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In "Strategic Trust and Cooperation," Vice Admiral Paul A. Maddison, Commander Royal Canadian Navy, provides a tour d'horizon of the emergent maritime operational environment and the challenges it poses to the navies of the United States and its friends and allies around the globe. In an arresting comment, he notes that "the complex and dynamic interrelationships among influence, combat and stabilization activities may lead to new and more adaptive approaches to campaign planning, as well as more flexible command organizations at the tactical and operational levels both at sea and ashore. Fighting forces themselves will undoubtedly become much more extensively networked to meet the demands of a highly cluttered, confused, complex, and legally constrained battle space." In such an environment, moreover, it is even more imperative for nations to work together to safeguard international maritime order, beginning with the deliberate nurturing of what he terms "strategic trust." Admiral Maddison's remarks were originally presented in the form of an address to students and faculty at the Naval War College.

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FROM THE EDITORS

In "Strategic Trust and Cooperation," Vice Admiral Paul A. Maddison, Commander Royal Canadian Navy, provides a *tour d'horizon* of the emergent maritime operational environment and the challenges it poses to the navies of the United States and its friends and allies around the globe. In an arresting comment, he notes that "the complex and dynamic interrelationships among influence, combat, and stabilization activities may lead to new and more adaptive approaches to campaign planning, as well as more flexible command organizations at the tactical and operational levels both at sea and ashore. Fighting forces themselves will undoubtedly become much more extensively networked to meet the demands of a highly cluttered, confused, complex, and legally constrained battle space." In such an environment, moreover, it is even more imperative for nations to work together to safeguard international maritime order, beginning with the deliberate nurturing of what he terms "strategic trust." Admiral Maddison's remarks were originally presented in the form of an address to students and faculty at the Naval War College.

In "Command of the Sea: An Old Concept Resurfaces in a New Form," Robert C. Rubel argues that a proper understanding of command of the sea is essential for a correct assessment of the role of the U.S. Navy in the contemporary strategic environment, particularly with a view to the challenge posed by the growing "access denial" capabilities of the Chinese military. Insisting on the distinction between (global and enduring) command of the sea and (local and intermittent) "sea control," Rubel makes the case that America's formidable fleet of power projection platforms—aircraft carriers, but also large-deck amphibious ships—should be understood as having a vital role in maintaining command of the sea on a global scale in the interests of safeguarding the increasingly interdependent "system" of global commerce and communication. At the same time, this suggests that they are not necessarily the preferred instruments for asserting sea control in—most particularly—the South China Sea. The argument builds on previous contributions by the author to this journal ("Talking about Sea Control" [Autumn 2010], "The Future of Aircraft Carriers" [Autumn 2011]). Robert C. Rubel, a retired Navy captain, is currently Dean of Naval Warfare Studies at the Naval War College.

A complementary vision of a future maritime confrontation with China is offered by Jeffrey E. Kline and Wayne P. Hughes, Jr. In "Between Peace and the Air-Sea Battle: A War at Sea Strategy," the authors propose an alternative to the emerging "Air-Sea Battle" construct being developed by the U.S. Navy and Air Force, one that avoids deep strikes against targets on the Chinese mainland. Like Rubel, Kline and Hughes favor reliance on attack submarines to deny the Chinese sea control of the South China Sea, but they also make the case for developing a new small surface combatant that, together with similar vessels of regional allies, would constitute a "flotilla" (using the term coined by the classic naval theorist Julian Corbett a century ago) to operate in the East Asian littorals in times of peace as well as potential conflict. Captains (retired) Kline and Hughes, of the faculty of the Naval Postgraduate School, have both served on the Advisory Board of the *Naval War College Review.*

There is little need to rehearse the litany of budgetary woes currently facing the Department of Defense. In "Building the Purple Ford: An Affordable Approach to Jointness," Robert P. Kozloski argues that the U.S. military's quasi-religious devotion to "jointness" today has caused it to turn a blind eye to the real costs imposed by what he insists are the inherent inefficiencies of the joint system in its various aspects. Concentrating primarily on the procurement process and the military personnel system, Kozloski argues that both efficiency and effectiveness are often sacrificed to the real or perceived requirements of jointness. While recognizing that the landmark Goldwater-Nichols Act has genuinely improved the operational performance of the military in important respects, he holds that the problems created by the legislation in other areas can no longer be ignored in the current fiscal environment. His most radical suggestions are the abolition of most combatant commands in their current form, with the drastic reduction in joint billets that this move would allow, and legislative reform that would limit the number of officers in all services required to be joint certified.

Next, Iskander Rehman's "Drowning Stability: The Perils of Naval Nuclearization and Brinkmanship in the Indian Ocean" revisits the Indo-Pakistani nuclear relationship in the light of the growing trend toward the development or procurement by both sides of nuclear-capable sea-based platforms and weapons, notably, the new Indian *S-2* SSBN. Rehman warns that the unstructured and volatile nuclear confrontation on the subcontinent could well become still more dangerous if this trend continues, especially if accompanied by the eventual introduction of Chinese nuclear-armed submarines into the Indian Ocean.

In "Decided Preponderance at Sea: Naval Diplomacy in Strategic Thought," Kevin Rowlands reviews the relatively scanty literature on naval diplomacy (a.k.a. "gunboat diplomacy") from the days of Alfred Thayer Mahan through the recent studies of James Cable and Edward Luttwak. He argues that at the present, when

"ballistic-missile defense at sea, theater security cooperation, humanitarian assistance and disaster relief, enforcement of no-fly zones, forward presence, and global fleet stations are all forms of postmodern naval diplomacy," more systematic thought needs to be devoted to the ubiquitous functioning of navies in peacetime. This reminder is apposite at a time when the U.S. Navy is preparing to revisit its fundamental maritime strategy for the current century, with its central emphasis on maritime security cooperation. Commander Rowlands is a serving officer in the Royal Navy.

War gaming has held a place of honor at the Naval War College since its early days. Milan Vego reminds us that it has a much longer historical pedigree. In "German War Gaming," Vego traces the development of war gaming from its origins in ancient India through early modern Europe, its embrace by the Prussian army in the late eighteenth century, its development under the German Empire in the run-up to World War I, and its revival in the 1920s and '30s. Of particular interest is his account of German army gaming of World War I scenarios, and for those with naval interests, German naval gaming prior to World War II. The central flaw of German war gaming was its consistent failure to address grand strategic or political factors; yet there is much here to stimulate productive thought about contemporary war gaming. Milan Vego is professor of joint military operations at the Naval War College.

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The newest title in our Newport Papers monograph series—*High Seas Buffer: The Taiwan Patrol Force, 1950–1979,* by Bruce A. Elleman, of the Naval War College's Maritime History Department—is available for sale by the Government Printing Office's online bookstore (bookstore.gpo.gov, or follow the link on the Press website). It is also available on our website in PDF, downloadable to e-readers. It tells the story of one of the longest naval operations in modern history—officially lasting twenty-nine years, and in a real sense continuing to the present. It was also one of the most successful, since, as a potent symbol of American power, it ensured that frictions over the Taiwan Strait did not escalate into full-blown warfare. In fact, the Taiwan Patrol Force did its job so well that virtually nothing has been written about it until now.

IF YOU VISIT US

Our editorial offices are now located in Sims Hall, in the Naval War College Coasters Harbor Island complex, on the third floor, west wing (rooms W334, 335, 309). 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 (841-2236).

STRATEGIC TRUST AND COOPERATION

Address to the Naval War College by Vice Admiral Paul A. Maddison, Royal Canadian Navy

Let me begin by stating how much I appreciate this opportunity to return so soon to Newport after last fall's International Seapower Symposium. On that occasion, I was asked by our host, Admiral Jon Greenert, to provide a Canadian perspective on common challenges our navies face in the world's oceans, in what the great American naval strategist Alfred Thayer Mahan, writing from a desk only a few hundred meters from here, described as "a wide common, over which men may pass in all directions."

On my return today to this very same lecture hall, it is only fitting for me to begin by acknowledging the superb role played by this Naval War College in cultivating a capacity for critical thinking that has marked its graduates and has marked you since Stephen B. Luce convinced a reluctant Navy Department to establish the College in 1884, thereby laying what we would recognize today as the modern foundations for the professional study of war in the United States Navy.

It was this foundation—revised and renewed over decades, but always reaffirmed—that prepared the United States Navy for its highly successful transformation during the Second World War around naval aviation, amphibious operations, and integrated seaborne naval logistics and that more recently has contributed so deeply to the development of the "Cooperative Strategy for 21st Century Seapower" and the Air-Sea Battle operational concept. In keeping with this theme of successful anticipatory transformation, my remarks this morning will begin by looking at how naval operations are likely to evolve in this increasingly maritime twenty-first century.

I wish as well to acknowledge the central role that the Naval War College has played in nurturing what I call "strategic trust"—that sense of cooperation and confidence that permits naval leaders to see past issues that may divide us as the instruments of national policy that our navies must always be, to work together on issues of common interest, which in this globalized era have become crucial to our collective prosperity and security.

Strategic trust begins, of course, in the relationships that are created among leaders themselves, and few institutions anywhere can match the record of the Naval War College for bringing together successive generations of future international leaders with their shipmates in the American services, ever since Admiral Arleigh Burke began the international program in 1956. The record of that program speaks volumes. As of June 2011, the senior and junior international courses have produced about 1,909 and two thousand alumni, respectively, of which 1,271 have risen to flag rank, 331 of whom have become chiefs of navy, including thirty-one that are serving in that capacity today—for example, my friends Admiral González of Chile and Admiral Verma of India.

In keeping with this theme of strategic trust, I will, in the latter half of my remarks, lay out for you an imperative for strategic cooperation.

But first, permit me to offer you a personal perspective on what we may expect to confront during operations in the coming decades both at sea and ashore. While the underlying and very human nature of conflict will not change, the means of warfare will certainly continue to evolve both ashore and at sea. Over the past twenty years, operations ashore have been conducted against adversaries who have learned with increasing effectiveness to blend all forms of violence—ranging from the purely criminal through the irregular to the conventional—to political purpose, while using superior knowledge of their local physical, social, and cultural terrains to fight from a position of maximum relative advantage.

Such adversaries have not yet mastered the maritime domain to the extent required to challenge modern navies. However, the trend toward improved capabilities and competence at sea is clearly evident in some notable recent successes: the suicide attack on USS *Cole* in 2000; the attack by al-Qaeda on the French oil tanker *Limburg* in 2002; Hezbollah's attack on the Israeli corvette *Hanit* using a variant of the Silkworm antiship missile in 2006; and terrorist attacks launched at Mumbai, in 2008, from the sea.

In addition, certain states have already demonstrated the capacity to orchestrate the actions of maritime nonstate actors as a means of leveraging their own conventional and asymmetric capabilities. Given the disruptive synergies involved in using such proxies and the perceived benefits of plausible deniability, these states may continue to see strong incentives to improve their irregular maritime forces.

Accordingly, we must be prepared now and as part of future coalitions to be confronted both at sea and ashore by a wider range of potential threats and challenges than we have ever dealt with before, in addition to the ever-latent but rising potential of state-on-state conflict at sea that has been our traditional focus in naval warfare.

Such operations will take place in a highly complex, politically ambiguous, and legally constrained environment, more often than not in that relatively narrow zone astride the world's coastlines where the vast majority of humanity resides—in the littorals—where the consequences of massive social change and disruption are already beginning to play out, as we are witnessing today in the Middle East and elsewhere. The contested littorals are where the future sea–land–air–special operations joint force must be prepared not only to counter only irregular or state-centered threats and challenges but to confront both at the same time.

Across the width and depth of a littoral theater, joint and combined forces ashore will be engaged, often simultaneously, in operations designed not only to defeat our adversaries but also to favorably influence populations and protect them, while also creating the conditions for other agencies and partners to restore civil services and governance.

Given how closely coupled the actions of a joint force will be in the littoral context, naval forces in the future, including Canada's, are likely to play a much greater role in supporting these influence, combat, and stability operations ashore.

I foresee, for example, that a far greater emphasis will need to be directed toward influence activities prior to the onset of combat operations, as well as during them. Indeed, such activities, which some have termed "the battle of the strategic narrative," will be central to all future campaigning—essential not only for the purposes of isolating the adversary in political, economic, and military terms but also for establishing and maintaining the legitimacy of intervention among the domestic and international communities, as well as with populations within the theater of operations. Maritime forces will play a key role in such diplomatic and influence activities, not only in supporting forces ashore but also through the finely calibrated supportive and deterrent effects they create by their operational maneuver offshore.

The complex and dynamic interrelationships among influence, combat, and stabilization activities may lead to new and more adaptive approaches to campaign planning, as well as more flexible command organizations at the tactical and operational levels both at sea and ashore. Fighting forces themselves will undoubtedly become much more extensively networked to meet the demands of a highly cluttered, confused, complex, and legally constrained battle space.

Such trends are likely to increase the role played by maritime forces—and not solely those of the major naval powers—in contributing to combat operations ashore. Such contributions include the insertion, support, sustainment, and extraction of special operations forces; joint intelligence, surveillance, and reconnaissance preparations from the sea; the provision of joint and tactical maritime

supporting fires from the sea; and the protection of forces and populations ashore from an extension of a naval formation's force-level defensive capabilities.

All of these joint actions will be greatly enhanced by the ability of maritime forces to maneuver operationally once sea control is achieved—that is to say, to use their inherent mobility for strategic and operational as well as tactical advantage—by placing an adversary's forces at risk along exposed flanks and using deception to present operational dilemmas to the adversary.

Finally, the logic of joint sea basing is likely to become more compelling in an increasingly urbanized littoral environment, as ways are sought to reduce a joint and combined force's footprint ashore and its associated force-protection liabilities. This will also require such sea bases to be defended in depth from adversaries at sea and attacks launched from ashore.

Few joint campaigns are likely to be possible without achieving sea control—that ability to control events deriving from a capacity for decisive action on, above, and below the surface of the sea.

Achieving sea control in a contested littoral will require extensive intelligence preparations at the strategic and operational levels, as well as detailed and ongoing environmental analysis to predict and compensate for the complex atmospheric, topographic, and hydrographic effects on maritime weapons and sensors, whose performance in coming decades will need to be substantially improved to deal with clutter and background noise from human activity that is orders of magnitude greater inshore than far at sea.

Future maritime adversaries will attempt to exploit their initial advantage of local knowledge by challenging maritime forces with a range of conventional, irregular, and high-end asymmetric threats. Such adversaries will initially seek to avoid engaging the maritime force to its strengths, working all levers at their disposal to deny access indirectly through political action or popular will. Mines and submarines will certainly remain their most effective means for delaying or denying access to a joint force, given the significant resources and level of effort required to address these particular threats.

In more openly hostile situations, the enemy may launch "swarming" attacks, using relatively unsophisticated but very fast and highly maneuverable speedboats in large numbers, armed with optically sighted handheld weapons. Others will employ shore-based rocket artillery, as we witnessed off Libya, and some—such as Hezbollah demonstrated in 2006—may have access to subsonic but capable antiship missiles that can be launched from commercial vehicles ashore.

An increasing number of adversaries in the future will be able to complement such capabilities with highly advanced weapons launched at sea and from ashore, including hypersonic antiship missiles and very fast, supercavitating torpedoes.

In addition to such "kinetic" weapons, some adversaries will have also developed advanced weapons that operate through their effects on maritime sensors, as well as those that target key network nodes in physical or cyberspace to impair the performance of our battle networks.

Engagements may well be fought in proximity with an adversary's nonconventional, irregular, and asymmetric elements, as well as at range when an adversary attempts to bring high-end capabilities to bear. A sophisticated adversary will undoubtedly attempt both concurrently. Engagements may develop suddenly and be conducted with intensity along multiple lines of attacks at sea and from ashore, followed by attempts to disengage into the littoral background.

In the face of such an adversary, maritime warfare will need to emphasize offensive action, enabled through extensive preparations to counter an adversary's expected actions; by thwarting how the adversary would prefer to fight; and by eliminating or neutralizing an adversary's capabilities before they can be brought into action. Maritime warfare will require fully integrated offensive and defensive joint action across all physical dimensions in the maritime domain—from the seabed to space—as well as full use of the electromagnetic and informational environments.

As a result, such operations will require far more than the bringing together of a coalition at the time of crisis. They will require ever-higher degrees of interoperability to effect a merging of allied and coalition maritime forces at the technical, tactical, and doctrinal levels, as well as a degree of understanding, confidence, and trust among warfare commanders that is achieved only through years of working closely with one another.

And that brings me to the second topic I wished to discuss with you today—the imperative for strategic cooperation, an imperative that is tagged by a sense of urgency due, I believe, to the fact that we may very well be on the cusp of historic and momentous change in the global maritime domain.

Today's rules-based maritime order sits on a delicate balance between two central and essentially competing ideas that have existed in a state of constructive tension for some five hundred years, since they were first disputed by the English and the Dutch in the seventeenth century:

- The first—*mare liberum*—the idea that the seas cannot be made sovereign and hence are free for all to use; and
- The second—*mare clausum*—the idea that the seas can be made sovereign to the limits of effective state control.

This delicate balance was achieved not in bloodshed but rather through an unprecedented degree of international consultation and collaboration in the closing

decades of the twentieth century. The result was a unique global convergence of maritime interests that was codified within the 1982 United Nations Convention on the Law of the Sea (UNCLOS).

The convention was forged out of a compelling need to reconcile the economic and national interests of the world's coastal states with the traditional defense and security interests of the great maritime powers. That makes the 1982 Convention among the crowning achievements of international law, but what made it possible was the fact that both the maritime powers and the coastal states risked suffering equally from the perpetuation of an unregulated, disputed, and unstable maritime order.

Whether or not that international consensus will continue to hold in the face of building pressures on coastal states both large and small is one of the abiding strategic issues of this twenty-first century.

To understand why, we need only look to the Arctic, where we are likely to see more change in the coming three decades than has occurred since Europeans first arrived in Greenland. Predictions may vary, but most analyses suggest that the Arctic Ocean will become a commercially viable sea route between Europe and Asia for the first time in recorded history, with recent trends suggesting that eventuality may arrive much sooner than many thought possible even a few years ago.

In all likelihood, the northern sea route will emerge across the Arctic Basin well before the fabled Northwest Passage. And such are the advantages for "transit" shipping of this long-sought passage across the Arctic Ocean that shipping patterns worldwide are likely to be altered significantly, with economic consequences that will be felt not only in the Northern Hemisphere but even on the other side of the equator.

In conjunction with a gradual retreat of the northern ice cap, improvements in extraction technologies are likely to make arctic resources commercially exploitable, again potentially much sooner than many had previously envisaged.

And the economic stakes are enormous. Believed to be awaiting each of the five arctic coastal states are precious inheritances for decades to come—vast energy and mineral reserves that have been already discovered, or are believed to lie, in the Arctic Basin seabed and its periphery.

All of this will eventually bring new and unprecedented levels of human activity in the high North, including not only a host of economic opportunities in northern societies but also accelerating social change as traditional lifestyles are progressively altered, as well as greater risks to the environment.

In short, a range of factors have emerged to deepen the economic, political, and legal stakes at issue in the Arctic, creating the potential for increased strategic competition in the coming decades. However, as the maritime boundary delineation agreement reached in 2010 by Russia and Norway attests, the intensification

of ocean politics in the Arctic has been moderated thus far by strategic cooperation. Moreover, such are the demands of that remote, vast, and distant place that there is a strong operational imperative for cooperation at high latitudes. The recent Search and Rescue treaty, signed in May 2011 by the Arctic Council nations, is a case in point.

Although the arctic states, including Canada, hold to different interpretations regarding the various provisions of UNCLOS, none of these positions appear to be incompatible with the logic that underpins the convention itself. From the geopolitical perspective, strategic cooperation aligns with the core long-term national interests for each of the arctic states, as it reinforces the 1982 Convention from which they each stand so much to gain.

Elsewhere in the world, intensifying ocean politics have been met by significant increases in interstate tension and confrontation. Nowhere is this more apparent than in the Asia-Pacific. The South China Sea in particular, much like the Arctic Basin, is a region rich in seabed resources. Unlike the Arctic, its importance to global commerce is real today rather than emergent tomorrow. To the southwest, it is served by one of the world's most important maritime transit ways, the Malacca Strait, through which passes a substantial portion of global maritime commerce, including much of the oil and gas resources on which regional economies depend.

From the legal perspective, the region is overlaid with multiple and largely overlapping territorial claims, especially by the states that enclose the South China Sea, a factor that has for the most part defied diplomatic and legal efforts at resolution. Many observers suggest that future solutions, however distant their prospects, will be political rather than legal in nature, adding complexities at the geopolitical level.

In this context, China has identified its maritime claims in the South China Sea as a core national interest, at a time when ocean policy has become increasingly central to the Sino-American relationship in two crucial respects: first, in relation to the United States as an Asia-Pacific power that is vested deeply in regional stability and security; and second, in relation to the role played by the United States as the world's preeminent maritime power. In both instances, how China and the United States approach their differences in ocean policy will be crucial to the trajectory of the twenty-first century.

China is not alone in making such claims. That it does so may simply signal the need for a new international dialogue concerning adjustments to be achieved between coastal states' needs for regulation and stewardship of their ocean approaches, on one hand, and the international community's rights of free movement and access, on the other.

That alone would be a development of cardinal importance to the global system. However, it may also portend something even more profound should the international consensus through which the 1982 Convention was derived begin to unravel, and with it the period of relative stability in ocean politics that the convention has achieved.

The consequences of such an unraveling would be enormous and potentially lead to a far darker world than the one we now inhabit. This is not a future to which I believe any of us would want to aspire, but rather one that we fellow naval officers, guided by strategic trust, should be prepared to stand against, for the common vital interest of our nations, and for the greater good of all.

There are areas where our navies are already working toward that greater good. In the Caribbean Basin and the Pacific approaches to Central and South America, a range of nations from the Americas and Europe are cooperating effectively to stem the flow of narcotics at sea through the auspices of Joint Interagency Task Force South.

Off the Horn of Africa, we have witnessed since 2008 a largely spontaneous but nonetheless remarkable assembly of naval power to suppress piracy, while the international community continues to seek more enduring solutions.

In other words, navies are not only a means of military action, employed in pursuit of national interests as states interpret them. They are also the principal guarantor of good order in that "wide common, over which men may pass in all directions," as Mahan described it. Every naval officer here, as first and foremost a professional mariner, understands that our oceans remain crucial to sustaining life on this planet.

Each one of us understands that the ocean's riches are crucial to the future of all coastal states, many of which are struggling to secure a better life for their citizens. Each one of us understands how a regulated ocean commons underpins the global economy, on which our prosperity, and indeed our very way of life, depends.

In this globalized era, our navies will continue to be required to protect our ocean approaches at home, as well as to keep good order at sea abroad. They will be increasingly required not solely to render humanitarian assistance and relieve distress in response to events at home and abroad but also to promote goodwill among populations on an ongoing basis. Our navies will continue to be called on not just to suppress criminal activities at sea but also to build the capacity of coastal states to secure their home waters. Finally, navies will also continue to play a crucial role in helping build trust and confidence among states to prevent conflict at sea.

What I speak of here is not starry-eyed idealism but rather that point at which national self-interest and common global interest converge fully. I am speaking

of choices that are ours to make, today's leaders and the leaders of tomorrow, choices that require strategic trust to be established and sustained among pragmatic, determined men and women of action—such as are gathered here in this great hall of higher learning. I believe it to be within our collective grasp to realize its great purpose. Indeed there may be no higher purpose. All we need to do is resolve ourselves to achieve it.

VICE ADMIRAL PAUL A. MADDISON, CMM, MSM, CD

Vice Admiral Maddison became Commander, Royal Canadian Navy on 21 July 2011, having previously served as Deputy Commander and Assistant Chief of the Naval Staff. Since his graduation from Royal Military College Saint-Jean in 1980, he has served in both Atlantic and Pacific Fleets, as well as in NORAD headquarters, and commanded the destroyer HMCS Iroquois *in the Persian Gulf and Arabian Sea. As a flag officer he has served as the Canadian Forces' Assistant Chief of Military Personnel and commanded both Maritime Forces Atlantic and Joint Task Force Atlantic.*

Rear Admiral Christenson became the fifty-third President of the U.S. Naval War College on 30 March 2011. The fourth of six sons of a Navy Skyraider pilot and a Navy nurse, he graduated from the U.S. Naval Academy in 1981.

At sea, he commanded USS McClusky *(FFG 41), Destroyer Squadron 21 in USS* John C. Stennis *(CVN 74), Carrier Strike Group 12, and the USS* Enterprise *(CVN 65) Strike Group. He most recently served as President, Board of Inspection and Survey. He also served as the antisubmarine warfare officer and main propulsion assistant aboard USS* Cook *(FF 1083); as aide to Commander, Cruiser Destroyer Group 1 in USS* Long Beach *(CGN 9); as weapons officer aboard USS* Downes *(FF 1070); as Destroyer Squadron 21 combat systems officer, in USS* Nimitz *(CVN 68); and as executive officer of USS* Harry W. Hill *(DD 986). He deployed eight times on seven ships, twice in command of* McClusky.

Ashore, he commanded the Surface Warfare Officers School in Newport, and as a new flag officer he served as Commander, Naval Mine and Anti-submarine Warfare Command, Corpus Christi, Texas. He also served at the U.S. Naval Academy as a company officer, celestial navigation instructor, assistant varsity soccer coach, and member of the admissions board; at Headquarters, U.S. Marine Corps, in the Strategic Initiatives Group; and on the Joint Staff, in J5 (Strategic Plans and Policy) and as executive assistant to the assistant chairman.

He graduated with distinction and first in his class from the Naval War College, earning his master's degree in national security and strategic studies. He was also a Navy Federal Executive Fellow at the Fletcher School of Law and Diplomacy.

Rear Admiral Christenson has been awarded the Defense Superior Service Medal, the Legion of Merit (five awards), the Meritorious Service Medal (two awards), the Navy Commendation Medal (five awards), and the Navy Achievement Medal.

PRESIDENT'S FORUM

THE YEAR I SPENT AS A STUDENT at the Naval War College was truly one of the best experiences of my life. When I returned to Newport as President of the College, I found that the educational process I admired so much had been refined and updated and was still the best national security education available anywhere. But I also found that the College offers a number of tailored versions of the intermediate-level Joint Professional Military Education (JPME) course for the benefit of the many students whose careers do not afford them the opportunity to spend a year in full-time study yet want to receive this tremendous education.

Since 1914 the Naval War College has provided nonresident courses by way of the technological means prevailing at the time. In the early years, this meant correspondence courses delivered by the Postal Service. In the nearly one hundred years since the "Correspondence School" was established, the structure and name have changed with the times, and the majority of the College's nonresident programs are now managed by the College of Distance Education (CDE).

Because the College's nonresident student population is diverse, dispersed, and deployable, CDE offers six delivery methodologies. To highlight a few of these programs:

- The Fleet Seminar Program (FSP) is the delivery method that most closely matches the resident Newport classroom experience. Our students meet in faculty-led seminars one night per week over a thirty-three-week period, completing one of the College's three core courses during each academic year. Over a three-year period, they can complete all of the requirements for Joint Professional Military Education Phase I (JPME-1) credit. These seminars are led by an exceptionally qualified and experienced adjunct faculty, of which the majority have taught in, or are graduates of, our resident

program. On the basis of my visits to FSP classes around the country and meeting with graduates, who often come to Newport for our June graduation ceremony, I can state unequivocally that these students are bright, highly motivated, and eager to learn. To take on the challenges of a rigorous Naval War College program while holding down a full-time job requires extra dedication and determination that I greatly admire.

- Our very successful partnership with the Naval Postgraduate School in Monterey offers courses leading to JPME Phase I certification for the officers assigned there. The Monterey Program teaches tailored versions of all three core courses of the College, utilizing eighteen full-time NWC faculty members who are permanently assigned to the California campus.
- We also offer our core curriculum as an asynchronous Web-enabled course that was recognized in 2002 by the Association for Educational Communications and Technology with its prestigious Crystal Award for the most innovative distance-learning project in the nation.
- For almost a hundred years, the College employed a paper-based methodology to deliver PME via correspondence courses to officers where they lived and worked. In 2003 CDE embarked on a new educational venture, developing a CD-ROM-based correspondence course that was first deployed in April 2004.
- In the fall of 2001 the College launched the Nonresident Graduate Degree Program (NGDP). This program was a response to the CNO's "Vision Statement for Navy Education," which emphasized education as "crucially important" and called on the Navy's senior leadership to make education a priority in the development of the officer corps. Establishment of the NGDP created a unique opportunity for nonresident officers and senior federal civilian employees to attain JPME-1 and simultaneously earn the College's Master of Arts in National Security and Strategic Studies degree. Students earn twenty-one graduate semester hours for completing the three core courses, and they round out the degree by completing an additional nine graduate semester hours of elective courses that have been screened and approved by the College. One hundred ninety-two NGDP students earned MA/NSSS degrees during the last academic year.
- In addition to the JPME Phase I variations offered by CDE, in May 2005 the College was named as the executive agent for the development, implementation, and management of both the officer and enlisted PME portions of the Navy Professional Military Education Continuum. The Primary PME course for junior officers is delivered by way of the Navy Knowledge Online system. We also offer a comparable course for senior enlisted personnel. To reach the Navy's most junior sailors, CDE administers Introductory and Basic Enlisted

PME. These courses meet Navy and Joint Professional Military Education requirements at both officer and enlisted career milestones, and they are designed to build on one another, thus preparing a student for an intermediate-level service school or Senior Enlisted Academy experience.

Enrollment in the various programs offered by the College of Distance Education has increased dramatically over the past decade, and today the College enrolls more than eighty thousand students in its programs across the United States, at overseas locations, and afloat. In June 2012, we graduated a record-high 1,060 students from our nonresident JPME programs. We are committed to providing high-quality nonresident education that parallels, to the maximum extent possible, the educational structure and quality of the resident experience in Newport.

The excellence of our CDE programs was evident recently in the course of my discussions with the chairman of the Rhode Island Board of Governors for Higher Education (RIBGHE), who visited the College at the suggestion of Congressman James Langevin of Rhode Island. We will be working with the RIBGHE in the months to come, sharing with it the concepts and methodologies we have found to be successful and learning from it how other educational outreach programs are conducted. I want to thank Dr. Jay Hickey, director of the College of Distance Education, and his superb faculty and staff for helping extend the reach and impact of the Naval War College around the world.

I will close with a quote from one of our most distinguished alumni, the late Fleet Admiral Chester Nimitz, who once said of the Naval War College correspondence course, "I regarded that course as one of the most valuable experiences that I had," and that "it gave an excellent indication to the people in the office of Chief of Naval Personnel, when they were looking for someone to do a job, to look down the list of the people who had completed the Naval War College correspondence course and say, 'Well, here is a guy who can stick with it.'" I commend all of our nonresident students for their willingness to "stick with it" even when the demands of their regular jobs and their family commitments clamor for their time and attention. Your dedication to excellence will pay great dividends.

The Naval War College is utilizing technology and educational flexibility to reach sailors seeking to improve their professionalism, at all grade levels, wherever they work and live.

JOHN N. CHRISTENSON
Rear Admiral, U.S. Navy
President, Naval War College

Professor Rubel is Dean of Naval Warfare Studies at the Naval War College. Before retiring from the U.S. Navy in the grade of captain, he was an aviator, participating in operations connected with the 1973 Yom Kippur War, the 1980 Iranian hostage crisis, the TWA Flight 847 crisis, and DESERT SHIELD. *He commanded Strike Fighter Squadron 131 and served as the inspector general of U.S. Southern Command. He attended the Spanish Naval War College and the U.S. Naval War College, where he served on the faculty and as chairman of the War Gaming Department, in the Center for Naval Warfare Studies, before his present appointment. He has a BS degree from the University of Illinois; an MS in management from Salve Regina University, in Newport, Rhode Island; and an MA in national security and strategic studies from the Naval War College (1986).*

COMMAND OF THE SEA

An Old Concept Resurfaces in a New Form

Robert C. Rubel

Whosoever commands the sea commands the trade; whosoever commands the trade of the world commands the riches of the world and consequently the world itself.

SIR WALTER RALEIGH

For in war . . . the common sense of some and the genius of others sees and properly applies means to ends; and naval strategy, like naval tactics, when boiled down, is simply the proper use of means to attain ends. But in peace, as in idleness, such matters drop out of mind, unless systematic provision is made for keeping them in view.

ALFRED THAYER MAHAN

The last great sea battle occurred in 1944. Since then the world ocean has been open to free navigation by all nations as a matter of American policy. The ability to enforce this policy—or perhaps better said, the absence of serious challenges to this policy—has been in significant part a product of the superiority of the U.S. Navy. Despite a latent and partial challenge during the Cold War by the Soviet navy, since World War II the degree and persistence of U.S. Navy superiority have led most people to take it for granted and have caused the old term "command of the sea" virtually to disappear from the naval lexicon.[1] However, the emergence of a powerful Chinese navy and an associated land-based sea-denial force is stimulating a new focus on sea control and overcoming antiaccess/area-denial efforts. New concepts, such as "AirSea Battle," are being developed and investments made in platforms, weapons, and systems. This activity is critical to American strategic interests and prospects, and it must be informed by an understanding of command of the sea as a foundational concept of sea power. A reconsideration of command of the sea is all the more necessary as political, economic, and technological developments have significantly changed the nature of how sea power influences the dynamics of geopolitical interactions. This article will argue for an extended definition of the term and its renewed application to naval strategy and doctrine.

THE EVOLUTION OF THE TERM

"Command of the sea" denotes a strategic condition, and it is from this actual condition that the logic flows, whatever words are used to describe it. Since ancient times, navies have sought to control communications on the sea. Such control might be general—such as the Romans and British achieved at various times—or it might be local and temporary. In either case the object of such control has been to protect one's own commerce, disrupt the enemy's, move one's own army, and prevent the movement of the enemy's. At various times and places belligerents have built substantial navies to carry out these missions and in the dynamics of their competitions the notion of command of the sea emerged. "Command" denoted a relative strength relationship between two or more navies in which one enjoyed a significant superiority such that the freedom of action of the others to carry out the four basic missions of sea power was constrained and that of the stronger navy enhanced.

By the time the American naval historian and theorist Alfred Thayer Mahan wrote about sea power, international trade as a foundation for a nation's economy had become an inherent element in the concept of command of the sea. Although Mahan did not use the term directly, his notion of "that overbearing power on the sea which drives the enemy's flag from it, or allows it to appear only as a fugitive; and which, by controlling the great common, closes the highways by which commerce moves to and from the enemy's shores" encapsulates the strategic condition in which not only is the enemy's navy unable to interfere with the movements of one's own army but his sea commerce is so constricted as to starve his economy.[2]

Mahan was an advocate of keeping the U.S. battle fleet concentrated in order to counter any European adventurism in the Western Hemisphere.[3] However, this was a tacit admission that the United States of the late nineteenth century did not enjoy command of the sea on a global scale. That belonged to the Royal Navy of Great Britain. Sir Julian Corbett was a British historian who also developed naval theory. In his view, command of the sea, conferred by the defeat or blockade of the enemy's battle fleet, allowed one to disperse one's own naval forces to exercise sea control in specific areas as the need arose.[4] The dispersed fleet could also perform other functions, such as showing the flag and projecting power ashore. Fleet dispersal highlights the other side of the naval strategy coin—sea control. Whereas command of the sea denotes a specific kind of general superiority, "control" is delimited in space and time. Command is associated with capital ships and the main battle fleet; if the enemy cannot challenge one's main battle fleet, then one has some degree of command. Control is usually, but not always, fought for and exercised by smaller, more numerous combatants. This distinction tends to be lost on many who see these terms as synonymous. Command has

been traditionally about the relative strength of fleets, whereas control was and is about the condition of a water space.

The introduction of the submarine and aircraft in the world wars threatened the idea of command of the sea. If the enemy always has the ability to contest control in any area of the sea, whether or not he has a viable battle fleet, there is nothing available to the stronger navy beyond a rather tenuous and local sea control. However, the unconditional surrender and occupation of the Axis powers in 1945 eradicated their air and subsurface threats. The fact that no other viable hostile navy existed at the time gave the navies of the United States and the United Kingdom command of the sea by default. The absolute magnitude of this command added yet another dimension to the concept.

A critical element of this article's argument is the notion that the definition of command of the sea can be extended to peacetime. Those who feel that the concept applies only to wartime tend to base their view on Sir Julian Corbett's assertion that most of the ocean is uncommanded most of the time:

> The object of naval warfare must always be directly or indirectly either to secure command of the sea or to prevent the enemy from securing it.
>
> The second part of the proposition should be noted with special care in order to exclude a habit of thought, which is one of the commonest sources of error in naval speculation. That error is the very general assumption that if one belligerent loses command of the sea that command passes at once to the other belligerent. The most cursory study of naval history is enough to reveal the falseness of such an assumption. It tells us that the most common situation in naval war is that neither side has command; that the normal position is not a commanded sea, but an uncommanded sea. The mere assertion, which no one denies, that the object of naval warfare is to get command of the sea actually connotes the proposition that the command is normally in dispute. It is this state of dispute with which naval strategy is most nearly concerned, for when the command is lost or won pure naval strategy comes to an end.[5]

In Corbett's framework, command is that condition imposed by one navy on another during wartime, and though the effects may extend globally, the arenas of the contending fleets are limited to regions.[6] Moreover, as revealed by the quotation above, Corbett's definition tends to weave between describing a condition of relative strength between two fleets and the status of an area of water. In this author's view, command strictly denotes the balance of power between or among navies. Water areas may be controlled or not. Conflation of relative strength with water space leads to the kind of error that Corbett himself decries, the kind of error that led to allied efforts early in both world wars to secure the sea-lanes. It turned out that all that could be done was to adopt the convoy system and hunt U-boats from the air. Even the concept of sea control, concerned as it is with military conditions in a specific time and space, is ultimately about ships and

whether they can be effectively defended or attacked. Command of the sea, then, is a statement about the relative power of navies and the perceptions that attend asymmetry in power. Such asymmetry exists in both peace and war.

In today's globalized world, one characterized by endemic struggle and conflict, nuclear weapons, the Internet, mass communications, and ubiquitous sensing, the dynamics of interstate, intergroup, and intercorporate relations have produced a world of continuous contention, the characteristics of which are significantly influenced by who can do what in the global commons. The geopolitical fact of American naval supremacy influenced the history of the Cold War, just as it influences the dynamics of today's world. Extending the definition of command of the sea temporally (into peacetime) and geographically (to global scope) appears to offer analytic utility in this environment, aiding in the assessment of appropriate risk for naval forces and in the development of effective maritime policies and strategies. In today's world, sea power, even for nations with small coastal navies, cannot be properly understood on any scale less than global. Command of the sea of the kind achieved by the United States and Britain in 1945 is directly associated with overall military and economic superiority, which in turn allows a nation to establish a world order on its terms.[7] Given that the United States and Great Britain were liberal maritime trading democracies, such command underpinned the achievement of the Bretton Woods accords of 1944 and the subsequent evolution of the global system of commerce and security. As Clark Reynolds puts it, "As in the past, however, international agreements depend on the willingness of the participants to live up to them and especially upon the acquiescence of the great powers which are capable of commanding the seas."[8]

The issue of potentiality is also central to the argument. Carl von Clausewitz asserts that possible engagements are to be regarded as real ones because of their consequences.[9] Whereas Corbett regarded command as an operative fact in war, this article seeks to establish command of the sea as a condition in which the various actors perceive the U.S. Navy as enjoying superiority and shape their actions accordingly. These actions may consist of decisions on whether to build a navy to challenge that superiority or decisions on whether and how to support, or at least go along with, American policies. Some of this could be wrapped up into "suasion," as described by Edward Luttwak: "Latent naval suasion continuously shapes the military dimension of the total environment which policy makers perceive and within which they operate."[10] However, for the purposes of assessing risk in the development of naval strategies and doctrine, it is useful to understand modern command of the sea as a condition of naval superiority that influences other nations' decisions in a way that is congenial to U.S. interests, especially as it relates to the maintenance of a global security system that supports the operation of a global economic system.

