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At the Twentieth International Seapower Symposium, held at the Naval War College in October 2011, one thing was strikingly clear: among the leaders of many of the world's navies today there is a growing embrace of the vision of maritime security cooperation first enunciated by former Chief of Naval Operations Admiral Michael Mullen under the label of the "thousand-ship navy." In our lead article, "Networking the Global Maritime Partnership," Stephanie Hszieh, George Galdorisi, Terry McKearney, and Darren Sutton explore this vision and the obstacles that continue to stand in the way of its realization.

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Cover

The Mark 45 five-inch/54-caliber lightweight gun on the forecastle of the Arleigh Burke*–class guided-missile destroyer USS* Higgins *(DDG 76), on 22 March 2011 in the Arabian Gulf.* Higgins *was deployed with the* Carl Vinson *Carrier Strike Group. U.S. Navy photo by Lt. Cdr. Alex T. Mabini, USN.*

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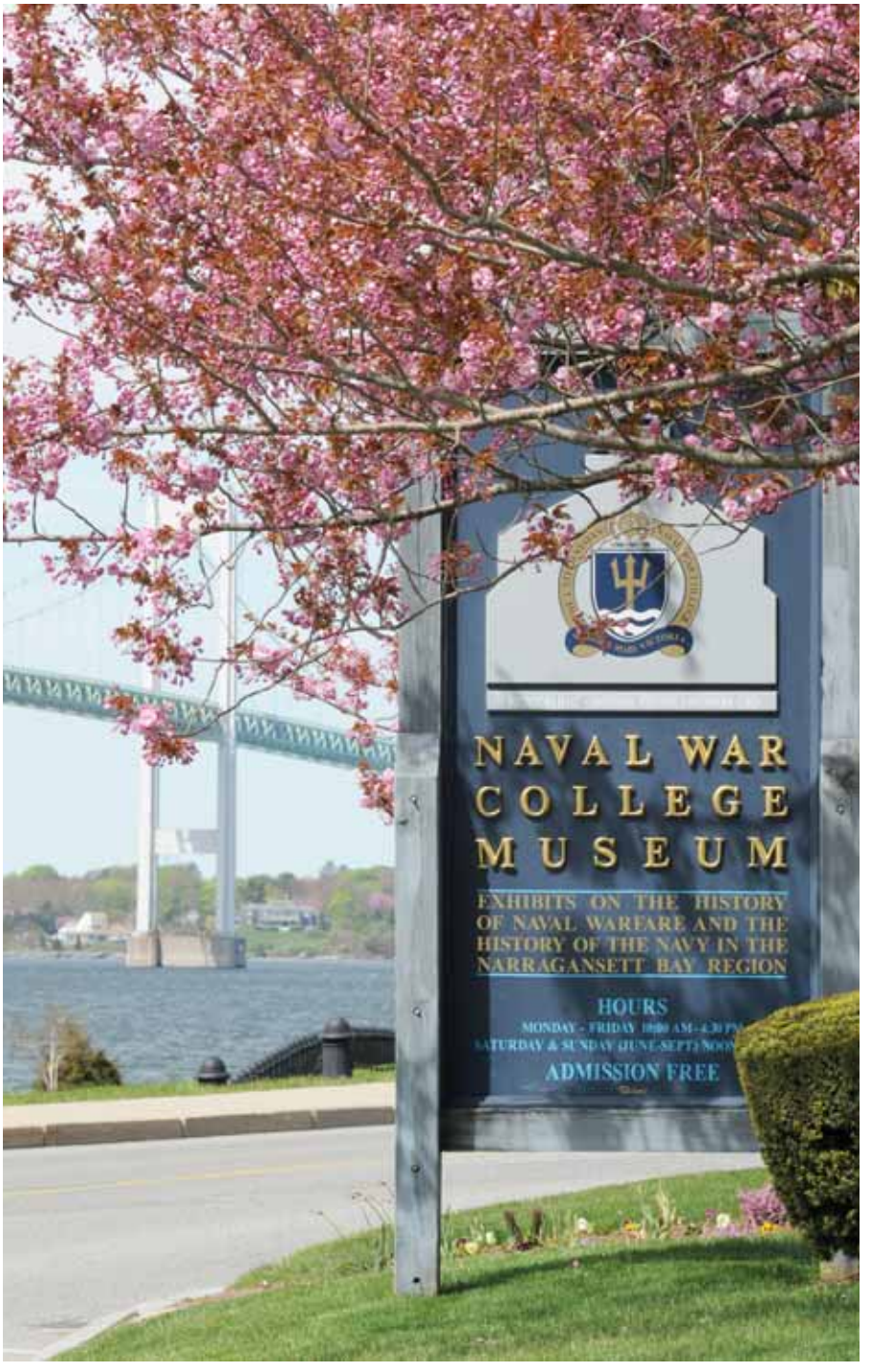
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EXHIBITS ON THE HISTORY
OF NAVAL WARFARE AND THE
HISTORY OF THE NAVY IN THE
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FROM THE EDITORS