The onset of the Cold War generated a set of geopolitical parameters that provided context for the way American command of the sea made its presence felt. The development of huge arsenals of nuclear weapons created massive disincentives for the United States and Soviet Union to go to war directly with each other. The USSR, a continental power, attempted to create buffer states and to export its ideology via subversion and proxy wars. The United States was able to adopt a grand strategy of containment based on its command of the sea—which conferred, among other things, the ability to transport the U.S. Army to where it was needed. Moreover, this freedom of movement on the seas was a major factor in gluing together the cordon of alliances that hemmed in the USSR. The Soviets, for their part, built a large submarine fleet that was potentially capable of contesting U.S. command. However, the nuclear balance made the actual use of this capability problematic, and the established fact of U.S. command of the sea could not be reversed short of war.

Nuclear weapons governed another facet of command of the sea as well—concentration. The power of nuclear weapons meant that a whole fleet arrayed in a traditional formation could be wiped out at a single stroke. While methods of tactical dispersal were developed, the larger issue was strategic dispersal. To play its part in the implementation of a globe-girdling strategy of containment, the U.S. Navy had to disperse its forces into multiple regions in any case. Each carrier battle group was more powerful than any local force it could conceivably encounter. On only one occasion, the 1973 Yom Kippur War, were the Soviets able to assemble a locally superior force. Even then, the constraints of nuclear balance and emerging détente prevented the Soviets from leveraging their advantage. The command of the sea achieved by the United States at the end of World War II put it in a military, geographic, and economic position of leadership and advantage that could not be effectively undone by the Soviets in the nuclear age—short of risking nuclear war.

The fall of the Soviet Union created a unipolar situation in which U.S. command of the seas was, if anything, even more complete than at the end of World War II. The total absence of competition made the whole concept seem obsolete and thereby invisible—submerged, as it were, in a sea of peace. The U.S. Navy, though, maintained its global pace of operations, an indication that there was still some geopolitical function that needed to be performed. What was happening was that the process of globalization had kicked into high gear, partly as a result of the Soviet Union's collapse and in part as a result of new global communications technology, including the Internet. The nations of the world were becoming economically interdependent, and what the process needed was comprehensive global security.[11] The Gulf war of 1991 spotlighted the issue of regional instability, and naval forces seemed to be on call almost everywhere. American command

of the sea, instantiated by a fleet sufficiently large to sustain capable presence in multiple regions, continued to define the geopolitical environment of the post–Cold War era.

It should be noted that one of the earliest manifestations of command of the sea—preventing an enemy from moving his army by sea and driving his commerce from the sea—had by now lost its salience. Fleet dispersal was by now an inherent modus operandi for the U.S. Navy. With American global leadership now a virtually unassailable fact, all the factors associated with "command of the sea" disappeared below the waves, and with them use of the term.

COMMAND OF THE SEAS RESURFACES

We must ask why command of the sea could now be relevant again. The answer lies in the changed set of geopolitical circumstances. The issue is not simply that China is building a more capable navy. The point lies in the nature of the global system that has emerged and in the potential consequences for that system if the U.S. Navy suffers even a local defeat at the hands of China, Iran, or some other power.

The process of globalization has created a closely coupled global economic system in which the degree of economic interdependency among nations has made the smooth and uninterrupted flow of resources, goods, and information critical to the economic well-being of all nations. The system can be visualized as a set of nodes and connectors. The nodes are resource-extraction-and-production areas, manufacturing areas, and consumption areas. These nodes are in some cases geographically focused, but most often they are widely separated and geographically noncontiguous. Connectors consist of commercial maritime shipping, airlines and airfreight carriage, mass media, telephony, and the Internet. All this creates a complex economic topology that is tightly interdependent. Consumption places demand on manufacturing, which in turn places demand on resources. Within the manufacturing node, production has become highly parsed, with components for particular goods being made in multiple countries and being shipped, in an intricate global ballet of just-in-time delivery, ultimately to the country that assembles the final product.[12] The history of the last two decades is one of nations joining the system, not leaving it. It is likely that this system possesses a degree of adaptive self-healing capacity to contend with shocks like natural disasters. However, it is not clear what the consequences would be if one nation or bloc of nations withdrew from it or attempted to subvert it by imposing a different rule set.

China is a continental power that is pursuing a continental-style grand strategy. A Eurasian authoritarian regime, the Chinese Communist Party (CCP) must garrison its own territory to ensure national integrity. Security for such a regime radiates out from the capital to the national borders. Typically, continental powers from Rome onward have been unable to arrest their security strategies at their frontiers; they have always felt compelled to establish buffers, in the form

of neutralized states or occupied territories, which they eventually incorporate into an empire. This process also takes place at sea, which appears to be manifest in China's focus in its "near seas." China's ambitions in this process have brought it into conflict with neighboring states that claim the same islands and sea areas as Beijing does. Although China has benefited greatly from participation in the global system, for various reasons the CCP would like to change the rules of that system or even create an alternative one, with China as its leader.[13]

China's People's Liberation Army and its component navy (the PLAN) have, in pursuance of its buffering strategy, developed an array of missile, air, and naval forces designed to deny the U.S. Navy access to the ocean areas adjacent to the Chinese mainland, including the Yellow Sea, East China Sea, South China Sea, and even the western portions of the Philippine Sea. In the first instance, these forces are meant to prevent interference by the U.S. Navy if China feels it necessary to use force to prevent a declaration of independence by Taiwan. However, as its interests have broadened and its naval power has developed, China has expanded its military objectives to keeping the United States out of the near seas in order to solidify its greater territorial claims. While many in the U.S. naval establishment regard the evolving operational challenge in East Asia as a regional sea-control issue, there are larger implications with regard to the global system that cause the matter of command of the sea to resurface in a new form.

The current American maritime strategy, "A Cooperative Strategy for 21st Century Seapower," says that the U.S. sea services will be deployed to defend the global system on a day-to-day basis.[14] In doing so, they will attempt to limit regional conflict, defend the homeland, and prevent war among the major powers. The issue is systemic disruption. According to Stephen Carmel, senior vice president of Maersk Line, "As the last great age showed us, the forward march of globalization is not inevitable, but also not reversible. We cannot slide easily backwards into a better previous time when the pressure gets to be too much. When globalization breaks, it does so violently, permanently altering the trajectory of history."[15] In a potential naval fight between China and the United States, the stakes become the functioning of the global system, given the importance of East Asian manufacturing and container shipping hubs.

In light of the central role of the U.S. Navy in maintaining a stable security environment in which the system, specifically its flows, can function, we may define command of the seas as the condition in which the U.S. Navy, in conjunction with allies and partners, is able to maintain a global security environment that permits unrestricted global systemic flow. In a negative sense, it denotes the inability of any navy or force to impose a defeat on the U.S. Navy that would compromise the latter's ability to carry out this function. If we view a regional sea-control fight through the lens of China's objectives, the U.S. Navy will have been prevented from interfering with whatever operation in the near seas that it

undertakes. From an American global perspective, this might seem like a regional setback with respect to local sea control. However, the systemic implications turn it into a global matter.

If China is able to chase the U.S. Navy from its near seas, it will change the political calculus of the world and acquire several strategic options. First, it could dictate an alteration of the rules under which the current global system operates. One of these would be the status of the exclusive economic zone (EEZ), the two-hundred-nautical-mile band of sea abutting a nation's territorial waters in which certain rights to exploit the resources in and under the water are reserved to the coastal state. Currently, the EEZ is regarded as a high-seas regime, except for reserved economic rights. China wants to expand sovereign rights, to include the ability to exclude outside naval forces from the EEZ. If it can enforce this claim, it will—aside from making virtually the entire South China Sea its "internal waters"—have erased the ability of the U.S. Navy to operate globally to maintain the security environment required by the global system. While not enjoying the kind of comprehensive command of the seas that accrued to the United States in 1945, China would, to a significant degree, rob the United States of that command necessary to underpin the Bretton Woods regime. The consequences for global flow are hard to envision, but if Mr. Carmel is correct in his diagnosis, it would be anything but a graceful degradation. The second option that opens up to China would be the formation of a separate economic system. It could, for example, elevate the Shanghai Cooperative Organization to the status of a modern and more effective version of Napoleon's Continental System.[16] Such a system would not be purely continental, as it is unlikely that a continuing state of war would exist, such that the United States could interdict the organization's shipping. Such a project by China might or might not succeed, but the attempt would likely disrupt the current system catastrophically.

If we "drill down" to operational matters, we can speculate on what the nature of a U.S. Navy strategic defeat might look like. First, we must remind ourselves that China is a nuclear power that, in lieu of a proven comprehensive U.S. missile-defense system, can presumably inflict massive damage on the American homeland. All naval operations are delimited within this context. Second, U.S. naval conventional striking power is substantially invested in eleven large nuclear-powered aircraft carriers. The Chinese, for their part, have heavily invested in various systems to knock these carriers out of action.

With these considerations in mind, we can examine a plausible combat scenario. Postulate: a few years from now the true resource potential of the seabed in the South China Sea is revealed, and it is massive. China decides to assert, fully and finally, its territorial claims to the South China Sea and issues a démarche instructing all other navies to stay outside the "nine-dash line" that essentially

cordons off the whole of that sea as Chinese internal waters. Chinese antiaccess/area-denial forces deploy to the theater. The United States, along with a group of Southeast Asian nations, condemns the démarche, and two carrier battle groups, along with submarines and other naval forces, are dispatched to challenge it. To do so, these forces must sail into the disputed zone.

Let us now assume that the Chinese allow these forces into the zone and then spring a trap, shooting first with missiles and torpedoes, supported by mines. This "battle of the first salvo" succeeds in disabling the two carriers and several surface ships. The president of the United States now has a decision to make. Does the United States continue to "feed the fight" with more naval forces? Does the United States escalate with strikes against Chinese area-denial systems on the mainland? Or does the United States decline to challenge the military status quo and instead call for negotiations? The latter two choices would be politically and strategically unpalatable, at least as long as the United States sees an opportunity to stay in the fight via the first option.

But the question now arises of how much of its navy the United States is prepared to risk in the fight. The criterion on which this judgment is made should be based on an understanding of the role that command of the sea plays in the functioning of the modern global system and on a calculation of how much loss the U.S. Navy can absorb before the edifice crumbles.

Before proceeding farther, it should be noted that there are those who refuse to contemplate issues such as this, being convinced that the U.S. Navy would be able to prevail quickly and decisively, without significant loss, in any such contest. Whether such outlooks are based on computer simulations or fear of admitting potential weakness (whether to the Chinese or to other services, which might take advantage to seize more budget share), they constitute a roadblock to thinking and could leave the national command authority unprepared in case the unthinkable happens. In any case, the purpose of positing such a negative scenario is not to assert that U.S. aircraft carriers are vulnerable but to explore the dimensions of command of the sea. To do so, we have to get on the other side of the loss of several carriers to see how the options play out. Any attempt to discredit this argument on the basis of an assertion that "it would never happen" would therefore be specious.

The foregoing notwithstanding, however, we must first ask ourselves what might happen if the U.S. Navy were successful, if it forced the PLAN to retreat from the scene and was able to prevent land-based systems from achieving significant effects. Would China then withdraw from the system—that is, put an embargo on trade with the United States and its allies? Despite the emotional and cultural imperative of saving face, economic survival might dictate that China keep its ports open and even continue to trade with the United States, if

only indirectly. In any case, while a Chinese withdrawal from the system would be damaging, it is plausible to think that the system would adapt and remain functional. On the other hand, if the war escalated to the use of nuclear weapons or China won the engagement, the system would likely break.

If a win of sorts is possible for the U.S. Navy, what cost would be acceptable? Beyond a certain level of destruction, given the length of time needed to build, fit out, and work up a modern warship, the U.S. Navy would become less than a global navy. At that point it could no longer provide the security environment necessary for the global system to operate.[17] If the current U.S. Navy, at around 280 ships, is stretched thin and strains to meet demands from regional commanders, the amount and kind of losses it could absorb in a fight with the Chinese and still maintain command of the sea—in its modern instantiation—likely would be relatively low. This is especially the case for aircraft carriers, whose capacity to project power ashore has made them such useful geopolitical chess pieces that President Barack Obama dictated that the Navy retain eleven in commission, even in the face of huge defense-budget cuts. Almost paradoxically, the utility of carriers on a global scale in maintaining the system's security environment makes them too valuable to risk in a regional sea-control fight, even though, or perhaps precisely because, command of the sea is at stake. A posture that would align better with the strategic architecture would be to create a naval force consisting of submarines, smaller surface combatants, and unmanned systems that could impose losses on the PLAN but could also absorb losses without jeopardizing command of the sea.

This brief thought experiment reveals an interesting inversion of naval strategic imperatives that highlights how the nature of command of the sea has changed since Sir Walter Raleigh concocted his syllogism. As codified by both Mahan and Corbett, command of the sea was to be won by defeating or bottling up the enemy battle fleet. This was a matter for the navy's most powerful ships to settle. Once command of the sea was gained, the seas became safe for smaller units, like frigates, to spread out and exercise sea control in specific and local circumstances. In other words, one *fought for* command of the sea—via battle, if possible—and *exercised* sea control, via dispersed security operations. This general relationship held good at least through the end of World War II. Now, however, as we see in our thought experiment, our most capable ships, the carriers, are best used to *exercise* command of the sea—that is, maintain the security environment—while smaller, more numerous forces may have to *fight* a decisive battle for local or regional sea control, the outcome of which would likely have profound global strategic consequences. This inversion is new and runs counter to common wisdom. It must be understood if we are properly to assess risk and structure fleet architecture.

ASSESSING AND MANAGING RISK

"Command of the sea" is a descriptive term. What it describes is a strategic condition. As the world geopolitical environment evolves, so does the nature of the condition that the term describes. Great and broad strategic conditions are not easily encapsulated by a four-word term, so it is both necessary and useful to inquire more deeply into its definition and thus into the parameters of the condition. Such inquiry as we have outlined reveals important relationships between strategic conditions and the nature and use of naval forces.

Naval forces have always been expensive and relatively scarce. Their employment, especially of the largest and scarcest of these, must therefore be attended by clearheaded calculations of acceptable risk.[18] Bottom-up examinations of potential tactical outcomes using computer simulations have their uses, but these must not constitute the sole basis for assessing risk. The enemy could always get lucky, and an understanding of risk from the top-down strategic perspective allows us to understand the consequences of loss in a way that provides better ability to better assess and manage risk.

The inquiry conducted in this article reveals that a new relationship has emerged between command of the sea and sea control, and the kinds of ships that are appropriate to each function. Whether an aircraft carrier is a capital ship in the sense a battleship was in 1922 is beside the point. Their unique characteristics, coupled with today's changed geopolitical circumstances, suggest that they should be used in a dispersed manner to exercise command of the sea on a day-to-day basis, much as British frigates in 1812 exercised sea control around the periphery of the British Empire. While carriers will never be numerous, the implication is that we should have enough of these ships to make them readily available in most regions. The U.S. Navy may never again have more than eleven of them, but assuming most nations have incentives to do their part to protect the global system, their carriers, even including those of China, could be enlisted in the common effort. More total carriers being operated by like-minded nations make the continuous and systemic exercise of command of the sea all the more effective, because they will be available in more places more often. Aircraft carrier building is more widespread today than it has been at any time since World War II. But given their vulnerability to missiles, torpedoes, and mines, why would nations devote their scarce resources to such ships? Beyond national prestige, which is no small thing, it appears that there is a tacit understanding that they contribute to the overall security environment—a corporate command of the sea by an informal condominium of nations all of which, despite particular differences in policy, share a common incentive to keep the global system operating.

The new logic of command of the sea also suggests a kind of strategic equivalence between aircraft carrier forces and amphibious forces. Modern amphibious

groups, especially when equipped with missiles, unmanned systems, and modern vertical/short-takeoff-and-landing jets, have a legitimate capability to conduct autonomous power-projection operations, thus increasing the capability of the U.S. Navy and others to exercise command in more places at more times, making that command more effective and secure. Moreover, the flexibility of some new designs, such as the *San Antonio* (LPD 17) class, offers the potential of significantly increasing the sea control, shore-bombardment capability, and cooperative international expeditionary operations capabilities of an amphibious group.

There may never be a fight for sea control between the United States and China. If there is, it will be in the American interest to fight it with forces made up of units that are relatively hard to find and hit and whose acceptable-risk profile is more compatible with the conditions that would obtain in the East Asian arena.[19] This would allow the president to feed the fight without placing himself on the horns of a difficult strategic dilemma. If the United States has the option of fighting—and winning—the war solely at sea (on, under, and above it, using joint forces), the strategic risks of nuclear escalation and rupture of the system are minimized. If such a posture is credibly attained through force-structure investments, concept and doctrine development, and strategic communication, deterrence will be enhanced. In the end, the issue may not be U.S. ability to seize sea control in the South China Sea but its ability to deny it to China—a less rigorous and presumably less costly requirement.

"Command of the sea" is not and maybe should not be a doctrinal term, but its utility as a tool for strategic analysis has reemerged. Some may be uncomfortable with its hegemonic overtones, but in a global system environment it is ever more suggestive of an informal partnership of nations, especially in view of the cooperative approach that the current American maritime strategy espouses. A current and sophisticated understanding of command of the sea contextualizes doctrinal concepts and terms such as "sea control," "sea denial," and others, which should improve programmatic analysis and tactical development. "Command of the sea" is an old term that, in a new form, can be usefully leveraged to enhance our understanding of the modern strategic maritime environment.

NOTES

1. U.S. Navy Dept., *Naval Warfare,* Naval Doctrine Publication 1 (Washington, D.C.: March 2010), available at www.usnwc.edu/Academics/Maritime--Staff-Operators-Course/documents/NDP-1-Naval-Warfare-(Mar-2010)_Chapters2-3.aspx. This manual (known as NDP 1), the Navy's keystone doctrinal publication, does not mention the term. It does use "maritime superiority" and "supremacy," apparently as equivalents to "sea control."

2. Alfred Thayer Mahan, *The Influence of Sea Power upon History, 1660–1783* (Boston: Little, Brown, 1890), chap. 2, p. 138.

3. Alfred Thayer Mahan, *Naval Strategy* (Boston: Little, Brown, 1919), pp. 5–6, 18. The reader will have to connect the dots of Mahan's argument, but it is clear that he regards a concentrated fleet as the best deterrent against European aggression in the Americas.
4. Julian S. Corbett, *Some Principles of Maritime Strategy* (London: Longmans, Green, 1918), part 2, chap. 2, pp. 100–104. Corbett establishes the relationship between command of the sea and sea control through his discussion of the roles of "cruisers" (frigates, brigs, and sloops, in the days of sail). Frigates especially had a role with the battle fleet as scouts, but they also functioned independently as convoy escorts, privateer hunters, etc., to protect British sea communications and disrupt those of the enemy. The need to concentrate the fleet to secure command absorbed frigates that could otherwise be dispersed to control communications.
5. Ibid., p. 77.
6. Ibid, pp. 114–36. Corbett goes into a rather intricate explanation of concentration and dispersal in naval warfare as distinguished from land warfare. He sees concentration as an elastic concept in which a certain degree of dispersal is inherent. However, his whole concept of concentration revolves around the existence of a "strategical centre" (p. 117), which implies a regional delimitation—for example, Royal Navy dispositions in the eastern Atlantic during Britain's wars with France. Dispersal beyond that to such places as the Indian Ocean or even the eastern Mediterranean would break the concentration.
7. George Modelski and William Thompson, *Seapower in Global Politics 1494–1993* (Seattle: Univ. of Washington Press, 1988), pp. 16–17.
8. Clark G. Reynolds, *Command of the Sea: The History and Strategy of Maritime Empires,* vol. 2, *Since 1915* (Malabar, Fla.: Robert E. Krieger, 1983), p. 547.
9. Carl von Clausewitz, *On War,* trans. Michael Howard and Peter Paret (Princeton, N.J.: Princeton Univ. Press, 1976), book 3, chap. 1, p. 181.
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11. Sam J. Tangredi, ed., *Globalization and Maritime Power* (Honolulu: Univ. Press of the Pacific, 2004), chap. 1, pp. 1–21.
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13. Gregory Chin and Ramesh Thakur, "Will China Change the Rules of Global Order?," *Washington Quarterly* (October 2010), pp. 119–38.
14. J. T. Conway, G. Roughead, and T. W. Allen, "A Cooperative Strategy for 21st Century Seapower," October 2007, available at www.navy.mil/; repr. *Naval War College Review* 61, no. 1 (Winter 2008), pp. 7–19.
15. Carmel, "Globalization, Security, and Economic Well-Being."
16. Ariel Pablo Sznajder, "China's Shanghai Cooperation Organization Strategy," *Journal of IPS* 5 (Spring 2006), pp. 93–102, available at irps.ucsd.edu/.
17. Roger Whiteneck et al., *The Navy at a Tipping Point: Maritime Dominance at Stake?,* CAB D0022262.A3/1REV (Alexandria, Va.: Center for Naval Analyses, March 2010), pp. 41–43, available at www.cna.org/.
18. See Robert C. Rubel, "The Future of Aircraft Carriers," *Naval War College Review* 64, no. 4 (Autumn 2011), pp. 13–27.
19. See Robert C. Rubel, "Talking about Sea Control," *Naval War College Review* 63, no. 4 (Autumn 2010), pp. 38–47.

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BETWEEN PEACE AND THE AIR-SEA BATTLE

A War at Sea Strategy

Jeffrey E. Kline and Wayne P. Hughes, Jr.

> *"Land-sea wars" have significant maritime dimensions, with command of the sea posited by this study as mattering more than either [land combat] skill or strength. . . . [C]ommand of the sea is a preeminent form of power that determines the outcome of land-sea conflicts.*
>
> JOHN ARQUILLA

In a February 2012 article published in the *American Interest,* General Norton A. Schwartz, Chief of Staff of the U.S. Air Force, and Admiral Jonathan W. Greenert, Chief of Naval Operations, provide solid justification for more closely integrating Air Force and Navy capabilities into an Air-Sea Battle strategy.[1] We applaud the Air-Sea Battle component as the most effective means of preparing for the most challenging conflict—full-scale conventional war. We propose, however, an intermediate strategy, one providing American leadership additional flexibility to avert the need to exercise the potentially escalatory strikes that the Air-Sea Battle strategy may require. Predicated on American relative strengths, particularly in the undersea domain, it is a "war at sea" strategy.

A war-at-sea strategy's purpose is to provide U.S. political leadership less intrusive ways to deter war and inspire allied engagement in peace. It is a maritime strategy confining conflict to the sea without land invasion or strike, thereby diminishing the threat of escalation. The strategy affords leadership the means to reinforce *any* relationship between the United States and China, whether cooperation, competition, confrontation, conflict short of war, or war. In this short article we describe the ends, ways, and means of the strategy, why its adoption provides more options for deterrence, and how it plays to American strengths.

THE STRATEGY'S ENDS, WAYS, AND MEANS

The war-at-sea strategy's *ends* are to deter Chinese land or maritime aggression and, failing that, deny China the use of the sea inside the "first island chain"

(a conceptual line from Japan to Taiwan and the Philippines) during hostilities. The *ways* are distant interception of Chinese shipping, widespread submarine attacks and mining inside the first island chain, offensive attacks by a flotilla composed of small missile-carrying combatants to fight in the China seas and patrol vessels for maritime interdiction at straits and choke points, and Marine expeditionary forces positioned to hold the South China Sea islands at risk, with no intention of putting ground forces on China's mainland.[2] The *means* are a force structure with a better combination of conventional air forces, battle-group ships, and submarines, and a forward-deployed flotilla of U.S. and allied small combatants.

Thus, by plying long-standing American maritime strengths against China's dependence on the seas, the strategy is intended to retain our nation's peaceable influence in the western Pacific for many years to come.

The war-at-sea strategy is also, however, a catalyst for peacetime engagement. It implies an adaptable force structure, a deployment plan, logistics capability, and allied collaboration. Accordingly, a critical peacetime component includes engaging Singapore, Malaysia, Indonesia, Brunei, Philippines, South Korea, and Japan. While engagement may take many forms, increased maritime-security operations, especially with the flotilla, can aid these nations' maritime governance operations to counter terrorism, piracy, smuggling, and illegal, unregulated, and underreported fishing. These vessels would also prevent seabed exploration contrary to international law, while at the same time providing valuable tactical experience for the crews.

MORE OPTIONS FOR DETERRENCE

The capacity for sea denial within the first island chain and executing a distant blockade would provide American leadership graduated options before undertaking the potentially escalatory step of strikes on mainland China. We believe that maritime options may be a more credible deterrent than Air-Sea Battle's deep-strike capability, if China perceives our leadership as being more willing to employ them in response to aggression within a maritime exclusion zone or in territorial disputes. A strategy of maritime interdiction or blockade has been criticized as too slow-acting. A war-at-sea strategy, however, affords time for passions to cool and opportunities for negotiation in which both sides can back away from escalation to a long-lasting, economically disastrous war involving full mobilization and commitment to some kind of decisive victory—in other words, World War III. In addition, if potential allies within the Pacific basin realize we intend to exercise "at-sea only" strategic options that lessen the likelihood of Chinese attacks on their homelands, they may be more willing to maintain and expand partnerships with the United States.

A tenet of the maritime strategy is that no U.S. Navy actions will be initiated except in response to claims by China contrary to international law. Our emphasis on influence and peacekeeping embraces the notion that we stand ready to respond should China assert hegemonic claims that interfere with the freedom of the seas so aggressively that both commercial enterprises and sovereign governments expect the U.S. Navy to act in their behalf.

A MARITIME STRENGTH: UNDERSEA CAPABILITIES

By exploiting our superior undersea forces within the first island chain, we neutralize China's advantage of its extensive cruise and ballistic-missile antiaccess forces. U.S. and allied submarines, operating where large U.S. surface ships would be at risk, deny Chinese submarines, warships, logistic ships, and commercial traffic safe passage through the East and South China Seas. A combination of the following activities affords American policy makers an array of choices:

- The "shock" destruction of a prominent Chinese warship, like that of the Argentine cruiser *General Belgrano* by HMS *Conqueror* in 1982, making clear the Royal Navy's intention to enforce a maritime exclusion zone around the Falkland Islands
- Tracking and sinking all Chinese submarines at sea except ballistic-missile-carrying boats
- Sinking Chinese surface warships at sea
- Mining some or all Chinese warship bases and commercial ports, with our submarines or unmanned underwater vehicles
- After establishing exclusion zones for all commercial shipping, sinking anything found inside them, while preserving routes for innocent, friendly traffic into East Asian states.

Flotilla Capabilities. Augmenting our undersea forces with small, missile-carrying surface combatants will challenge China's targeting capabilities, even supposing it would expend its advanced ballistic and cruise missiles on such low-value targets. We draw from workshop discussions—with representation from the Naval Postgraduate School and the Naval War College—to suggest three prominent employments:

- Hit-and-run raids on Chinese seabed exploitations that are contrary to international law
- Escort of vital shipping into friendly ports, especially in the South China Sea
- Augmentation of Japanese patrol vessels to constrain illegal interference by China near the Senkaku Islands.

What would the flotilla look like? In rough terms, we envision individual small combatants of about six hundred tons carrying six or eight surface-to-surface missiles and depending on soft kill and point defense for survival, aided by off-board manned or unmanned aerial vehicles for surveillance and tactical scouting.[3] To paint a picture of possible structures, we contemplate as the smallest element a mutually supporting pair, a squadron to comprise eight vessels, and the entire force to be eight squadrons, of which half would be in East Asian waters. The units costing less than $100 million each, the entire force would require a very small part of the shipbuilding budget.[4]

Maritime Interdiction or Blockade. Interdiction would in most instances be our first action to indicate the seriousness of the U.S. government in response to interference with free trade or other belligerent actions by China contrary to international law or conventions. Maritime interdiction can be graduated from a small number of inspections through seizure of select cargoes, such as crude oil, up to a full blockade. We envision blockade as imposed at the Singapore, Sunda, and Lombok Straits, as well as, to the extent feasible, the Luzon Strait. Carrier battle groups can safely cover these interdiction operations. To be most effective, cooperation of Japan and Singapore will be essential, and that of Indonesia and the Philippines desirable. If the interdiction moves away from choke points—for example, off the coast of Burma—aerial surveillance from littoral combat ships, land bases, or both seems desirable.

Holding the South China Sea Islands at Risk. The presence of Marine expeditionary forces and their amphibious ships station forward in the western Pacific provides a unique capability to keep Chinese-held South China Sea islands, particularly those in dispute, at risk. During peacetime, their presence, by balancing force in the region and signaling American commitment, may motivate peaceful resolutions to disputes over exclusive economic zones; increase engagement opportunities exercises with the Philippines, Malaysia, Vietnam, and Singapore; and provide an asymmetric threat in response to a Taiwan invasion. In the event of war these expeditionary forces would deny use of South China Sea islands and exploration of the seabed through quick-reaction raids, land-to-sea missile attacks from concealed sites, ground and air surveillance, and other collaborative island employment with allies.

Less Reliance on Communications. Our undersea forces will be less vulnerable to cyber and electromagnetic attack by operating in ways that exploit the "silent service's" long-standing advantages. Flotilla ships would operate in stealthy, semi-silent fashion as MGBs, MTBs, and PT boats have done in the past. Tactically offensive, yet operationally defensive, the war-at-sea strategy leverages

the stronger form of warfare at sea, the offense, and allows for less concern on command-and-control interruption as it promotes individual and independent tactical actions for cumulative effect. Conventional air and sea forces that must employ active modes of search and communication will at first be assigned to support the distant blockade, thereby keeping them outside Chinese antiaccess and area denial targeting. If Chinese land attacks on U.S. or allied forces ashore require the United States to reply with the Air-Sea Battle's deep strike capabilities, then our ships and aircraft would move into position to execute their missions with well-rehearsed methods of deception and networking.

WISHING DOES NOT MAKE A STRATEGY

The assertions in favor of developing a war-at-sea strategy are hypotheses. Further analysis, war gaming, and policy discussions must be united to answer the following questions:

1. Can the United States effectively deny China's use of the South and East China Seas in the event of all-out war at sea without attacks on land-based forces by either side?
2. Before the war-at-sea strategy is adopted for the indefinite future, the United States must confirm the affordability of the Navy forces that would create a maritime no-man's-land within the first island chain. What do the time-phased, programmatic details look like?
3. Attacks on bases would be an expansion of the war to the land, so the more secure the bases the less temptation to attack them. Where are the best locations at which to base submarines and support flotilla operations?
4. Can China counter this war strategy by threatening attacks off U.S. west coast ports and in the Pacific trade routes, essentially implementing a war-at-sea strategy of its own?
5. For what other combat and noncombat operations might the flotilla be more cost-effective than traditional battle-group combatants? Patrolling and fighting in coastal waters will continue to be the most frequent tasks for the twenty-first-century U.S. Navy. Until we can carry part of the burden with our own flotilla, we must rely on our partners around the world or employ more expensive, multipurpose, blue-water combatants for maritime security operations.
6. Will a war-at-sea strategy have a better chance to deter, delay, or constrain conflict with China than land-attack strategies?

7. Last, how do we disseminate the change of structure of our strategy in a way that maintains influence in the western Pacific? We suggest, for unity of effort among the U.S. armed forces and our partners in Asia, that the strategy be openly published. China will not like it, but it is a peacekeeping strategy, not at all a manifest for aggression.

CONSUMMATION

We have cited Professor John Arquilla on the significance of sea power, as Arquilla's analysis looks at land-sea wars after 1815. He gives the classic nineteenth-century maritime strategists' advocacy of sea power fresh credibility by validating the continuing efficacy of maritime superiority in contemporary times with current data and quantitative analysis.

Close integration between U.S. air and maritime forces with resilient communications and the ability to attack in depth are desirable goals for both the Air-Sea Battle and war-at-sea strategies. Our emphasis is on America's maritime superiority, ways to exploit it, and by implication the hazards to the nation and the world should it be lost. Inserting a war-at-sea strategy as an intermediate step preceding the threat of full conventional war—and adjusting force structure to achieve it—will provide American leadership a more robust portfolio for engaging China and strengthening our alliances in the emerging age of the Pacific.

NOTES

1. Norton A. Schwartz and Jonathan W. Greenert, "Air-Sea Battle," *American Interest,* 20 February 2012. The epigraph is from John Arquilla, *Dubious Battles: Aggression, Defeat, and the International System* (Washington, D.C.: Crane Russak, 1992).
2. The flotilla of small vessels as an entirely new component for inshore operations was popularized by Sir Julian Corbett in *Some Principles of Maritime Strategy* in 1911. He foresaw the inability of battleships—the "capital ships" of their day—to operate inshore in the face of the evolving threat of torpedo boats and submarines. See pp. 121–23 of the 1988 republication of Corbett's masterwork by the Naval Institute Press.
3. For comparison, a PHM (or patrol combatant hydrofoil, a type discarded by the U.S. Navy in 1993) carrying four Harpoons displaced 250 tons; coastal patrol ships (PCs) now operating in the Persian Gulf are of either three or four hundred tons; and the coastal minesweepers (MSCs) once stationed in Sasebo, on Kyushu, in Japan, displaced 450 tons.
4. For example, supposing a unit cost of eighty million dollars in series production and assuming a mere *ten*-year service life, a force of sixty-four vessels would cost about $500 million per year to sustain, or a bit over 4 percent of the probably diminished Ship Construction (Navy), or SCN, budget.

BUILDING THE PURPLE FORD

An Affordable Approach to Jointness

Robert P. Kozloski

Given the enormity of the U.S. national debt and the pressure to reduce Defense spending, surviving the forthcoming era of austerity will require innovative approaches to Department of Defense (DoD) organization and processes. Some of this innovation may require a reversal of previous efforts intended to improve effectiveness and efficiency within the DoD. Preserving operational capacity must be the top priority in any budget-reduction discussion. Unfortunately, the current approaches advocated within the Pentagon, on the Hill, and by influential Beltway think tanks call for reducing spending by trimming inefficient processes, eliminating end strength, and terminating costly acquisitions programs. The U.S. government should be hesitant to cut one plane, one ship, or one Marine until all options to reduce overhead and to streamline organizations have been fully considered. These options must include critically examining the sacred purple cow of jointness.

As former Secretary of Defense Robert Gates noted in a speech at the American Enterprise Institute in May 2011, "Sustaining this 'tooth' part of the budget—the weapons and the soldiers, sailors, airmen and Marines who use them—is increasingly difficult given the massive growth of other components of the defense budget, the 'tail' if you will—operations, maintenance, pay and benefits, and other forms of overhead. America's defense enterprise has consumed ever higher level[s] of resources as a matter of routine just to maintain, staff, and administer itself."[1]

Further, the former Chairman of the Joint Chiefs of Staff (JCS), Admiral Michael Mullen, echoed a similar sentiment in a June 2011 speech to service members warning against taking the "easy choices." He stressed that "when I say all things are on the table, all things are

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on the table." He added, "We need to avoid just making the relatively easy decision to just cash in force structure, we have to go through everything else before we get to that point, because that's why we're here."[2]

For the foreseeable future, and until deficit spending and the national debt are brought under control, Defense spending will remain at the center of any serious federal budget discussion. Given these realities, the fiscal trade space is clear—DoD accepts the cost of inefficiency at the peril of operational capabilities. The Defense Department and Congress must take this opportunity to evaluate the results of previous reform efforts and determine what is working well and what can be improved or eliminated. In the process, policy makers must face the reality that jointness is inherently inefficient.

Jointness represents an inefficient compromise between two schools of thought: on one hand, complete unification of the military, and the other, maintaining a service-centric structure. Joint organizations and processes, many of which were created during periods of practically unconstrained spending during the Cold War and after September 11, 2001, are layered on the existing overhead of the services.

Over the past twenty-five years many practitioners, elected officials, and scholars have written extensively on the positive and negative aspects of Goldwater-Nichols legislation and the extent of its implementation throughout the Department of Defense. However, a gap exists in the current literature—an assessment of the *total cost* of implementing and maintaining the current joint structure. This assessment must include the total cost of military, civilian, and contractor support to joint staff work; facilities; additional work levied across the enterprise to support joint processes; and the cost of developing joint products, exercises, and assessments. That total cost of Goldwater-Nichols implementation should then be compared to the benefits derived from twenty-five years of reform to determine whether the congressional mandate has provided good value for the American taxpayer.

Certainly, jointness has brought many improvements to the U.S. military, such as more thorough operational planning, clearer lines of authority and unity of command during joint operations, and mutually agreed procedures across the services to ensure interoperability. These positive outcomes of reform efforts must be preserved; however, as will be discussed in some detail, other aspects of jointness should be reconsidered or eliminated. This in turn will raise the question: Are there more affordable ways to maintain the benefits of joint reform?

JOINT HISTORY

The current joint construct was codified and institutionalized twenty-five years ago with the passage of the Goldwater-Nichols Department of Defense Reorganization Act of 1986.[3] Goldwater-Nichols, as the act is known, represents the most

recent attempt in a series of compromises on military reform that dates back to the Franklin D. Roosevelt administration.

In the early stages of the Second World War, it was apparent that outdated organizational models prevented effective operational and business integration across the two separate departments of War and Navy.[4] In the spring of 1942, with no charter, executive order, or documentation of any kind, President Roosevelt formed the Joint Chiefs of Staff as a counterpart of the British Chiefs of Staff.[5] This organizational model was designed to integrate land, sea, and air capabilities.

The National Security Reform Act of 1947 was enacted in response to many of the lessons learned during the war. President Harry S. Truman was a strong proponent of the unification of the two departments. During the war, prior to succeeding Roosevelt as president, Truman had served as chairman of the Senate Special Committee to Investigate the National Defense Program. He was appalled at the findings of this committee, the waste and inefficiency of operating separate and uncoordinated military departments.[6] The 1947 act fell short of Truman's desire for complete unification, largely due to the fierce resistance offered by Navy leadership, with support from Navy-friendly members of Congress.

The Secretary of the Navy at the time, James Forrestal, was selected as the first Secretary of Defense. In March 1948, Forrestal assembled the service chiefs in Key West, Florida, to define the functions of the armed forces. As Forrestal noted in his report to President Truman, "there shall be maximum practicable integration of policies and procedures of the Departments and agencies of the National Security Establishment . . . in order to produce an effective, economical and business like organization."[7] The Key West Agreement, as the result of this summit was known, also formalized the unified command structure and stressed the overall theme of eliminating duplication of functions among the services.

Forrestal quickly became frustrated with the lack of authority of his new position and admitted to President Truman that he was having difficulty making the new organization work effectively. Subsequently, in late 1948 a group, known as the Hoover Commission (after its chairman, former president Herbert Hoover), was formed to review the National Security Act, and as a result it was amended in 1949. The amendment rebranded the National Military Establishment as the Department of Defense, strengthened the position of Secretary of Defense, and created the position of Chairman of the Joint Chiefs of Staff.[8]

Subsequent amendments in 1953 and 1958 strengthened the position of chairman and attempted to strengthen civilian control of the military. These efforts transformed the Joint Staff from an ineffective corporate system to a more centralized organization. Nevertheless, and despite efforts to consolidate military authority, service parochialism restricted effective integration of military capabilities and prevented consistent advice to civilian authority.[9]

While each of these reform efforts attempted to make DoD more efficient and effective, they did so by increasing the size of headquarters staffs. If authority and control shifted from the services to the Secretary of Defense and the Joint Staff during this period, there was no reduction in the output of service and military department staffs. In all likelihood, the workload increased for the services as the size of the Office of the Secretary of Defense (OSD) and the JCS staff grew.

A new reform movement began in the 1980s, for several underlying reasons. The first was a series of ineffective military operations: numerous episodes during the Vietnam War; the seizure by the North Koreans in 1968 of USS *Pueblo* (AGER 2); the retaking in 1975 of the containership SS *Mayaguez* from the Khmer Rouge, which had seized and then abandoned it; EAGLE CLAW, the 1980 attempt to rescue hostages seized by the Iranians in 1979; the 1983 Beirut barracks bombing; and URGENT FURY, the 1983 invasion of Grenada. These military failures had several characteristics in common: poor military advice to civilian leadership, lack of unity of command, and inability of services to operate effectively in a joint environment.[10]

An issue raised by these operations, particularly EAGLE CLAW and URGENT FURY, was the desire, rather than operational necessity, for military operations to be conducted by more than one service. EAGLE CLAW was a high-risk, complicated operation that pushed the limits of U.S. military capabilities at the time. While many factors contributed to its failure, including simple bad luck, the urge to involve all the services may have been part of the operational problem.

The only rotary-wing platform capable of flying this mission was the Navy's RH-53D Sea Stallion. Unfortunately, their pilots were not trained for this type of special-operations mission. Although the U.S. Air Force had a cadre of over a hundred special-operations-qualified pilots of the similar HH-53, most possessing combat experience in Vietnam, Marine Corps pilots were selected for the mission.[11] Many participants, including the ground commander, later speculated that Marines were chosen by the head of the Joint Staff's Operations Directorate, Lieutenant General Phillip Shutter, U.S. Marine Corps, simply to ensure that each service was represented in the operation.[12] The failure of the rotary-wing assault phase of EAGLE CLAW significantly contributed to the disaster at Desert One and the ultimate decision to abort the mission, after the loss of eight service members and national embarrassment.

URGENT FURY, the seizure of the small, lightly defended island of Grenada, was clearly an operation ideally suited for a Marine amphibious assault. But the desire for jointness added an unnecessary level of complexity to the operation. As Secretary of the Navy John Lehman later noted in his memoirs, not one of the 1,700-man Joint Staff wanted to upset Defense reformers, and so, though sufficient Navy and Marine Corps assets were available for the task at hand, the

prevailing doctrine was "it must be joint and it must be unified."[13] Major Mark Adkin writes in his work *Urgent Fury* that during "the planning stages, it quickly became apparent to all services they must be in on the action. URGENT FURY would increase the prestige of the armed forces, so none of them could afford to miss out."[14] Similarly, as Norman Freidman, who recently addressed this issue, observes, "Goldwater-Nichols produces a good deal of inefficiency by practically guaranteeing any significant operation must be conducted jointly."[15] URGENT FURY was ultimately successful; however, its problems with joint-force integration are well documented.

The second source of 1980s Defense reform was, collectively, several instances of mismanaged acquisition and wasteful spending that garnered national media attention in the 1970s and early 1980s. Horror stories of $436 hammers, $600 toilet seats, and $7,622 coffee brewers emerged and outraged the public as well as members of Congress. In light of the outcomes of military operations and the misuse of tax dollars, it was difficult to maintain support for military spending, even in the Ronald Reagan–era buildup during the Cold War.[16]

In a closed session of the House Armed Service Committee in February 1982, the Chairman of the Joint Chiefs of Staff, General David Jones, U.S. Air Force, told Congress that the system was broken and that despite his best efforts he was not able to reform it—congressional action was needed. This testimony was ultimately the catalyst for bringing about the Goldwater-Nichols reform, though it would take nearly five years to garner enough support in Congress, the Pentagon, and the White House to pass the watershed legislation.[17]

In order to rectify the problems that had plagued the military since Vietnam, Congress targeted eight areas of reform in the Goldwater-Nichols legislation:[18]

- Reorganizing DoD and strengthening civilian authority
- Improving the military advice provided to the president, National Security Council, and Secretary of Defense
- Placing clear responsibility on the commanders of the unified and specified combatant commands for the accomplishment of missions assigned to those commands
- Ensuring that the authority of commanders of unified and specified combatant commands was fully commensurate with the responsibility of those commanders for the accomplishment of missions assigned to those commands
- Increasing attention to strategy formulation and contingency planning
- Providing for the more efficient use of Defense resources
- Improving joint officer management policies

- Otherwise enhancing the effectiveness of military operations and improving DoD management and administration.

In 1996, a decade after the passage of Goldwater-Nichols and soon after a decisive victory in Kuwait and Iraq, the new chairman, General John Shalikashvili, issued a white paper, *Joint Vision 2010,* that reaffirmed the military's commitment to jointness. *Joint Vision 2010* identified jointness as an imperative and declared that to achieve integration while conducting military operations, "we must be fully Joint—institutionally, organizationally, intellectually, and technically."[19] *Joint Vision 2010* stimulated joint growth that continued unabated until the closure of U.S. Joint Forces Command in 2011.

JOINT EFFECTIVENESS

Since the passage of Goldwater-Nichols, this watershed legislation has received mixed reviews from experts throughout the national-security enterprise. Many have felt that Goldwater-Nichols did not go far enough in reforming the Defense Department and called for future,"beyond Goldwater-Nichols" initiatives.[20] Others have argued that the entire concept of jointness was flawed, counterproductive, or unnecessary.[21] The fact remains, building and maintaining a joint force is expensive, but because jointness is often spoken of as if it were a military religion, in practice it is rarely seriously challenged. The military services appear to have accepted the current joint system as a fact of life and are attempting to make the best of it.

Within the first decade after the passage of Goldwater-Nichols, the United States engaged in joint military operations in Panama and Iraq. Advocates of Goldwater-Nichols pointed to these decisive victories as measures of success for jointness and Goldwater-Nichols. Such military leaders as General Norman Schwarzkopf and General Colin Powell observed that Goldwater-Nichols was an enabler for successful military operations during the first Gulf war. Generals Shalikashvili and Hugh Shelton, U.S. Army, both attributed significant improvements in operational planning to Goldwater-Nichols.[22]

However, the success of these two operations cannot be attributed entirely to Goldwater-Nichols reform. Few considered the quality of the adversary or the effect of transitioning to an all-volunteer force while evaluating Goldwater-Nichols. The United States enjoyed significant military superiority over each of these opponents, and many of the military problems that had appeared in Vietnam—such as fragging, crimes against civilians, and rampant drug use—had been significantly reduced in the all-volunteer force before these two operations were conducted.[23]

In 2001, James Locher III, a congressional staffer active in the passage of Goldwater-Nichols, assessed what has worked with Goldwater-Nichols and what

areas needed improvement.[24] He argued that clarification of the mission responsibilities of unified commanders and increase in the authority of the unified commanders were both worthy of the top rating, A. Another area that received an A was military advice provided to civilian leadership. It is difficult to believe that this top rating would be given today, considering the events of the past decade.

Army lieutenant colonel Paul Yingling identifies in an article, "A Failure of Generalship," systemic problems with today's senior military leaders and notes no significant improvement in ability to advise civilian leaders or effectiveness during military operations from the Vietnam era to the latest Iraqi experience.[25] Specifically, Yingling believes, "the intellectual and moral failures common to America's general officer corps in Vietnam and Iraq constitute a crisis in American generalship. Any explanation that fixes culpability on individuals is insufficient. No one leader, civilian or military, caused failure in Vietnam or Iraq. Different military and civilian leaders in the two conflicts produced similar results. In both conflicts, the general officer corps designed to advise policymakers, prepare forces and conduct operations failed to perform its intended functions."

Similarly, Marine Corps lieutenant general Greg Newbold notes, "Flaws in our civilians is one thing; the failure of the Pentagon's military leaders is quite another. Those are men who know the hard consequences of war but, with few exceptions, acted timidly when their voices urgently needed to be heard. When they knew the plan was flawed, saw intelligence distorted to justify a rationale for war [with Iraq], or witnessed arrogant micromanagement that at times crippled the military's effectiveness, many leaders who wore the uniform chose inaction. A few of the most senior officers actually supported the logic for war."[26] Did the culture of jointness and the desire to speak with one military voice contribute to the fact that dissenting opinions regarding going to war did not reach senior civilian leadership?

Another area of reform awarded an A rating by Locher was improvement to operational effectiveness. It is important here to distinguish between military *efficiency* and *effectiveness.* Goldwater-Nichols certainly improved the operational efficiency of the U.S. military, by reducing friction among U.S. military forces, establishing common processes and doctrine, and establishing clear missions and responsibilities. However, military effectiveness should be measured only by outcomes.

Again, considering the state of military operations since that assessment, the A rating is questionable. U.S. military effectiveness certainly must be questioned for doing little to prevent or deter the terrorist attacks of September 11. While there is ample blame to be shared throughout the federal government, the Department of Defense is charged with defending the nation. It is too soon to judge the effectiveness of military operations in Iraq and Afghanistan, but they may very well end on a par with military effectiveness in Vietnam.

Even before recent conflicts began, the value of Goldwater-Nichols reform on operational effectiveness was questioned. Naval War College professor Mackubin Owens describes the operational improvements realized from Goldwater-Nichols as marginal but believes that the unintended consequences of the act may well create problems that outweigh any benefits.[27]

The Goldwater-Nichols objective of strengthening civilian authority received a mediocre grade of B-minus. Locher argued that many of the problems that still existed could be overcome through continuing Goldwater-Nichols reform efforts. Others argue to the contrary. Some contend that Goldwater-Nichols undermined the long-standing civilian control of the military by elevating the position of chairman almost to the level of his nominal boss, the Secretary of Defense.[28] There seems to be little improvement in this area over the past decade. As Dr. Owens recently noted, "Thanks to the Goldwater-Nichols Act of 1986, the military is united in an unprecedented way. Whereas in the past the armed services often were at odds over roles, missions, budgets, and weapons systems, today they can work together to shape, oppose, evade, or thwart the choices civilians make."[29]

After fifteen years of close observation, Locher assessed that not all of the objectives of Goldwater-Nichols reform were working as well as envisioned. Strategy making and contingency planning received a grade of C, and officer joint management received a C-plus. Defense management and administration—what Locher described as a "choking bureaucracy"—received a D rating, and the efficient use of resources received a "barely acceptable" rating of D. Locher's assessment focused on the success of the objectives; he did not include a cost-benefit analysis to determine the fiscal implications of this reform effort.

There is little to suggest any improvement with these latter two objectives since Locher's 2001 assessment. In fact, it has been argued that the situation has worsened. As former secretary Gates noted in his May 2010 speech at the Eisenhower Library, "Almost a decade ago, Secretary Rumsfeld lamented that there were 17 levels of staff between him and a line officer. The Defense Business Board recently estimated that in some cases the gap between me and an action officer may be as high as 30 layers."[30] There is no evidence to suggest that any layers have been removed since those comments were made two years ago, although what Admiral Mullen has described as the easy choice of reducing military end strength is well under way.

Joint efforts to ensure the efficient use of resources have largely been failures. Since 2001, new and cumbersome processes have been established to achieve this objective. After nearly a decade it is difficult to find evidence that joint involvement in the acquisition or requirements process has made a significant improvement. The Joint Requirements Oversight Council (JROC) and the Joint

Capabilities Integration and Development System (JCIDS) are the cornerstones of the chairman's effort to ensure more efficient use of Defense resources. Each of these initiatives drives costs upward through increased staffing and additional administrative requirements needed to navigate through the processes.

However, as a recent study from the Institute for Defense Analysis notes, over the past decade JCIDS has not altered any solution originally proposed by a military service, nor does it appear that the process has added value to the front end of the acquisition process for the programs examined.[31] In the same period, the Department of Defense has spent over forty-six billion dollars on canceled defense programs.[32] While this amount cannot be directly attributed to failures of JCIDS, clearly twenty-five years of Goldwater-Nichols efforts to resolve this problem have had little success.

The comments of General James E. Cartwright, USMC, provide an interesting insight into these joint processes. Testifying before the Senate in 2009 as a nominee for the position of vice chairman of the Joint Chiefs of Staff, Cartwright optimistically said of JCIDS, "We've just completed a major update to the JCIDS process and will continue to evaluate the need for further changes. This included changes to align the JCIDS process with the recent changes to the DoD Acquisition process. But more importantly we streamlined the process to reduce non-value-added administration and improve visibility and access for all stakeholders."[33] After being confirmed as vice chairman, General Cartwright served as head of the JROC and was deeply involved with the JCIDS process. After only two years in this position, he concluded, "JCIDS has outlived its usefulness. It has been gamed to death, we're going to throw it away. . . . JCIDS in fact has been used to obstruct the fielding of some technologies. If you don't want to get something done, you can just burden it down with studies."[34]

If there are few positive outcomes from these costly joint processes, even they may have a negative effect on the military's ability to support national defense. Former Secretary of the Navy Richard Danzig recently observed that diversity of thought and opinions within an organization are valuable tools for countering uncertainty. Genuine competition, the antithesis of jointness, offers the best probability of survival in an unpredictable world.[35] But as it is, because consensus is needed to develop or modify joint concepts or doctrine, outputs are often void of controversial issues and reduced to mutually acceptable terms. Often much is lost in this joint staffing process. As Lieutenant General Paul Van Riper, USMC, noted in a letter to the Commandant of the Marine Corps, "[The JCIDS] process has led to the creation of an excess of concepts most of which—in my view—are devoid of meaningful content. My greatest concern is that as these concepts migrate into the curricula of professional military schools they will undermine a

coherent body of doctrine creating confusion within the officer corps. . . . Rather than a method to drive change, the joint concepts seem to serve as a means to slow innovation."[36]

Cooperation and integration of capabilities on the battlefield are desirable outcomes, but in fact joint management often yields collusion among military leaders, stifles innovation and proposals, or produces advice to civilian leadership based on the lowest common denominator.[37] Finally, it does not always make sense for services to work together on issues. There are many cases in which the different needs of the services legitimately drive disparate approaches to the acquisition of military technology.[38]

NAVAL IMPLICATIONS

All the services have been affected by Goldwater-Nichols reform, but the three naval services have been particularly impacted by the current joint culture. In a 2010 U.S. Naval Institute *Proceedings* article, Commander Bryan McGrath, U.S. Navy (Retired), details the difficulty encountered while developing the much-needed maritime strategy ultimately issued in 2007. As he notes, many Washington insiders felt the services had "no business" creating this type of document, that strategies are created elsewhere. Others attempted to make the strategy more joint by "mentioning all of the important contributions of the other services that bolster sea power." Further, he concludes, "Goldwater-Nichols eviscerated the idea of aggressive service advocacy to eliminate excess service rivalry. It has done so in such a value-neutral way that even a salutary instance of service advocacy would be attacked and destroyed as divisive."[39]

Given the current fiscal imperative facing the naval service, recent discussions regarding the need for the Navy to regain its innovative culture have been prevalent.[40] In a recent presentation at the Potomac Institute, an Army War College professor, Dr. Williamson Murray, described the Navy's efforts during the interwar period from 1920–40 as making those years one of the most important periods in U.S. military history. He pointed also to the accomplishments of the Navy's General Board in developing the innovative leaders and new concepts and equipment that ultimately produced victory over Japan.

As mentioned previously, Goldwater-Nichols spawned a series of joint processes to ensure the efficient use of defense resources. Unfortunately, these processes substantially inhibit innovation. As Danzig notes, JCIDS overlaps with the cumbersome Defense Acquisition Process and the Planning, Programming, Budgeting and Execution System. This inefficient triad results in decision making measured in years and decades, compared to similar weeks or months in the private sector.[41] This delay is significant given the rapid advancements in computing, robotics, and unmanned systems. The result of these processes is that the military may have lost a competitive advantage to the nation's competitors.

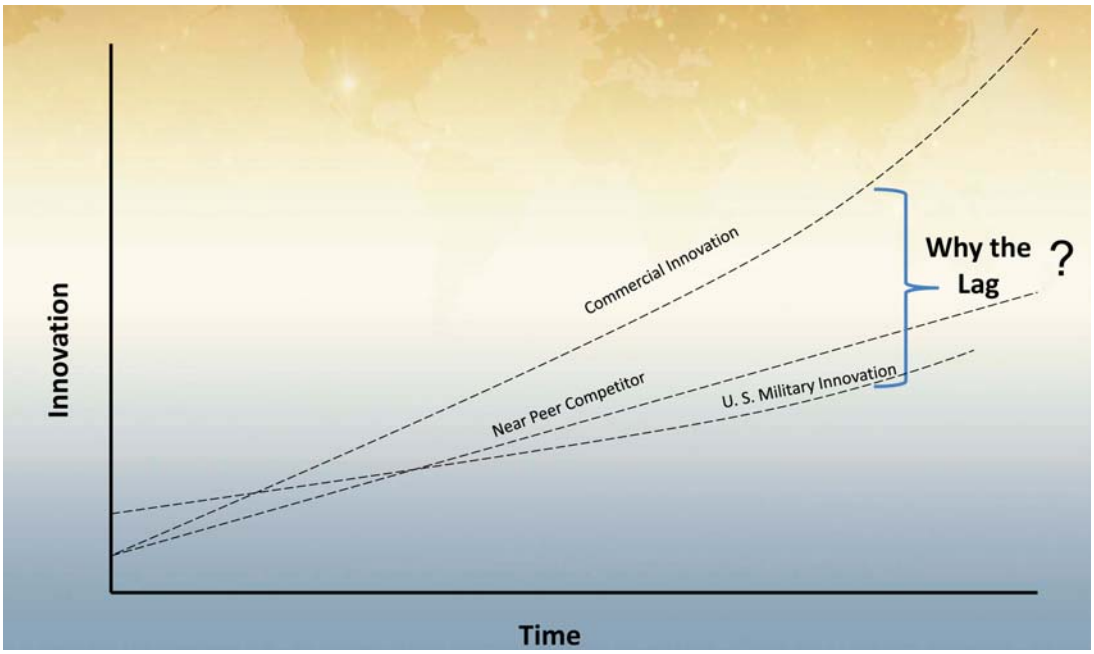
Would the General Board be as successful in today's process-driven structure? (See figure 1.)

Retired Marine lieutenant colonel Frank Hoffman has recently outlined the importance of adaptation in developing good strategy: He notes, "A good strategist recognizes that assumptions are not written in stone, and that strategy is really an iterative and continuously renewable process. It is not about writing a glossy document—it's about constantly adapting to new circumstances."[42] While this approach is certainly the correct one, given the uncertainty of the global security environment, this adaptive strategy cannot be effectively supported by the current acquisition and budget-formulation processes. If we attempted what Hoffman recommends in today's regulatory environment, the results would be costly "requirements creep" and cancellations of even more acquisition programs.

OPPORTUNITIES PRESENTED BY TWENTY-FIVE YEARS OF GOLDWATER-NICHOLS

The vast majority of officers serving in the military today have spent their entire careers under the joint rubric. If Goldwater-Nichols has been as successful in reforming the military as many senior leaders claim, jointness should by now be fully engrained in the military culture. Therefore, fewer organizations and processes should be needed to compel jointness. After twenty-five years of reform, DoD should now transition from reforming to maintaining jointness, where appropriate.

FIGURE 1



Source: Office of Naval Research.

Whether one agrees with the outcomes of Goldwater-Nichols reform or the extent to which jointness has been implemented, there is little doubt that jointness will, and should, remain part of the U.S. military culture for the foreseeable future. Can more affordable solutions be identified to maintain its positive aspects?

As one defense scholar, Dr. T. X. Hammes, notes, defense strategy for the forthcoming era of austerity must achieve coherence among the ends, ways, and means.[43] When examining existing programs, organizations, and processes, DoD must identify the *ends* it must attain and identify innovative *ways* to accommodate shrinking *means*. Similarly, the department must consider the "buy Fords, not Ferraris" approach that has been advocated by Commander Henry Hendrix for the Navy.[44] Hendrix contends that the service should focus its investments in affordable capabilities with practical features rather than those with expensive but often unnecessary options. This approach must be adopted by the Department of Defense writ large, to include its suborganizations and processes.

The following options should be considered by policy makers and defense reformers alike, as representing the "Ford" approach to maintaining the beneficial aspects of jointness.

Leverage Joint Training and Education to Maintain the Joint Culture

Each military department maintains its own Reserve Officers' Training Corps (ROTC) infrastructure as a central component of initial officer accession. The four services currently maintain over 480 ROTC units across the country, serving an even greater number of colleges and universities. As can be expected, there is a great deal of overlap. For instance, there are twenty-four ROTC units in the Commonwealth of Pennsylvania alone, and many of the larger universities have three ROTC units on a single campus.

At institutions where more than one service is now represented, the units should be combined into a joint ROTC unit. Curriculum could be altered so that topics relevant to all military officers are provided to students in the first two years and service-specific education and training in the final two. Exposure to different service perspectives on common topics would be a valuable learning experience for students. Students could apply for selection to the services of their choice after two years, at which point they could make informed decisions. This would create a joint environment at the onset of their military careers. Similarly, the service academies could modify their curricula to increase the joint or interagency exposure of their students.[45]

Starting officers out with a joint rather than service perspective may help reduce the service parochialism fostered by the current system. Providing all officers a joint perspective at the start of their careers would be more effective than attempting to reform established service-centric acculturation in midcareer. This

recommendation could not only inculcate jointness into the officer corps but realize cost savings.[46]

However, much larger savings could be realized in a joint-officer development concept that eliminated the requirement for all officers to complete joint duty prior to selection to flag or general-officer rank. Rather than focusing on individual officers, Congress should require a certain percentage of each service's officer corps to maintain current joint qualifications. Changing the present requirement may also stimulate larger personnel reform initiatives within the Navy.

As Yingling argues, there are systemic problems affecting the development of senior officers. This is particularly so in the Navy. Is the current system simply demanding too much professional diversity in officers' career paths? Is it realistic to expect a naval officer to become an expert in a technical field and warfare specialty, complete successful tours at staff and command positions, perform joint duty, and remain current in professional military education, all within twenty years?

The current system takes a cookie-cutter approach to all officers and assumes this varied expertise must be obtained in two-or-three-year periods. Regardless of performance in a billet, officers are transferred to offer opportunities for the next in line. If officers are performing well, why not leave them in their positions longer? At some point the demand for quality performance in a billet must trump frequent rotation for the sole purpose of officer development.

The current outdated personnel system not only does a disservice to the officer corps but is unnecessarily costly as well. This professional diversity requires frequent transfers, and the cost of these movements is significant.[47] Additionally, where officers are required to maintain operational skills that are prone to atrophy, such as in the naval aviation community, the requirement to serve in joint and other duties may have a negative effect on performance, losing a sizable training investment.[48]

As Admiral James Stavridis and Captain Mark Hagerott argue, the Navy's officer corps is out of balance and reflects platform-centric approaches dating back to the Cold War.[49] They propose separate career tracks aligned to technical operations; to joint, interagency, and international operations; or to general/hybrid operations. If this concept were supported by Congress, only the officers on track for flag and general-officer positions on joint staffs would need to maintain joint qualifications.

Joint professional military education is a critical component of this proposed officer development strategy. However, a certain degree of institutional resistance in the Navy, brought on by the numerous competing demands on the officer corps, inhibits effective officer education. Dr. Joan Johnson-Freese of the Naval War College highlights numerous issues with the current professional military education system. In particular, "Navy students regularly report that they were

discouraged from attending a war college in residence by their detailers or superiors, and warned that to do so would be detrimental to their careers. To say this disdain for education among their superiors affects their attitude in class would be understatement."[50]

As a former commandant of the Army War College, Major General Robert Scales, has noted, services begin to find potential flag and general officers in the grades of major and lieutenant commander.[51] It is at this point in an officer's career path that decisions should be made on future potential and best career paths. Once these determinations have been made, graduate education programs could be aligned to career paths rather than the haphazard approach currently in place.

Entry-level officer accession programs embedded with education in joint matters, as well as more effective use of joint professional military education, could better shape an officer's career path and be more fiscally responsible than the current approach. In 2005, the Chairman of the Joint Chiefs of Staff issued his vision for joint officer development, with the stated objective of producing the largest pool of fully qualified, inherently joint officers at the O-6 (colonel and Navy captain) level for promotion to flag and general officer.[52]

Reduce Joint Billets and Organizations

The politically savvy architects of Goldwater-Nichols understood that in order for this new reform effort to take hold, the legislation would need to contain some form of incentive to inspire military officers to take a renewed interest in joint matters. This incentive took the form of the requirement to complete joint duty for flag/general-officer promotion consideration.

Examination of the Joint Duty Assignment List for fiscal year 2011 reveals that across the DoD, 13,070 billets were classified as joint billets.[53] Of the 13,070 only 758, or 5.8 percent, were classified as critical billets. One must question whether each of the 12,312 noncritical joint billets existed out of necessity or had been created simply to facilitate joint officer development. The cost of maintaining this infrastructure is significant.[54]

The requirement for joint duty was an important part of the reform effort, and to support this mandate, ample billets needed to be available to manage the throughput of military officers from each service. If the requirement for all officers to complete joint duty were rescinded, joint billet structure, or even organizations, could be reduced.

The joint force witnessed in 2011 the closure of U.S. Joint Forces Command (JFCOM), whereby several joint organizations were deemed unnecessary, while others were merged under the Joint Staff. This occurred in the midst of two ongoing conflicts, and there have been no noticeable negative effects to ongoing combat operations involving the joint force. It is too early to determine whether there will be any negative effects from the closure of JFCOM. Even though many

of its functions are still being performed, eliminating the command's overhead saved the Defense Department two billion dollars.[55]

One approach to reducing joint billets and achieving substantial cost savings is to rethink the military organization for the operational level of war. Currently the military has nine combatant commands to manage both functions and geographic regions. This approach dates back to World War II and is based on the need that emerged then to establish special commands to integrate war-fighting functions in geographic areas. The requirement for such organizations must be placed in context; at the time, the Navy and Army were separate, cabinet-level departments; joint operations during this period would be considered interagency operations today.

"Unified" (that is, involving the forces of more than one service) commands of this kind of the post–World War II era evolved into the combatant-command organizational model of today. Both the National Security Act of 1947 and Goldwater-Nichols stressed the operational importance of a unified command structure to coordinate all military operations in a geographic area and to ensure unity of command under civilian control. With the changes in the global security environment since the end of World War II, however, some question whether these organizational models are still valid or effective. As Ambassador Edward Marks has observed, "In today's world, military engagement programs with other countries can only be seen as part of the overall engagement activity of the U. S. government. The . . . 'nexus' of security challenges—terrorism, narcotics, smuggling, international criminal networks, etc.—can no longer be managed as single agency programs but must be integrated into 'whole of government' programs. Unfortunately the character of the geographic commands militates against effective whole-of-government engagement programs and therefore coherent foreign policy."[56]

Many proposals exist for creating the interagency equivalent of a combatant commander, inclusive of the DoD, that would answer directly to the National Security Council.[57] While these initiatives have merit and need further investigation, it is likely the Department of Defense would still need an organization to integrate military capabilities and provide unified command in a geographic area.

Currently joint commanders are empowered to an extent heretofore never seen. This not only increases the number of decision makers involved in operational and resourcing issues but makes it difficult to reverse negative trends or correct mistakes.[58] The current organizational functional alignment enables the combatant commanders to generate requirements; the services, for the most part, must program and budget on the basis of these requirements. This creates a rift between the services, which are focused on long-term service health, and the combatant commanders, who are focused on their two-year tours of joint duty.

It also hinders strategic investment and long-term research and development.[59] While the current organizational model of combatant commanders may be (questionably) effective, they are (unquestionably) expensive to maintain.

Examination of the Joint Duty Assignment List of 2010 shows a substantial number of joint billets are apportioned to the combatant commands—nearly 7,400 billets, or 62 percent. In 2010 the Defense Business Board found that the ten unified combatant commands had between them over ninety-six thousand military, civilian, and contractor staff members and annual budgets totaling over $16.5 billion.[60] For comparison, in 1988 the "specified" (i.e., single-service functional commands), unified, and supporting commands had a combined staff of slightly under sixty thousand personnel.[61] During this same period of headquarters growth, total active-duty end strength decreased from 2.1 million to 1.4 million.[62]

The Department of Defense can reorganize the combatant commands by transferring the missions and authorities of each of the six geographic combatant commanders to designated "service executive agents." For example, the U.S. Pacific Command's roles and missions would be assumed by the U.S. Pacific Fleet Command. As General Schwarzkopf noted after the first Gulf war, "Goldwater-Nichols established very, very clear lines of command authority and responsibilities for subordinate commanders, and that meant a much more effective fighting force."[63]

These same clear lines of authority could be established for each service executive agent. Unlike during World War II, the command relationships of *supported* and *supporting* commands are now well understood and frequently used, and they could be applied to the new organization.

While this dual-hatting of responsibility may appear to impose overwhelming tasks, military leaders are often placed in positions of command authority over diverse missions. For example, today the commanding general of Marine Forces Command also commands Fleet Marine Forces Atlantic, U.S. Marine Corps Bases Atlantic, and U.S. Marine Corps Forces Europe.

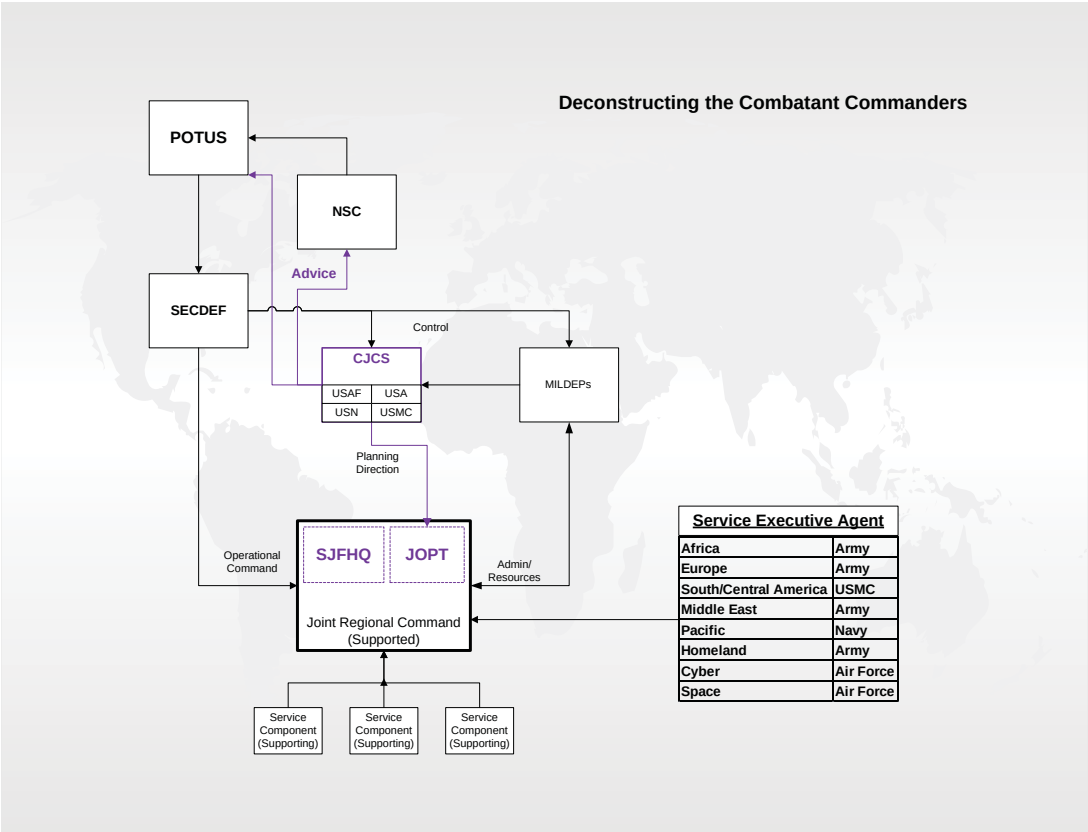
The command organization for each of the service commands selected to fill this kind of role would need to be slightly modified. First, each service commander would need a Deputy Commander for Joint Operations from a service other than that of the commander. Second, each service command would need to maintain a Standing Joint Forces Headquarters element. Finally, a robust Joint (or interagency) Operational Planning Team would be embedded within the organization. The Joint Operational Planning Team would be led by a one-star—that is, a brigadier general or rear admiral (lower half)—from another service who would serve as the team leader but would have a dual reporting requirement to both the service commander and the Joint Staff.

To support this new model, services should eliminate individual service component commands and support the new organizations from a centralized Forces Command—for example, Marine Forces Command and U.S. Fleet Forces Command (see figure 2).[64]

The three functional combatant commanders should also be reevaluated. U.S. Special Operations Command (USSOCOM) has been largely efficient and effective since its inception, and its current organization structure should not be altered. However, an examination of roles and responsibilities of the current stakeholders in special operations—OSD Office of Special Operations and Low Intensity Conflict, the Joint Staff, and USSOCOM—may yield more streamlined organizations.

When the U.S. Transportation Command was established in 1987, the task of moving large forces and volumes of materiel to areas of conflict around the globe was one that only the U.S. military could manage. Today, however, global distribution of goods and material is the norm throughout the commercial world. Lieutenant General Claude V. Christianson, U.S. Army (Retired), argued recently

FIGURE 2



there is an inherent link between the Defense Logistics Agency (the supplier) and Transportation Command (the distributer) and that the creation of a global logistics organization should be considered.[65] These two defense organizations should be merged to create that more effective organization.

Is the global management of logistics an inherently military function, or could this function be accomplished more efficiently by greater use of civilian personnel? A 2011 Congressional Budget Office study noted military compensation was significantly higher than that of federal employees with the same education and experience.[66] Eliminating the four-star command infrastructure and many of the military billets in the logistics arena would provide considerable savings, as the two-billion-dollar savings from the closure of JFCOM suggests.

The U.S. Strategic Command appears to be the catchall combatant commander. It is difficult to find the commonality behind maintaining strategic weapons, countering the threat of weapons of mass destruction (WMD), and performing cyberspace and information operations. The functions of Strategic Command should be deconstructed and a flatter arrangement put in place. For example, the WMD mission could be wholly transferred to the Defense Threat Reduction Agency, and cyberspace (or the entire electromagnetic spectrum) should be the equivalent of a geographic combatant commander, with the responsibility given to the Air Force. Some strategic functions could be managed by the Joint Staff.

By transforming the current combatant-command structure, the Defense Department could also eliminate several four-star and many lesser flag and general-officer billets. DoD is currently maintaining a historically high number of flag and general-officer billets, compared to military end strength. Robert Gates identified this issue as an efficiency initiative in 2010, and several groups, such as the Project on Government Oversight, have testified before Congress on the problem of "star creep."[67] That is, the number of flag and general officers has increased, while the size of the total force has decreased. Eliminating up to a third of the total admirals and generals would provide a significant cost savings.[68] More than that, however, it would send a clear message that the military is serious about operating as efficiently as possible during this era of fiscal austerity.

Reduce the Roles and Missions of the Joint Staff

If the previous two concepts were implemented, the expanded roles and missions of the Joint Staff could also be reduced or eliminated. In the twenty-five years since the passage of Goldwater-Nichols, the Joint Staff has grown significantly in size and influence, often at the peril of the military departments and services.

As the Defense Business Board has pointed out, since 2000, over fifty thousand civilian or military billets have been added to the staffs of OSD, the Joint Staff, the combatant commanders, and Defense agencies—as well as an unknown number of contractor personnel. In the notional organizational structure there are over

twenty-nine layers of bureaucracy between an action officer on a service staff and the Secretary of Defense.[69] This should be a lucrative target area for those looking for ways to improve DoD efficiency.

The Joint Staff should be focused on strategic issues affecting global military operations. One recent analysis notes that

> the Chairman of the Joint Chiefs of Staff shall be responsible for the following:
>
> Strategic Direction. Assisting the President and the Secretary of Defense in providing for the strategic direction of the armed forces.
>
> Strategic Planning.
>
> - Preparing strategic plans, including plans which conform with resource levels . . .
> - Preparing joint logistic and mobility plans to support those strategic plans . . .
>
> Contingency Planning; Preparedness.
>
> - Providing for the preparation and review of contingency plans . . .
> - Preparing joint logistic and mobility plans to support those contingency plans.[70]

In addition to these functions, the Joint Staff must continue to perform the previous JFCOM functions deemed essential—for example, developing joint doctrine, scheduling and evaluating joint exercises, and managing joint interoperability.

The Honorable Michael Donley argued ten years after the passage of Goldwater-Nichols that reform efforts since 1947 had already greatly lessened the influence of the civilian leadership within the military departments. He held that because of the shift of responsibilities to OSD and the Joint Staff, their spans of control had so broadened as to suboptimize the entire Defense Department. Military departments, he concluded, should take on a greater role in integration and focus more on balancing operational requirements with strategic investment decisions.[71]

As stated previously, one of the main criticisms of Goldwater-Nichols has been the weakening of civilian control over the military. By reducing the scope of Joint Staff influence in nonoperational matters, civilian leadership within the military departments could be made more effective and a proper balance of civilian control achieved.

It can be argued that the inefficiencies that appalled Truman during World War II are now significantly worse, and more costly. This is true despite several major reform efforts intended to improve the performance of the Department of Defense. As a key player in the congressional effort to create and pass Goldwater-Nichols, James Locher, concluded in 2001, "Defense organization is important; it deserves continuous and innovative attention. Congress came to the department's rescue

in 1986, but today the Pentagon's organizational problems are again stacking up, and at an ever faster pace."[72]

National security expert Dr. Eliot Cohen saw over a decade ago that the leadership structure of the military had been molded by Goldwater-Nichols; that is equally the case today, if not more so. The military's structure represents outdated visions—a command structure conceived in 1943 and a personnel system begun in the 1970s. "Given the flaws [in Goldwater-Nichols], the time is now ripe for a revision of the Goldwater-Nichols Act."[73] Unfortunately, the decadelong response to the September 11th attacks makes it apparent that little action was taken on his recommendations. His assessment has even more merit in the current fiscal environment than when Cohen wrote. Fiscal austerity should serve to force consideration of long-overdue reforms.

The current "easy choice" of reducing end strength to survive the forthcoming budget reductions should be considered only after all means of reducing unnecessary overhead have been exhausted. Before a single ship, plane, or Marine is cut from our existing force structure, policy makers within the Department of Defense and on Capitol Hill must look at the results of previous reform efforts and repeal specific elements that no longer provide value or are simply unaffordable. A more modest, "Ford-like" approach to maintaining the benefits of jointness would be an excellent place to start.

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DROWNING STABILITY

The Perils of Naval Nuclearization and Brinkmanship in the Indian Ocean

Iskander Rehman

In May 1998, the sun-scorched deserts of the Indian state of Rajasthan shook with a succession of nuclear explosions. Barely two weeks later, in a seemingly tit-for-tat response, Pakistan conducted its own series of detonations, in the remote western hills of Baluchistan. Both nations' previously concealed nuclear capabilities had suddenly burst out into the open, giving a new and terrifying form to the enduring rivalry that had convulsed the subcontinent for decades. Caught off guard, the international community reacted with indignation and dismay. Concerns over nuclear escalation in the event of another Indo-Pakistani conflict refocused Washington's attention on South Asia and triggered the longest-sustained level of bilateral Indo-American engagement in history.[1] This had the unexpected benefit of enabling both democracies finally to find common ground, after many years of acrimony, chronic mistrust, and squandered opportunities. Fears of mass terrorism in the wake of 9/11 and subsequent revelations of extensive proliferation emanating from Pakistan added urgency to Western desires to preserve a modicum of crisis stability in South Asia, as well as to prevent any form of escalatory behavior that could spiral into nuclear conflict or further the spread of radioactive material.

More than ten years later, however, the international community's sense of urgency seems to have waned, and the evolution of the nuclear postures and arsenals of both New Delhi and Islamabad no longer appear to evoke the same degree of concern, or even interest.

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Symptomatic of this ebbing attention is the detached, disinvested manner in which much of the world has witnessed the ongoing shift of South Asian nuclear capabilities from land to sea.

When in July 2009 India launched its first nuclear submarine, *S-2* (also known as the Advanced Technology Vessel, or ATV, and ultimately named *Arihant*), in a dry dock in the eastern port of Visakhapatnam, the reaction of much of the world to the event was remarkably subdued. The event was perfunctorily acknowledged abroad, and in India as well, as a technological and symbolic milestone in the nation's rise to great-power status.[2] Barring Pakistan, which reacted immediately and sharply to the news, scant commentary—scholarly or journalistic—was made about the impact that the introduction of sea-based delivery systems would have on the South Asian nuclear equation.