At the Twentieth International Seapower Symposium, held at the Naval War College in October 2011, one thing was strikingly clear: among the leaders of many of the world's navies today there is a growing embrace of the vision of maritime security cooperation first enunciated by former Chief of Naval Operations Admiral Michael Mullen under the label of the "thousand-ship navy." In our lead article, "Networking the Global Maritime Partnership," Stephanie Hszieh, George Galdorisi, Terry McKearney, and Darren Sutton explore this vision and the obstacles that continue to stand in the way of its realization. The rapid evolution of communications and sensor technologies is, ironically, one such obstacle, because one of its major effects is to *increase* the gap between the capabilities enjoyed by the U.S. Navy in this area and the capabilities of allied and partner navies. The authors offer a model for intensified regional collaboration in technology development that can help overcome this problem: The Technical Cooperation Program, a long-standing though little-known five-nation (United States, United Kingdom, Canada, Australia, and New Zealand) umbrella organization involving a network of 170 research entities and some 1,200 scientists and engineers.

Since World War II, more U.S. naval vessels have been destroyed or seriously damaged by sea mines than by all other forms of enemy action combined. Sea mines are the naval weapon of choice for nations of limited resources and technological capacity, as we have been reminded recently by the Iranian navy. Today, the People's Republic of China has a robust mining capability and an arsenal of sea mines that may number as many as a hundred thousand. In "Taking Mines Seriously: Mine Warfare in China's Near Seas," Scott C. Truver provides an authoritative, detailed survey of contemporary mine warfare and mine countermeasures generally and explores the implications of China's potential use of this most "asymmetric" of naval weapons in any conflict with the United States and its allies in the western Pacific. He argues that it is time the U.S. Navy took sea mines seriously—not only from a defensive perspective but also as an offensive instrument in the context of its emerging "AirSea Battle" concept.

Recent apparent frictions between American military commanders and the Obama administration over troop drawdowns in Iraq and Afghanistan serve as a reminder that the civil-military relationship in the United States remains fraught

with controversy and misunderstanding. Two articles in this issue address this subject. In "What Military Officers Need to Know about Civil-Military Relations," Mackubin Thomas Owens provides a succinct overview and guide to how to think about civil-military relations in a realistic and responsible fashion. He argues that many military officers continue to draw the wrong conclusions from the Vietnam War concerning the proper role of civilian authority in managing military operations, and he sounds an important cautionary note about the tendency observable in today's military to abuse the notion of "operational art" by using it as a device for excluding perceived civilian meddling in military decision making. A proper understanding of "strategy," by contrast, shows the necessity of civil-military collaboration in a sustained process aimed at preserving the always delicate balance between military and political considerations. Dayne E. Nix, in "American Civil-Military Relations: Samuel P. Huntington and the Political Dimensions of Military Professionalism," complements Owens's account by exploring the various senses in which, given today's evolving strategic environment, military officers must themselves acquire "political" expertise in order to perform their own jobs effectively. Professors Owens and Nix are both on the faculty of the Naval War College.