This article seeks to address this issue directly, asserting that it is only a matter of time before Pakistan formally brings nuclear weapons into its own fleet. The study first examines the key causes and motivations behind both nations' lurches toward naval nuclearization. For both nations, a variety of factors explain the pursuit of sea-based deterrence. In particular, China's nuclear role in the Indian Ocean is examined, both as a key enabler of Pakistani naval nuclearization and as a potential future military actor in the Arabian Sea. The second section charts the dangerous path that Indian and Pakistani navies appear to be taking, a path that combines dual-use systems (most notably nuclear-tipped cruise missiles), cultivated doctrinal ambiguity, and brinkmanship to render the future of nuclear stability in South Asia exceptionally bleak. It is argued that if this haphazard naval nuclearization remains unchecked, its destabilizing effect will spill over into the Persian Gulf and beyond. Without a concerted effort to integrate sea-based nuclear assets more effectively into both nations' strategic thinking and into a bilateral dialogue, New Delhi and Islamabad may be unable to avoid escalation in a crisis and, ultimately, skirt nuclear disaster.

LURCHING TOWARD NAVAL NUCLEARIZATION: KEY CAUSES AND MOTIVATIONS

Since the beginning of the Cold War, the quest for a nuclear deterrent has frequently been viewed as an imperative for second-rank powers desirous of maintaining a degree of strategic autonomy with respect to prospective adversaries that have vast nuclear or conventional superiority. In India's and Pakistan's cases, the decision to acquire a nuclear capability was motivated by a feeling of conventional asymmetry, combined with a perception of severe threat. For New Delhi the main concern was China, which had in 1962 inflicted a severe defeat on ill-equipped and poorly prepared Indian troops along the long-disputed Sino-Indian border and in 1964 had conducted its first nuclear test. For Islamabad the

existential threat was India, particularly after the war of 1971, which led to the shearing-off of the Pakistani eastern "wing" as the independent state of Bangladesh. In both nations, watershed moments—for India the 1962 defeat along the Sino-Indian border and the 1964 Chinese nuclear test and, for Pakistan, the 1971 war—helped nourish and sustain consensus among their respective national decision makers about the strategic utility of nuclear weapons.[3]

If both New Delhi's and Islamabad's quests for a nuclear triad (i.e., comprising land-, sea-, and air-based systems) can be viewed through the prism of traditional nuclear deterrence, however, there are also other—more complex—elements at play. Indeed, while India's pursuit of sea-based strike is but the next logical step in the formulation of its nuclear triad, Pakistan's motivations are more complex and cannot be viewed solely as reactive.

India's Fitful Quest for a Nuclear Triad

Shortly after a series of tests, known as POKHRAN II, in 1998, the Indian government declared that its future "minimum nuclear deterrent" would eventually revolve around a triad composed of mobile land-based missiles, aircraft, and naval assets.[4] Having officially adopted a posture of no first use (NFU) and assured retaliation, India considered acquiring a capacity for "continuous at-sea nuclear deterrence," essential for the survivability of its nuclear second strike. The importance attached to sea-based deterrence in India's nuclear posture has been consistently belabored over the past decade, whether in the Standing Committee on Defence of the Lok Sabha (the lower chamber of the Indian Parliament) or in the Indian navy's *Maritime Military Strategy* (2007) and successive iterations of its *Maritime Doctrine,* in 2004 and 2009.[5] There is undoubtedly a certain bureaucratic rationale and desire for prestige behind the Indian navy's continued emphasis on the indispensability of its nuclear role, alongside those of the historically privileged army and air force.[6] This is rendered palpable to a certain degree in, for example, the 2004 *Maritime Doctrine,* which laments the fact that, among NFU nuclear powers, "India stands out alone as being devoid of a credible nuclear triad."[7]

Beyond the clear symbolism of the 2009 launching of *Arihant,* however, also lie powerful tactical arguments in favor of India's deploying nuclear-armed submarines. Unlike the United States and the Soviet Union during the Cold War, separated by thousands of miles, India is squeezed cheek by jowl between two prospective nuclear adversaries. The flight time of a short-range ballistic missile directed from Pakistan toward a major Indian city, such as New Delhi or Mumbai, is estimated to be a couple of minutes at best.[8] This factor deprives India of a crucial element in the event of a nuclear crisis—time to react in order to avoid a crippling "decapitation" strike, an attack designed to destroy the nation's leadership and its ability to command and control its forces. Moreover, the militarizing

of China's Tibetan Plateau and the mushrooming of ballistic-missile silos at strategically selected, high-altitude points along the Sino-Indian border constitute a major threat. India's land- and air-based deterrent could be substantially weakened or even annihilated under a sustained missile saturation campaign.[9] Placing nuclear assets at sea puts them at a safer distance from decapitating strikes; their mobility and (in the case of a nuclear-powered submarine) discretion provide a greater measure of survivability.[10] Furthermore, the introduction of a nuclear-powered submarine will in itself greatly increase India's range and scope in terms of subsurface warfare. Only half of its dwindling submarine fleet is currently deemed operational, and a new batch of six French-designed Scorpène submarines is now projected to start joining the fleet only in the middle of this decade. *S-2*'s entry into service will help stanch the steady hemorrhage of the Indian navy's subsurface assets.[11] The greater operational reach and added covertness provided by its nuclear reactor will make the new boat a major improvement over India's current diesel-electric submarines (SSKs), which, unlike Pakistan's three *Agosta* 90B submarines equipped with the French MESMA air-independent-propulsion (AIP) system, lack AIP and therefore have to surface relatively frequently to recharge their batteries.

The arguments in favor of an undersea deterrent have long been understood by Indian decision makers, who initiated the ATV program over three decades ago. Endless delays, bureaucratic languor, and chronic difficulties in miniaturizing a nuclear reactor fit for wartime conditions conspired to make progress painstakingly slow, to the point that it became uncertain whether the $2.9 billion project would ever see the light of day.[12] From 1988 to 1991, India leased a Charlie I–class submarine, cruise-missile equipped and nuclear powered, from the Soviet Union in order to gain experience in operating a nuclear vessel. *Arihant,* which is said to resemble strongly the Charlie II class, has reportedly also benefited from Israeli, French, and German expertise.[13] With the benefit of this technological know-how and regained impetus after the overt nuclearization of the subcontinent in 1998, the ATV was finally launched with great fanfare in 2009. *Arihant* is destined to be the first vessel of a flotilla of four to five indigenously produced nuclear-powered ballistic-missile submarines (SSBNs), and it was announced in July 2011 that the construction of a sister vessel at a classified facility in Visakhapatnam had been initiated.[14] The second submarine should be ready for sea trials by 2015, by which time India should also be operating an Akula II–class nuclear-powered submarine on lease from Russia. The Akula, while nuclear-powered, will not be nuclear-armed, as that would be strictly prohibited under international law.[15]

Despite its announced success, many troubling questions still surround India's nuclear submarine project. For one thing, it remains unclear as of this writing whether the high degree of economic and technological investment required for

deploying and sustaining a nuclear submarine fleet will be covered by the Indian navy or by specific funding allocations. Experts have pointed out that maintaining a flotilla of four to five missile-armed submarines on constant patrol, as has been announced, would engulf much if not all of the navy's present budget.[16] In 2010 the Indian navy only received 15 percent of the overall defense budget. If the "Cinderella service" does not receive a far larger slice of the defense cake, it would seem to be impossible for it to maintain its current carrier-centric force structure while simultaneously pursuing nuclear ambitions.

It is also uncertain when the submarines will be truly operational. INS *Arihant* was described at first as a "technology demonstrator" rather than a combat vessel. Recently, however, statements from the naval chief of staff have indicated that it will be deployed on deterrent patrols as soon as it is commissioned in late 2012/early 2013.[17] Finally, information surrounding the precise armament system of the ATVs, as well as of the Russian-provided Akula II submarine, is shrouded in opacity. It remains unclear, for example, whether India's Defence Research and Development Organisation (DRDO) intends to equip them with short-range ballistic missiles under the SAGARIKA program or with nuclear-tipped cruise missiles.[18] The latter prospect, addressed in greater depth below, poses a major threat in terms of crisis stability.

Another puzzling, and somewhat disturbing, evolution is manifest in India's decision to conduct a series of test firings, starting in 2000, of short-range Danush ballistic missiles from *Sakunya*-class offshore patrol vessels. It has been unclear whether this program was intended to signal India's willingness to station nuclear-tipped ballistic missiles aboard conventional vessels or is simply a preliminary to tests from submerged pontoons.[19] Recent statements from Indian DRDO officials, however, indicating that the tests are clear indicators of India's burgeoning capacity to conduct synchronized strikes from both land and sea, add credibility to the notion that India plans to equip its surface fleet with nuclear weapons.[20] This appears remarkably ill-advised, given the vulnerability of such vessels to the growing antisurface-warfare capabilities of both Pakistan and China.[21]

Beyond Tit for Tat: Motivations behind Pakistan's Desire for a Sea-Based Deterrent

Pakistan's nuclear posture over the years has been both asymmetric and catalytic.[22] It has served an asymmetric purpose by offsetting the conventional superiority of its overbearing Indian neighbor, as well as a catalytic purpose by providing a medium of signaling and a means of drawing external powers into Indo-Pakistani disputes, most notably over Kashmir. Refusing to subscribe to an NFU policy, Pakistan views its nuclear posture and arsenal as adjustable—as variables that can be manipulated to dilute India's conventional military advantage, which, notes retired Pakistani commander Muhammad Azam Khan, is "most pronounced in the maritime field."[23]

In 2002, Lieutenant General Khalid Khidwai, director of Pakistan's Strategic Plans Division, responsible for safeguarding Pakistan's nuclear arsenal, outlined the conditions under which Pakistan would resort to nuclear weapons. "Nuclear weapons," he declared, "are aimed solely at India. In case that deterrence fails, they will be used if a) India attacks Pakistan and conquers a large part of its threshold, b) India destroys a large part of either its land or air forces, c) India proceeds to the economic strangling of Pakistan, or d) India pushes Pakistan into political destabilization or creates a large-scale internal subversion in Pakistan."[24] The fact that economic strangulation was mentioned only three years after the Kargil War, during which the Indian navy threatened blockade by coercive maneuvering and establishment of an offshore picket line off the port of Karachi, is hardly coincidental. Clearly Islamabad reserves the right to add a measure of elasticity to its "redlines" depending on variations in strategic circumstances. How then has Pakistan responded to the launching of *Arihant*?

Reactions to the news were predictably shrill. Foreign Office spokesman Abdul Basit characterized the "induction of new lethal weapon systems as detrimental to regional peace and stability";[25] journalists deplored the fact that India had behaved irresponsibly by choosing to take the Indo-Pakistani "nuclear race to sea."[26] Commander Khan noted that it constituted the first step in "a military nuclearization of the Indian Ocean," adding that "it noticeably dents the strategic balance . . . and has the potential to trigger a nuclear arms race."[27] In reality, however, Pakistan itself had been mulling over the acquisition of a sea-based deterrent long before Prime Minister Manmohan Singh's wife ceremonially cracked a coconut on *Arihant*'s gleaming new hull. Eight years prior, in February 2001, the Pakistani navy had publicly acknowledged that it was considering deploying nuclear weapons on board its conventional submarines;[28] this was reiterated two years later by the chief of the Naval Staff, Admiral Shahid Karimullah, who declared that while no such immediate plans existed, Pakistan would not hesitate to act on that line if it felt so compelled.[29]

Most analysts now concur that Pakistan is developing a sea-based version of its nuclear-capable, indigenously produced Babur missile, which is a subsonic, low-level, terrain-mapping, land-attack cruise missile (LACM) bearing an uncanny resemblance to the U.S.-designed Tomahawk, albeit with a maximum reported range of only seven hundred kilometers.[30] Others have ventured that the Pakistani navy may attempt to miniaturize nuclear warheads and mate them to the Exocet and Harpoon cruise missiles already deployed on the *Agosta*-class SSKs or have suggested that the service's recently acquired P-3C Orions be armed with strategic weapons—that is, nuclearized LACMs.[31] The fact that Pakistan has long been contemplating such a move from land to sea, in any case, would indicate that should such a transition be finally completed, it will have been anything but

a knee-jerk reaction to the launching of *Arihant.* Indeed, while the gradual materialization of India's nuclear triad will no doubt accelerate the process, Pakistan also has a strong strategic rationale for investing in a sea-based nuclear capability, one that extends far beyond a simple desire to mirror India's recent advances.

This article contends that it is the very strength of this rationale that will overcome the Pakistani army's lingering reticence to entrust nuclear weapons to a navy it has traditionally viewed as a subordinate service. While Pakistan's nuclear policy is still defined by its overbearing army, it has also allowed the air force to play an important role in the shaping of its deterrent.[32] Similarly, as long as the army continues to exert control over Pakistan's command-and-control structure, it appears unlikely that its generals will oppose, for purely bureaucratic reasons, the deployment of nuclear weapons on Pakistani vessels. Indeed, Pakistan has its own distinct set of reasons for acquiring a sea-based nuclear capability. The study of these underlying motivations strongly suggests that the potential strategic gains accrued from naval nuclearization would trump residual turf considerations.

Fear of a Preemptive Seizure or Strike on Land-Based Nuclear Assets. The Pakistani military has traditionally exhibited a high degree of paranoia over the possibility of foreign seizure or preemptive destruction of its land-based nuclear assets.[33] The steady degradation of Islamabad's ties with Washington and the facility with which U.S. Navy SEALs were able to operate unimpeded deep inside Pakistani territory during the operation that killed Osama Bin Laden have only reinforced Pakistan's fears over the security of its nuclear arsenal from American or Indian intervention.[34] Stationing a portion of the nation's nuclear arsenal on or under the sea represents an extra measure of reassurance to jittery officers in the Strategic Plans Division.

Response to Cold Start. Intensely frustrated by the strategic impossibility of conducting punitive strikes across the Line of Control in response to violent acts of terrorism originating in Pakistan, the Indian military has been striving to forge an operational concept that would enable it to wage conventional war safely under a nuclear umbrella. The concept, which has been termed "Cold Start," envisions a form of blitzkrieg warfare relying on fast, integrated battle groups and closely synchronized army/air force operations in lightning retaliatory strikes and, potentially, seizures of limited portions of strategic territory.[35] While Cold Start in India is still viewed as something of a strategic hypothesis, it has already gained traction in Pakistan, whose vocal pundits ritually portray it in virulent terms as proof of India's belligerence and continuously destabilizing behavior.[36] On a tactical level, Pakistan's response has been to reemphasize its readiness to use nuclear weapons to incinerate advancing columns of Indian tanks, arguing that "the wider the conventional asymmetry, the lower the nuclear threshold."[37]

In April 2011 Pakistani military officials made good on their promise by testing a short-range ballistic missile designed for battlefield use (the Nasr, or Hatf-IX), thus lowering the nuclear threshold even farther.[38] In addition, equipping a submarine or surface vessel with nuclear-tipped Babur cruise missiles would enable the Pakistani navy to help beleaguered ground forces hold a Cold Start blitzkrieg assault at bay.

Strategic Depth. The quest for strategic depth has long constituted one of the key components of the Pakistani military's geopolitical mind-set. The nation's men in khaki have, since partition, had to contend with the reality of an India that not only is conventionally superior but also dwarfs their own country in terms of size and population. This geographical asymmetry has profoundly permeated Islamabad's threat perceptions in times of crisis. Pakistani military planners worry that Indian forces crossing the Line of Control may march into Lahore, around whose outskirts a series of battles were fought during the Indo-Pakistani war of 1965, or be tempted to swoop down toward Sindh and forcibly truncate the province from the rest of the country. This deep-seated fear of fragmentation has fed the Pakistani military's visceral mistrust of India for decades, and especially since 1971. Considerations of strategic depth predicate that, confronted though it is with a far stronger and larger neighbor, Pakistan could effectively counter an invasion by concentrating its forces on the Indo-Pakistani front. This would enable it to achieve greater parity with an Indian military that would be obliged to maintain a large portion of its forces along the Sino-Indian border. In order to focus its strength, however, Islamabad would need to make sure that it did not face a two-front threat of its own and therefore would have to rely on a friendly (or subservient) regime in Kabul.

The notion of strategic depth was further enshrined at the end of the 1980s, when both South Asian states were developing concealed nuclear capabilities. General Mirza Aslam Beg, as Pakistani army chief from 1988 to 1991, suggested dispersing nuclear assets and air force bases deep into Afghan territory, from where Pakistan could continue to wage war against India in the event that its territory was overrun or its infrastructure destroyed.[39] Pakistan has thus consistently viewed Afghanistan both as its strategic backyard and as an extended training base for its "war of a thousand cuts" against India in Kashmir. Accordingly, it actively supported the Taliban during the long period of factional struggle that followed the Soviets' departure from Afghanistan and, more recently, covertly aided and abetted the Taliban, as well as groups such as the Haqqani network, based in North Waziristan.

Pursuing sea-based nuclear strike would allow Pakistan to acquire the strategic depth, vis-à-vis India, it has traditionally sought to acquire across the Hindu

Kush. For even though NATO and its allies have been encountering numerous difficulties in Afghanistan and Western nations are beginning to withdraw troops, Pakistan's hopes of transforming the country into its Central Asian satrapy are liable to remain unfulfilled. Prospects of a sustained rearguard action or hidden second-strike assets deep in Afghan territory appear particularly unrealistic. Shifting part of its nuclear arsenal to sea therefore would enable Islamabad to acquire the greater degree of survivability it was hoping to acquire eventually through dispersion in a compliant Afghanistan.

Countering Indian Plans for Ballistic-Missile Defense. For the past few years, India has expressed an interest in deploying a ballistic-missile defense (BMD) system to help shield its major cities and infrastructure. While precise information on the progress of India's BMD is scarce and frequently contradictory, it would appear that New Delhi has been working toward an indigenous system as well as in dual ventures incorporating Russian, Israeli, or American technology. Recent press reports indicating that India has been working toward the implementation of a new multilayered defense system (combining medium-range Indian surface-to-air Akash missiles and the short-range Israeli Barak air-defense system) and that NATO has offered to share missile-defense technology with India are likely to raise hackles in Pakistan.[40] Renowned scholars of nuclear issues in South Asia like Sumit Ganguly and S. Paul Kapur have long warned of the potentially destabilizing effects of introducing missile defense to the subcontinent, equating the danger with that injected by the introduction of counterforce nuclear capabilities during the Cold War.[41] Pakistan's reactions to India's projected anti-ballistic-missile (ABM) defenses largely reflect these concerns: various military analysts have suggested different ways in which Islamabad might circumvent an operational Indian system. One method, as both Mansoor Ahmed (from the Department of Defence and Strategic Studies at Quaid-e-Azam University) and Usman Shabbir (of the Pakistan Military Consortium think tank) suggest, would be to employ submarine-launched, nuclear-tipped cruise missiles, along with land-based Shaheen II ballistic missiles equipped with MIRVs (multiple independently targetable reentry vehicles).[42]

Enabler and Actor: China's Complex Nuclear Role in the Indian Ocean

The genesis of the Sino-Pakistani entente can be traced back to the early 1960s. Since then, Beijing has proved the most stalwart of partners to Islamabad, providing military equipment and economic aid when no one else would—after the 1965 war, when the United States cut off its military aid, and in the late 1990s, when Pakistan was isolated (for its nuclear proliferation, the antidemocratic coup d'état in 1999, and its support of the Taliban regime in neighboring Afghanistan). China actively assisted Pakistan with its nuclear program from the late 1980s

onward and has provided it with ready-to-launch M-9, M-11, and Dong Feng 21 ballistic missiles, thus helping it bridge its military capability gap with respect to its Indian rival.[43] All of Pakistan's first nuclear plants—in Kahuta, two in Chasma, and Khushab—were built by the Chinese, and Beijing's planned construction of two further nuclear reactors in Punjab (Chasma III and Chasma IV) was announced in early 2010.[44]

Cost-Effective Nuclear Balancing in the Maritime Realm. For Pakistan, China provides a strong external security guarantor on which it can rely to offset the growing conventional superiority of India. Since 1962, India's war plans involving Pakistan have had to factor in the possibility of a joint Sino-Pakistani assault, a perennial two-front threat.

Defense cooperation between Beijing and Islamabad has become the central, overarching element of the Sino-Pakistani relationship, far more so than bilateral trade, which remains anemic, accounting for little more than seven billion dollars in 2010. (This is in stark comparison to Sino-Indian trade, which had skyrocketed to over sixty billion dollars per annum as of 2010.) Whereas Sino-Pakistani defense cooperation has traditionally revolved around land and missile warfare, for the past decade or so both nations have increasingly focused on the maritime sphere, Beijing equipping its South Asian proxy with warships at friendly prices, ranging from F-22P frigates to fast-attack craft equipped with Chinese-made antiship cruise missiles (ASCMs) and a "stealth-like superstructure."[45] In both cases, China has built and delivered the first ships, agreeing to transfer the requisite technology and expertise so that Pakistan could gradually develop a more autonomous shipbuilding capacity.

This arrangement points to a conscious Chinese effort to help Pakistan develop its indigenous shipbuilding industry in order to counterbalance the rapidly modernizing and numerically superior Indian navy. As India's blue-water fleet increasingly extends its influence into contested Southeast Asian waters, Beijing will no doubt seek to constrict New Delhi's maritime sphere of operations by obliging it to shift attention to its western maritime flank. China could do so in a relatively cost-effective manner by

- Strengthening Pakistan's small fleet by providing it with larger ships at friendly prices
- Propping up Islamabad's underdeveloped indigenous shipbuilding capacity by transferring technology and hybridizing Chinese and Pakistani ship-based weapon systems
- Reinforcing Pakistan's strategy of offensive sea denial by improving its anti-access and area-denial capabilities (A2/AD).

The last point bears mention. Pakistan's naval posture is interesting in that it seems to replicate somewhat that of China toward the United States. Both countries, when confronted with larger blue-water forces whose formidable power projection capabilities radiate out from carrier battle group nuclei, have opted for strategies of sea denial, with a heavy focus on submarines and antiship missile warfare.

A study of Pakistan's historical naval tactics reveals the primacy it has persistently accorded to submarines and maritime aircraft equipped with antiship missiles. Pakistan has consistently given priority to its small submarine fleet, often introducing new capabilities to the subcontinent—acquiring AIP systems for its three *Agosta* 90B submarines and modifying the boats to fire Harpoon ASCMs while submerged. The Pakistani navy has sought to supplement its submarine fleet's already potent antiship capabilities by equipping its helicopters and maritime reconnaissance aircraft, such as the recently purchased Orions, with Exocet missiles. Pakistan has also acquired over 120 Chinese C802 long-range ASCMs, which it plans to disperse to launchpads along its coastline.

In early 2010, Pakistan chose to vaunt its burgeoning A2/AD capabilities, roiling the waters of the Arabian Sea in a massive firepower exercise. A variety of missiles and torpedoes that could be fired from warships, submerged submarines, and maritime aircraft were demonstrated in a singularly blunt message to "nefarious forces."[46] In the future, China might well deem it strategically advantageous to transfer antiship ballistic or cruise-missile technology to Pakistan in order to offset India's naval modernization and increase the tactical vulnerability of its carrier strike groups.

But what of Pakistan's desire for an undersea nuclear deterrent? Might China seek to nurture a nascent Pakistani nuclear triad? If so, what form could this maritime nuclearization take? Pakistan's traditional preference for submarines arises from the fact that they offer a certain degree of tactical flexibility and can thus act as force multipliers against larger fleets. Admiral Noman Bashir has described the Pakistan submarine arm as "the backbone" of the Pakistani fleet, and Pakistani military officials have repeatedly emphasized the need to enlarge their subsurface flotilla, which—at five boats (three of the *Agosta* 90B, or *Khalid,* class and two *Agosta* 70s, introduced in the 1970s)—they consider "far short of" meeting evolving requirements.[47] The Indian Ocean, with its peculiar underwater topography and challenging hydrographic conditions, renders submarines particularly difficult to detect. This natural stealth would be further accentuated in the clustered and complex Indian and Pakistani littorals, from which Pakistani submarines would most likely tend to operate and where their acoustic signature would be difficult to pinpoint amid the cacophony of ambient sound.

In March 2011 Pakistan's cabinet approved a defense ministry request to purchase six new diesel-electric submarines from China.[48] It remains unclear which class of submarine will be purchased, but Pakistani officials have made clear that they wish the vessels to be equipped with AIP. Some analysts have speculated that China could supply Pakistan with six of its latest Qing-class SSKs, equipped with AIP and each carrying three CJ-10K submarine-launched, 1,500-kilometer-range cruise missiles, which could be mated with unitary nuclear warheads.[49] Others have ventured that Pakistan and China may decide to codesign submarines specifically to serve Pakistan's tactical needs and subtropical maritime environment.[50]

All this remains speculative, however, and no hard evidence has yet emerged to support these notions. Similarly, various rumors have occasionally surfaced over the possibility that Islamabad might lease a Han-class nuclear submarine from China.[51] Once more, there is little evidence. Moreover, the Type 091 Han, based on largely outdated 1950s technology, is an extremely noisy boat with poor radiation shielding and is being progressively decommissioned in the People's Liberation Army Navy (PLAN).[52] The lease of a Han would have little tactical utility to Pakistan, apart from that of enabling its submariners to learn how to operate an (antiquated) nuclear vessel. Furthermore, just as Russia is barred from providing India nuclear-armed submarines, China could not provide Pakistan submarines for nuclear deterrence without breaking international law. Another possibility, mentioned earlier, is retrofitting Pakistan's Harpoon or Exocet missiles with miniaturized nuclear warheads.[53] While the technological hurdles involved would be formidable, such a conversion could become gradually more feasible with covert Chinese assistance.

From Enabler to Actor? China's involvement in Pakistan extends far beyond simple defense ties. Indeed, through a bevy of costly infrastructure projects in such places as the Baluchi seaport of Gwadar, China harbors long-term ambitions of transforming its South Asian ally into a critical energy corridor and strategic transport hub. Much has been written on China's "String of Pearls" strategy, and much of that has been marked by whimsical interpretations or sensationalistic reports of supposed Chinese military activities.[54] Indeed, one cannot discard entirely the notion that in the future a more expansionist China may seek to develop a string of military bases in the Indian Ocean. In reality, however, all evidence suggests that China's vast development projects in places like Hambantota, on the southern tip of Sri Lanka, and Chittagong, in Bangladesh, are primarily economic in nature.[55]

Gwadar, in Pakistan, might come to be a notable exception. Indeed, during a recent visit to China, the Pakistani defense minister, Ahmad Mukhtar, reiterated a long-standing invitation to China to build and occupy a naval base

to complement the commercial facilities Chinese workers completed there in 2008.[56] The request was met with circumspection among the Chinese strategic community, wary of giving too much credibility abroad to the notion of an unabashedly expansionist China. Shortly after Mukhtar's visit, the Chinese foreign ministry denied that talks about the military use of Gwadar had even taken place.[57] This extreme caution reflects an ongoing debate within China on whether it would be dangerously premature for Beijing to project hard power far beyond its traditional maritime backyard. For the time being, there is little convincing evidence to suggest that China is leaning toward permanently occupying military bases overseas, whether at Gwadar or elsewhere.[58]

In the future, however, if Beijing's relations with Washington and New Delhi continue their downward trajectory, China's leadership may feel compelled to shed its present reservations. In such a case, Gwadar's location at the mouth of the Persian Gulf and the willingness of the Pakistani government to station Chinese troops on its territory could prove attractive. In purely military terms, however, Gwadar is far from ideally placed. Lying on a small peninsula tenuously linked to the mainland by a thin spit of land, the former fishing village is, as some strategists have aptly noted, acutely vulnerable to sea- or air-launched strikes.[59] Any Chinese surface platforms moored there could be relatively easily sunk or crippled by a sustained Indian or American missile barrage. The location's tactical utility is to be found under the surface—Gwadar is a natural deep-sea port. By stationing nuclear submarines along Pakistan's seaboard, China would be able to stage a more credible and less vulnerable military presence at the very mouth of the Persian Gulf.

Chinese strategists have long fretted over the vulnerability of their energy shipping—their "Malacca dilemma."[60] A nuclear submarine flotilla patrolling the Arabian Sea would provide Beijing the option of preempting or disrupting any form of hostile economic warfare, whether a large-scale maritime blockade or a more limited form of modern *guerre de course*. Also, recent developments in American operational planning could add to the temptation to forward-deploy forces in the Indian Ocean. The Pentagon's AirSea Battle concept, at the heart of its freshly minted Joint Operational Access Concept, envisions the possibility—should a conflict with China devolve into a protracted campaign—of widening the geographical scope of combat operations well into the Indian Ocean, far west of the Malacca Strait.[61]

Moreover, Chinese nuclear submarines would be able to support the Pakistani fleet in the event of an Indo-Pakistani naval conflict, harassing India's shipping and energy supplies and waging a war of attrition against its navy, under the cover of Pakistan's A2/AD envelope. The potential economic threat posed by China's

expanding submarine fleet has been recognized by Indian naval analyst Gurpreet Khurana, who warns, "Its [China's] attack submarines lurking off Indian ports could strangle India's economy, and its submarine-launched land-attack cruise missiles could be used to target India's vital assets and installations in the littoral."[62]

Chinese submarines could deploy underwater mines close to major Indian ports, such as Mumbai and Karwar, and engage in sabotage, sending small teams of special forces to attack offshore installations or cut underwater fiber-optic cables. If Pakistan were eventually to be equipped with the DF-21D antiship ballistic missile, Chinese submarines could provide targeting information. This could prove particularly invaluable were Islamabad's over-the-horizon radars to be obliterated by Indian air strikes or missile barrages. PLAN vessels along Pakistan's Makran coast could fulfill an invaluable forward intelligence role, monitoring Indian naval communications or keeping an eye on U.S. fleet deployments in the Persian Gulf. The combined Sino-Pakistani threat would therefore extend horizontally from land to sea, forcing Indian defense planners constantly to factor in the presence of a combined naval task force in the immediate vicinity, poised near India's trade and energy jugular.[63] However hypothetical, the possibility of such a deepened entente, or collaboration, should be as much a concern for New Delhi's vibrant strategic community as a string of pearls with less direct and immediate military implications.

THE DIRE CONSEQUENCES OF NAVAL NUCLEARIZATION

What would be the implications of nuclearization of the Indian Ocean in terms of regional stability? Drawing on the classic literature of deterrence, the argument will be made that the shifting of both Pakistan's and India's nuclear deterrents from land to sea will have highly adverse effects on the regional balance of power, as will the potential future presence of Chinese nuclear forces in the Indian Ocean. Conflict propensity would be aggravated along three lines of escalation: vertical, inadvertent, and horizontal.

Vertical Escalation: Dual-Use Systems and Strategic Ambiguity

Escalation can be succinctly defined as a sudden increase in the scope and intensity of a conflict that crosses the critical threshold of one or more actors.[64] The shift in focus in South Asia from strategic to tactical nuclear war fighting is a highly destabilizing one. As noted previously, both South Asian nations have experimented with dual-use systems—Pakistan by publicly declaring its intentions to develop a tactical nuclear capability on land and at sea, India by contemplating stationing short-range ballistic missiles aboard surface vessels. While Pakistan's flirtation with dual use is to be expected, given its calculated decision to adopt an asymmetric posture based on the threat of first use, India's is more disturbing

and less easily comprehensible. Indeed, India has consistently emphasized its attachment to a minimum deterrence strategy. By experimenting with the use of ballistic missiles as conventional war-fighting instruments and the use of cruise missiles as tactical nuclear weapons, both nations are dangerously blurring the lines in an environment already marked by strategic ambiguity. International-relations theorist Robert Jervis has convincingly argued that the possibilities for miscalculation and misperception are high even for mature nuclear powers whose thresholds are supposedly clearly defined and whose strategic relationships are relatively stable.[65] In the case of the Indo-Pakistani dyad this is far from the case, and the margin for fatal error is even smaller. Pakistan's nuclear thresholds are marked by a high degree of fluidity, and both South Asian nations seem ensnared in a stability/instability paradox, which means that while all-out war seems highly unlikely, small-scale or subconventional conflict has arguably become even more probable.[66]

The systemization of dual-use weapon systems in the subcontinent would undermine the tenuous balance that has existed since 1998 by greatly increasing the risk of vertical escalation from conventional to nuclear conflict. This grim possibility was identified by the late K. Subrahmanyam, the doyen of Indian strategic thought, four years before India came out of the nuclear closet: "As Indian strategic perceptions must logically rule out nuclear war fighting, there is no need for India to have tactical nuclear weapons. They have been largely given up by the US and Russia because of the realization of their non usability without risking rapid escalation to strategic exchange."[67]

This problem has also been singled out by a trio of U.S. Naval War College analysts, who wonder how New Delhi and Islamabad "can preserve crisis stability when their maritime forces are in conventional combat on the high seas," warning that "if one navy stations nuclear weapons aboard conventionally armed warships, its antagonist could end up inadvertently destroying nuclear forces in the process of targeting conventionally armed forces."[68] That could lead to an escalatory cycle with potentially devastating consequences.

Another abiding question centers on the conditions under which Pakistan might choose to use its tactical nuclear weapons at sea. Islamabad has stated its willingness to use tactical nuclear weapons on land against advancing Indian tank formations, but some Indian strategic planners have dismissed these threats as groundless, considering it highly unlikely that Pakistan would deliberately maim itself by setting off a nuclear explosion on its own soil.[69] Would Pakistani decision makers display the same restraint about the open ocean? Or would a heavily outnumbered Pakistani fleet commander be tempted to employ a tactical nuclear-tipped ASCM against, for example, an advancing Indian carrier strike force? This question remains uncomfortably open.

Inadvertent Escalation: Perils of Brinkmanship in Unstructured Maritime Environments

Two additional factors heighten the chances of inadvertent escalation in the event of the introduction of dual-use weapon systems in the Arabian Sea: Pakistan's long-standing policy of naval brinkmanship and the unstructured nature of the Indo-Pakistani maritime environment.

Thomas C. Schelling famously defined brinkmanship as the manipulation of the shared risk of war.[70] Through tactics of intimidation and deliberate maintenance of a high degree of strategic uncertainty, weak actors may hope to deter a stronger adversary from effectively leveraging its conventional superiority. On a tactical maritime level, these means can dissuade the stronger naval actor from pressing its claims or patrolling certain areas through fear of an isolated incident spiraling out of control. There is no lack of such incidents—for instance, both nations systematically detain fishermen they consider to have violated their territorial waters.[71] More seriously, Pakistan has displayed a strong proclivity to naval brinkmanship over the years, whether threatening direct collisions with Indian naval ships or "buzzing" Indian flotillas with maritime aircraft. The most dramatic such incident occurred in 1999, when a Pakistani Bréguet Atlantique aircraft entered Indian airspace without warning and was shot down by an Indian air force MiG-21.[72] In the future, the Indian air force may have no way of ascertaining whether a straying Pakistani maritime patrol aircraft is carrying nuclear weapons or not. The problem of fathoming an adversary's intentions is difficult enough under normal circumstances. It becomes even more arduous when, in an environment of dual-use weapons, one player relies on a policy of brinkmanship to compensate for its conventional inferiority.

In addition to this, South Asia's maritime environment is alarmingly unstructured. There currently exist no confidence-building or institutionalized conflict-resolution mechanisms in the maritime realm.[73] Ideally both nations should work to enact something resembling the Incidents at Sea Agreement put in place by the Soviet Union and the United States during the second half of the Cold War, with the aim of preventing isolated naval incidents from spiraling out of control.[74] But in order to do so, Pakistan would have to jettison its policy of naval brinkmanship; for the time being at least, such a strategic concession appears highly unlikely. Furthermore, though both countries have signed an agreement on the advance notification of ballistic-missile test firings, they currently have no such regimen for cruise missiles.[75] If both countries now intend to deploy nuclear-tipped cruise missiles, it would behoove them to work immediately toward extending the existing agreement, in order to avoid critical misinterpretations during test firings.

Horizontal Escalation: Nuclearization of the Indian Ocean and Its Impact in Peacetime

What would be the wider regional impact of the maritime nuclearization of the Arabian Sea? How would various regional powers and economic stakeholders perceive the spillover effect of the Indo-Pakistani nuclear relationship into the Indian Ocean or the presence of Chinese nuclear submarines at the mouth of the Persian Gulf? In all likelihood, either would only reinforce preexisting security dilemmas, as the means by which each state sought to reinforce its nuclear deterrent would automatically appear to undermine those of its neighbors. The fact that many of the aforementioned conflict scenarios appear speculative is precisely due to the prevalence of strategic uncertainty in the region. This ambiguity aggravates instability by allowing perception to shape reality, rather than vice versa.

If China, for instance, were even to contemplate some sort of a permanent subsurface presence in the Indian Ocean, there is little doubt that this would lead to heightened threat perceptions in both India and the United States. In 2008, the Indian navy chief expressed concern over future Chinese nuclear incursions into the Indian Ocean;[76] other naval thinkers as well have cautioned that the forward deployment of Chinese SSBNs in India's maritime backyard would render "the Chinese nuclear threat all-round and indeterminate."[77] India's decisions to develop the port of Chah Bahar, in Iran (in 2002), and to construct a massive military port in Karwar, south of Goa, have been construed by some as direct responses to the joint Sino-Pakistani venture in Gwadar.[78] While the Indian navy's growth over recent years has been somewhat erratic and subject to chronic delays in terms of both procurement and construction, one could reasonably assume that a joint Sino-Pakistani naval presence at India's very door would open the eyes of even the more sea-blind members of the nation's civilian leadership. India's navy, while well-balanced, suffers from certain weaknesses in terms of modern antisubmarine warfare. Many of the surface vessels currently on order, such as the new *Kolkata*-class (Project 15A) destroyers equipped with towed-array sonars, represent significant improvement but are far behind schedule—owing in large part, once again, to a combination of bureaucratic languor, inefficiency, and severe cost overruns.[79]

If the China threat so often portrayed in sensationalistic terms in India's media were to acquire a more immediate reality, one could expect the Indian government to respond by augmenting the Indian navy's share of the defense budget, speeding the introduction of delayed programs like the *Kolkata* destroyers and the French-designed Scorpène submarines, ordering more ships, and reinforcing coastal defenses. The divergences between the cognitive sets of leaders in New Delhi and Islamabad would heighten the chances for misunderstanding and

mutual incomprehension. Indeed, whereas in New Delhi such a buildup would be largely defensive in nature, geared toward deterring what India perceived as a growing Sino-Pakistani naval threat to its coastal regions and sea-lanes, strategic planners and decision makers in Islamabad would no doubt perceive yet another Indian bid for naval hegemony in the Indian Ocean.[80] In China, the Indian naval buildup would be viewed as a clear sign of a growing taste for maritime power projection, a reinforcement of the present belief of some Chinese analysts that India's nuclear submarine program is a sign of naval expansionism rather than of a quest for deterrence.[81] This would only add urgency to a Chinese policy of cost-effective naval balancing in the Indian Ocean. The future of stability in the region would therefore be decidedly bleak, subject to the destabilizing effects of a trilateral naval arms race in the world's busiest shipping lanes.