If the Korean War as a whole remains a dim memory at best for most Americans, many have heard of its most famous feat of arms—General Douglas MacArthur's amphibious assault at Inchon, behind the lines of the invading North Koreans. In "A Remarkable Military Feat: The Hungnam Redeployment, December 1950," Donald Chisholm, of the Naval War College's Joint Military Operations Department, offers an account of a similar feat that has been undeservedly forgotten—the withdrawal of elements of three American divisions from northeastern Korea under pressure from advancing Chinese Communist forces after their victory at the battle of the Chosen Reservoir. Chisholm argues that this brilliantly orchestrated "amphibious withdrawal" deserves to be carefully studied as a resource for the reconstruction of an aspect of amphibious warfare doctrine that scarcely exists in today's American military.

Finally, as part of our long-standing effort to understand capabilities and current trends within foreign middle-power navies, consonant with the U.S. Navy's continuing emphasis on global maritime security cooperation, we offer Deane-Peter Baker's "The South African Navy and African Maritime Security." Baker, currently a professor at the U.S. Naval Academy, argues that South Africa's naval past (focusing on guardianship of the Cape sea line of communication) continues to shape its current maritime outlook, at the expense of a focus on the current challenges of maritime security that South Africa faces, in common with other African littoral nations. South Africa, he believes, can play an important continent-wide role in this regard.

HISTORICAL MONOGRAPH 19

The nineteenth book in our Historical Monograph series—*Talking about Naval History: A Collection of Essays,* by John B. Hattendorf, the Naval War College's Ernest J. King Professor of Maritime History—is available for sale by the Government Printing Office's online bookstore. This collection of twenty articles on naval and maritime history selected from the recent work of Professor Hattendorf is published to mark the more than twenty-five years that he has occupied the College's prestigious Ernest J. King Chair of Maritime History. Professor Hattendorf's articles and essays range widely across five hundred years of history and deal with four major themes: maritime history as a field of academic and professional study, European naval history in the classic age of sail, American naval history, and naval theory.

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, 334, 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).

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 first responsibility of a leader is to define reality. The last is to say thank you.

MAX DE PREE

REALITY—THE NAVAL WAR COLLEGE is over 127 years old, and since its establishment it has made a powerful difference in America's wars, in the prevention of wars, and in those cherished but too-infrequent periods of peace. For as long as the United States has a navy, the Naval War College will continue to make a powerful difference while remaining the Navy's home of thought.

Thank you—We just updated our Missions, Functions, and Tasks Statement. I want to lay out the four missions of the Naval War College and link them to the four incredible deans primarily responsible for accomplishing those missions—and to say thank you.

Before I get to the missions and deans, I want to say thank you as well to the two people who lead the Naval War College. First is our provost and our Chief Operating Officer, Ambassador (Ret.) Mary Ann Peters. Second is my deputy and our Chief of Staff, Captain Russ Knight, USN. Ambassador Peters has served three Presidents here, after a distinguished career in the State Department, spanning from assignment in Moscow at the height of the Cold War to service as ambassador to the world's seventh-most-populous country, Bangladesh. Captain Knight began his distinguished naval aviation career flying the original "warhorse," the A-6 Intruder, before commanding an F/A-18 Hornet squadron. He also commanded Naval Air Station Meridian, Mississippi, where he taught, flew, led, and perfected his skills in maintaining a complex installation.

Mission 1: Educate and Develop Leaders. *The College shall provide current, rigorous and relevant professional military education programs supporting the Navy's Professional Military Education (PME) Continuum.* The Dean of Academic Affairs, who accomplishes this mission, is Dr. John Garofano. The College's

"smokestack industry" is to produce graduates who know military history, how our national security policy is formulated, and how joint military operations are executed.

Mission 2: Help CNO Define the Future Navy and Its Roles and Missions. *The College shall conduct research, analysis, and gaming to support the requirements of the Secretary of the Navy, the Chief of Naval Operations, the combatant commanders, the Navy component commanders, the Navy's numbered fleet commanders, other Navy and Marine Corps commanders, the U.S. intelligence community, and other departments/agencies of the U.S. government.* The Dean, Center for Naval Warfare Studies, who accomplishes this mission, is Professor Robert C. "Barney" Rubel. The College's "venture capitalist of ideas," from war gaming to strategic research, the center has a long history of thinking hard about the future, innovating, writing, and making a difference.