The United States, for its part, undoubtedly would be highly uneasy at the idea of Chinese submarines freely roaming the waters of the Persian Gulf, where it has enjoyed largely unchallenged maritime dominance since the end of the Cold War. A permanent Chinese military presence in the region would represent a direct challenge to the so-called Carter Doctrine, which has defined American interests and policy in the Middle East for over a generation.[82] A Chinese nuclear submarine task force stationed off Gwadar would not constitute an existential threat to the U.S. Fifth Fleet, nor would it display the assertiveness that the PLAN has been known to manifest closer to home. Nevertheless, by its innate capabilities in terms of intelligence gathering, stealth, and endurance, such a force, by its very presence in the region, would severely upset American strategic and operational planning and impede the Pentagon's planned reorientation toward the wider Asia-Pacific by compelling Washington to maintain a large naval presence in the Middle East.[83] This, along with the growing probability of a nuclear Iran, would add strain to an already heavily overextended U.S. Navy and compel American decision makers to augment the fleet in an attempt to obtain full-spectrum military dominance over China in several regional theaters simultaneously.[84]

Other regional factors must also be taken into consideration. How would Iran, for example, react to the presence of Pakistani nuclear-armed vessels close to its shores? The nations' ties are complex and frequently conflictual.[85] As Iran's alleged nuclear weaponization and sporadic spurts of belligerence foster fears in the Middle East and beyond, there is a distinct possibility that Gulf states that, like Saudi Arabia, share close strategic ties with Pakistan will turn to Islamabad for assistance. This assistance could take the indirect form of a discreet transfer of military nuclear assets or technology or occur more openly as an extension of the Pakistani nuclear umbrella.[86] Islamabad may decide that maintaining a submarine armed with nuclear-tipped cruise missiles on constant vigil close to Iranian shores is the most convenient and politically acceptable form of deterrence—as it

would not entail placing nuclear weapons on, say, Saudi soil and would not oblige Pakistan to divert nuclear forces to the Iranian border. The maritime realm, however, is precisely where the possibility of a small-scale confrontation between Iran and Pakistan is most pronounced. If, for instance, Pakistan were to station nuclear weapons aboard conventional surface ships or submarines and if such a vessel fell afoul of an Iranian mine or torpedo strike, the consequences would be disastrous. Indeed, Iran has long toyed with a strategy of naval brinkmanship not dissimilar to that of its eastern neighbor.[87]

TAILORED DETERRENCE AND STRATEGIC CLARITY

The epicenter of Indo-Pakistani nuclear rivalry is drifting outward from the subcontinental landmass into the Indian Ocean, from the dusty plains of Punjab and Rajasthan into the world's most congested shipping lanes. Both nations are shifting their deterrent from land to sea, and both are doing so in a dangerously haphazard manner, relying increasingly on dual-use delivery vehicles. Such a voluntary blurring of platform and mission categories would, in conflict, only add to the fog of war, by rendering it nigh on impossible to discriminate between nuclear and conventional attacks in real time. Crisis stability is further undermined by Pakistan's policy of naval brinkmanship, which injects uncertainty into a highly unstructured maritime environment. The ongoing Sino-Pakistani naval partnership, which serves both partners' strategic interests by constraining Indian naval power and refocusing that nation's attention on its western maritime front, runs the risk of contributing to regional instability by aggravating abiding security concerns in New Delhi and fostering unease in Washington. These concerns would be compounded if China were to decide to move from nuclear enabler to nuclear actor in the Indian Ocean by permanently stationing nuclear submarines off Pakistan's Makran coast.

It is imperative that decision makers in both South Asian capitals reflect on the implications of extension of their nuclear rivalry to the maritime sphere and work toward establishing a tailored deterrence that reduces strategic ambiguity. India will need to devote as much attention to escalation management as to the issue of second-strike survivability, while Pakistan will have no choice but eventually to abandon its posture of cultivated ambiguity and naval brinkmanship. The signing of an agreement on controlling incidents at sea would be a useful way forward, as would advance notification for cruise-missile tests.[88]

China, for its part, should reflect on the continued validity and wisdom of its strategic stance in South Asia. Beijing may find it convenient to leverage the Pakistani military's existential threat perception of India to its advantage, but it also hankers after a stable regional environment in which it can peacefully pursue its own economic interests. How China manages these conflicting ambitions will

help shape the nuclear balance in the subcontinent, the continued security of the world's most vital shipping lanes, and, as a direct result, the world's perception of Beijing's rise to great-power status.

NOTES

The author would like to thank James Rogers, Toshi Yoshihara, Dinshaw Mistry, and three anonymous reviewers for their helpful comments on an earlier draft.

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"DECIDED PREPONDERANCE AT SEA"

Naval Diplomacy in Strategic Thought

Commander Kevin Rowlands, Royal Navy

Oliver Cromwell famously declared that "a man-o'-war is the best ambassador"; a twenty-first-century equivalent represents the U.S. Navy in posters and on T-shirts and sweatshirts as an aircraft carrier over the caption "90,000 tons of diplomacy." Though the images may be different, the message is the same—yet "naval diplomacy" is not a readily understood term. From the coercion delivered by the gunboats of the Pax Britannica to the modern-day exercise of *soft* power through *hard*ware, interpretations of what constitutes naval diplomacy are wide-ranging. Strategists have undoubtedly long been aware of its existence, but over the centuries few have been moved to study or document it in any substantial way.

The purpose of this article is to establish what has been written about this important dimension of international politics so that it can be better understood and better implemented, or countered, in future. The political (or diplomatic) role of sea power has always been important and, arguably, far more commonly exercised than its wartime uses. Indeed, it is unique to navies and has no parallel on land or in the air. But examination of naval strategy exposes a knowledge gap: the major works of Mahan, Corbett, and others are filled with the preparation for, and the conduct of, war at sea, but most offer little more than an oblique reference to what navies have historically done on a day-to-day, year-by-year basis.

Mahan in his classic work talks of naval "prestige" and "flying the flag," but in passing. Corbett similarly

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acknowledges peacetime employment but does not concentrate on it. Indeed, it was not until the second half of the twentieth century—the era of the Cold War—that naval diplomacy started to be studied in its own right, but that study was, of course, tempered by the geopolitical situation of the time. Cable, Booth, and Luttwak in the West and Gorshkov in the East placed naval diplomacy in the realm of their own understandings. But was their era, that of the Cold War, really representative of a long historical development in naval thought, or could it have been a historical "blip"?

Today, the combined fleets of the West effectively exercise command of the oceans, with few regional powers capable of contesting the seas even locally. These fleets' position of strength has arguably led to a subtle shift in their role along the spectrum of conflict from major combat operations back to constabulary and diplomatic tasks.[1] Though no direct peer competitors yet exist, rising powers, particularly in the East, are developing credible maritime strategies not wholly based on war fighting. Whether these powers are seeking to join the existing international system or to challenge it remains to be seen. The Cold War ended over twenty years ago, and it has taken time for a new global order to become clear, and it might not be clear yet. For navies this shift in emphasis and increasing focus on "influence" may not be a new phenomenon.

This article takes "naval diplomacy" to mean the exertion of influence on international affairs through naval power when not at war. It attempts to trace the historiography of naval diplomacy through strategic thought and determine whether there has been a return to the use of navies as peacetime policy instruments of the state and tools of grand strategy, or whether it is merely business as usual in the twenty-first century.

MAHAN, CORBETT, AND CLASSICAL NAVAL DIPLOMACY

The classic naval texts are essentially Atlanticist in nature, reflecting the concentration of maritime power, first in Europe and then in North America. Nonetheless, they offer some generic principles that are applicable globally. Perhaps the most influential naval writer, Alfred Thayer Mahan, focused his thesis in *The Influence of Sea Power upon History* on navies at war, particularly the navies of England, France, and the United Provinces in the age of sail, and he did not specifically mention naval diplomacy. However, peppered throughout his work are examples and comments on the utility of threat and limited force by navies. In particular, Mahan acknowledges the importance of navies in peacetime, observing that the requirement for naval strategy differs from that for a land-centric military strategy in that the former is as necessary in peace as in war.[2]

Examination of Mahan's work for reference to what amounts to naval diplomacy —even if the term is not used—reveals two broad themes. In the contemporary

language of "hard" and "soft" power, Mahan could arguably be said to view navies both as instruments of coercion and as agents of national reputation. In the early sections of his major work Mahan writes of ancient Rome during the Carthaginian wars, discussing how the Roman fleet was positioned to "check" Macedonia, an ally of Hannibal, and was so successful in doing so that "not a soldier of the phalanx ever set foot in Italy."[3] The principle employed by this threatening naval force was one of prevention and deterrence. Similarly, coercion through overt presence and shows of greatness was applied when "Roman fleets . . . visited the coasts of Africa."[4] Great-power deterrence, manifest in Mahan's history, can be considered a significant form of naval diplomacy. Even in antiquity Thucydides, author of that great foundation of strategic studies *The Peloponnesian War,* attributes the growth of Athenian power to its fleet and its limited sorties throughout the Aegean: "The navies [of] . . . the period," he wrote in the first chapter of the first book, were "the greatest power to those who cultivated them."[5]

Mahan, in a later work, a collection of articles published at the turn of the twentieth century, applied his own thesis to contemporary events. The Boxer Rebellion of 1898–1901 against Western imperialism in China, for example, threatened free trade and risked "the interest of the commercial nations and of maritime powers."[6] Without resorting to total war, the West used limited military force extensively. An eight-nation alliance mounted naval intervention, policing, and stabilization expeditions along the coast of China and inland up the major river systems, particularly the Yangtze, to quash the uprising.[7] Two forms of naval diplomacy can be seen at play in turn-of-the-century China: the show of limited force by the strong to the weak and the building of coalitions. In another series of essays Mahan expands on coalition building, discussing the "possibilities of an Anglo-American reunion" and seeing the opportunities for cooperative progress in the common ground of sea power.[8]

That some states were ready and able to mount sea actions while others were not is worthy of mention. Mahan identified character, both of a nation and of a government, as an essential element of sea power. The willingness to be "bold" and of an "adventurous nature," he asserted, is key. For the age of sail, in which he concentrated his analysis, he compared the characters of England and Holland, the outwardly focused nations of "shopkeepers," with that of France, with its trait of "prudence," concluding that the former were more likely to exercise sea power.[9] Today this characteristic could be expressed in policy terms as a willingness to be expeditionary; Mahan closely associates this active pursuit of national interest with image, flying the flag, and "prestige." Aggressively won "honor" and "prestige" at sea were not to be ignored; skirmishes on land would more often lead to war than would the flexing of muscles at sea, where, out of sight and unconstrained by geography, they could be used as timely reminders of power.

Mahan's "prestige" factor is perhaps comparable to the power of "attraction" in the more recent words of Joseph Nye, the leading thinker on soft and "smart" power in contemporary international politics.[10] According to Nye military force can produce "behavioral outcomes" even when not used in war: "Success attracts, and a reputation for competence in the use of force helps to attract."[11] Prestige and attraction are both about image and perception, not truth. Mahan again: "The decline of prestige may involve as much illusion as its growth; therefore its value, while not to be denied, may be easily exaggerated. Prestige then does not necessarily correspond with fact."[12]

For Mahan, if naval "prestige" were to be perceived to be of political utility to government it needed to be not only widely recognized but also carefully targeted, by timely geographical presence. Though his thesis is laid out in the context of the colonial powers of seventeenth- and eighteenth-century Europe, there are unambiguous parallels to other ages, including our own. Naval diplomacy, a form of wider political effort, is a means of communication in power relationships. Mahan's point was that national security in peacetime can be aided by a "decided preponderance at sea."[13] The influence of Mahan upon history cannot be overstated; it has been vociferously argued that his theories swayed the United States, Japan, and Germany, among others, in the early years of the twentieth century.[14]

Writing shortly after Mahan on the other side of the Atlantic, Sir Julian Corbett expanded further on the theories of naval warfare in his book *Some Principles of Maritime Strategy*. Like Mahan, Corbett did not specifically ally his principles to operations other than war; indeed, his work has been described as "weak" on law and order at sea in peacetime.[15] Instead he preferred to develop his ideas as "the principles which govern a war in which the sea is a substantial factor."[16] However, he did discuss "limited" war at some length;[17] it could be argued that his theories on blockade, both naval and commercial, and on the strategy of a "fleet in being" could be applied at different points on the spectrum of conflict and thus be effectively used as tools of coercive naval diplomacy.

One manifestation of coercion that Corbett examined was the "demonstration." He considered, for example, the success of a British fleet under Rear Admiral John Purvis cruising off Cádiz in 1808. Purvis's force, by presence, negotiation, and demonstrable capability, "encouraged" Spanish revolt against the French in a way that would not have been available to committed land forces.[18] Demonstration, in the modern sense, is about leverage, and Corbett uses Napoleon's words to underline its effectiveness:[19] "With 30,000 men in transports at the Downs [a relatively shallow area of the North Sea off the southeast coast of England] the English can paralyse 300,000 of my army and that will reduce us to the rank of a second-class power."[20]

The transports, of course, are naval.

A near contemporary and "disciple" of Corbett was the British admiral and theorist Sir Herbert Richmond.[21] "Sea power, in its full expression," he wrote, "is a form of national strength capable of giving weight to national policy."[22] As for his antecedents, Richmond's focus on war dominates his work, but his thoughts on the peacetime utility of naval force can be found in his pages. He attributes the expansion of the British Empire to naval power and sees it as a means to national greatness and, ultimately, peace: "All the greater naval nations assure the world that a great navy is the surest guarantee of peace; that it gives security against war, and is therefore a highly beneficial institution."[23] Richmond also alerts his readers to (albeit under different terms) other, nonmilitary, naval roles, such as humanitarian relief, noncombatant evacuation, and peace enforcement, which fit the broad continuum of naval diplomacy.[24]

It is evident that the writers of the classic naval texts understood the utility of naval forces in nonwar scenarios. Terminology may have changed, but "flying the flag" and "prestige" can be equated with influence and the exercise of soft power, while "gunboat diplomacy" and "demonstration" are effectively the forerunners of coercion and coercive diplomacy. Writing at the end of the nineteenth and beginning of the twentieth centuries, neither Mahan nor Corbett could possibly have placed his work in the context of the world a hundred years hence. As far as they were concerned, however, they were recording for posterity the enduring principles of maritime strategy—and in fact, with the benefit of hindsight, later historians added a different perspective that shows the views of the classic naval strategists to have generally stood the test of time.

Multipolarity in global affairs, the world order in Mahan's and Corbett's time, was often not as anarchic as might at first be assumed; it was generally accompanied by the presence of one dominant power. From the eighteenth century until at least the early twentieth, that dominant power was Great Britain, and the Royal Navy enjoyed command of the sea. Robert Keohane has coined the term "hegemonic stability" to describe the situation in which a wider peace is the result of the diplomacy, coercion, and persuasion of the leading power.[25] This period of Britain's dominance was commonly referred to as the "Pax Britannica."

Jeremy Black acknowledges the role the naval forces of the hegemonic power could play in maintaining the world order: "Throughout much of the nineteenth century, foreign expectations and fears about British power allowed Britain to get grudging unofficial recognition of the Pax Britannica, the doctrine of the Royal Navy keeping the peace of the sea for all to benefit."[26] The Royal Navy acted as a policy instrument of the state through military endeavor and constabulary action, playing, for instance, a decisive role in supporting the government's political objective of the abolition of the slave trade.[27] Some writers have labeled the British use of sea power during the Pax Britannica as "altruistic," but this rather

misses the point.[28] Britain maintained its leading position in the world through economic strength supported by military, predominantly naval, might. British sea power was used during the period very much in the national interest and thus as an instrument of state power, but the stability it provided was tacitly welcomed by other states as well; it was all the more effective for the Royal Navy's rarely having to resort to high-intensity warfare.

However, Britain's supremacy did not go unchallenged. The pre–First World War naval arms race with Germany, with both sides resorting to using their fleets for geopolitical gain, is well documented. In Germany, Alfred von Tirpitz's vision, as State Secretary of the Imperial Navy Office, of maritime ascendancy inspired the national leadership;[29] Kaiser Wilhelm II gave an "imperial performance" to mark Germany's intent to be a world power while at Tangier during a Mediterranean cruise in 1905.[30] In the United Kingdom the "Navy Scare" of 1909 (sparked by news of the acceleration of the German naval building program) was used to justify huge increases in the numbers of the Royal Navy's dreadnoughts.[31] Similarly, at the beginning of the twentieth century the United States sought to claim its place as a first-rank power largely through the expansion of its own navy. Henry Hendrix has documented the rise of the aspiring power in his *Theodore Roosevelt's Naval Diplomacy,* which uses a series of case studies to demonstrate the utility of the naval forces available to the government. Many of the instances were coercive in nature, such as the defense of the Panamanian revolution in 1903 when the province was attempting to gain independence from Colombia, and the heavy-handed deployment of a squadron to Tangier after the kidnapping of an American citizen in Morocco in 1904.[32] The crowning glory of the U.S. Navy at the time and the soft-power counterbalance to its coercive diplomacy was in sailing the "Great White Fleet" on a round-the-world influence mission, 1907–1909.[33]

CABLE, GORSHKOV, AND NAVAL DIPLOMACY IN A BIPOLAR WORLD

Naval diplomacy continued through the two world wars of the twentieth century, but the political climate of the Cold War perhaps placed more stringent limits on the use of force, certainly between the major blocs, as the strategic focus turned to nuclear deterrence. Though greater utility was attached to the diplomatic role of the military instrument, little academic attention was directed that way; one exception was the work of Sir James Cable. Cable was instrumental in moving the understanding of naval diplomacy forward, but he was essentially a Cold War writer. Though the period of his analysis, presented in three editions of his seminal work *Gunboat Diplomacy,* ran from the end of the First World War to the early 1990s, it was inevitably viewed through a prism of state-to-state relations.

Coercive by definition, his gunboat diplomacy was always "done" by one side to another. It is telling that Cable narrowly defined "gunboat diplomacy" as "the use or threat of use of limited naval force, otherwise than an act of war, in order to secure advantage or to avert loss, either in the furtherance of an international dispute or else against foreign nationals within the territory or the jurisdiction of their own state" and that he chronicled each of the incidents through the seven decades of his study in terms of an "assailant" and a "victim."[34] But the reality can be more complex, with a multitude of stakeholders, be they domestic audiences or the international community, directly or indirectly involved in every "incident." Binary it is not.

The robust language used by Cable, a professional diplomat, is an enduring characteristic of his work. He believed that coercion was implicit in most aspects of international relations and that if a government is willing to "reward friends and to punish enemies its wishes will at least receive careful consideration."[35] This realist perspective reflects the dominant thinking of the latter half of the Cold War:[36] "To be coercive a threat must be more than a generalised prediction of disastrous consequences, however plausible, in the immediate future. It must express readiness to do something injurious to the interest of another government unless that government either takes, or desists from or refrains from some indicated course of action."[37]

The realist approach also provides a framework within which his model explains coercion at sea. To Cable, gunboat diplomacy could be categorized among four modes, which he discusses in descending order of effectiveness. *Definitive force* he explains as an act or threat of force possessed of an authoritative purpose apparent to both sides. The intent of the employing force must be recognized as limited and must be considered tolerable by the recipient, the "victim"—that is, more desirable than resort to war:[38]

> A government embarking on an act of genuinely limited force should thus have a reasonable expectation that force initially employed will be sufficient to achieve the specific purpose originally envisaged without regard to the reactions of the victim, whose options are thus confined to acquiescence, ineffectual resistance or a retaliation that can only follow, and not prevent, the achievement of the desired result. In such cases, the use of force is not merely limited but is also definitive: it creates a *fait accompli*.[39]

Purposeful force, according to Cable, is less direct and less reliable than definitive force.[40] He explains it as limited naval force applied in order to change the policy or character of a foreign government. In itself, he wrote, the force does not do anything; it acts to induce the recipient to take a decision that would not otherwise have been taken.[41]

Catalytic force was described by Cable as a case in which limited naval force "lends a hand" so as to catalyze a situation the direction of which has yet to reveal itself.[42] In essence, he explains it as an act undertaken when there is an underlying feeling that "something is going to happen."[43] Less effective than either definitive or purposeful force, it is more likely, he claimed, to result in failure. Cable is rather ambiguous about the use of catalytic force and labels as such few of the incidents listed in his chronological appendix. One of those few is the bombardment of targets in Beirut by the battleship USS *New Jersey* in 1983, when peacekeeping forces were under threat ashore, though this and other cases could be just as easily be placed in another of Cable's categories.[44]

The final mode of gunboat diplomacy is that in which warships are employed to emphasize attitudes or to make a point—*expressive force,* which Cable readily dismisses as "the last and least of the uses of limited naval force," promising only vague and uncertain results.[45] Cable explains how the "purposeful" can descend into the "expressive" for reasons of domestic political necessity.[46] His justification for including expressive force as a category was simply that it was commonly employed, affording governments vehicles for visual manifestation of their positions with little political commitment. Effectively, however, his justification underlines the particular advantages of naval forces as communicative tools and runs counter to his own low opinion of their worth in that capacity.

The first edition of *Gunboat Diplomacy,* published in 1971, received praise that was still alive thirty-five years later. Richard Hill, for instance, opined in 2006 that Cable's work "sharpened to a point the theory and experience of 'effectiveness short of war' and reminded navies of what they had been *doing* rather than what they had been training for."[47] Subsequently, the 1970s saw if not a torrent, at least a stream of other works building the understanding of naval diplomacy in the West, the most notable of which were by Edward Luttwak and Ken Booth.

Luttwak, an American strategist, published *The Political Uses of Sea Power* in 1974. The book, though short, ranges widely and debates the use of armed forces in general before settling on naval power. Rather than be constrained by concepts such as coercion and deterrence, Luttwak adopts the term "suasion" to frame his arguments. Suasion, he writes, is a "conveniently neutral term . . . whose meaning suggests the indirectness of any political application of naval force."[48] Under the umbrella of naval suasion Luttwak placed a spectrum of operations, from routine deployment to "deliberate action." At what might be called the "softer" end, where he situates routine deployments, navies can deliver local deterrent or supportive functions. Luttwak labels this end of the spectrum "latent suasion," and it correlates well with Cable's expressive force; some later commentators subsumed it into wider defense diplomacy. Deliberate action, the "active" side of Luttwak's spectrum, corresponding to definitive or purposeful force in Cable's terminology,

was further broken down into the positive and negative of coercive elements—respectively, compellence and deterrence.[49]

Luttwak's work was very much a product of the Cold War and was obviously influenced by Cable and the theorist Thomas Schelling (both are acknowledged), but it is perhaps less politically impartial than that of the earlier writers. Luttwak discussed differences in perceptions of military strength between the Western and Eastern blocs as U.S. "self-denigration";[50] he criticized "declining" American influence in the Middle East;[51] and he identified increasing multipolarity during the 1970s détente—a conclusion that seems prescient if somewhat premature when read nearly four decades later.[52]

Edward Luttwak certainly added to the debate on naval diplomacy in the 1970s. However, he did not enjoy the same success among practitioners as did other commentators, like Cable, whose work fed directly into the maritime doctrines of most Western navies, perhaps because the basis of Luttwak's theory of "suasion" was in practice its main limitation. Luttwak robustly emphasized the importance of image and perception over capability, dedicating a whole chapter to "visibility and viability" and arguing, for instance, that "to frighten South Yemen or encourage the Sheik of Abu Dhabi one does not need a powerful sonar under the hull or a digital data system in the superstructure."[53] The proposition had merit but did not necessarily fit into the political or military narrative of the time. Critics have dismissed with relative ease such assertions as simplistic, pointing to a range of examples of perceived weaker navies who have succeeded over stronger maritime powers. A case in point was the success of the Icelandic Coast Guard against Britain during the "Cod Wars."[54]

Ken Booth's *Navies and Foreign Policy,* published in 1977, drew on Luttwak's ideas, which he acknowledged as "useful," but went farther.[55] The work is significant in that it introduced the "trinity of naval functions," a phrase that has since been incorporated into the formal doctrine of the British, American, Canadian, and Australian navies, among others.[56] The concept suggests that naval forces have three main roles: military, policing, and diplomatic. Within the diplomatic role, which Booth defines as "concerned with the management of foreign policy short of actual employment of force," a state's political objectives are realized through subsidiary means: negotiation through strength, manipulation, and prestige.[57] The latter, he concedes, is "invariably a by-product" of the others.[58]

Booth approached the utility of navies from a functional perspective and identified seven key characteristics of warships as diplomatic instruments: versatility, controllability, mobility, projection ability, access potential, symbolism, and endurance.[59] Taking the characteristics and applying them to operations, he posited five basic tenets of naval diplomacy, which he subdivided into two groups. The first group, which he termed "naval power politics," encompassed

standing demonstrations of naval power and specific operational deployments. The second group, "naval influence politics," consisted of naval aid, operational visits, and specific goodwill visits.[60] It is worthy of note that Booth's understanding of naval diplomacy, contrary to Cable's, gravitates to the less coercive end of the spectrum. If fitted to Luttwak's model it tends toward latent suasion.

As Western thinkers debated naval diplomacy, discussing themes from coercion to cooperation, Eastern bloc opinions were also forming. Admiral of the Fleet of the Soviet Union Sergey Gorshkov, the "architect" of the Cold War fleet of the Union of Soviet Socialist Republics (USSR), personally guided the development of the navy for nearly thirty years, capturing in the late 1970s his thoughts in his major work, *The Sea Power of the State*.[61]

His theory was born out of study as well as observation and experience. Gorshkov was a student of naval history, certainly patriotic, and a keen watcher of the West.[62] In his discussion of the development of the Soviet fleet he was unambiguously nationalistic and defensive; indeed, the opening chapter of his book is an out-and-out attack on imperialism and capitalism. However, it is striking how Gorshkov used examples of the West's successful diplomatic use of navies to convince the leaders of the land-focused USSR of the utility of sea power. Gorshkov implied that Soviet naval growth after 1945 had been in direct response to American naval advances and not simply designed for the furtherance of Soviet foreign policy.[63] Nonetheless, he used his knowledge of Western maritime strategy to introduce a forward-presence mission to a fleet that had traditionally concentrated on coastal defensive tactics. He intuitively understood that the navy could be extremely useful in operations other than war: "Demonstrative actions by the navy in many cases have made it possible to achieve political ends without resorting to armed struggle. . . . The navy has always been an instrument of the policy of states, an important aid to diplomacy in peacetime."[64] Also, mirroring other naval thinkers, he associated maritime strength with national prestige: "The strength of the fleets was one of the factors helping states to move into the category of great powers. Moreover, history shows that states not possessing naval forces were unable for a long time to occupy the position of a great power."[65]

What is clear is that Gorshkov's work was written primarily for a domestic audience and that he was very aware of the benefits of military strength in nonwar scenarios. However, what is also apparent is that his vision was largely reactive and followed developments in the West. He saw NATO as "an alliance of maritime states, with powerful naval forces occupying advantageous strategic positions in the World Ocean."[66] He used strong rhetoric to illustrate the threat he perceived: "For over a century, American imperialism used the navy as the main instrument of its aggressive foreign policy in line with prevailing tradition and was impressed by the concept of sea power which was presented as an irreplaceable means of achieving world dominance."[67]

The true intention of Western sea power in peacetime, he wrote, was "gun diplomacy."[68] This assertion was, of course, not necessarily an ill-informed insult. The importance of sea power in "achieving world dominance" was already a generally accepted concept. Gorshkov used the term "local wars of imperialism" to encapsulate his interpretations of Western strategy and offered the view that naval forces were the most suitable instruments for that strategy because of their mobility, persistence, independence, and ability to be deployed or withdrawn at will.[69] Though Gorshkov used the attributes in his analysis of NATO strategy, they are recognizable, even universal, and equally applicable to his own forces of the time. "Local wars of imperialism" was a politically charged term, but the sense is familiar—it can be equated to that of the "limited wars" or "limited use of naval power" of Cable's *Gunboat Diplomacy*.

However, unlike Cable's, Gorshkov's notion of naval diplomacy was not entirely adversary centered. He was not unaware of its coercive potential, but he saw one role of sea power as that of "holding in check" allies to manage or maintain power relationships.[70] He was particularly intrigued by the United Kingdom–United States relationship and thought it "interesting" that the United States had achieved its position of relative maritime preeminence through close partnership with Britain, a position that Germany had failed to reach through confrontation.[71] Mahan would have been pleased.

Emphasizing the soft-power potential of naval diplomacy, Gorshkov built up a fleet that not only was a credible fighting force but deployed to nontraditional operating areas with a forthright agenda to extend communist influence:

> The Soviet navy is also used in foreign policy measures by our state. But the aims of this use radically differ from those of the imperialist powers. The Soviet navy is an instrument for a peace-loving policy and friendship of the peoples, for a policy of cutting short the aggressive endeavors of imperialism, restraining military adventurism and decisively countering threats to the safety of the peoples from the imperialist powers. . . . Soviet naval seamen . . . feel themselves ambassadors for our country. . . . Friendly visits by Soviet seamen offer the opportunity to the peoples of the countries visited to see for themselves the creativity of socialist principles in our country, the genuine parity of the peoples of the Soviet Union and their high cultural level. In our ships they see the achievements of Soviet science, technology and industry.[72]

Though the language of the blocs was very different, the understanding and tactics of naval diplomacy during the Cold War were broadly similar in East and West. There are dozens, if not hundreds, of examples of the use of naval diplomacy during the period. Analysis was scant—the writers of the time were busy writing about deterrence and the means to prevent the Cold War becoming "hot." Nonetheless, from coercion to reassurance to cooperation, the superpower navies were seen to have utility as instruments of state power beyond their primary warfighting role.

NAVAL DIPLOMACY IN THE POST–COLD WAR WORLD

The period since 1990 has been one of transformation and uncertainty in geopolitics. The collapse of the Warsaw Pact and dissolution of the USSR were arguably the principal catalysts for change, but there were other milestones, in social, political, economic, and cultural spheres. The inexorable rise of China and India, the financial crises in the West, the normalization of liberal intervention and subsequent backlash of nationalist movements, insurgency, and anti-Western terrorism have all played their part, as has the ever-ramifying web of commercial interactions, linkages, and interdependencies known as globalization.[73]

In a "postmodern" era that has been characterized variously as the "end of history" and the "clash of civilizations" there has been no shortage of comment and conjecture;[74] indeed, it could be argued that grand-strategic reevaluation is the norm following each great transformation of global politics. The First World War, for instance, marked a shift from balance-of-power politics to the pursuit of collective security through international systems for peace, such as the League of Nations.[75] Similarly, at the end of the Second World War Sir William Beveridge discussed the place of armed force, in his *The Price of Peace*. Three general principles, he argued, should govern force: it must never be used for national purposes, the rights of each nation must not depend on whether it is armed or the scale of its armaments, and yet there must be sufficient arms in the world to enforce the rule of law and keep wrongdoers in order.[76] Such words may seem naïve today, and they certainly did not predict the reality of the coming Cold War, but the context of the time in which they were written was marked by a very different perception, one based on optimistic expectation and shaped by what had gone before. In the same way, the plethora of immediate post–Cold War writing may not appear quite so insightful in the decades to come.

If Cold War naval diplomacy was understood by practitioners and commentators as a means to maintain bipolar balance through coercion, reassurance, and image management, its post–Cold War expression was not quite so definitive. The new era was a period of change, and for a time in the 1990s one of the major blocs, the former Soviet Union—that is, its remnant the Russian Federation—all but ceased naval activity on grounds of affordability, while the other sailed the world's oceans unopposed.[77] The change in global politics inevitably took time to unpick, and as the remaining established navies continued to conduct "business as usual" their professional leaderships and academia debated their collective place in the new world order.[78] In a reinvestigation of coercive diplomacy, Peter Viggo Jakobson concluded that in general terms the theory stood but that it needed refinement, particularly in acknowledging the use of "carrots" as well as "sticks."[79] Some commentators were quick to go farther. Michael Pugh, for instance, stated that "navies are no longer accurate measures of national power"

and that "power, even symbolically, can no longer be solely equated with the barrel of a gunboat."[80]

The U.S. Naval War College has published a series of monographs looking specifically at American naval strategy through the transitional periods of the 1970s, '80s, and '90s.[81] The latter decade stands out because of the scale and pace of development in strategic thought.[82] Throughout, naval diplomacy was an acknowledged feature of American strategy and was much discussed, though often under the banner of "forward presence":

> Forward-deployed naval forces help preserve U.S. influence overseas, even in places where we have no bases or political access. They enhance our ability to deter aggression, promote regional stability, strengthen diplomatic relations abroad and respond quickly to crisis. Naval forces provide policy makers with unique flexibility. We can quickly reposition a powerful fighting force off the coast of a country, out of sight to influence subtly or within sight to make a strong statement.[83]

Forward presence, Robert Wood, then dean of Naval Warfare Studies at the Naval War College, stated in 1993, "is something we need to define in terms of meaning and degree as well as in terms of other names used for it throughout history."[84]

Similar reassessments also took place elsewhere. In the United Kingdom, the Royal Navy in the 1990s formally published its doctrine for the first time, with an acknowledgment of naval diplomacy. Eric Grove, discussing his part in writing the first edition of *British Maritime Doctrine,* stated, "We were not completely satisfied with Sir James Cable's taxonomy of 'gunboat diplomacy' for the purposes of doctrine and instead adopted 'presence,' 'symbolic use,' 'coercion,' and 'preventive, precautionary and pre-emptive naval diplomacy.'"[85] Indeed, language is key; Canada similarly attempted to distance its doctrine from "gunboat" diplomacy, which it called a "pejorative" term, preferring instead "preventive deployments, coercion, presence and symbolic use."[86]

The argument for naval diplomacy and forward presence appeared compelling with respect to the age of intervention but its value was limited by its focus on the naval forces of the West. Like other aspects of international-relations thought, it suffered from Western-centricity.[87] In the early days of the aftermath of the Cold War virtually no attention was given to the navies of the rising powers—a shortfall that has since been addressed.

In 2007 the Indian navy deployed a squadron of warships to Singapore, Yokosuka, Qingdao, Vladivostok, Manila, and Ho Chi Minh City. The deployment—a departure from previous Indian operating norms—bore, as the naval theorist Geoffrey Till remarked, "more than a passing resemblance to the famous cruise of Theodore Roosevelt's Great White Fleet before the First World War." The cruise delivered little in terms of specific exercises but was conducted "for general

purposes of greatness." Specifically, there is undoubted rivalry between India and China in the region, and the deployment was the clear staking of a claim of regional dominance by the Indians.[88]

Whether the Indian deployment was in reality different from the naval activity of the superpowers during the Cold War, representing a return to an older modus operandi, is uncertain. What is evident, however, is that naval diplomacy was alive and well at the turn of the twenty-first century, and not just by the global hegemon. Malcolm Murfett, one of a new generation of commentators beginning to question the significance of naval diplomacy, comes to the same conclusion: "One of the reasons why it still has relevance in the modern world is because it can be used on a wide variety of occasions to achieve certain tangible results."[89]

China achieved such a "tangible result" when in 2008 it announced the dispatching of two destroyers and a support ship to the Gulf of Aden for counterpiracy operations. The deployment, though small by Western standards, demonstrated the ability of China's navy to operate credibly and sustain a force at a distance and for a period that had previously been assumed to be beyond its capability. The People's Liberation Army Navy "compelled Western observers to revise their once-mocking estimate of Chinese aptitude for naval expeditionary operations."[90] Once again we hear mention of the outward character of a rising power. When Western analysts, notably in the China Maritime Studies Institute at the U.S. Naval War College, turned their attention to the East they found there had been in China a surge of interest in maritime affairs and in the theories of Mahan—interest that, viewed in concert with Indian and other Asian maritime expansion programs, pointed to a prospect of a "reconfiguration of maritime power" in the region and, by extension, globally.[91]

The literature shows that naval diplomacy has been used since man first put to sea in ships and that its history can be traced down through the years ever since. However, until the middle of the twentieth century, strategic naval writing tended to focus on *military* capability at sea, even though the political benefits of the threat of force, the use of limited force, and "showing the flag" were well known and implicitly understood. Naval diplomacy before the Second World War was primarily studied by those maritime states with global ambitions, who practiced it to coerce, reassure, and promote their own images. The bipolarity of the Cold War did little to change the purpose and tactics of naval diplomacy, but its use, for the most part, became ever more limited to the major seafaring states in the Western and Eastern blocs. Strategic thought in that period was anchored by superpower confrontation, but interest in naval diplomacy as a separate topic grew, particularly in the 1970s. The aftermath of the Cold War saw a transformation in world politics and a reassessment of the utility of force in general. Naval

diplomacy continued; indeed, its use expanded with the increase in the number of maritime stakeholders. If we look to the future we may start to see new aspects of an old role; ballistic-missile defense at sea, theater security cooperation, humanitarian assistance and disaster relief, enforcement of no-fly zones, forward presence, and global fleet stations are all forms of postmodern naval diplomacy. As the strategies of the sea powers still testify, there is always advantage to be had from a "decided preponderance at sea."

NOTES

1. Ken Booth suggests a "trinity" of naval roles—military, policing, and diplomatic. This model has since been adopted by numerous Western navies and incorporated into doctrine. Ken Booth, *Navies and Foreign Policy* (London: Croom Helm, 1977), p. 15.
2. Alfred T. Mahan, *The Influence of Sea Power upon History* (Boston: Little, Brown, 1890; repr. Mineola, N.Y.: Dover, 1987), p. 22.
3. Ibid., p. 16.
4. Ibid., p. 21.
5. Thucydides, *The Peloponnesian War* (Harmondsworth, U.K.: Penguin Classics, 1954), pp. 36–76.
6. Alfred T. Mahan, *Retrospect and Prospect: Studies in International Relations, Naval and Political* (Boston: Little, Brown, 1902), pp. 32–33.
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GERMAN WAR GAMING

Milan Vego

A tedious war game is the grave of interest.
GENERAL ALBERT KARL FRIEDRICH WILHELM VON BOGUSLAWSKI (1834–1905)

The Germans invented and developed the modern war game. By the end of the nineteenth century, the German-style *Kriegsspiel* had been adopted in most of the major militaries of the day. In the interwar years (1919–39), the Germans greatly increased the number and diversity of war games, which collectively became one of the main means of educating and training future commanders and their staffs at all levels. Prior to and during World War II, the Germans proved to be masters of the use of war games throughout the chain of command for rehearsing plans for pending and future operations. In peacetime, they used war games to test the validity of new doctrinal documents and for force planning. Though German methods of organizing and executing war games cannot and should not be blindly followed, yet many aspects of their practice could be successfully applied today. Moreover, the role and importance of war gaming should be greatly enhanced in the present era of smaller forces and shrinking financial resources.

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THE ROOTS

The rudiments of war games go back to the Gupta Empire (550–320 BC) in India, where a chesslike game, *chaturanga*, was invented.[1] (Some other sources say that a chesslike game, *xianggi*, originated in China.) In the seventh century AD, *chaturanga* was adopted in Sassanid Persia (AD 224–651) as *chatrang*. After

the Arab conquest of Persia in the seventh century, this game became known in Arabic as *shatranj.* In the ninth century, *shatranj* found its way to Byzantium.[2] The North African Moors spread a derivative of *shatranj* to the Iberian Peninsula. Around 822 the emir of Córdoba, in Andalusia, was introduced to the game by a Persian Muslim.[3] This game became known as *ajedrez* in Spanish, *xadres* in Portuguese, and *zatrikion* in Greek. The game was introduced to Western Europe generally by Muslim merchants; its Arabic name was replaced by the Persian *shāh* (king), or *shah mat* (the king is dead), eventually becoming "check" or "chess" in English. The game spread to Switzerland in 997, the northern part of Christian-dominated Spain in 1008, southern Germany in 1050, and central Italy in 1061. By 1200, the game had been adopted in Britain and Scandinavia.[4]

"Courier chess" was played in Germany at the beginning of the thirteenth century.[5] It was first mentioned in the great Arthurian romance *Wigolois,* by Wirnt von Gravenberg, in 1202.[6] Courier chess was described in some detail in a travel account by Kunrat von Ammenhausen in 1337.[7]

In 1616, Duke August II of Brauenschweig-Wolfenbuettel (or Lueneburg, 1579–1666) published under the pseudonym "Gustavus Selenus" *Das Schack-oder Koenig-Spiel* (Chess Game or King's Game), in which he gave a detailed description of courier chess as taught in schools and played in the small village of Strobeck. In 1644, Christopher Weikmann of Ulm, in Bavaria, invented a modified game of chess, which he explained in his *Neu-erfundenes grosses Koenig-Spiel* (Newly Invented Great King's Game).[8] Each player had thirty pieces, and each piece had fourteen different fixed moves, similar to those in modern chess.[9] Weikmann's game, called "war" (or "military") chess, was designed to serve not only as a pastime but also as a means of studying the military and political principles of the time. Weikmann's game was extremely popular among Germans.[10]

A significant development came in 1780, when Dr. Johann Christian Ludwig Helwig, master of pages at the court of the Duke of Brunswick, invented the "King's Game" *(Koenigspiel).* Helwig's game used a modified chessboard with 1,666 squares, in various colors, each color representing a certain terrain feature, such as flat ground, mountain, marshes, forests, lakes or ponds, a building, villages, etc. A dotted line divided the chessboard into two camps and marked the frontier between them.[11] As in chess, each piece was named for a character common in the political and military world of the day (king or marshal, colonel, captain, lieutenant, chancellors, heralds, knights, couriers, adjutants, bodyguards, halberdiers, and private soldiers).[12] The King's Game was meant to encourage young noblemen to think about important military questions and to teach them basic elements of military art and science.[13] Helwig's game became very popular in Germany and was quickly introduced by the militaries in France, Austria, and Italy.[14]

The "New War Game"

Between 1780 and 1824 occurred several significant developments in military gaming. In 1797, Georg Venturini, a military theoretician and tactician from Schleswig, invented the "New War Game" *(Neue Kriegsspiel).*[15] It was based on Helwig's game but with much more numerous, detailed, and complex rules.[16] A year later Venturini transferred the game from the chessboard to a chart, thereby converting it into something that could be further developed.[17] By 1804 his game had undergone several revisions. Venturini expanded Helwig's grid system to 3,600 squares, each representing one square mile and colored to indicate the terrain within it. In contrast to other games then in use, Venturini's used stylized maps and so represented a major change from the rigid chessboard.[18]

This advance was made possible by the recent advent of precise maps. In 1727 the Dutch engineer Nicholas Cruquius had drawn the bed of the Merwede River with lines of equal depth (isobaths) at intervals of one fathom; a French geographer, Philippe Buache, had used a similar method, with ten-fathom intervals, in a chart of the English Channel prepared in 1737 and published in 1752. The same technique had thereafter been adapted to the terrain maps.[19]

In Venturini's game, pieces and moves approximated the ordinary marches of troops. The terrain was not fictional but represented actual territory between France and Belgium. A sixty-page rule book governed reinforcements and logistics.[20] The playing pieces represented not only infantry and cavalry but also various supporting arms and equipment. Venturini even included restrictions on movement during winter months and incorporated the effects of proper support and provisioning of combat arms.[21] His game gained popularity in Germany, Austria, and Italy.[22]

In 1811 a Prussian counselor at Breslau, Georg Leopold Baron von Reisswitz, devised a war game on a sand table, with terrain modeled to the scale of 1 : 2,373. The game was described in his *Anleitung zu einer mechanischen Vorrichtung um taktische Manoevers sinnlich darzustellen* (Introduction to a Mechanical Gadget to Sensory Depiction of the Tactical Maneuver). Reisswitz's game had a maximum of ten players on each side, neither side knowing about the moves of the other.[23] Troops were represented by squares of wood on which pasted symbols indicated various branches of service.[24] Reisswitz's game was played in a way similar to previous games, except that the movement of the troops was not restricted to chessboard squares; maneuvering and the marching of columns were much more realistic than before.[25] Reisswitz also used a realistic-looking terrain. The game was directed by an umpire, or referee, known as a *Vertrauter* (confidant), with several assistants. The umpire determined the course of the game after evaluating movements and adjudicating decisions made by the players. Limited information was given to each commander regarding the strengths and disposition of the

opposing side, the state of roads, the season of the year, and the supply situation.[26] Each player would submit orders to the umpire, who updated the terrain table and told the players only what they would know at that point in an actual situation. The actions in the game progressed until victory could be declared for one side or another. To determine casualties, the umpire consulted complex tables that indicated likely attrition on the basis of characteristics of terrain, firepower, and other factors.[27]

Reisswitz was fortunate to come in contact with a Prussian officer by the name of von Reiche, who was the captain of cadets at the Berlin garrison. Reiche was responsible for instructing Prince Friedrich and Prince Wilhelm (later king and kaiser, respectively) in the art of fortification. He mentioned Reisswitz's game to the princes, who promptly petitioned for a demonstration for themselves and other invited officials at the castle in Berlin where they lived. Both princes enjoyed the game and told their father, King Friedrich Wilhelm III (1770–1840), about their experience. Witnessing a demonstration himself, the king was fascinated by this new and more accurate representation of war.[28]

Reisswitz's son, Lieutenant Georg Heinrich Rudolph Johann von Reisswitz, further improved the New War Game, describing the changes in his *Anleitung zur Darstellung militaerischer Manoever mit dem Apparat des Kriegs-spiels* (Instruction for Representation of Military Maneuvers under the Guise of a War Game, 1824).[29] Among other things, he replaced the sand table with a large-scale map (1 : 8,000) showing the gradient angles of mountains and valleys.[30] For the first time, combat with battalion-sized forces was simulated.[31] The junior Reisswitz recommended that the number of the players on each side be kept to four. His game was the first to use red and blue color coding for the opposing sides, a system still used today. The game would require at least two umpires, one for conducting the movement of troops and the other for determining the outcomes of attacks and recording losses.[32] The umpires were responsible also for devising a realistic and interesting initial situation.[33] They would present a "general idea" or "outline" of the situation (in modern terms, a scenario) to the players indicating the positions of the main body of troops of both sides and giving reasons for players to conduct moves on the board.[34] If there was more than a single player on each side, one would be commander in chief and the other the commander of a major part of the force, such as the main body or vanguard. A commander would submit a written plan to the umpire containing the intended maneuver, orders to individual units, orders given to other players, the intended final position of troops, etc.[35] Reisswitz quantified the effects of combat, so that results of engagements were precisely calculated rather than debated. Rules covered virtually every contingency of operations of units up to the size of divisions and corps.[36]

A great novelty in the younger Reisswitz's war game was that it emphasized the importance of general-staff officers.[37] General Karl von Mueffling (1775–1851), chief of the general staff (1821–29) in Prussia, exclaimed, "It's not a game at all! It's training for war. I shall recommend it enthusiastically to the whole army."[38] He fulfilled that promise: a royal decree directed every regiment in the Prussian army to play the game regularly.[39] By the end of the 1820s each Prussian regiment was purchasing with state funds materials for war gaming.[40] The junior Reisswitz's game was accepted by many Prussian officers, although there were initially many detractors.[41] Mueffling used staff rides, terrain studies, sand tables, and war games for educating staff officers in the assessment of a situation to solve tactical and strategic problems.[42] Numerous war-gaming clubs sprang up in Germany. In 1828, Helmuth von Moltke, Sr. (1800–91, later a field marshal), joined such a club.[43] However, Reisswitz's game was often played in a very mechanical and superficial manner, because of lack of understanding by those who directed them.[44]

The Moltke Era

By the 1850s the *Kriegsspiel* had gained great popularity in the German military and some interest in the militaries of other countries. In the second part of the nineteenth century, logistical and fortification war games were developed in the Prussian (then German) army.[45] The elder Moltke's tenure as the chief of the general staff (1857–88) saw the start of systematic education and training of future operational commanders through war gaming. Between 1858 and 1881 he personally led annual "exercise rides" *(Uebungsreise),* combining gaming and rigorous on-site investigations, aimed not only to enhance the operational thinking of general-staff officers but also to test and refine operational plans prepared for various contingencies. The rides and games were based on the real political-military situation of the time, enriched by historical excursions, especially valuable to young officers.[46] War games had a positive impact on the combat preparedness of the Prussian army. For example, General Kraft, Prince zu Hohenlohe-Ingelfingen (1827–92), would write, "The ability to quickly arrive at decisions and the cheerful assumption of responsibility which characterized our [Prussian] officers in the Franco-Prussian War of 1870–71 was in no small measure due to the war games."[47] After that war, the German style of war gaming was gradually adopted by the Austrian, Russian, British, French, Italian, American, and Japanese militaries.

Until the 1870s, war games were unpopular among the Prussian and German officers themselves. They were cumbersome and time consuming, because of overly complicated rules and adjudication processes, which made the games less interesting for the players. The leading proponents of these "rigid" war games were W. von Tschischwitz, Thilo Wolf von Trotha, and von Neumann.[48] They

tried to systematize further and improve the rules and further improved methods for calculating losses.[49] This situation changed—slowly at first, but then radically—with the introduction of the "free war game" *(Freie Kriegsspiel),* in which professional judgment substituted for rules. War games became more popular and were played more often.[50] The most influential proponents of the free war gaming were Major (later General) Klemens Wilhelm Jacob von Meckel (1842–1905) and Colonel (later General) Julius von Verdy du Vernois (1832–1910). They argued that umpires should render decisions based not on rules but on tactical experience. Meckel in his *Anleitung zum Kriegsspiel* (Instruction to the War Game, 1875) proposed that the director be freed from some rules, though not in assessing the effects of fire.[51] He was not ready to make a complete break with the rigid style of gaming.[52]

In 1876 Verdy published *Beitrag zum Kriegsspiel* (Contribution to the War Game), borrowing many ideas that Meckel had planned to elaborate on in his projected but unfinished three-volume work.[53] Like Meckel, Verdy was concerned that war gaming still faced resistance among German officers. He saw the reason in the difficulty for beginners of handling tables, calculating losses, etc.[54] The essence of Verdy's approach, in contrast to that of the junior Reisswitz, was to strengthen the role of umpires by eliminating all written rules.[55] Verdy wrote that war games should be conducted on the principles Moltke had used to decide outcomes during staff rides.[56] Moltke had not determined an outcome by a roll of dice but on the basis of his expertise, experience, and judgment. The same should be done, Verdy argued, in a war game.[57]

Verdy's game required a detailed map (scale 1 : 12,000) and a general map at a much smaller scale (1 : 2,000–3,000), plus blocks, scales, and dividers. The players were divided into two opposing groups, with an umpire and an assistant if necessary in control. The umpire briefed the players (perhaps on the day prior) on the general situation, providing only such information as would readily be available to both sides in actual combat—weather, location, etc. A specific situation was outlined for each of the sides, again with only such information as would normally be possessed by the commander to whose operations it was relevant.[58] Initial orders and dispositions were then submitted to the umpire by each side.

In the 1870s, the Germans began to differentiate among three types of war game: the "small war game" *(Kleine Kriegsspiel),* "large war game" *(Grosse Kriegsspiel),* and "strategic war game" *(Strategische Kriegsspiel).* A small game was conducted to test the effect of the fire of units, down to the smallest it was possible to evaluate. The forces were limited to four to six companies, one or two cavalry squadrons, and a quarter or a half of a battery.[59] A large game encompassed the tactical exercise of forces up to an army division. A strategic game was conducted by general-staff and senior officers for operations by army

corps.[60] The first strategic war game had been conducted in 1848 in Berlin, under the direction of Lieutenant Colonel (later General) Vogel von Falckenstein. The scenario was a war between Prussia and Austria, and the game made an extraordinary impression.[61]

In the 1880s, the Germans conducted small games, known as "regimental war games," simulating the employment of tactical-sized forces at each regimental headquarters once per month and over the winter.[62] Large war games were conducted chiefly for divisions and the study of their transportation and supply problems, by senior regimental, divisional, and corps staff officers. General-staff officers played strategic war games, encompassing the operations and employment of armies.[63]

The Schlieffen Era and World War I

During his tenure as the chief of the Great General Staff (1891–1906), Field Marshal Alfred von Schlieffen (1833–1913) extensively used staff rides and war games to educate higher commanders and their staffs and rehearse his war plans. He led sixteen rides to Germany's western border and fifteen to the eastern. Each ride lasted ten to fourteen days. In these rides two teams of twenty-five to thirty-five general-staff officers each, of all grades, played against each other. The rides were not social excursions but very intense evolutions; the staff officers worked long hours.[64] All of Schlieffen's games involved two-front warfare with France and Russia, sometimes also Great Britain. Thus, he assumed that the German army would face a numerically superior enemy.[65]

Schlieffen's war games were based on the plans being developed for war. The aim was to ensure that senior commanders were thoroughly familiar with Schlieffen's strategic ideas and that each general-staff officer knew how he judged Germany's strategic situation. The games also enhanced the ability of each general-staff officer to pursue the common approach once war broke out, whether or not he had intimate knowledge of Germany's deployment plan.[66] Schlieffen generally conducted two general-staff rides per year, in June and October. He conducted follow-up tactical-strategic problems on issues identified that he thought needed elaboration. They were played mostly from the perspective of the Red side—that is, Germany's opponent.[67]

In 1897, Schlieffen started to rehearse his plans for an invasion of France through Belgium. These games ended routinely with the encirclement of the French army. The entire focus was on the operational aspects of the German offensive; in none of them did Schlieffen consider the possible political and economic consequences of an advance through neutral Belgium.[68] (Some sources claim that he actually recognized the consequences of violation of Belgian and Dutch neutrality but misjudged the British attitude toward these countries.)[69]

The war game conducted in 1905 is the only one for which full documentation survives. The scenario was a war against Russia, France, and Britain. Germany

would await an enemy invasion (Schlieffen assumed that both Russia and France would attack first), thereby avoiding violation of the neutrality of Belgium and the Netherlands, and only then go onto the counteroffensive. Schlieffen envisaged German victory within six weeks.[70] The German army would defeat Russia first and then shift westward to fight a combined French-British army that by that time would have advanced into Germany through Belgium. (Despite widely held historical views, it seems that Schlieffen doubted Germany's chances of success in a two-front war.)[71]

In the 1905 war game, Schlieffen assumed that Belgium and the Netherlands would be neutral but would defend their neutrality; Germany would therefore take a defensive posture on the western front. The scenario considered it possible that in case of violation of their neutrality by Anglo-French forces, Belgium and the Netherlands would side with Germany. German forces consisted of twenty-four army corps plus a number of reserve corps. Germany's ally Austria-Hungary would not enter the war until a sizable part of the Russian army had concentrated on its border. Russia would attack East Prussia with its Niemen and Narva armies. France would concentrate its army along the entire border, from upper Alsace to the North Sea coast. Six British divisions would be deployed on the northern flank of the French army in Flanders. Belgium and the Netherlands would deploy six and four divisions, respectively; the Germans rated their combat value as not very high.[72] In the game, the course of German operations against Russia was almost identical to what was to happen in World War I, in the battles of Tannenberg and the Masurian Lakes. The Russian side committed mistakes similar to those the Russians were actually to make in August 1914. It was assessed that the Russians were so badly beaten that their armies would present no further threat in the east; by the fortieth day after the start of mobilization, the mass of the German army in the east was available for transport to the west. In the game's scenario, the western allies had in the meantime attacked German forces along the entire front. The main thrust was through Belgium; the bulk of the French active corps was deployed between Luxembourg and Antwerp.[73] The Germans now counterattacked, eventually forcing the combined Anglo-French forces to surrender in the area of Liège.[74]

Schlieffen taught officers to fight intelligently and to think for themselves. His staff problems and war games did not have "school solutions." The players were forced to develop their own "possibilities" (courses of action) and make their own decisions against agile enemies. They had to discuss their answers with, and justify them to, Schlieffen and their colleagues. Schlieffen tried to make the training of his staff officers as realistic as possible.[75] Nevertheless, Schlieffen used general-staff rides and war games to rehearse his own operational ideas, testing how operations would unfold in particular scenarios and how German commanders would react

to enemy actions. Schlieffen also often imposed arbitrary difficulties on his own commanders, while at the same time making situations easier for the enemy.[76]

Schlieffen's successor, General Helmuth von Moltke, Jr. (1848–1916), made great efforts to improve German plans prior to 1914. For example, when he war-gamed the Schlieffen Plan, the results indicated that the two armies on the outside, or far right flank, of the great wheeling movement would run out of ammunition two days before the campaign ended; Moltke therefore organized two motorized ammunition battalions, the first in any army of the day. Yet the Germans did not simulate in their games the diplomatic and political consequences of their actions. Hence, in the event they were to be caught by surprise when their invasion of Belgium caused Belgian civilians to destroy their own railroads and brought the British Empire into the war.[77]

The Germans continued to use war gaming during World War I. For example, the German high command rehearsed the spring offensive (*Kaiserschlacht*—Kaiser's Major Battle) in a game played at the headquarters of the Army Group Crown Prince Rupert. Also, in testing their plan for the final offensive in August 1918 (Operation MICHAEL), they conducted several strategic-level games.[78] All these games showed that chances of decisive success were slim.[79]

The Interwar Years (1919–1939)

Between 1919 and 1939 the German military, more than any other, used war gaming as the main means for educating and training its officer corps. The reason was that the Versailles Treaty of 1919 put severe restrictions on Germany's forces. Among other things, the size of the new German military, the Reichswehr, was put at a hundred thousand, including four thousand officers. The general staff was formally dissolved, although its main functions survived under different names. Tanks, aircraft, and U-boats were prohibited. These prohibitions stimulated German military leaders—led by General Hans von Seeckt (1866–1936), chief of the Army Command (Chef der Heeresleitung, 1920–26)—to expand greatly the number and types of war games as a main method of combat training.[80]

Seeckt was a firm believer in war of movement *(Bewegungskrieg).* This was his greatest contribution to the development of the Reichswehr and later Wehrmacht. His idea was that the only way to prepare the Reichswehr for a war of movement was to focus on educating officers in theoretical aspects of warfare.[81] War games represented an important part of that education. After the end of Seeckt's tenure, the Reichswehr started to play operational war games.[82]

In the interwar years German operational plans were tested and rehearsed in a series of war games. The aim was to make commanders at all levels thoroughly familiar with the situation and also with the difficulties they would have to overcome with respect to both enemy and terrain.[83] The Germans also used war games to test combat principles. In these games one side used the doctrine and

tactics of the potential enemy. The "friendly" commanders were changed several times, in order to bring the decisions of several persons to bear on principles to be tested.[84] The Germans often used war games as teaching tools for the study of the past campaigns and operations and also for the testing and improvement of certain doctrine developed and used in the past.[85] A secondary purpose of a war game was to give higher commanders opportunities to get to know their subordinate officers, observe their fitness under certain situations, and gain impressions of their strong and weak points. It was even thought possible to draw conclusions as to their qualities of mind and character. The dangers, however, of excessively one-sided assessments of fitness or unfitness as manifested during war games were well understood.[86] In the interwar years the Germans stressed that an officer's promotion should never be based solely on his detailed visual grasp of a situation on the map or on his polished appearance during a war game, or the like.[87] The officer's performance in the field and his character were to be the determining factors.[88]

The Germans believed that war games were the best way for commanders to make known to subordinates their views on various aspects of warfare.[89] War games were an important means for the "spiritual" preparation for war and for shaping unified tactical and strategic views.[90] Yet a war game, they held, should never be considered proof of the correctness or incorrectness of operational thinking or of measures taken. Its outcome could be seen only as an example, and only from several such examples would it be possible to draw useful conclusions.[91]

In Seeckt's era the term "war game" *(Kriegsspiel)* was broadened to include not only the traditional war game but also the planning game *(Planspiel),* staff exercise *(Stabsuebung),* exercise ride *(Uebungsreise),* terrain discussion (evaluation) *(Gelaendebesprechung),* command staff exercise *(Rahmenuebung),* special exercise *(Sonderuebung),* and sand-table exercise *(Sandkastenuebung).*[92]

The Germans considered the "war game," as such, to be two-sided. Such games were conducted from the strategic to tactical levels of command. A war game aimed at educating all officers in the assessment of the situation (that is, the commander's estimate). The Germans emphasized the importance of concise and logical presentation of ideas, in making decisions and issuing orders based on them.[93] Another purpose of a war game was training in techniques and procedures of writing and issuing orders. War games trained commanders at all echelons and tested new methods, as well as certain fundamentals, of combat.[94] The sides were designated as Blue and Red; in a game involving allies or neutrals, they would be designated by other colors (Yellow, Green, etc.).[95] War games proper were difficult to organize and play, because of the need to represent faithfully the enemy's way of thinking, doctrine, and tactical procedures.

"Planning games," also called "planning exercises" *(Planuebungen),* were generally used for tactical and operational education of the commanders at all

levels.[96] Specifically, they were designed for education in certain tactical concepts and principles. The planning games were apparently the preferred method of rehearsing plans for pending or future operations. They were played on maps at scales of 1 : 5,000 or larger.[97] The idea to be tested was given by the director of the game; a specific episode was gamed, so that participants could acquire a picture of the combat situation. The focus was then on decisions for execution of the combat ideas, employment of individual combat means, and coordination. Drafting necessary orders was found most valuable. Planning games were one-sided; the "enemy" side was played by the director.[98] In that way, it was possible to focus more closely on a given topic.[99] In the Wehrmacht, planning games were used for training officers and noncommissioned officers (NCOs) in the practical application of doctrinal fundamentals; for the reinforcement of existing states of combat training; for training in making decisions, estimating terrain, and using weapons; and for evaluation of the knowledge, abilities, and character traits of participants. The emphasis was on making decisions and employing forces to carry out an operational idea.[100] Planning games were also used to prepare officers and NCOs to occupy higher positions.[101] In troop training, the duration of a planning game was a maximum of two and a half to three hours.[102]

"Staff exercises" were usually single-sided and were used to train participants in the functions of staffs in combat. The exercise simulated as many frictions and interruptions as possible.[103] "Training rides" had the same purposes as war games and planning games. The difference was that they were conducted for several days and mostly in the field. At the operational level, they were used to explore problems in national defense. At the tactical level they were used for education of the commanders and their staffs in combat with combined armies and logistics.[104] Rides at the operational level often took the form of "operational studies," especially when they were conducted in the field. They were often two-sided but sometimes one-sided.[105]

The "command staff exercise" familiarized commanders and staffs with the command and message system essential to attainment of the objective. Operations staffs and signal troops would take part.[106] The most developed exercises of this type were the "commander's exercise" *(Fuehreruebung)* and "communications exercise" *(Nachrichtenuebung)*. "Special exercises" were conducted for several purposes. Most often they were used to test suitability of "war organization" *(Kriegsgliederung)*, or an order of battle, a new organization in the supply services, the employment of new weapons, or some tactical fundamental.[107] "Sand table exercises" were primarily for training tactical commanders from the battalion level down to the rifle squad.[108]

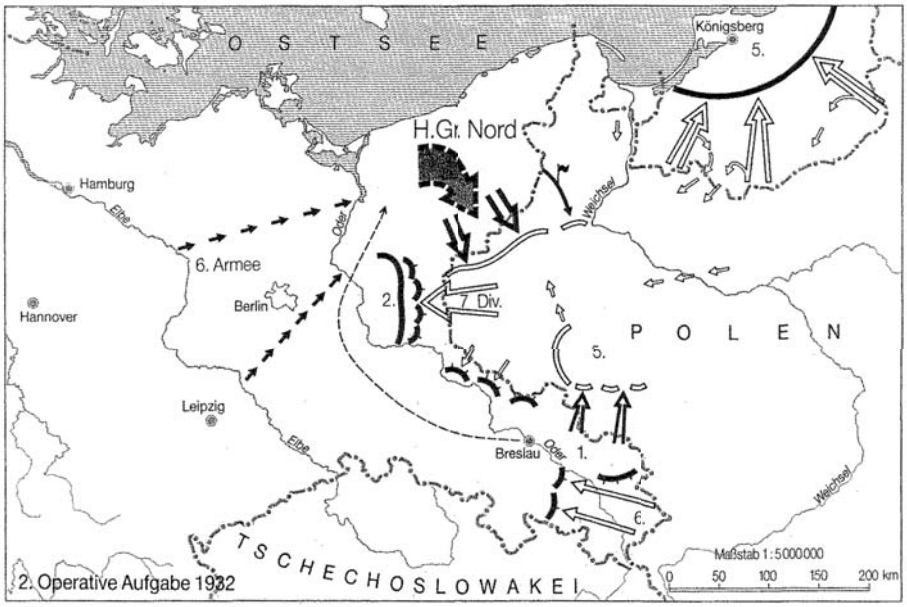
Seeckt also introduced, in lieu of the prohibited Great General Staff rides, "commander's rides" *(Fuehrerreisen)* for the education of future operational

commanders. Thereby he laid the foundations for the conduct of German major operations and campaigns in World War II.[109] The participants were exclusively generals—group, division, and infantry or artillery commanders.[110] Commander's rides included both army and naval officers.[111] The first was conducted in 1921, to explore national defense in case of sanctions by the Western powers. The following year, the scenario envisaged defense against attack by the Czechoslovak army.[112] The commander's rides of 1923 and 1928 explored problems of coastal defense.[113] The chief of the Troop Office (or Truppenamt, as the Reichswehr-era general staff was known) conducted annual Troop Office rides *(Truppenamtreise),* also called "chief's rides" *(Chefreise);* participants were chiefs of staff and specially selected general-staff officers.[114] After the general staff was formally reestablished in 1935, general-staff rides *(Generalstabsreisen)* were restored. The Reichswehr formally became the Wehrmacht in October 1935.

In addition to war games, operational thinking was developed by means of "operational missions" *(Operative Aufgaben).* They were not war games in the ordinary sense but written studies on hypothetical problems in the future. They were worked out by the leading general-staff officers in the Reichswehr Ministry; the staffs of group commands, divisions, and the weapons school; and individual officers serving in staff positions. About three hundred officers, from majors to two-star generals, were involved in such studies. Their solutions were evaluated by the Troop Office.[115] For example, in the first "operational mission," in 1931, the scenario was that Germany (Blue) would be involved in a war against France (Red) in northern France, while Czechoslovakia (Yellow), with twenty-four to twenty-eight divisions deployed in northern Bohemia, would advance to its border with Saxony. Germany had available twelve divisions and several cavalry units. The Germans would be able to deploy six additional divisions to the western border. The Germans assumed that the Czechoslovak forces, not completely assembled, would cross the border and engage eleven German divisions and one cavalry division from Silesia and, in the area of Glatz (then part of Germany, now in southwestern Poland), attack deep into their flanks. In the north, German forces would feint two attacks but in general would conduct a delaying defense.[116]

In the first and second "operational missions" of 1932, the scenario envisaged war against Poland (Red). (See map 1.) The first "operational mission" of 1932 was played at the level of the Army Command. The initial situation envisaged that the Poles would deploy several armies to Germany's (Blue) borders, with the main effort in the western part of the province of Posen; their aim was to attack in the direction of Frankfurt/Oder–Berlin. The Germans would use one army in Silesia, in the Oder–Warthe–Bogen area and in East Prussia, two armies in Pomerania, and one advancing to a position from which to attack toward the southeast.[117] Three German armies deployed in Silesia would face the Polish

MAP 1



armies. Their task was to secure the province and bind the enemy forces. In the solutions presented by the control team and by some 80 percent of participants, this task evolved into a rapid offensive against one of the Polish armies. The solution of the control team required the greatest concentration of forces, combined with the highest risk, because of the substantial weakening of the forces facing the French.[118]

In the second "operational mission" of 1932, the participants played the role of the chief of the Army Command. In the scenario, which followed from the first exercise, while the German army in Silesia had achieved partial success, the main attack, launched from Pomerania, had not achieved decisive success. The question was whether, in light of an expected enemy main strike on Berlin, the original German plan of a flank attack from Pomerania remained valid. The solution of a significant number of participants was to shift the weight of the main effort *(Schwerpunkt)* to Silesia. However, after analysis of the chances of success and the operational potentials of the enemy and friendly forces, General Wilhelm Adam, who played the chief of the Troop Office, retained the original decision.[119]

In the Reichsmarine (1919–35), a special type of the war game was the "commander's war game" *(Fuehrerkriegsspiel)*. Participants were naval officers of the ranks of captain and above. The games were prepared by the sections of the Navy Command (Marinekommandoamt). The director of the game was the commander in chief of the Reichsmarine. Commander's war games explored strategic and operational problems of naval warfare against the background of a possible

conflict.[120] The Reichsmarine conducted commander's war games each year from 1923 to 1927. In 1925 the scenario was a war between France and Germany; other states were neutral. Because the postures of Italy and England were doubtful, France did not consider redeploying its Mediterranean forces to the North Sea. The basic idea was that France would not engage German naval forces in the initial phase of war but would attack German imports at sea. The main objectives of the Reichsmarine were to maintain control in the Baltic, protect Germany's sea imports, and interfere with French shipping.[121]

In 1927–29, the Reichsmarine apparently focused on commander's rides and its participation in the army maneuver in the fall of each year. In the Reichsmarine's commander's ride of 1928, the focus was on interdependence of warfare on land and at sea. The war game was conducted jointly by the Reichsmarine and the army. The scenario was a war with France and Belgium. The hostilities broke out after several weeks of tension, by which time the German army had mobilized twenty-one divisions and imported war materiel from overseas.[122]

MAIN PURPOSE

In the interwar years, the Germans differentiated overall between "educational" *(Belehrungspiel)* and "testing" *(Erprobungspiel)* war games. The purpose of the educational war game was to educate officers in the use of doctrinal documents or a higher commander's views on a certain aspect of warfare. The purpose of a testing war game was to explore strategic or tactical thinking or to develop new concepts of troop leadership.[123] The war games were conducted on either maps or boards.[124]

Scale

Until the early 1930s, the Germans differentiated between tactical and strategic war games in terms of command echelon and scale. Tactical war games were designed to provide junior commanders with decision-making experience and train them to issue the orders needed to implement their decisions. These games were the simplest to organize and execute. They could be conducted without regard to a war situation in a given theater;[125] some of these games were one-sided. Operational and strategic games, however, were conducted by the highest echelons. Apparently, "operational" war games as such came into use in the early or mid-1930s, conducted by operational-level commands. A strategic war game was much larger in scope and required greater effort on the part of organizers and participants. They simulated warfare in a single or several theaters. In its simplest form, an educational strategic game was meant to provide strategic education. In a testing strategic game, the aim was to assess operational preparatory work by higher staffs. In the Reichsmarine, such games were prerequisites for the execution of naval maneuvers.[126]

In the same period the Germans conducted several strategic war games. In the 1930s, Field Marshal Werner von Blomberg (1878–1946), minister of war and Commander in Chief of the Armed Forces, organized several high-level games and staff studies to explore "the problems which the military and political situation had created for Germany's national defense and especially to establish a theoretical basis for the joint actions of the supreme command of the armed forces and high commands of the Army, Navy, and Luftwaffe in all important areas."[127]

General Ludwig Beck (1880–1944), chief of the Army General Staff, tried in 1938 (but failed) to impress Hitler, by conducting a war game, with the risks of going to war with the Western powers. In June 1938, instead of the annual large general-staff ride, he decided to explore in writing the question whether it was possible to defeat the Czechoslovak army quickly before France seized the Rhineland in the west. He concluded that although the Czechs had formidable defenses, it would be possible to defeat them. The Czechoslovak army could mobilize as many as thirty-eight divisions; the Germans would require about thirty divisions and three weeks to subjugate Czechoslovakia.[128] Beck also asserted that any attack on Czechoslovakia would certainly lead to the involvement of France and Great Britain and possibly intervention by the United States—a new multifront war that would mean the downfall of the Third Reich.[129] He concluded that attack on Czechoslovakia in 1938 could only bring "catastrophic results . . . for Germany and for all Europe." Beck proved to be wrong about catastrophe in the short term.[130]

Beck's June 1938 study convinced him that Hitler's assumptions about limited war that year were mistaken; he viewed "as fateful, the military action against Czechoslovakia, planned on the basis of these military premises, and must explicitly disavow any responsibility of the general staff of the Army for such action."[131] Germany was not strong enough. Hitler responded that the Wehrmacht was an instrument of policy and had only to execute the missions that he gave it, not discuss them. Beck replied in turn that he could not accept orders with which he did not agree.[132] He resigned on 18 August 1938.

The Reichsmarine conducted several strategic and operational war games in 1929–35. For example, a fleet war game was conducted in March 1931, a strategic war game *(Strategische Kriegsspiel)* in April 1932, a high-command war game *(Kommandoamtskriegsspiel)* in 1933 and 1934, a commander's war game *(Fuehrerkriegsspiel)* in 1934–35, and a high-command ride *(Kommandoamtsreise)* and strategic war game in 1935. It regularly took part in the army's fall maneuvers and exercises. After 1935 the newly renamed Kriegsmarine conducted strategic war games in the winter of 1937–38 and 1938–39. It also participated in the Wehrmacht maneuver in Mecklenburg and Pomerania in October 1937. For example, in a Navy High Command (Oberkommando der Marine, or OKM)

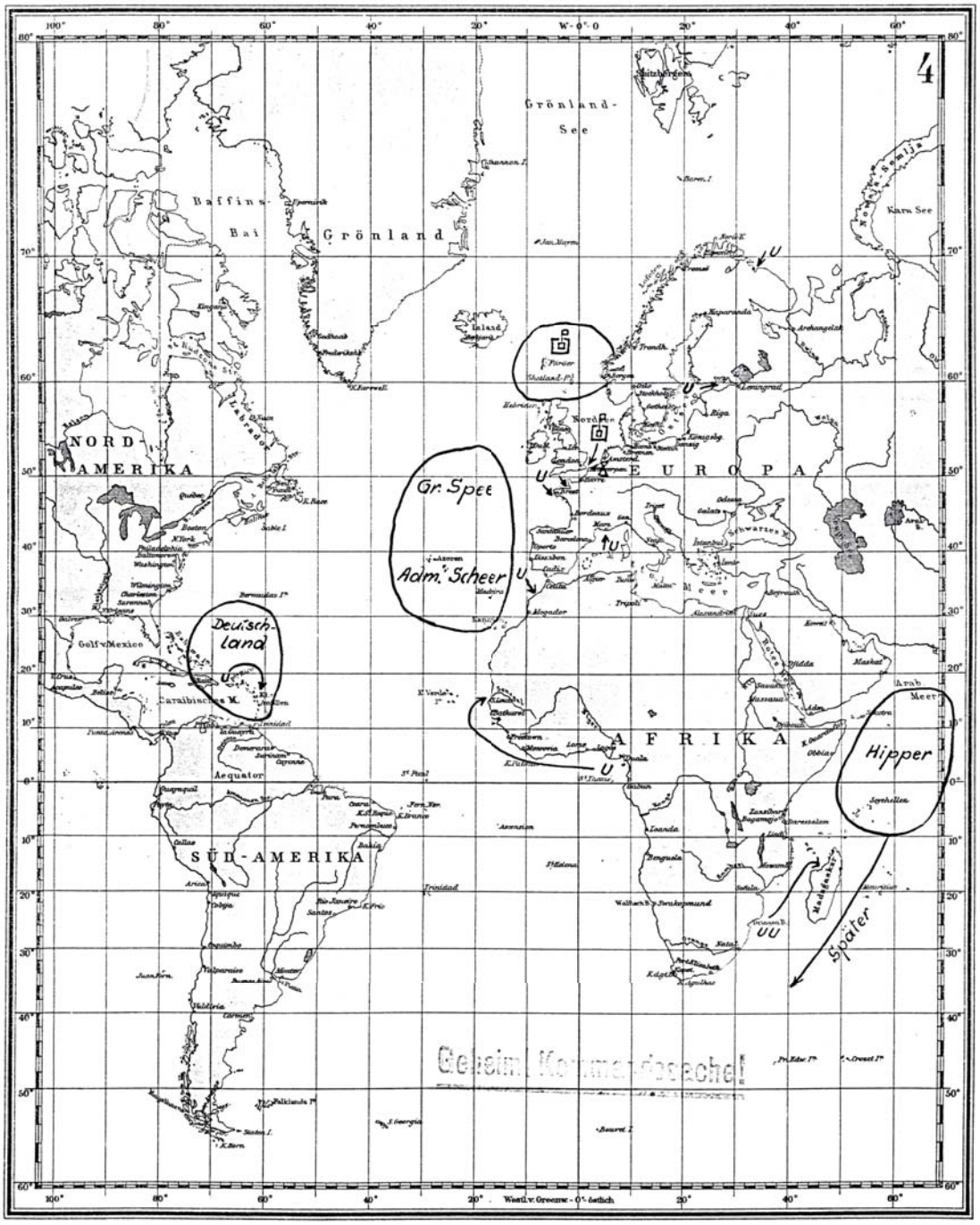
strategic game in the winter of 1937–38, "Kriegsspiel-A," the aim was to explore possibilities and prospects of a sudden opening of hostilities by Germany, testing operational questions and overall naval warfare, questions of high command and organization, and the operational possibilities of ship types not yet in service.[133] Among other things, Kriegsspiel-A elaborated the combat employment of the German battle fleet north of the Shetlands; employment of the "pocket" battleships in the Caribbean *(Deutschland)* and in the eastern part of the central Atlantic *(Graf Spee, Admiral Scheer),* and of a heavy cruiser *(Hipper)* in the western part of the Indian Ocean (see map 2); war in the Baltic, and the problem of importing iron ore from Luleå, Sweden; and the employment of the U-boats in the western Mediterranean.[134]

The Fleet Command (Flottenkommando), established in September 1933 with responsibility for all seagoing forces, conducted four distinctive but related operational war games: Kriegsspiel-B, -C, -D, and -E.[135] Naval operational war games were longer than tactical games and consisted of several smaller, tactical games played over several days.[136] The purpose of Kriegsspiel-B was to explore the possibilities of operational warfare in the North Sea and the approaches to the Atlantic with France in, first, a defensive posture and later offensive; the operation orders that would be necessary during the transition from peacetime to tension and then to war; and naval command organization in the North Sea.[137] Kriegsspiel-C examined operational warfare in the Baltic, specifically the offensive posture of the Soviet Union, the effect on the declaration of war of a Bruestort–Oeland mine barrier, and U-boat barriers.[138]

Kriegsspiel-D's purposes were to examine the employment of U-boats in the Mediterranean and the Atlantic from organizational and technical viewpoints; to explore the possibilities of mining the approaches to French ports in the Atlantic and the Mediterranean; to collect insights about cooperation between U-boats and surface ships in trade warfare; and to test the chances of success of U-boats armed with guns in commerce raiding.[139] The lessons drawn from Kriegsspiel-D pertained to the employment of U-boats in the Mediterranean to cut off communications between France and its colonies in North Africa and to tie up large French naval forces. The game also suggested that the U-boat commander (B.d.U.), Commodore (later Grand Admiral) Karl Doenitz (1891–1980), should exercise only overall operational command and control, leaving tactical command to the flag officer of the U-boats (*Fuehrer der Unterseeboote*—F.d.U.) in the Mediterranean. The game showed that the local commander would know the situation better and have more secure radio communications.[140]

Kriegsspiel-E was designed to test unified command for cruiser warfare in the Atlantic, rehearse cooperation between surface forces and U-boats, explore the

MAP 2


4
Grönland-See
Baffins-Bai
Grönland
NORD-AMERIKA
EUROPA
AFRIKA
SÜD-AMERIKA
Gr. Spee
Adm. Scheer
Deutschland
Hipper
Später
Golf v. Mexico
Caraibisches M.
Aequator
Karn See
Nordsee
Schwarzes M.
Arab. Meer
Madagaskar
Geheim Kommandosache!

supply and organization of the "Staging Service" (*Etappendienst*—resupply ships) for warfare in the Atlantic, and study the value of a base in Duala, Cameroon, for operations in the Atlantic.[141]

The tactical war games that made up Kriegsspiel-A (designated F, G, H, and J) were conducted by the Naval Station Commands *(Marinestation)* N[ordsee] (North Sea) and O[stsee] (Baltic). Naval Station Command N conducted Kriegsspiel-F, while Naval Station Command O played Kriegsspiel-G, -H, and -J. Kriegsspiel-F looked at operational warfare in the North Sea in the presence of strong French forces and explored whether a mine barrier could be laid in the North Sea in a timely way and what its effect would be.[142] Kriegsspiel-G examined operational warfare in the Baltic should the Soviet Union open hostilities. It also asked how far the planned mine barrier could be extended and whether it could be laid in the face of strong action by the Soviets. Finally, it explored the defensive and offensive use of mines in the Baltic and what forces would be required in that theater. Kriegsspiel-H was a simulated gunnery duel aimed to test whether the German battleships, with 380 mm (fifteen inch) guns, could engage older and modern battleships successfully.[143] Kriegsspiel-J explored the tactical details of the intended Bruestort–Oeland mine barrier—its form, gaps, monitoring, necessary material, and again, laying it in the face of various Soviet attacks.[144]

The Germans also used operational war games for exploring the combat possibilities of their new panzer and motorized forces. After 1933, the Germans created a number of experimental independent tank battalions and regiments, to explore the potential roles of each and identify problems. General Beck wished also to explore the use of the panzer and motorized units at the operational level. In 1935 he conducted a general-staff ride looking at how a panzer corps might be used; the next year, a general-staff ride explored the employment of a hypothetical panzer army. At the end of 1935 Beck recommended that the three new panzer divisions (established in October 1935) be used as an independent force "in association with other motorized weapons" and for accomplishing "long-range objectives."[145]

Organization

The Germans considered the most important prerequisites for successful war games to be sound organization and thorough preparation. The key people in a game were the director *(Leiter)*, the team leaders *(Parteifuehrer)*, and their subordinate leaders *(Unterfuehrer)*.[146] The director was the most important. In a strategic game, he was responsible for issuing written assignments for all participants, the general situation, simulated forces and their order of battle, the mission of each side, general orders, and regulations for play.[147] Beforehand, the director prepared a "letter game" *(Briefspiel)* to communicate to team leaders his intentions; the letter game served as the basis for the conduct of the game. Ideally, the director issued his orders in writing and then followed up with the verbal

explanations, in order to prevent misunderstanding and duplication of work by team leaders. The director was to maintain during game play a clear picture of the decisions of team leaders, their basis, and the resulting employment of forces.[148] Before the game, when necessary, he issued general and individual orders, and he discussed with the parties individually the details of preparatory work, so that play could begin on the first day.[149]

Normally, the director was not selected by seniority or rank but according to his professional fitness. Among the many requirements for the position, the director had to possess a mastery of tactics, knowledge of military or naval history, and combat experience.[150] He had to be imaginative and creative, to make a game lifelike and interesting to the players. He needed a thorough knowledge of command and control.[151] The director had to have cool, businesslike judgment and eloquence in describing a situation—the interest of the players could not be engaged by dry lectures.[152] The director needed a good memory and to be able to give players freedom of action and allow the results of their decisions to mature without losing the thread of the game or sight of the object to be attained.