Mission 3: Support Combat Readiness. *The College shall conduct Operational Level of War education, leadership and professional ethics training, education, and assessment activities to support the ability of the Navy's Joint Force Maritime Component Commanders (JFMCCs) and Navy component commanders to function effectively as operational commanders.* The Dean, College of Operational and Strategic Leadership, who accomplishes this mission, is Rear Admiral Jamie Kelly (Ret.). This college—the part of our institution to which the salt water flows most directly from the fleet, and then back—imbues in all our students knowledge of leadership and ethics, as well as meets the fleet's demand for confident, competent planners at the operational level of war.

Mission 4: Strengthen Maritime Security Cooperation. *The College shall bring together flag, senior and intermediate level naval leaders from other countries to develop them for high command in their navies; promote an open exchange of views between international security professionals which encourages friendship and cooperation and builds trust and confidence; and study operational planning methods and common maritime security challenges.* The Dean, International Programs and Maritime Security Cooperation, who accomplishes this mission, is Professor Tom Mangold. One of every six students here at the Naval War College is an international officer. This program truly embodies the spirit of the Navy's "Cooperative Strategy for 21st Century Seapower." It has built, year by year, a network of thousands of graduates, officers who have established deep and mutual trust and confidence through their shared experiences in the classroom and in travel, in Newport and as far as the Golden Gate Bridge.

Supported firmly by the Navy, we nevertheless benefit every day from the generous support of the Naval War College Foundation, led by its distinguished chairman, Mr. Peter Pelletier.

Finally, we must thank our Chief of Naval Operations, Admiral Jonathan Greenert, who has kept up the impressive record of his predecessor, Admiral Gary Roughead, of frequent trips to Newport. Uniquely among the services, as President of the Naval War College, I report directly to the CNO, with all the enormous benefit that brings.

Four important missions, incredible leadership in Newport and Washington, and friends around the world—to all of you, I say again, thank you.

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

Dr. Hszieh is a Corporate Strategy Group Strategic Analyst at the Space and Naval Warfare Systems Center Pacific, San Diego, California. She earned a PhD in political science at the University of Southern California and is the author or coauthor of numerous articles.

Captain Galdorisi, USN (Ret.), is Director, Corporate Strategy Group, at the Space and Naval Warfare Systems Center Pacific in San Diego, California. He is a graduate of the U.S. Naval Academy, and holds master's degrees from the Naval Postgraduate School (oceanography) and the University of San Diego (international relations). Additionally, he is a graduate of both the junior and senior courses at the Naval War College as well as the MIT Sloan School's Program for Senior Executives. His most recent book is Leave No Man Behind: The Saga of Combat Search and Rescue.

Mr. McKearney is the president and founder of The Ranger Group. A retired naval officer whose service spanned the Vietnam era to the post–Cold War era, he holds master's degrees from the U.S. Naval Postgraduate School and San Diego State University. He is president of the Military Operations Research Society (MORS) and is past chairman of the MORS symposium composite group on joint warfare.

Dr. Sutton is Head, Combat Systems Simulation and Analysis, Maritime Operations Division, in the Defence Science and Technology Organisation. He is also the science and technology adviser to the Royal Australian Navy's Air Warfare Destroyer Project. Dr. Sutton earned his doctor of philosophy in science (laser diagnostics for hypersonic flows) from the Australian National University.

NETWORKING THE GLOBAL MARITIME PARTNERSHIP

Stephanie Hszieh, George Galdorisi, Terry McKearney, and Darren Sutton

We will be prepared to support and defend our freedom of navigation and access to the global commons. Our partners and allies are our greatest strategic asset.

ADMIRAL MICHAEL MULLEN

Six years after Admiral Michael Mullen, then Chief of Naval Operations, proposed his "thousand-ship navy" concept at the Seventeenth International Seapower Symposium at the U.S. Naval War College in 2005, his notion of a Global Maritime Partnership is gaining increasing currency within, between, and among navies.[1] As the Chief of Naval Operations, Admiral Gary Roughead, noted in his remarks at the Nineteenth International Seapower Symposium in 2009, navies worldwide are working mightily to enhance cooperation and interoperability on the global commons.[2]

Real-world operations, especially in the Pacific Rim, have demonstrated that networking maritime forces is crucial to the effectiveness of operations that run the gamut from humanitarian operations to dealing with insurgencies, to nation-building, to state-on-state conflict. Additionally, these operations often involve nations and navies that come together on short—or no—notice, and, as a *necessary condition* for success in these operations, this networking must be immediately available and robust.

The central themes of this article are that the technical challenges of netting maritime forces together are not trivial and that overcoming these challenges is more daunting today than at any time in history. Why? Simply because unlike the days when flag hoists or simple radio transmissions were all that navies needed to effectively work together, rapid technological change has reached nations and navies unevenly and has actually *impeded* the effective networking of coalition partners. To maintain the growth and development of global maritime partnerships around the world, this article proposes leveraging an example of one effort

among long-standing partners to address the issue of naval interoperability at the defense laboratory level.

Coalitions at sea are not new. However, globalization—one of the macrotrends of the late twentieth and early twenty-first centuries—has prompted many nations to join together to maintain the security and stability of the maritime domain. Globalization—generally understood as "the integration of the political, economic, and cultural activities of geographically and/or nationally separated peoples"—involves the international interaction of information, financial capital, commerce, technology, and labor at significantly greater speeds and volumes than previously thought, and it impacts the lives and fortunes of all humanity.[3] It is important to recognize that globalization has a significant impact in the maritime domain, where events in one part of the world can swiftly impact peoples and societies across the globe.

As globalization has grown over the past two decades, we have witnessed an increase in maritime trade on the global commons. The tonnage of goods carried across the oceans by the rapidly growing merchant fleets of the world has more than quadrupled in the past four decades. This global exchange of goods has brought ever-increasing prosperity to the community of nations.

With globalization and the concomitant dependence on reliable oceanic commerce come vulnerabilities. Those who would disrupt this trade and the rule of law on the global commons, whether for economic or political gain, now have far more opportunities to attack vessels on the high seas or in near-shore waters than ever before. The dramatic increase in this century of piracy, a scourge many thought no longer existed, is but one manifestation of the threat to the rule of law on the global commons that the international community—and especially navies—must address today.

Concurrently, the nexus of climate change, growing populations, and a demographic shift to coastal and near-coastal regions has resulted in a significant increase in the impact of natural disasters—hurricanes, tsunamis, coastal flooding, volcanic events, earthquakes, and a host of others—that bring suffering to millions. Often, only naval forces are capable of delivering relief supplies in a timely fashion and in the volumes necessary to relieve disaster victims.

No single navy—of any nation—is robust enough to enforce the rule of law on the global commons alone or respond adequately to a major natural disaster. Today, through practice, global maritime partnerships have become the sine qua non for nations working together as global forces for good in support of ever-increasing levels of security, stability, and trust.

When navies assemble as a global force for good, a prerequisite for their ability to work together is that their ships, submarines, aircraft, command centers, and forces ashore have the ability to exchange data and information—often in

vast quantities—freely and seamlessly. Their effectiveness is directly proportional to their ability not only to communicate but to network, at sea and ashore. But as nations and navies proceed along different technological development paths, the challenges to effective networking are greater today than they were years ago, when navies used simpler—and more common—communications and rudimentary networking means. Because of this, their ability to interoperate effectively is often challenged.

Nations and navies are proceeding along different technological development paths. As a result of this inexorable trend, naval cooperation is under increasing stress.

There are core reasons why navies have been especially impeded in their attempts to network effectively in this new century. While the will is there, and though these navies are aligned through doctrine, tactics, techniques, and procedures to work and network together at sea, the technical means to realize the promise of "network-centric operations" throughout coalitions remain elusive.[4] Achieving that promise means dealing with the command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) issues that currently complicate this effective networking. Navies have overcome similar challenges in the past, however, and understanding where we have been can help the members of today's naval coalition avoid becoming "victims of limited experience."[5]

Naval coalitions have long been an important part of maintaining sea power and good order on the seas. During the Cold War it was a naval alliance, under the auspices of NATO, that was able, through the building of a credible nuclear and conventional deterrent, to check Soviet encroachment into Europe.[6] However, coalition operations have taken on renewed importance as the maintenance of good order at sea has become a pressing concern for the international community. Naval coalitions today tend to be heterogeneous with respect to the types of navies represented, while the operations naval coalitions undertake have also expanded to include antipiracy patrols, as well as disaster relief and humanitarian missions. The importance of the ability to communicate with coalition partners transcends warfare and impacts coalition naval partners in literally every endeavor. This was dramatically demonstrated in December 2004 and early 2005 during the Indian Ocean tsunami response, where eighteen nations worked together, primarily on and from the sea, to deliver relief supplies.[7]