In fact, the Germans considered that the true art of businesslike and beneficial war gaming lay in the personality and actions of the director. He alone had the power to create many-sided and interesting situations in which new decisions had continuously to be made.[153] He had full responsibility for preparation, execution, and "final discussion" *(Schlussbesprechung)* or postgame critique;[154] accordingly, he exercised complete authority.[155] Preparation of the game required thorough knowledge and understanding of all related areas, possible situations, and their development; its execution required mental agility and close attention; the director needed a good sense of when, where, and how to intervene in the course of the game.[156] He was required to take a realistic view of the game on the basis of the simulated combat situation, for which he needed a thorough knowledge of staff work and a temperament suitable for the specific type of game.[157]

One of the main responsibilities of the director was the distribution of roles to the participants. Normally, a team leader (commander of a side in a war game) was selected for his abilities and regardless of rank. A team leader was responsible for his side's technical execution of the game and its preparatory work.[158]

The Germans also paid great attention to the quality of the control teams and participants in the planning games conducted at the highest levels of command. For example, in a planning game conducted by the Reichswehr Ministry in 1927, among five members of the control team were Lieutenant Colonel Wilhelm Adam, who later became a four-star general, and three majors—Wilhelm List, Guenther von Kluge, and Walther von Brauchitsch—who would reach the rank of field marshal. Among fourteen participants in the same planning game were two majors (Erwin von Witzleben and Ewald von Kleist) who became field marshals,

and ten captains, five of whom became field marshals (Ernst Busch, Albert Kesselring, Erich von Manstein, Friedrich von Paulus, and Walter von Reichenau) and five four-star generals (Hans-Juergen von Arnim, Heinz Guderian, Gothard Heinrici, Eberhard von Mackensen, and Gerhard Matzki). Another participant in the game was Lieutenant Commander Karl Doenitz, later grand admiral and the successor to Hitler.[159] That so many junior officers in a planning game attained high rank in their respective branches is not a coincidence. It implies that their high professional and mental abilities were duly noted by their superiors.

The Germans stressed that the sides in a game should have roughly equal numbers of weapons specialists, distributed without regard to rank. However, the director would take into account the wishes of a team leader. Some officers were kept in reserve; not all participated in a game from its beginning. If too many officers were placed in reserve, the director would assign one or more to assist him in directing the game.[160]

Subordinate leaders for each side were assigned only for strategic war games. They were normally selected by the director but in some cases at the discretion of a team leader. Subordinate leaders had a limited role. In educational games, their roles could be changed by the director. The assignment of a large number of subordinate leaders would complicate a game, and that had to be avoided.[161]

Elements

Arbitrarily, the principal elements in the design of a German war game were the initial situation (scenario), its sections *(Spielabschnitt),* and duration—both as simulated in the scenario and actual time of play. Selection of the "situation" *(Lage)* depended on the game's purpose. A situation described the groupings of hostile and neutral powers and the events leading up to the opening of hostilities. If hostilities had already started, the course of war on land, at sea, and in the air to date was described.[162] The situation contained everything necessary for a team leader to make combat decisions.[163] The Germans emphasized that the situation should contain a general part dealing with the original state of affairs and a specific part with such details as organization, the condition and fighting qualities of troops, the logistical status, signals and communications, the air situation, terrain, and weather.[164]

The Germans stressed that a war-game situation should be described in such a way as to be full of tension and potential for surprise. Its scope would not exceed what was necessary for clear understanding. The situation had to establish a larger framework for the main topic of the game—an operational framework for a tactical game, a strategic framework for an operational game. It encompassed the situation on the ground, at sea, and in the air, depicted graphically whenever possible to allow easier understanding and clarity and to save time.[165] The

commander of each side was not to be given more information than he would receive in an actual combat situation. The mission and the intent of the higher commander had to be clearly expressed.[166] Finally, the Germans emphasized that a situation should be interesting, that it should contain an element of uncertainty and not follow past patterns: "impossible" situations are not that unusual in war. The missions and orders should be issued in full text and should be phrased with particular care.[167]

The scenario of a war game usually projected a situation two or three years in the future; its political, economic, and other nonmilitary aspects served only as background. The Germans repeatedly stressed the need for a simple and succinctly described scenario; otherwise, much of the fascination with the game would be lost.[168] For example, in the Kriegsmarine's strategic war game of 1937–38, it was emphasized that the political framework had been designed only to allow the game to explore the possibilities of "operational" warfare; it did not represent in any way the view of the German naval high command of what the political situation would be in 1940. Political developments in the course of the game—for example, entry into the war by Italy or Poland or changes in the strategic postures of other states—were meant only to change the initial situation and set up new missions for the players.[169]

The Germans warned that it was dangerous to conduct a game based on a historical event. It was possible to reconstruct the original historical situation, but from the very first move by either side everything would change, because the imponderables, such as human psychology and the personalities of the individuals involved, would be very different from what they had been. Hence, unless developments were left to the free play of the opposing sides, the game would be unnatural and uninteresting. Still, examples from military and naval history might be cited to good purpose if the director could elaborate from episodes he had personally witnessed, to illustrate the influence of intangible factors in war.[170]

The duration of a war game depended on its purpose and scale. In general, operational and strategic games were longer than tactical ones. In the early 1930s, the Germans believed that a tactical war game should not take longer than three to four hours to play, while higher-level games should last for several days or weeks or even months. The shorter the game, the more critical it was for the players to make quick and sound decisions. If the game was to be intense and maintain the interest of the players, it should not last too long.[171] In terms of simulated "game time," the Germans preferred that a section or phase of a game should not represent a period longer than a week. A game with a longer phase would be complicated to play because it was not transparent to controllers. It would lack the unpredictability caused by shifts in the situation, which often happen in real combat. Hence, it was better to play a game divided into several

shorter phases; the number of examples would be increased and the clarity of the situation enhanced.[172]

Strategic or operational war games had relatively few days of actual play. Most of the time was devoted to "planning studies" *(Planstudien),* or staff studies, and discussions between the directing team and participants of problems revealed during each phase. For example, the Kriegsmarine strategic war game of 1937–38 started on 3 November 1937 and ended on 7 March 1938. The game consisted of three phases. The preparation of the initial situation lasted until 22 December 1937, followed by work on the second situation until 20 January 1938, and on the third until 15 February.[173] Only six days were devoted to moves by the players, all during an admiral's staff ride *(Admiralstabsreise)* at Krummhuebel (Karpacz today), in Lower Silesia, from 25 February to 7 March.[174] The actual days of play were 25–26 February (days 1–2), 28 February–1 March (days 3–4), and 3–4 March (days 5–6)—there was no play on 2 March. Preparations for the final discussion were made on 5–6 March, and the final discussion itself took place on the 7th.[175]

Execution

The director controlled a war game closely. He asked direct questions and insisted on equally direct, unequivocal, concise, and clear-cut answers. Long-winded or irrelevant expositions were, if necessary, abruptly cut off. The guiding principle was to bring out clearly the most important points of a subject; the director was responsible for consolidating the thoughts of the participants on the essential points;[176] he was not to be driven off the subject when other participants were. When the director spoke, no other person was allowed to speak. His comments started with the side that made the first decision; he would respond to questions in a way that fostered reflection.[177] He was to express his views in a clear and definite manner but without personal acrimony. The idea of training and teaching was to be paramount.[178]

The director of the game was responsible for preparing a large number of messages crafted to confront the players during game play with complex situations.[179] The battle picture was constantly updated. The participants were kept informed of the overall situation.[180]

Shifts from one phase or episode to the next, and the "time jumps" between them, depended on the situation. In general, the largest "time jump" was made at the beginning of the game, when the opposing sides were the farthest apart; the jumps were progressively smaller as the distances were reduced. The director could order an unscripted time jump during a game after consultation with the team leaders of the opposing sides.[181] For each phase, subordinate commanders conducted new assessments of the situation and made appropriate decisions.[182]

One of the director's main responsibilities during the game was to keep a high level of interest among the players. This means that each phase of a war game had to be kept full of uncertainty and drastic developments.[183] The director influenced the course of the game by issuing reports from friendly forces and intelligence on the enemy that imposed substantial changes in the situation.[184]

The director was to play the game in accordance with the decisions of both sides, but he did not know in advance what these decisions would be.[185] He was to allow sufficient freedom of action to the players but not to let the game to degenerate into trivialities. To this end the director could intervene through discussions during a particular point in a game in which he could ask briefly questions, make statements, and give his reasons. The Germans stressed that it was undesirable for a director to interfere with the actions taken or decisions made by players or to criticize or correct them. If the players sensed that they could not make decisions themselves, but only the director, then uncertainty, indecision, and reduced interest and motivation would result.[186] If the team leaders made tactical errors, they were not interfered with; subsequent events would show which measures were correct and which faulty.[187]

A game was to be conducted in such a way that it facilitated a free exchange of opinions between the director and the players in conversations that the director stimulated by transmitting his knowledge, in the shape of interesting situations and his ideas on command and control. The director was to help players develop their judgment and their capacity for rapidly arriving at decisions. He was to abstain from tedious written work before the game and from long-winded theoretical discussions in the course of it.[188]

The Germans emphasized that warfare is full of uncertainty, that commanders must learn to act in conditions of uncertainty, finding their way through sheer willpower.[189] For this reason the director ensured that players did *not* have all the information they needed to make sound decisions. The commander of each side in a game had to build his picture of the situation independently, not let the director do it. Very often, commanders forgot that neighboring forces were part of the game; this gave directors opportunities to impose unexpected events and thereby influence the game in certain directions.[190]

German war games ended with a final discussion lasting perhaps half a day. It was conducted one or two days after the last play day.[191] The final session included remarks by the most senior officer present and the director, followed by discussion with the participants. The director's superior stated in his comments whether he considered the plan underlying the game to have been suitable and to correspond to reality, whether the topic for the game had been completely and accurately grasped, and whether the purpose of the game had been achieved.[192]

The written report of the final discussion was typically dozens of pages long. It was written by the director, with the input of the team leaders, and it reflected the level at which the game had been conducted. For example, the final discussion report for Kriegsspiel-B of 1937–38, by the commander of the Fleet Command (Admiral Rolf Carls), was written at the operational level, from a war-at-sea perspective. This document, issued on 12 April 1938, was sixty-eight typewritten pages long. After a short discussion of the game itself, it focused on such operational aspects of war at sea as struggle for sea control, the missions of the Kriegsmarine, the importance of bases overseas and neutrals, and the maritime theater, as well as the most important episodes of Kriegsspiel-B.[193]

The final discussion was not a description of the course of the entire game. The director selected the interesting and instructive moments and commented on decisions made by the team leaders. The director was to take a stand on all important decisions he had made himself and not only to critique those of others but suggest specific solutions.[194] Both praise and criticism were to be given sparingly; any criticism, especially in the oral session, was to be polite and respectful, especially in the presence of junior officers. The director was to state clearly—after pointing out that no military problem has a standard solution, that for most theoretical problems several solutions are perfectly possible, and that his opinion was no sure path to victory—how he would have acted and why. Every criticism was to conclude with a statement as to whether the commander had accomplished his mission. Finally, the exchange of opinions was not to lead to limitless discussion.[195]

Normally, after the end of a war game the director ordered written "planning studies" of problems that had been identified during the game and required elaboration. For example, after Kriegsspiel-B the commander of the Scouting Force (*Befehlshaber der Aufklaerungsstreitkraefte,* or B.d.A.) was directed to conduct three planning studies. The first, delegated to the flag officer of the Torpedo Boats (*Fuehrer der Torpedoboote,* or F.d.T.), was to assess the protection of German sea communications in the Baltic and the chances of success should Soviet forces go on the offensive. Second, the flag officer of the Minesweepers (*Fuehrer der Minensuchboote,* or F.d.M.) was to assess the possibility of and chances of success in laying the Bruestort–Oeland mine barrier after Soviet attacks on German sea communications and also of laying mine barriers before Soviet forces penetrated into the central Baltic. The third planning study was to explore the employment of the U-boats and S-boats (fast torpedo boats), mine barriers, and aircraft in the Gulf of Finland to damage or eliminate the Soviet fleet, and also the use by German forces of bases in neutral Finland or Estonia.[196] The naval high command directed a study, *The Problem of the North Sea Theater in a German-British Naval War,* about seventy pages long, based on the war game.[197]

WAR GAMES, EXERCISES, AND MANEUVERS

Prior to 1939, the Germans routinely used war games to examine plans that would be tested in large-scale exercises and maneuvers. For example, the concept of employing U-boats in groups or screens (popularly called "wolf packs" in the West) had its beginnings in the last few months of World War I. The idea of employing large numbers of U-boats in groups and on the surface was revived during naval war games in the early 1930s. Shortwave radio had now made it possible for the first time for the U-boat command to direct from headquarters on board a ship or ashore the movements and coordinate the attacks of several groups of boats. This concept was first tested in practice during Wehrmacht maneuvers in the fall of 1937. The commander of the U-boats, Commodore Doenitz, controlled his boats deployed in the Baltic via shortwave radio from a submarine tender at Kiel. On the basis of these exercises Doenitz requested that a command ship equipped with the latest communications be built for the command and control of U-boats in case of war.[198]

In the winter of 1938–39, during the navy's strategic war game, Doenitz conducted an operational game to explore the employment of U-boats in the open Atlantic, with special reference to attack in groups, command and control, organization, the location of enemy convoys, and the massing of additional U-boats for final attacks. In this game no restrictions were placed on either side. The officer in charge of the convoys had the entire Atlantic at his disposal and was free to select their courses. Game play suggested that for Commander, U-boats to exercise complete control of the U-boats in a theater and to conduct joint operations from a command post ashore was not feasible. Doenitz then decided that he should direct himself the broad operational and tactical organization of U-boats in their searches for convoys but that the command of actual operations should be delegated to a subordinate in a U-boat positioned at some distance from the enemy and remaining as far as possible on the surface. Doenitz accordingly ordered a certain number of submarines under construction to be fitted with communications needed for that role. Another finding of the game was that given the number of U-boats then available and planned, the Germans could not expect, in a war against merchant ships in the next few years, to do more than inflict a few pinpricks.[199]

In May 1939, after further large-scale exercises in the North Sea, U-boats conducted an exercise in group tactics off Cape Finisterre and in the Bay of Biscay. In July 1939 Doenitz (by then promoted to rear admiral) conducted a similar exercise in the Baltic. All these exercises proved to Doenitz that his concept of using U-boats in groups was well-founded. (Nevertheless, the German naval high command continued to believe that in the next war U-boats would be employed individually.)[200] Doenitz also used lessons learned from the winter exercise of 1938–39

to argue that a successful war against British maritime trade would require a force of at least three hundred U-boats, mainly of the 517- and 750-ton types.[201]

Rehearsing Operations Plans

In the interwar years the Germans invariably looked for potential problems in operational ideas or plans for pending or future operations by conducting war games, preferably planning games. For example, General Helmuth Felmy (1885–1965), commander of the Luftwaffe's 2nd Air Fleet, conducted on 2 May 1939 a planning game, covering a period of four to five days and based on the then current deployment of his units.[202] The main purpose was to explore the possibility of a successful air war against Great Britain. The game was considered so important that it was attended by General Erhard Milch (1892–1972), state secretary for air transport and inspector of the Luftwaffe; Colonel (later General) Hans Jeschonek (1899–1943), the newly appointed chief of the Luftwaffe General Staff; Generals Albert Kesselring (1885–1960) and Hugo Sperrle (1885–1953), commanders of the 1st and 3rd Air Fleets, respectively; and the director of the command section *(Fuehrungsabteilung)* of the Fleet Command and several of his aides.[203]

The conclusion drawn by the planning game was that should hostilities be opened in 1939, a quick victory using airpower could not be achieved. (This agreed with a Luftwaffe General Staff study, *Operational Objectives for the Luftwaffe in Case of a War against England in 1939,* of 22 May 1939.)[204] The reasons given were insufficient range of the He-111 bombers to attack the ports on the British west coast; a limited ability to attack the British surface fleet; the inadequacy of training for attacks against sea targets and in extended bad weather conditions; the small number of aircraft capable of long-range operations; and the existence of too many potential targets and too large a combat area for the number of aircraft available.[205]

The Germans assumed that the major part of the Royal Air Force would be deployed to France, for "tactical" and political reasons.[206] Nonetheless, the 2nd Air Fleet concluded that the Luftwaffe's efforts against British imports would not have decisive effect. Instead, "terror" attacks on London would be the strongest option; they would have a catastrophic effect on the British capital, although they would also increase British resistance. Luftwaffe attacks on the British Expeditionary Corps could not be expected to have decisive effect, because the embarkation and debarkation ports were beyond effective range. Further, the game suggested, attacks on British fighter aircraft would achieve only small success, because the British had a well-organized air-defense reporting network at sea and on the coast. This, in turn, would increase warning time for enemy fighters and therefore their readiness for action. The game predicted heavy losses for German

aircraft in attacks against enemy fighters, which also would distract from the attacks on "vital" targets.

Attacks on the British defense industry and "shadow" industry appeared to offer the greatest chances for success. Such attacks would have long-term effects. Because of the wide dispersal of the British airspace industry, defense would be difficult, allowing the Luftwaffe to employ the smallest forces.[207] Using this analysis, the 2nd Air Fleet proposed to use its deployment areas in northwestern Germany and, avoiding the defense area around London, to carry out "rolling" attacks by its smallest units against the British air industry. Secondary targets would be fuel depots and port installations.[208]

Another conclusion of the 2nd Air Fleet's planning game was that the fragmented command structure of the German coastal air defenses would cause considerable friction and reduce the Luftwaffe's effectiveness. The German navy had responsibility for air defense in the coastal fortified areas, which were also the Luftwaffe's deployment and logistical support areas. General Felmy proposed the unification of air defenses to achieve a clear chain of command. For him, this was not a matter of service prestige but a pragmatic measure for the protection of the entire Wehrmacht. Specifically, he proposed the establishment of two air-defense divisions in the North Sea area, one between the Ems and Elbe Rivers and the other between the Elbe estuary and the German-Danish border. (Felmy's proposal was ignored, but efforts were made in April 1939 to enhance coastal air-defense cooperation between the Kriegsmarine and the Luftwaffe.)[209]

The Luftwaffe General Staff conducted a general-staff ride in June 1939 because of the expected war against Poland. This ride included a planning game several days long. The scenario envisaged that Germany (Blue) would carry out a surprise attack on Poland (Red); Western European powers and Soviet Russia were expected to remain neutral in the conflict, and Poland would not undertake any mobilization. During the general-staff ride, the lead role in air war was assigned to the 1st Air Fleet.[210] The main mission of the 1st Air Fleet was initially to attack Polish air units on the ground and then prevent the deployment of Polish ground forces with the mass of its forces. The Germans envisaged the employment of the 1st Air Fleet; the 1st, 2nd, and 3rd Air Divisions, with their six attack *(Kampfflugzeug)* aircraft wings and one dive-bomber wing *(Geschwader);* the 7th Air Division, with air transport troops and one paratroop battalion; and the East Prussia Luftwaffe Command, with one attack and one dive-bomber wing.[211]

In July 1939 General Franz Halder (1884–1972), the chief (from 1938 to 1942) of the Army General Staff, conducted the last general-staff ride *(Generalstabsreise)* prior to the outbreak of World War II. The purpose was to rehearse the plan for war against Poland. The movements of the Blue party were almost identical

to those that would be actually carried out that September. For example, the surprise mass breakout by the Polish grouping at Poznan on 9 September against General Johannes Albrecht Blaskowitz's Eighth Army was played during the planning game. (In the actual event the attempt failed, because of the energetic action of General Kurt von Briesen's 30th Infantry Division assigned to protect the flank of the Eighth Army.)[212]

In the German army, deployment instructions *(Aufmarschweisungen)* were drafted by the Army High Command (Oberkommando des Heeres, OKH). Corresponding deployment orders were then issued by lower headquarters to subordinate units.[213] Such orders set the initial employment of all forces in a major operation or campaign. In many cases the enemy situation was known in great detail. The campaigns in the west in May 1940 and in Soviet Russia in June 1941 were thoroughly gamed in advance.[214] In these campaigns, every commander down to the company level was completely familiar with his initial mission, the nature of the forces facing him, and the difficulties that he might encounter.[215]

Prior to the campaign in France and the Low Countries, the Germans used war games and exercises of all types to prepare all officers and even NCOs. The extended waiting period before it began gave ample opportunity to rehearse the plans. For this reason the first days of fighting went without friction and according to plan; almost nowhere was it necessary for the higher command echelon to intervene.[216] Among other things, problems of troop concentration and initial operations were studied. The Army General Staff conducted a war game for several days between Christmas 1939 and the new year to explore the main thrust through the Ardennes. It was directed by General Carl-Heinrich von Stuelpnagel, the Quartermaster-General I (OQ I) (Operations) and deputy chief of the Army General Staff at Zossen, near Berlin. The Blue force was commanded by an officer of the Army General Staff, Red by the chief of the general staff's Foreign Armies West department (Colonel Ulrich Liss). This game was based on the German operations plans and the enemy situation as known at the time. The Red side's leader was supposed to make decisions from the viewpoint of an enemy commander. The purpose of the game was to raise and discuss controversial problems within a specially selected circle. The war game was conducted with breaks, each new phase starting with a probable situation at a particular time. The lessons learned were evaluated by Stuelpnagel and reported to General Halder.[217] The war game showed the compelling effectiveness of a thrust through the Ardennes.[218]

An Army General Staff planning game was also played, testing in great detail the possibilities of and the time needed for traversing the Ardennes with panzer units. All available German and the Belgian maps were used, as well as aerial photographs of terrain. The capacities of the roads, secondary routes, and parking

sites had to be entered in small-scale maps in such a way as to give cartographically correct pictures of where columns and individual vehicles were at any time and of security distances and intervals between marching units. Play was based on the use of panzers in peacetime and in Poland. Both the war game and the planning game gave Halder information useful for his final plan of operations. He supplemented that information by personal trips to deployment areas.[219]

The commanders of various corps and divisions conducted their own planning games in preparation for the campaign against France and the Low Countries. For example, General Georg-Hans Reinhardt, commander of XLI Panzer Corps, conducted on 24 April a planning game to rehearse the deployment plan for his corps. This planning game revealed serious flaws in the plan for Panzer Group (Panzergruppe) Kleist (named after its commander general, Ewald von Kleist) (of which XLI Panzer Corps was a part). Reinhardt's corps was to pass General Heinz Guderian's XIX Panzer Corps, so that the two would reach the Meuse River almost simultaneously. This meant that it would be necessary to shift temporarily into a combat sector to the north of that assigned to Panzer Group Kleist; the infantry corps advancing on Guderian's right would have to stop on reaching the Belgian-Luxembourgian border so that Reinhardt's corps could veer out to the right through the corridor that would be developing. Reinhardt believed that such a complicated movement was irresponsible and posed an unjustified risk. Just four days before the start of the offensive Reinhardt was confronted with a disaster: he was now to have only two movement routes, because of changes in the deployment plans.[220]

Guderian's corps was assigned the sector of the main weight of effort for the entire Panzer Group Kleist. It was to advance through southern Luxembourg and the southern corner of Belgium, reaching the Meuse River at Sedan. Success would heavily depend on close cooperation with the Stuka dive-bombers commanded by General Wolff von Sutterheim and his superior, the commander of II Fliegerkorps (Air Corps), General Bruno Loerzer. Guderian arranged for a four-hour bombardment by the Stukas prior to and during his crossing of the Meuse. Guderian conducted a planning game, to which he invited airmen, about the pending operation. He also took part in a war game organized by Loerzer.[221]

After the start of the campaign, on 12 May, Guderian received an order from Kleist to attack across the Meuse the next day at 1600. He protested that order because one of his divisions, the 2nd Panzer, would not be ready to attack with his other two. Kleist refused to change his orders, arranging with General Sperrle, commander of the 3rd Air Fleet, to start mass bombing attacks simultaneously with an artillery barrage. Kleist's order would endanger a meticulously worked-out plan for Luftwaffe support that Guderian had made with Loerzer, of which Kleist

had been unaware. Yet Guderian issued the same order he had prepared during the preparatory planning game, changing only the date and time of attack.[222]

When the battle at Sedan started at 1600 on 13 May, Loerzer's bombers and dive-bombers applied the tactics that had been rehearsed during Guderian's planning game at Koblenz. Strangely, Kleist did not contradict Guderian's decisions.[223] In fact, during the night on 13 May, Guderian called Loerzer and asked him whether he had received any change of orders prior to that attack at 1600. He learned that Sperrle's order had in fact been issued but was passed too late to the squadrons and that Loerzer quite correctly did not make modifications in the existing plan.[224] Guderian did not receive a single order from his superiors on what to do after crossing the Meuse. He later claimed that he received none until he reached the English Channel at Abbeville on 21 May; in the meantime he issued all orders himself.[225]

In the summer of 1940, during the preparations for the planned German invasion of England (Operation Sea Lion, or *SEELOEWE*), General Ernst Busch, commander of the 16th Army, conducted a planning game. The participants included the division commanders, their operations and supply officers, navy and Luftwaffe staff officers, and the commandants of the North Sea ports. The purpose of the planning game was to rehearse the movement of the attack waves from assembly areas to their landing beaches on England's southern coast and the establishment of a lodgment. Among other things, the planning game revealed how small were the capacities of the ports between the Scheldt and Somme Rivers, in comparison to the large number of barges, freighters, and lighters, normally used on rivers, that had been hastily rebuilt for crossing the channel.[226] Field Marshal Walther von Brauchitsch (1881–1948), Commander in Chief of the Army (1938–41), attended troop exercises conducted by the Ninth Army (General Blaskowitz) and the Sixteenth Army in the fall of 1940. General Halder attended war games conducted by the Ninth and Sixteenth Armies in late September and the beginning of October 1940. On the basis of the lessons learned during these war games, Halder issued corresponding orders to both armies for the contemplated invasion of England.[227]

One of the early plans for the German invasion of the Soviet Union (codenamed *OPERATIONSENTWURF OST,* or Operational Design East) was developed by General Erich Marcks, chief of the staff of the Eighteenth Army in Bromberg, West Prussia, on the instructions of the Supreme Command of the Wehrmacht (Oberkommando der Wehrmacht, or OKW) in July 1940.[228] That plan was further developed by General Friedrich Paulus, Quartermaster-General I and deputy chief of the Army General Staff, in November and December 1940.[229] Paulus was responsible for coordination of all planning for the campaign.[230] Particular attention was given to the distribution of forces and the selection of

operational objectives; these points were rechecked and clarified in a planning game held on 29 November and on 2, 3, and 7 December, at Zossen.[231] The strategic objectives of the campaign had been determined by Hitler, while operational objectives had been issued by Halder, as chief of the Army General Staff.

The participants in the planning game were section chiefs of the Army General Staff, several other army officers, and a Luftwaffe general assigned to the OKH. The game's purpose was to rehearse preparations for the operation under consideration; specifically, the questions to be explored were command and control for reaching the Kiev–Minsk line; the employment of Army Group South, which would be advancing from southern Poland and Romania; and the difficulties of operations from Romania.[232] Paulus conducted three related planning games: 29 November and 2 December, the Part I game (Eastern Study)—distribution of Russian forces, Russian fortifications, discussion of the operational "possibilities" after reaching the first operational objectives; 3 December, the Part II game (Eastern Operation, or *Ostoperation*)—border engagements and operations until the Lake Peipus–Minsk–Kiev line; and 7 December, the Part III game—operational possibilities east of that line (see map 3).[233]

On 28 November, the tasks of the three army groups involved were given to their respective chiefs of staff, who independently conducted planning games to assess those tasks. Halder's purpose was to put the preparations for the campaign on a broader footing.[234] Participants were directed to prepare operational drafts by themselves, without the assistance of other army group commanders.[235] The conclusion of all the game phases was that the German forces would prove insufficient if they failed to break Soviet resistance decisively before reaching the Kiev–Minsk–Peipus Lake line.[236]

Another conclusion was that the weight of main effort should be the advance from Poland.[237] It was also concluded that large numbers of infantry operating jointly with the 1st and 2nd Panzer Groups would be required to complete the planned encirclement of the Soviet forces in the Minsk area; otherwise panzer forces would not be able to continue their advance.[238] Further, the time Army Group North would require to capture the Baltic states would cause a delay in the advance of its right flank, thereby endangering the left flank of Army Group Center. The most important lesson, however, was that a quick outcome could be achieved only by encircling and capturing the Soviet capital, Moscow. Hence, the main task of Army Groups North and South would be to protect the flanks of Army Group Center.[239] The accomplishment of initial (operational) objectives along the line running from the Dnepr River to the south of Kiev through Rogachev, Orsha, Vitebsk, Velikiye Luki, and Pskov to Pernau (Pärnu) would be a prerequisite for a decisive attack on Moscow. Another lesson was that the German forces would require a three-week pause for buildup of supply lines and

MAP 3

Errechnete (Planspiel) und erreichte Linie nach Beginn des deutschen Angriffs gegen die Sowjetunion
WEISSES MEER
Archangelsk
Dwina
N
Onega-See
Ladoga-See
STOCKHOLM
HELSINKI
Finn. Meerbusen
H.Gr. Leningrad
Tichwin
H.Gr. Wolchow
Dagö
Reval
Narwa
Leningrad
Lyuban
Luga
18.
Ösel
ESTLAND
Peipus-S.
Tartu
Pleskau
H. Gr. Nord
Pernau
Riga
Libau
LETTLAND
Nowgorod
Ilmen-S.
Staraja Russa
16.
Demjansk
Cholm
Waldai-Höhe
Ostaschkow
Kalinin
H.Gr. Nordwest
Schtscherbakow-Stausee
Wolga
Gorki
Paneweschis
Daugapils
Weliki Luki
Idropez
Rschew
3.Pz.
Sytschewka
4. Pz.
Krasnaja Polnaja
MOSKAU
Moskwa
H.Gr. Kalinin
H.Gr. West
LITAUEN
Kowno
Wilna
Polozk
Welisch
Bjelyj
9.
Wilebsk
Smolensk
Maledetschno
Minsk
Orscha
Wjasma
Moshaisk
H.Gr. Nord
GEN.GOUV.
H.Gr. Mitte
WEISS-RUSSLAND
Mogilew
4.
Kaluga
Rosslawl
Bobruisk
Rogatschew
H.Gr. Mitte
2.Pz.
Brest-Litowsk
WARSCHAU
POLEN
Pripjet
Gomel
Briansk
Orel
H.Gr. Südwest
Sümpfe
WOLYNIEN
H.Gr. Süd
2.
Kursk
Korosten
Rowno
Lemberg
Woronesch
Saratow
Samara
Kiew
Bjelgorod
6.
Charkow
Wolfschansk
H. Gr. Süd
GALIZIEN
Winniza
Kamenez Podolsk
Mogilew Podolsk
Tscherkassy
Poltawa
Don
Isjum
17.
Kalatsch
Stalingrad
Uman
Kirowograd
Dnjepropetrowsk
Woroschilowgrad
UNGARN
BESSARABIEN
Perwomaisk
Artemowsk
Kischinew
UKRAINE
H.Gr. Süd
Stalino
H.Gr. Kaukasus
1.Pz.
Taganrog
Rostow
KALMÜCKEN STEPPE
Astrachan
Odessa
Galatz
ASOWSCHES MEER
Krim
11.rum.
Kertsch
BUKAREST
RUMÄNIEN
Donau
Sewastopol
Kuban
Maikop
KASPISCHES MEER
BULGARIEN
SCHWARZES MEER
Tuapse
KAUKASUS
Elbrus
Mosdok
Terek
erstrebte deutsche Linie in Russland
Errechnete Linie (Angriffstag 22.6.1941) X+8.Tag
" " X+20.Tag
Erreichte Linie X+28.Tag (bis 19.7.1941)
" " X+39.Tag (bis 30.7.1941)
" " X+166.Tag (bis 5.12.1941)
Russische Linie (5.12.1941)
Erstrebte Linie in Russland
Grenze der Heeresgruppe
1.Pz., 17. Armee
0 200 400 600 km

resupply. The offensive could be resumed on the fortieth day after the start of the campaign.[240]

Paulus conducted another planning game on 13–14 December at Zossen.[241] The reason for this planning game was the need to elaborate further the planned attack on the Soviet Union on the basis of the OKW instruction of July 1940.[242] On 18 December, Hitler directed the OKW to issue Instruction Nr. 21 for the invasion of Soviet Russia, code-named BARBAROSSA. The participants included chiefs of various sections in the Army General Staff, a few other, senior officers, and again a Luftwaffe general.[243] The Red side was played by the Chief of Foreign Armies, East (Lieutenant Colonel Eberhard Kinzel) and his two aides. The main purpose was to work through the theoretical possibilities for initial troop movements, on the basis of written studies.[244] This exchange of views would result in draft initial-deployment instructions.[245] The participants also examined the options available for continuing operations after successful preliminary engagements.[246] The focus was purely on strategic leadership, the current situation, and concealment of the offensive intent; occupation of the rear areas was not discussed.[247]

During the planning game, cooperation between the armies and panzer armies was addressed, as well as command and control. Issues included cooperation in Army Group South between the forces deployed in Romania (Armies A and B), those in southern Poland (Armies C and D), and the First Panzer Army; the separation line between Army Groups North and Center; the danger to the flank of Army Group North; the regrouping of forces after accomplishment of the first "strategic" (actually operational) objectives on the Dnepr River–Upper Dvina River–Peipus Lake line and the continuation of the offensive; reserves; and Luftwaffe support to the ground forces. The question of cooperation by the Kriegsmarine with other services was not raised.[248] In the game the Germans assumed that on day X+20 of the eastern campaign, their forces, after heavy fighting in the border areas of western Ukraine and Belorussia and in the Baltic states, would have accomplished, in terms of space and time, the initial objectives of the campaign plan. The players' conclusion was that a three-week operational pause for rest and resupply would be necessary before resuming the offensive toward Moscow. The Germans calculated that the Soviets would lose about 50 percent of their strength in the initial battles in the border areas and would be unable to carry out a strategic counterattack.[249]

The Army General Staff conducted yet another planning game on 17–20 December to explore the massive problems of supplying the German forces in the pending eastern campaign. This game was directed by General Eduard Wagner, Quartermaster-General III (OQ III) (Supply and Transport, Organization and Technology). The Russian campaign would require logistical support and

sustainment for about three million men, 600,000 horses, and 650,000 motor vehicles as far as 435–500 miles from initial deployment areas. The results of the planning game were summarized in a study, *Foundations of Command and Control of Supply in Wide-Ranging Operations in Sparsely Populated Areas,* sent to all frontline major commands in February 1941. Halder and Paulus spoke of the need to produce special winter clothing. However, that could not be done without a corresponding increase in raw-material allocations, and that in turn required Hitler's approval. Halder asked Brauchitsch to present the problem to Hitler. Brauchitsch did so, but Hitler dismissed these concerns, insisting that the campaign would be over before winter.[250]

On 5 February 1941 Army Group South conducted an operational planning game, dubbed OTTO, for the invasion of the Soviet Union.[251] The exercise was directed by General Halder; General Georg von Sodenstern, chief of the staff of Army Group South, handled the details.[252] Preparation for the game started on 7 January and was completed by the 27th.[253] Among other things, the players predicted the destruction of some 240 Soviet divisions, which would leave only sixty, and that the Soviets would not be able to recover from these losses. (In the actual invasion, the Germans in fact quickly destroyed 248 Soviet divisions, but they then faced not the sixty divisions predicted in the planning game but 220 divisions.)[254]

On 1 February 1941 the Army General Staff issued deployment instructions to all three army group commanders, who then conducted planning games and developed their operational designs. The final plans of the army groups were prepared by exchanging views with the Army General Staff. A final meeting about the eastern campaign was held on 4 and 5 June at Zossen, where orders from the army-group to the division level were clarified in accordance with the common mission.[255]

War Games in Combat

The Germans conducted war games during pauses in combat to study problems the actual situation on the front would pose.[256] For example, on 2 November 1944, during Operation *WACHT AM RHEIN* (Watch on the Rhine, popularly known in the West as the Battle of the Bulge), Army Group B, under Field Marshal Walther Model (1891–1945), rehearsed defense measures against a possible American attack at the boundary between the German Fifth and the Seventh Armies. The leading commanders and their staff officers assembled at headquarters for the planning game, which had just started when a fairly strong American attack was launched in the Huertgen–Gemuter Forest area. Model immediately ordered that with the exception of the commanders directly affected by the attack, the participants were to continue the game, incorporating reports from the front in the course of play.[257] For the next four hours the situation at the front—and in the

planning game—became critical. The 116th Panzer Division (Der Windhund, or Greyhound) had to be placed at the disposal of the threatened army. It happened that its commander, General Siegfried von Waldenburg, who was engaged in the planning game, was receiving a series of game orders to that very effect from Army Group B and the Fifth Panzer Army. In a few minutes Waldenburg issued not simulated orders at the map table but real ones to his operations officer and couriers. His division was alerted and set in motion in the shortest possible time. Pure chance had changed a simple planning game into stern reality.[258]

In the spring of 1944, General Friedrich Dollmann, commander of the German Seventh Army, had been responsible for the defense of Brittany and Normandy. He decided to conduct a planning game at Rennes on what proved to be the very day of the Allied invasion, 6 June, believing that because of bad weather the attack would not come that day. All his corps and division commanders were at Rennes when the Allies landed. Field Marshal Erwin Rommel, commander of Army Group B, was also absent that day, visiting his wife in Germany. Dollmann sent the 21st Panzer Division to counterattack, but the attempt failed. He then ordered General Fritz Bayerlein's Panzer-Lehr Division toward the front. Bayerlein protested that the movement would be conducted in daylight and his division would be decimated from the air, but he followed orders. As a consequence his division lost five tanks and some 120 other vehicles to Allied aircraft and was not ready to counterattack until 9 June, when it was repulsed by the Allies.[259]

CLEAR THINKING, SOUND AND RAPID DECISIONS

The modern war game emerged in Germany in the late eighteenth century and the first three decades of the nineteenth. By the end of the nineteenth century, most of the militaries of major European powers, as well as of the United States and Japan, had adopted the German methods. The golden age of the German war gaming came during the era of Hans von Seeckt, when the number and types of games played greatly increased, compared with prior to 1914. The main reason was the severe restrictions placed by the Versailles Treaty on the size and composition of the new Reichswehr. Another reason was the extremely difficult economic and financial situation in Germany in the 1920s.

War gaming greatly contributed to the superb level of professional education and combat training in the Reichswehr and Wehrmacht, to which in the interwar years no other military came even close. The Germans showed that war games could be used effectively and creatively to educate future commanders and their staffs at all levels of command and to train them in estimating situations and in making rapid and sound decisions. War games greatly enhanced the preparation of their officers in all aspects of warfare, at all echelons; games also tested new methods and checked fundamentals of doctrinal documents. The German

experience shows that war games, in combination with the study of military and naval history, have inestimable value for the operational thinking of high commanders and their staffs.

The Germans paid close attention to the preparation and execution of war games. Directors of games were selected by fitness for the position rather than rank. They had to possess not only solid knowledge and understanding of the theoretical and practical aspects of warfare but also strong personalities and characters.

In the war games themselves, the Germans stressed the importance of simplicity and realism in the initial situation. Political aspects of the situation provided only the framework for a game; they were not allowed to dominate it. The Germans emphasized repeatedly the importance of thinking and presenting ideas succinctly and logically. They paid great attention to the thorough preparation of a war game and devoted far more time to discussion and reflection than to the actual play. The Germans also invariably expended considerable effort in writing planning studies on the problems identified during a game. One of the perhaps most important elements of the German way of war gaming, however, was the final discussion, verbal and written—not a mere formality but a thorough analysis of the most important episodes and the lessons learned.

War games were routinely used at all levels of command in rehearsing current and future plans, for which the "planning game" seems to have been the preferred vehicle. In most cases the Germans were able thereby to identify problems that might arise in execution. Another benefit was that all commanders and their staffs became intimately familiar with the situations in the prospective operating areas. This made it much easier to carry out the operation.

The German way of war gaming was the product of the German national character and way of warfare. It cannot be easily transplanted elsewhere, if at all. Yet many aspects of German war gaming in the interwar years could be adopted today. For example, war games should be conducted often and at all command echelons. The diversity of war games should be greatly increased. Game design should emulate the focus on simple and interesting initial situations and on concise and logical presentation of ideas. Lengthy and prolonged game play is less valuable than extensive preparation and discussion. A game should end with thorough analysis of its most important events, reflecting the level of command at which it is conducted. Problems identified during a game should result in written staff studies. Current and future plans should invariably be rehearsed in planning games or map exercises. War games should be also used for force planning.

Much greater emphasis should be placed today and in the future on enhancing the quality of professional education and training, and of war gaming in particular. This is especially critical in an era of shrinking forces and severe budget

restrictions. Resources for war gaming and professional education should be the very last to be cut in the face of national economic difficulties.

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BOOK REVIEWS

LIFTING THE VEIL ON PRIVATE MARITIME SECURITY

Berube, Claude, and Patrick Cullen, eds. *Maritime Private Security: Market Responses to Piracy, Terrorism and Waterborne Security Risks in the 21st Century.* New York: Routledge, 2012. 272pp. $135

In April 2012 a video began to circulate of an incident that had taken place off Somalia. It shows private armed guards using heavy and repeated volleys of semiautomatic rifle fire to repel the close approach of two skiffs with armed pirates on board. Although most of the comments attached to the post were supportive, even "gung ho," more sober analyses were largely critical, pointing to poor tactics, disorganized command, wasteful use of ammunition, inadequate defensive preparations, and more damningly, failure to observe proper procedures. In May, a U.S. company, admitting responsibility, claimed that the reaction had been justified and responsible because the guards believed that the pirates had rocket-propelled grenades and feared for their lives. The company also claimed the attack had been the second on its client's ship in three days.

The challenge to maritime security mounted by Somali pirates is arguably the most substantial challenge to the lawful and peaceful use of the sea in fifty years. Responses to this challenge are beset with difficulties. The ocean space from Somalia to India is vast, too large to be patrolled effectively by a force of a hundred ships, even if so many vessels were available. The onus, therefore, has fallen to the potential victims to protect themselves, a solution that has been promoted vigorously by the United States but for a long time has been resisted by the shipping industry and by most other states. The tide of opinion, however, has turned. Shippers now realize that the naval protection they demanded will not get any better than it is now and is in fact likely to recede as financial constraints diminish warship numbers and steaming hours. Instead, shippers have turned to the private sector, which despite a shortage of experienced operatives has responded with alacrity. Where once the number of maritime security specialists could be counted on the fingers of one hand, now there are probably nearly a hundred, most of them domiciled in the United States and the United Kingdom.

This volume of essays, edited by Claude Berube, who has already written on the expansion of private contractors into the maritime sphere, and Patrick Cullen,

sets out to examine "the evolution, function, problems, and prospects of private security operating in the maritime sector." It suggests that the events of 9/11 were crucial in shifting port-security responsibilities away from the state and onto private industry, "reinterpreting," as Cullen puts it, maritime actors from passive objects needing state protection to responsible subjects accountable for their own security. This shift has now been extended to ships transiting areas prone to piracy, including Southeast Asia, the Arabian Sea off Somalia, and the Gulf of Guinea. The implications of this new interpretation are enormous, particularly when added to the increasing use of private contractors in a quasi-military role, as exemplified by Blackwater—a dynamic particularly generated by the Iraq conflict. As the market potential of that war zone declined, companies and individuals reportedly started new ventures and new careers in the waters off Somalia.

Understandably, given the book's focus, few of its essays delve deeply into the strategic and moral issues to which these activities give rise. The editors instead have chosen to emphasize the many practical implications of this development, including the early experience in the Strait of Malacca, by the acknowledged expert, Carolin Liss; the often-violent challenges to ship and fixed-platform operators off Nigeria; the uncertainties and complexities of a legal regime struggling to come to terms with rapid change; the role of private contractors in the security of ports; and the arguments for and against the use of armed guards on ships versus alternative risk-reduction measures that owners need to take into account. Other essays examine the equally complicated questions that arise when private operators take on coast-guard and fishery-protection roles, drawing on examples from Sierra Leone, Somaliland, and Puntland.

This is a timely and well-informed introduction to a new industry about which most people—even people familiar with shipping—know relatively little. This veil must be lifted, because the demands for private maritime security are likely to increase in line with the growing economic importance of the seas and the criminally and politically inspired challenges to which that importance gives rise.

MARTIN MURPHY
Alexandria, Virginia

Little, Benerson. *Pirate Hunting: The Fight against Pirates, Privateers, and Sea Raiders from Antiquity to the Present.* Herndon, Va.: Potomac Books, 2010. 357pp. $29.95

This is Benerson Little's latest of three books about pirates. In this one he has done a superb job of recounting the violent history that surrounds pirates and raiders and the measures that have been taken to hunt and suppress them. Also, Little has not forgotten privateers, who, depending on available opportunities, easily switched from being pirate hunters to pirates.

Little opens by noting the differences between pirates, who are principally active on the seas, and raiders, who are more associated with attacking from, not on, the water. Additionally, he provides detailed information about pirate and raider ships and about tactics and weapons, which over the centuries progressed from rams, arrows, and spears to cannon and muskets.

The earliest attempts to counter and suppress pirates and raiders were undertaken by navies and armed merchant vessels, which were, in the latter case, fighting for survival. Pirates and raiders, such as the famous Vikings, carried out coastal raids, as well as attacking ships. Assaults from the sea led to the inland movement of many shore settlements, to the construction of fortifications, and to the creation of early-warning systems of watchtowers. Raiders were vulnerable to ambush, cut off from escape and exposing their landing vessels to possible capture and destruction.

Pirate tactics changed with technology and the skills of the hunters. In general, and for a long period in the history of piracy, pirates held the upper hand in terms of ships, vessel ordnance, and individual weapons. However, as navies became more proficient, the end result was that pirates in most cases avoided confrontation with naval vessels.

Over the centuries nonviolent measures to combat piracy were employed, with varying degrees of success. These attempts included antipiracy agreements of the type forged during the Middle Ages by the Cinque Ports (a group of harbor towns on England's southeast coast) and by the Hanseatic League (city-states on the North Sea and the Baltic). Essentially, these agreements served to deter pirates from one member of the alliance from attacking vessels of another member, state, or port. They also contained provisions that prohibited merchants, and others, from acting as fences.

As the author points out, notwithstanding nonviolent measures, the best defenses against seagoing criminals have proved to be a combination of a strong, prevailing naval presence and stable governments ashore that are willing and able to deny safe havens.

The author devotes the final part of the book to modern piracy and pirate hunting. He mentions as part of the discussion the piracy that was widespread on the South China Sea in the 1970s and 1980s, as well as the more virulent form now present off Somalia. Little sets out many of the difficulties encountered there, what is being done to protect ships transiting the area, and finally, provides suggestions for steps that might be taken to deal with the problem more aggressively.

In summary, Benerson Little has produced a good book that readers with an interest in maritime history and affairs will enjoy.

JACK GOTTSCHALK
Livingston, New Jersey

Mueller, John, and Mark G. Stewart. *Terror, Security, and Money: Balancing the Risks, Benefits, and Costs of Homeland Security.* New York: Oxford Univ. Press, 2011. 267pp. $24.95

For a searching and all too often dismaying account of the homeland-security industry that has emerged after 9/11, look no farther. Mueller and Stewart's chief task is to apply cold analysis to the costs and benefits of homeland-security expenditures. The question, they argue, is not "Does the expense reduce the threat?" but "Is the size of the threat reduction worth the expense?"

Their answer is a resounding no. First, Mueller and Stewart demonstrate that individuals tend to exaggerate greatly the probability of a terrorist attack. They then present evidence, for example, that the risk of dying

from a terrorist attack between 2002 and 2007 was one in 1.8 billion. They offer a more transparent model that takes into account the probabilities of attack, potential losses, and the like.

Mueller and Stewart's discussion of the relative benefits of low-cost security measures is engaging. They argue that many of the far less expensive and less imposing measures are more effective. A RAND study claims that suspicious-package reporting reduces the risks to shopping malls 60 percent, while costly searching of bags manages only 15 percent.

Also, since 9/11 many of the few attempted terrorist attacks in the United States have been prevented by tip-offs and informants. Both the shoe bomber in 2001 and the underwear bomber in 2009 were stopped by fast-acting airline passengers. In addition, the public's pre-9/11 complacency is most likely gone for good, and that is a rarely discussed but valuable (and free) benefit for homeland security.

In perhaps their most provocative, but not unconvincing, chapter, Mueller and Stewart offer several premises that should form the foundation of homeland security. They argue that the number of potential targets is infinite, while the number and competence of terrorists are extremely small. (Risa Brooks has an excellent *International Security* article on the second issue.) If you protect one target, it is easy for terrorists to move to another. Subways cannot be truly protected without shutting them down.

Mueller and Stewart argue that political considerations play a major role in determining politicians' major incentive to "play it safe" and exaggerate the terrorist threat, at no cost to themselves. When George W. Bush stated, correctly, that the war on terror could not be won but that the threat could be reduced, his Democratic opponents pounced on this reasonable statement, asking what would have happened if Reagan had felt the same about communism.

The book concludes with a discussion of politicians' responsibility to communicate risks accurately. The striking and unfortunate dissimilarity between the national-security and the medical professions struck me as I read this.

This book is serious and approachable, an important contribution. If it became the dominant mantra in Washington, we all would probably be exactly as safe as we are now, while spending a lot less.

ANDREW L. STIGLER
Naval War College

Noble, Dennis L. *The U.S. Coast Guard's War on Human Smuggling.* Gainesville: Univ. Press of Florida, 2011. 297pp. $29.95

Of the eleven missions of the U.S. Coast Guard today, none is more fraught with human drama, tragedy, and the capacity to touch the soul than the interdiction of the smuggling of illegal migrant workers into the United States. Dennis Noble, long a chronicler of the history of the Coast Guard, sets out this story from the perspective of those who dare to enter the United States illegally and of the men and women of the Coast Guard who respond to the challenge. That the story unfolds at sea only enhances the urgency of the tale.

Noble centers on the unique stories surrounding the migrant flows from Cuba (in the Fidel Castro era), Haiti (since the fall of the despot President Jean-Claude "Baby Doc" Duvalier), and mainland China. A constant thread that

runs throughout the narrative is how different laws, regulations, and political environments over time have resulted in disparate migrant policies. Cubans, for example, benefited from the "wet foot/dry foot" policy, which did not apply to Haitian migrants, who were viewed as fleeing not for political reasons but for economic ones. Noble paints a vivid picture that highlights the experiences of all the participants from all aspects.

A strong point of this work is Noble's research, which includes visiting and photographing locations in Cuba that have played a significant role in the migrant story. He also excels in bringing out little-known aspects of migrant life. For example, a fact not commonly known is that since 1999 the U.S. Coast Guard has had a liaison officer assigned to the U.S. Interests Section in Havana. The Mariel boatlift of April 1980, in which at least 7,665 Cubans arrived in southern Florida, is well documented, but the number lost in that exodus is unknown. The Mariel boatlift was actually the second of three large migrant attempts from Cuba by sea. The third wave of evacuees made for the United States between 1991 and 1994, when the Coast Guard intercepted over forty-five thousand Cubans. I was stationed in Miami in 1993–94 and recall seeing several Cuban fishermen who had been rescued by the Coast Guard and were detained at its base at Miami Beach. They chose to return. Was their look of apprehension because of what the United States would do or how their own government would respond when they returned?

Noble gives equal treatment to the plight of the evacuees of Haiti, while the Chinese migrant story has a peculiarly sinister aspect. Since June 1993, when the coastal freighter *Golden Venture* was grounded off Queens, New York City, the Coast Guard has found itself involved in a human-smuggling operation the likes of which it has never encountered before. It has involved the canny smugglers known as "Sister Ping" and the "snakeheads."

Noble rounds out his book with a look at the politics and policies of migrant interdiction and includes some of his own recommendations for the problem.

The only distraction, albeit a minor one, is the overuse of acronyms, which breaks up Noble's otherwise smooth narrative. However, this in no way should deter anyone from reading this interesting work. It is obvious that Noble has a clear passion for the Coast Guard and a deep respect for the men and women who serve in it.

Dennis Noble has given maritime history a solid and well documented book on a mission unique to the U.S. Coast Guard—a mission not likely to go away anytime soon.

CDR. DAVID L. TESKA, U.S. COAST GUARD RESERVE
San Diego, California

Twomey, Christopher P. *The Military Lens: Doctrinal Difference and Deterrence Failure in Sino-American Relations*. Ithaca, N.Y.: Cornell Univ. Press, 2010. 240pp. $35

It has been said that "weapons speak to the wise—but in general they need interpreters." Political scientist Christopher P. Twomey, associate professor at the Naval Postgraduate School, in Monterey, California, shows the difficulty of that interpretation. He makes a strong case that the existence of different military languages—that is, different doctrines—explains otherwise puzzling examples of deterrence failure and escalation.

The Military Lens is a welcome addition to the literature on deterrence, which too often treats actors as interchangeable "black boxes." Twomey writes in the spirit of authors like Robert Jervis, who explored psychological factors that lead to misinterpretation of others' actions. This work adds a new factor, however —military doctrine. All militaries have doctrines, or "theory of victory." Doctrine is a service's vision of how its resources are used to achieve operational success. The author's core argument is that strategists look through a doctrinal "lens" when assessing capabilities and intentions, which weakens deterrence in two ways: the credibility of others' threats is discounted if their doctrines are thought ineffective, and others' signals are missed if one's own doctrine is used as a template for indicators. This attention to misperceptions at the level of operational net assessment is new and of direct relevance to planners and analysts.

Much of the book tests this new theory against three Korean War episodes: China's failure to deter U.S. movement north of the thirty-eighth parallel; U.S. failure to deter China from entering the war; and the less-well-known maritime story of the American deterrence of a planned Chinese invasion of Taiwan. Twomey traces the dramatic American and People's Liberation Army (PLA) underestimations of each other's land-warfare capabilities, leading to threats being noticed but not considered credible. The PLA Navy, with officers educated largely abroad, understood that U.S. air supremacy rendered landings impossible. The author's choice of the 1950 cases was wise, because other than the PLA Army/Navy differences, most of the variables are constant. A notable feature of the case studies is the author's archival research, conducted in both the United States and China. The fresh documentation alone will appeal to Korean War specialists.

Doctrinal difference fits the Korean War, but the radical divergence of the revolutionary PLA and the atomic American military makes this an easier case, which Twomey acknowledges. How often do doctrinal differences lead to deterrence failures generally? An additional chapter argues that in two Arab-Israeli cases deterrence failure is correlated with doctrinal divergence. The evidence is suggestive but could be strengthened with a larger universe of cases, which might answer additional questions. For example: Are doctrinal differences more common in ground than naval warfare? Do opponents in long-lasting rivalries (compared to the United States–China in 1950) fare better at assessing each others' capability despite different doctrines?

Twomey offers a warning that clear, credible threats may not be understood as such by others. Since doctrinal misperceptions take place at the military level, the lessons here are particularly relevant to planners, as they develop assessments and deterrent options for civilian leaders. This work also holds implications for professional military education. Officers should be encouraged to overcome doctrinal filters, scholars should study foreign doctrines, and educational exchanges might reduce misunderstandings (the author himself is involved in U.S.-Chinese dialogues). Perhaps weapons speak a common tongue, but Twomey reminds us that it is the militaries who need to be fluent in multiple languages.

DAVID BURBACH
Naval War College

McNeilly, Mark R. *Sun Tzu and the Art of Business: Six Strategic Principles for Managers*. New York: Oxford Univ. Press, 2012. 330pp. $19.95

Two millennia ago, the original author of Sun Tzu's *Art of War* presumably never intended the work to be applied to the twenty-first-century global marketplace. However, Mark McNeilly has taken the liberty of doing so. In a novel approach, he has compiled a list of strategic concepts derived from the ancient military strategist and translated them into a lexicon for modern corporate capitalists. *Sun Tzu and the Art of Business* is a guidebook for business managers looking to increase profitability for the sake of their companies and their employees. The book was originally published in 1996 but has been revised to address the influence of globalization, the increased use of the Internet, the increase in cooperative alliances, and the economic rise of China.

McNeilly, a former infantry officer and corporate strategist, derives six principles from Sun Tzu's philosophy that, if followed, will yield business success. The prescriptive list consists of winning without fighting—capturing your market without destroying it; avoiding strength, attacking weakness—striking where they least expect it; employing deception and foreknowledge—maximizing the power of market information; using speed and preparation—moving swiftly to overcome your competitors; shaping your opponent—employing strategy to master your opponent; and displaying character-based leadership—providing effective leadership in turbulent times.

McNeilly assumes there are natural parallels between ancient warfare and modern commerce. For example, battlefield victory is likened to market share and industry dominance. In order to validate his points, the author juxtaposes numerous business case studies with military history. While certainly engaging, some of the parallels seem oversimplified and lacking in critical analysis. The inclusion of so many case studies tends to minimize the complexities of each one, and when taken out of context, the case studies become almost trivialized. There is also little discussion on risk assessment or how one's enemy or competitor may react to each of the principles outlined.

For those who want a simple approach to applying military strategy to the competitive marketplace, this book achieves that objective. It is an enjoyable and quick read, written in a style that is brisk and easy to follow. Included is a practical section designed to help readers develop and apply a business approach. What readers may find especially helpful is the inclusion of Samuel B. Griffith's translation of Sun Tzu's *The Art of War* and a list of references for further study. Overall, this work may appeal more to a general audience than to serious students of strategy.

CDR. JUDY MALANA, U.S. NAVY
Naval War College

Wiarda, Howard. *Military Brass vs. Civilian Academics at the National War College: A Clash of Cultures.* Lanham, Md.: Lexington Books, 2011. 176pp. $60

Howard Wiarda's memoir of his time at the National War College is a startling book. During nearly a decade of teaching in the professional military

education (PME) program at the National Defense University (NDU), Wiarda amassed anecdotes that point to dire flaws in the way military education is conducted in the United States.

Unfortunately, the book is a missed opportunity. Every professor who has worked at a war college will recognize the stories Wiarda tells and can likely match many of them. However, because the book is written in the tone of an angry tell-all rather than with the detachment of a scholarly volume, too many legitimate points will be too quickly dismissed, especially by the most entrenched elements in PME, who are rightly the focus of Wiarda's criticisms. This is all the more regrettable because these are not the gripes of a disaffected or failed academic. Howard Wiarda's expertise and reputation are beyond question, and the government was fortunate to have him teaching U.S. military officers. Alas, if only NDU had felt that way about him and the other civilian scholars who have worked there.

Wiarda shows that he and other civilian academics at the National War College, a school within NDU, were treated by the administration as little better than irritants, necessary evils to be endured. Senior leaders at NDU cared little for education and not at all for scholarship. Their attitude toward the civilian faculty veered from benign neglect to sneering disdain, which sometimes manifested itself in weird ways. In one example, Wiarda was hauled into the commandant's office one morning after attending a reception and told he should not be "socializing above his rank," whatever that means.

Among these sometimes comical stories (a note to National's faculty: don't *ever* park in the commandant's spot), Wiarda is making a serious point about a common problem in all PME institutions—the people in charge of education are not actually educators.

Wiarda provides this blistering description, for example, of the kind of president who is "the bane of NDU's colleges and institutes": a "heavy-handed one, full of fire and brimstone, who thinks he/she knows everything there is to know about military education or even education in general, wants to change and reform the entire institution, and especially seeks to put 'those independent professors' in their place. He/she will usually spend a year or two instituting grand, sweeping changes, fulminating at the scholars and teachers, and wondering why his reforms are not carried out."

This general hostility to the faculty and the educational enterprise has deep roots. Wiarda writes that in military culture, senior officers are taught that they are good at everything, especially anything civilians can do. Worse, any disagreement with these senior military leaders triggers what Wiarda accurately sees as a huge intellectual inferiority complex.

This insecurity not only makes officers more difficult to educate but warps the priorities of the institution toward an obsession with student happiness rather than educational results. The idea that the faculty should teach and the students should learn clearly chafed Wiarda's superiors, who saw education as far less important than protecting the well-being (and fragile egos) of the officers at NDU.

Here Wiarda is merciless in his description of the students as "pandered to" and "pampered." He provides plenty of material to support that description,

including the virtual impossibility of failing students for any reason. Wiarda was told, as all PME faculty have been for years, that the students were his peers, an assertion that Wiarda found "laughable." Nor was it true. Wiarda shows that the students were actually treated as his superiors and that he was expected to serve them accordingly.

Academics, for their part, have no understanding of the military obsession with hierarchy and procedure—also a point Wiarda mentions. Yet in this too-brief volume, the author does not explore either culture as much as his title promises. Too much space is taken up with anecdotes and score settling at the expense of discussing remedies, the stories and problems being presented without priority. In one example, Wiarda is absolutely right to decry the often sadistic manipulation of faculty contracts by some of the martinets for whom he worked. This is a widespread problem in the PME world. More time discussing the pressing need for a tenure system in PME, however, and less complaining about distractions (like student parking) might have been more productive.

There are other problems with the book as well. Although short, it is poorly edited—indeed, it seems not to have been edited at all. The same anecdotes appear again in different places, sections overlap, and there are avoidable lapses in grammar and spelling. An entire chapter, about Wiarda's international travels while working for NDU, is out of place and disposable.

Nonetheless, the book's flaws do not obscure the reality of the problem. Successful and highly regarded educators from every major PME institution —including George Reed, Dan Hughes, Judith Stiehm, and Joan Johnson-Freese, among others—have stepped forward and written about the same issues. While Wiarda's narrative is flawed in tone, it is still an important step in illuminating serious and continuing problems in the PME community.

THOMAS NICHOLS
Naval War College

Hamilton, C. I. *The Making of the Modern Admiralty: British Naval Policy-Making, 1805–1927.* New York: Cambridge Univ. Press, 2011. 345pp. $120

This book explores the history of the development of naval policy making in the British Admiralty from 1805 to 1927, from the Battle of Trafalgar to the aftermath of World War I.

The author, C. I. Hamilton, a professor of modern European history at the University of the Witwatersrand, writes that he first became interested in this subject because he wished to know who did what at the Admiralty and how they did it. Reading this book answers those questions and introduces a rich tapestry of interesting historical characters and complex naval policy issues.

Although the book paints an analytically cohesive picture of naval policy issues that plagued would-be planners for over a century, it also contains many colorful historical details. Beginning in 1805 with Lord Barham, who at age eighty could run the navy almost single-handedly from his desk, the book deals authoritatively with thorny issues of naval administration and policy.

Many fascinating professional and civilian characters appear in this period. Only naval historians may initially recognize some, but there are many other

individuals who are well known, such as Benjamin Disraeli, William E. Gladstone, Winston Churchill, and Sea Lords John Fisher and John Jellicoe. The Admiralty was consistently an important department of the British government, but it was never a guaranteed stepping-stone for a First Lord to prime ministerial power. Churchill's elevation in 1940 to prime minister arose from political considerations other than his having been a First Lord of the Admiralty.

The book illustrates how difficult it was during most of this period for any First Lord and his professional naval advisers to develop policy and administer a far-flung navy at the same time. Although day-to-day administrative matters almost always consumed attention, policy usually was made under crisis and only when it was demonstrably required, often without the benefit of any long period of careful examination. Personalities rather than processes usually drove its development, until the Admiralty finally agreed to the establishment of a permanent apparatus of policy making based on good record keeping. This important part of the machinery of government was especially necessary in times of rapid technological change and various financial crises. Its effective achievement did not, however, come to fruition until the 1920s.

To assist in understanding these developments, the author has included useful appendixes. One sets out the names of the First Lords and naval professionals in the Admiralty. Another is a list of acronyms. Interspersed throughout the book are tables, which, for example, show the duties of the Lords and the structure of the Admiralty over time.

Naval historians will appreciate this well-researched and well-written and scholarly work, but even those without a detailed knowledge of the period will discover it to be an informative and agreeable read.

K. D. LOGAN
Ottawa, Ontario

Hillenbrand, Laura. *Unbroken: A World War II Story of Survival, Resilience and Redemption.* New York: Random House, 2010. 473pp. $27

Although not a historian, Laura Hillenbrand is an accomplished researcher and storyteller. In *Unbroken* she chronicles one individual's tale of "the greatest generation," revealing how war, particularly the Second World War, spun the lives of common, and not-so-common, individuals out of control and set them on trajectories that would otherwise have never occurred. It is also a tale of extraordinary endurance, incredible luck (both good and bad), and what can only be termed a remarkable ability to forgive immeasurable wrongdoings.

Unbroken is the story of Louie Zamperini, a remarkable man who was, in succession, a streetwise "tough kid," an Olympian, an Army Air Corps bombardier, an air-crash survivor, a Japanese POW, a veteran who suffered from post-traumatic stress disorder, and a born-again Christian. That he survived the war is incredible; that he lived to forgive his captors is unbelievable.

At the most basic level *Unbroken* is a classic "gripping yarn." The story's drama is all the more compelling because the adventures, perils, and triumphs are factual. Zamperini did run in the 1936 Olympics, on the same team as Jesse Owens. He spent forty-seven days in a life raft, covering more

than a thousand miles of ocean, only to be captured by the Japanese. The endurance and courage of Zamperini and his fellow survivor, Captain Russell Allen Philips, is reason enough to read this book. The saga of Zamperini and Philips is a war story, a survival story, a prison story, and even a love story.

As it is, *Unbroken* warrants a positive review and will delight readers young and old. Yet it could have been much more. For example, although Hillenbrand never deliberately raises the issue, there is a lot to say about how and what we remember and how and what we forget. By all reasonable expectations, Louie Zamperini should have been widely remembered. He experienced an epic challenge of survival and returned home to headlines, and although he continued to be in the public eye, time after time, a reader's reaction to this book is, "Who was this guy!"

How is it that Zamperini is not a household name? How many others who deserve the honor of memory have been lost in time? The author refers to others who also have been forgotten, perhaps the most poignant of whom were nine Marines left behind during the 1942 Makin raid. They were captured by the Japanese, taken to Kwajalein, and sometime later executed. Although not apparently serendipitous, one of the book's major contributions is the inclusion of those nine names.

Perhaps because the book is so individual-centric, Hillenbrand provides little context for the events that sweep Zamperini along his path. She provides no analysis of the larger issues. To some degree this illuminates the fundamental question: To what extent are an individual's actions, however heroic, essential to the conclusion of struggles of nations? Nor is there an effort to deal with what might be termed midlevel questions, such as how much of the attendant sadistic treatment in Japanese POW camps was the policy of the state. Or was it just aberrant behavior on the part of sociopaths?

Similarly, Zamperini's difficulties in adjusting to postwar life in the United States is described but with very little context, and even less attempt to use his story to deepen one's understanding of what current-day veterans are experiencing. Hillenbrand does not ask, much less answer, whether Zamperini's homecoming experience was typical of those of POWs dealing with a world in which post-traumatic stress syndrome was not even recognized, much less understood, or whether this was an unusual case for the time.

Hillenbrand admits to liking Louie Zamperini, and it is easy to see why she would. Although her feeling does not affect the book's balance, it may explain why sections detailing Zamperini's darker experiences (which include blackout drinking and spouse abuse) have a somewhat rushed feeling. It is as though Hillenbrand moves through his failings as fast as she can to showcase Zamperini's religious rebirth at a Billy Graham meeting.

Readers who see the book for what it is—a personal narrative of an extraordinary man in an extraordinary time—will not be disappointed.

RICHARD NORTON
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IN MY VIEW

SOME CAREFUL DEFINITIONS

Sir:

The *Naval War College Review* for Spring 2012 contains the article "Networking the Global Maritime Partnership." The subject is important and overdue. Unfortunately the article suffers from an egregious lack of definition discipline that makes the article full of faults and, in particular, gets to an ineffective end for our allies. (Sloppy terminology is endemic to the information technology business, both in and out of the Navy, so this is nothing new.)

The article makes three statements that I fully agree with:

- One is in the conclusion: "It is beyond debate that the U.S. Navy will continue to partner with other navies."
- The second is a page earlier: "The way forward may be easier than some think." This needs to be exploited, but the article is silent regarding it.
- And the nub of the shortcomings: "Interoperability does not fit into any requirements 'bin.'" We corporately do not know how to measure interoperability or improve it.

Unfortunately, the treatment does not show how these second or third points are to be achieved, either by the U.S. Navy itself or with its partner services or allies. The quotations given (one repeated below) by Vice Admiral Arthur K. Cebrowski are over a decade old—shouldn't we be making some more intellectual progress?

The hit parade of badly defined terms appears all over in the article. But the worst is the term "network" itself! If you google around a bit in a few dictionaries and program glossaries (or, in DODAF language, the TV2), you'll find dozens of definitions of the term "network," but two are sufficient here:

- *Communications network* (or internetwork) is one definition (and the one that the Canadians seem to be using in their legitimate complaint—"Is there a place for small navies?"). A communications network is "plumbing."

A communications network does not include end systems that generate or consume data; a communications network only transports the data. ARPANET was an example, so is SIPRNET, so are LANs in our ships. So is the extension of SIPRNET onto the battlefield in the USMC WPPL program. But we seem to lack an intra–battle group extension of the Internet which our allies' ships could plug into when sailing in company.

- *Information-systems networks* include the end systems (clients and servers, in the IT parlance) that attach to the communications system. The sense, decide, and act nodes are included in this definition.

In the case of this information-systems-network definition, the communications network is an absolutely necessary prerequisite. In the commercial world, most of the conversation on information-system networks (last year's buzz phrase was "SOA," service-oriented architecture, and this year's buzz phrase is "cloud computing") tacitly assumes an ample communications network. But this is not the case in the Navy, where at least one of the sense/decide/act nodes is on a different platform. Neither the assumption nor the fact can be taken for granted. But the article blithely does just that. So we're locked onto the superstructure, sans keel and hull.

Examples. There are information systems all around us. Warships have sensors (such as radars and lookouts), decision nodes (combat information centers), and actors (the warship's weapons), all connected together with some form of communications, which we generically call "local area networks." But we do not need to get exotic; our own nervous systems are classical information systems—sensory nerves, a decision node, and motor nerves to actuate muscles. All connected together by the axons—the communications system.

Complexity in information systems involves nesting and chaining of these same components. Usually when you take apart something advertised as SOA, you find lots of chaining. Mercifully, the authors did not use the much-abused and never-defined term "system of systems" in this article.

Admiral Cebrowski and John Garstka are quoted: "Network-centric warfare derives its power from . . . strong networking." Which definition is being used? The difference is not important in visionary statements, but it makes a lot of programmatic, interoperability, and infrastructure impact, and nowhere is it more critical than in cross-platform, cross-service, and cross-nation integration.

The program implication is that we have a dismal record in delivering information-system networks (including communications) within a single program, especially if the program crosses platform boundaries—which is always the case in interesting situations and is certainly the case in the integration of partner navies. The only programs that we've seemed to deliver correctly are those that

focus on a building block (such as GIG-BE, delivering the terrestrial-WAN backbone, limiting scope to the terminal router). A modularization model—how to fit the building blocks together—not only will benefit our allies but will improve our acquisition record.

There are a host of other terms in the article that have either no definition or myriad definitions:

- "Network-centric warfare" is used repeatedly but is not defined. Of note, "network-centric systems engineering" never appears at all. Network-centric systems engineering is simply attaching all end systems to a (communications) network (rather than to each other, point to point). This relaxes scale and modularity constraints. Network-centric systems engineering is a prerequisite to network-centric operations.
- Copernicus and FORCENet are both concepts or visions but are erroneously described as programs or are assumed to lead directly to programs. Global Command and Control System–Maritime was the program that emerged from Copernicus. What we today call GCCS-M is the result of the collapsing of no fewer than twenty-four tactical decision-support programs within SPAWAR alone into one, circa 1990.
- "Architecture" is used several times but not defined. Having been a "C3I architect" once in a former life, I'm well versed in 101 definitions of the term. Buried in here is the key to meeting complaints like the Canadians'. The authors state that "interoperability does not fit into any requirements 'bin,'" a statement I fully agree with. But without parsing interoperability into communications, data, process, procedure, cognitive, and doctrinal components, we have no means to measure it. Without measurement, we can't improve it. Interoperability is supposed to be the province of architecture, but modularization does not appear in the article. It is in no way clear that the requirements meetings described (e.g., AG-1, AG-6, etc.) will lead to a proper modularization model. We have no track record of success here.
- GIG has a definition—an evil PowerPoint one. Unfortunately it's worse than useless. Modularization is not spoken here.

To integrate our allies, we both need interoperability. Some of the infrastructure, such as a LAN in a ship, will be brought to the fleet by the national navy, not provided by the United States. So approaches of "buy into our infrastructure," such as "buy into Cooperative Engagement Capability (CEC)," are not appropriate.

The authors state, "The way forward may be easier than some think." They are right. Let's explore, using the first, communications-network, definition. The communications network is application-agnostic, and it is a prerequisite to the

applications (information system networks). So it must come before discussions like SOAs, but it will not prejudice those discussions. The communications internetwork is made up of three "plumbing" parts:

- A terrestrial-WAN (in the U.S. DoD, this is provided by the Defense Information System Network). DISN is made up of technology identical to that in commercial ISP infrastructure.
- LANs within platforms. The end systems in the platform attach to these LANs.
- Radio-WANs that interconnect the ships and connect them to the shoreside terrestrial-WAN.

The "glue" that routes these network segments together in the U.S. Navy is made up of quite ordinary (COTS) routers procured under the ADNS program.

All of these components except the radio-WAN can be acquired somewhat independently by a partner navy. And they may be procured on the open market —there are multiple suppliers. There is very little military-specific in the U.S. Navy's infrastructure. And none of a partner navy's need be either.

The radio-WAN landscape in the U.S. military has lain under a heavy fog for over a decade. The requirements term of the Joint Tactical Radio System program has been "interoperable radio," but never was "interoperability" defined as *ability to extend the Internet*. Sloppy definition, and consequently faulty requirements and scope, doomed the acquisitions. Meanwhile, the means to solve the problem have appeared in the commercial marketplace, and both the U.S. Marine Corps and the Army have found and deployed them on the battlefield. In Navy terms, we need the ability to extend the Internet, first from the routers at the communications stations (terminal nodes of the terrestrial-WAN ashore) to our ships, and second between the routers of the ships in the battle group (what we used to call "intra–battle group communications"). From the allied perspective, our partners need to know what the interface definition is.

The protocols necessary to do this have been standardized in the IEEE 802.16 and the TIA Long Term Evolution standards; adaptations from commercial practice are necessary only in the RF component (known as "Phy," for "physical media dependent"), not the protocols. Implementations exist from multiple vendors on the open market (ironically, the Marine Corps purchases were from a Canadian company). If you have a cell phone advertised as "4G" in your pocket, you have one of these standards implemented in it.

End systems need interface principles too. This principle applies to the interface; it is agnostic about the function of the end system. Principle: all end systems attach to a LAN within the platform. This applies, of course, to your laptop,

but it also applies to the decision-support equipment in CIC and to the radars, sonars, and other sensors in a warship. The corollary to this principle is that the data emitted by an end system must be secured before it leaves that end system; relying on the communications infrastructure to provide for authenticity and confidentiality of the data is not tenable in a coalition environment.

Discipline in the terminology is just as important as discipline in the modularization. The commercial information technology constantly overhypes the 1,001 applications that work over the Internet, in an effort to separate buyers from their money. As stewards of the nation's security and the taxpayers' money, we cannot uncritically reuse the terminology without some careful definitions.

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REFLECTIONS ON READING

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A *Sailor's History of the U.S. Navy,* by Lieutenant Commander Thomas J. Cutler, USN (Ret.), has been a popular book in the Chief of Naval Operations' Professional Reading Program (CNO-PRP) since the program was established in 2006. In the book's preface, Cutler, a former U.S. Navy gunner's mate, writes eloquently about the value of studying the past to illuminate the future and about the importance of understanding the heritage of one's chosen profession:

> More than half a century ago, Theodore Roscoe wrote a book called *This Is Your Navy,* an informal history written specifically for Sailors. On the first page he asked: "What's the good of going back to the old days, or even yesterday, when you've got your hands full with affairs of the present?" . . . Roscoe's answer to his own question was, "What you do today depends largely on what was done yesterday"; that "the things you're doing now result from, and are a continuation of, things done in the past." He quoted American patriot Patrick Henry . . . as saying: "I have but one lamp by which my feet are guided, and that is the lamp of experience. I know no way of judging the future but by the past."

Later in the preface, Cutler reflects back on his years in uniform: "I knew I was part of something special. The uniform I wore with such pride—that made me instantly identifiable as someone special—meant little without the knowledge that other people wore that same uniform, or some form of it when they fought the Barbary States of North Africa, charged into hostile Confederate fire at Mobile Bay, and destroyed Nazi submarines and Japanese aircraft carriers when evil men were hell-bent on dominating the world. The face I saw each morning in the mirror was not unusual in any particular way. Yet is was special because it had felt the sting of salt spray and had seen the wonders of a starry night at sea just as Sailors had done for many centuries before." He went on, "No doubt, I would have been proud of my service even if I had never known any of the history that had preceded me. But the more I learned about those Sailors who had gone before me, the more special I felt, and the more determined I became to measure

up to the standards they set. I could have served the Navy well without knowing its history, *but I sure wouldn't want to.*"

This award-winning author provides a series of interesting and informative vignettes about the honor, courage, and commitment of our navy's sailors. The stories include one about a very remarkable prisoner of war (POW) from the Vietnam War. In 1967, Seaman Apprentice Doug Hegdahl was blown overboard from the cruiser USS *Canberra* by the blast from the ship's five-inch guns during a night firing exercise. Rescued by Vietnamese fishermen, he was transported to a POW camp in Hanoi. Amid a large group of captured aviators, Doug was the most junior sailor. He convinced his North Vietnamese captors that he was an "uneducated peasant" who could neither read nor write, and his guard's subsequent lax supervision enabled him to destroy enemy trucks and equipment routinely. He memorized the names and ranks of 250 fellow prisoners and was able to provide this information and other intelligence when he was released after two years of captivity. His detailed reports of the horrendous conditions in the camps provided some of the first evidence of the torture and mistreatment being experienced by American POWs.

In the preface to *A Sailor's History,* Tom Cutler indirectly illustrates several of the reasons why the Navy Professional Reading Program exists. He argues that regardless of how busy sailors may be in dealing with the pressing issues of the day, they would be well served to find time to consider the path that led them to their current situations and that a knowledge of history often shows that solutions to today's problems may have roots in the past. Cutler's preface, as does his entire book, recalls the proud history and significant accomplishments of the sailors of centuries gone by and celebrates the important work that the entire U.S. Navy team does for our nation every day.

If you too are an American sailor, read *A Sailor's History of the U.S. Navy,* or another book in the CNO-PRP, to help you remember that you are part of something much greater than yourself!

JOHN E. JACKSON