As they do for naval coalitions in general, naval communications continue to represent an integral part of successful naval operations, because they allow commanders to create the all-important "operational picture." In the arena of naval warfare, communications are needed to maintain "dominant battlespace awareness"—knowledge of where one's enemies and one's own forces are. Out of this

knowledge comes the ability to plan and strategize to defeat the enemy. In 1904, Britain's First Sea Lord, Admiral Sir John Fisher, took advantage of the new communications technology of his time—the telegraph—and developed what Norman Friedman calls "picture-based warfare."[8] Admiral Fisher established two war rooms—one for the world, the other focused on the North Sea—to collate information received from telegraphic messages to plot where French commerce raiders were attacking British merchant ships. Armed with this picture-based view of the world, Admiral Fisher was able to direct battle cruisers to the spots.[9] Future British commanders built on Admiral Fisher's successful harnessing of communications technologies to construct a global tactical picture—one that served them well in the years leading up to World War I, as well as during that conflict.

The innovative use of communications technologies to better conduct picture-based warfare continues in contemporary naval operations. Throughout the 1990s and into the twenty-first century, other initiatives have included the National Defense University's Dominant Battlespace Concept; Admiral William Owens's "system of systems"; military transformation and the revolution in military affairs (RMA); and the concept of "network-centric warfare" popularized by Vice Admiral Arthur Cebrowski and John Garstka. All these have led to significant focus on using communications to provide U.S. forces and their coalition partners a better ability to build a common picture to conduct picture-based warfare and, in so doing, secure the tactical, operational, and strategic advantage. But what these reformers—and others like them—have really been talking about is moving beyond merely communicating between and among units to *networking* forces and forming them into single fighting entities.

COMMUNICATING EVOLVES INTO NETWORKING FOR MODERN NAVIES

> *Above all, the picture is what matters. Creating effective tactical pictures makes systems work, and it supports a new kind of warfare. The better the picture, the more efficient the operation.*
>
> DR. NORMAN FRIEDMAN

In the latter part of the twentieth century, the U.S. Navy, reflecting its traditional style of operations—which entailed the continuous forward deployment of a distributed force far from U.S. territory or supporting infrastructure—developed the concept of "networking" to ensure timely and reliable communications to enable the most effective employment of scattered forces.[10] This effort included experimentation with the Tactical Data Information Exchange System (TADIXS),

which was the progenitor of the tactical data systems, such as Link 11, shared by many navies today.

Armed with increasingly reliable tactical data links, global navies began to recognize the potential of this ability to link ships across vast distances to revolutionize naval warfare. As Loren Thompson pointed out in 2003, however, many of the concepts driving the networking of military forces today arose two decades ago:

> In 1990, long before network-centric warfare became a central feature of joint doctrine, the Navy established a program called "Copernicus" to assimilate emerging information technologies. . . . The admirals managing Copernicus understood that information technologies had the potential to revolutionize naval operations. The Navy adopted the phrase "network-centric warfare" to describe this nascent warfighting paradigm, because it stressed integration and communications over autonomy in conducting naval operations.[11]

Eight years later, Vice Admiral Cebrowski and John Garstka built on Copernicus to envision war fighting in the twenty-first century. Their 1998 U.S. Naval Institute *Proceedings* article, "Network-centric Warfare: Its Origin and Future," described the potential of network-centric concepts to alter the nature of warfare itself. Although the article was published well over a decade ago, their vision of network-centric warfare proved remarkably prescient:

> Network-centric warfare derives its power from the strong networking of a well-informed but geographically dispersed force. The enabling elements are a high-performance information grid, access to all appropriate information sources, weapons reach and maneuver with precision and speed of response, value-adding command and control (C2) processes—to include high-speed automated assignment of resources to need—and integrated sensor grids closely coupled in time to shooters and C2 processes. Network-centric warfare is applicable to all levels of warfare and contributes to the coalescence of strategy, operations, and tactics. It is transparent to mission, force size and composition, and geography.[12]

Theory met reality in the early part of the twenty-first century, when the United States, in response to the terrorist attacks of September 11, 2001, launched Operation ENDURING FREEDOM (known as OEF) to attack terrorist strongholds in Afghanistan. The ensuing campaign vindicated what the proponents of network-centric warfare had been advocating. As Admiral Vern Clark, then Chief of Naval Operations, later observed regarding the U.S. Navy's experience in OEF, "Eighty percent of the Navy strike sorties attacked targets that were unknown to the aircrews when they left the carriers. They relied upon networked sensors and joint communications to swiftly respond to targets of opportunity."[13]

Admiral Clark evolved a vision for the U.S. Navy called "Sea Power 21: Operational Concepts for a New Era."[14] Some critics described the three pillars of Sea Power 21 (Sea Shield, Sea Strike, and Sea Basing) as "old wine in new bottles," but with them Admiral Clark introduced a new term, "FORCEnet," which referred to "an initiative to tie together naval, joint and national information grids to achieve unprecedented situational awareness and knowledge management."[15] FORCEnet was clearly the next step in the evolution of the Navy's networking capabilities. Thompson noted that "Forcenet [*sic*] was the greatest system-integration challenge ever proposed in the history of warfare."[16] Whether this is true or not, the U.S. Navy made an enormous capital investment in FORCEnet and in the wide array of programs that instantiate the network-centric warfare concept.[17]

The ability of navies to network vast amounts of data at high speed over great distances—due to the advancement of C4ISR technologies over the past decades—has ushered in new capabilities, pushed the "information envelope," and expanded the "art of the possible" at sea. It is not an overstatement to say that C4ISR systems have become the sine qua non of success for most modern navies. In fact, navies have found conclusively that their effectiveness is proportional to their ability to network at sea and ashore. Accordingly, every modern navy has sought to install C4ISR networking technologies—often as rapidly as they can afford them—in order to gain that technological edge at sea.

Drawing on real-world results from the U.S.-led coalition conflicts in Kosovo, Afghanistan, and Iraq, the U.S. General Accounting Office (now the Government Accountability Office) summed up the results of these conflicts:

> Network-centric operating concepts have improved battlefield situation awareness for commanders and their forces. DoD [the U.S. Department of Defense] has indicated that technological improvements in information-gathering systems allow commanders an unprecedented view of the battlefield. Such improvements provide for greater shared situational awareness, which, in turn, speeds command and control. . . . Improvements in networking the force and the use of precision weapons are the primary reasons for the overwhelming combat power demonstrated in recent operations.[18]

C4ISR advances not only benefit so-called high-end navies, but any navy investing in naval C4ISR technologies can gain a tactical edge. As pointed out by Paul Mitchell in 2003 in this journal,

> Network-centric warfare aims at increasing the efficiency of the transfer of maritime information among participating units (or nodes). By optimizing the efficiency of operations through information exchange, even small naval formations can generate additional combat power. Data is manipulated by a series of dynamic and interlinked "grids": sensor grids gather the data, information grids fuse and process it, and engagement grids manage the operations generated.[19]

Network-centric concepts are also being applied to developing local and regional maritime situational awareness, through various maritime domain awareness (MDA) information-sharing efforts. In short, MDA efforts are also part of building global maritime partnerships, as various regional information-sharing partnerships are netting up the global maritime commons. Efforts such as the establishment of Maritime Headquarters with Maritime Operations Centers (MHQ/MOC) for the numbered fleets in the U.S. Navy are geared to provide the capability to support MDA operations globally. National programs in the United States—such as the Container Security Initiative, Automatic Identification System (AIS), Customs-Trade Partnership against Terrorism (C-TPAT), and Maritime Safety and Security Information System (MISSIS)—are part of the multiagency effort to build MDA capability to support the defense of the homeland.[20]

Other nations have similar efforts to build up regional situational awareness of the maritime domain. In the pirate-infested waters of the Malacca Strait, the trinational effort of Malaysia, Singapore, and Indonesia (MALSINDO) began as a means of protecting the sea-lanes in the region from illegal activities—piracy, smuggling, etc. The regional cooperation also brought about Project SURPIC in 2005, when Singapore and Indonesia developed a joint surveillance system to share information regarding vessel movements in the Singapore Straits.[21] Singapore also established the ACCESS system and the Regional Maritime Information Exchange (ReMIX) Internet-based system to encourage information exchanges with other nations in the region.[22]

The U.S. Navy is actively engaged with regional partners and longtime allies to build information-exchange agreements and relationships to enhance global maritime partnerships in order to support global maritime domain awareness. There is currently work under way between the U.S. Navy and the French Ministry of Defense to share information obtained from the U.S. Navy's AIS Program of Record and France's SPATIONAV coastal systems. This information-sharing agreement, spearheaded by the U.S. Navy's Space and Naval Warfare Systems Center Pacific (SSC Pacific), will extend U.S. awareness of vessel movement in the European region and also the French Caribbean. The latter will provide the United States with valuable information to support drug interdiction efforts in the Caribbean. The final phase of the plan would allow the United States and France to exchange information and analysis regarding noncooperative, or "dark," targets in order to identify maritime threats. Work is also under way with another partner nation, Singapore, to integrate satellite imagery with AIS information to track vessel movements.

Maritime domain awareness efforts within the U.S. Navy have also been extended to developing regions to build new partnerships. One example of this is a Sixth Fleet–sponsored project to provide the government of Ghana with the

ability to characterize vessel traffic in the Gulf of Guinea. SSC Pacific scientists and engineers supporting the Sixth Fleet work with the University of Ghana to train students on open-source image processing. There is also a project going on with the University of Ghana to track canoes fitted with radar reflectors and AIS transmitters. The small-boat detection trials and training of imagery analysts in that region help not only to build new relationships but also to develop a capability for persistent maritime domain awareness in the Gulf of Guinea.

Through these and other MDA efforts, the maritime domain is being netted and global maritime partnerships are being strengthened with these emerging information-sharing agreements. However, the ability of different naval forces to engage in similar information-sharing activities at sea remains a work in progress. As mentioned earlier, new C4ISR technologies have had a dramatic impact on the ability of many navies to network with their own ships, submarines, aircraft, and command centers. This has led to a situation where various components *within* each navy can exchange large amounts of information. In doing so, these navies have found that they become more effective across the spectrum of conflict, from peacemaking to counterinsurgency, to major conflict.

However, this rush to install cutting-edge technology in each navy has had just the opposite effect on its ability to network effectively with assets of *other* navies. The problem is exacerbated by the fact that nations and navies are proceeding along different technological development paths. As a result of this inexorable trend, naval cooperation is under increasing stress.

NETWORKING THE GLOBAL MARITIME PARTNERSHIP: HOW BIG A CHALLENGE?

> *In today's world, nothing significant can get done outside of a coalition context, but we have been* humbled *by the challenges of devising effective coalition communications.*
>
> DR. DAVID ALBERTS

The experience of the Canadian navy in numerous deployments with U.S. Navy carrier strike groups (CSGs) suggests the issues that persist even among two modern, technologically advanced navies, let alone between and among multiple navies at various levels of technological maturity.[23] This documented experience —as well as other compelling data—illustrates how the very technology that has helped each navy communicate internally has impeded effective communications with forces of other navies. Paul Mitchell, then director of academics at the Canadian Forces College, puts this dilemma in stark terms: "Is there a place for small navies in network-centric warfare? Will they be able to make any sort

of contribution in multinational naval operations of the future? Or will they be relegated to the sidelines, undertaking the most menial of tasks, encouraged to stay out of the way—or stay at home? . . . The 'need for speed' in network-centric operations places the whole notion of multinational operations at risk."[24]

In 2010 General James Mattis, then commander of U.S. Joint Forces Command, echoed Mitchell's themes as well as more general concerns regarding networking: "In this age, I don't care how tactically or operationally brilliant you are, if you cannot create harmony—even vicious harmony—on the battlefield based on trust across service lines, across coalition and national lines, and across civilian/military lines, you really need to go home, because your leadership style is obsolete."[25]

What reformers have really been talking about is moving beyond merely communicating between and among units to networking forces and forming them into single fighting entities.

But how important is coalition networking, and what is the "state of play" today, as U.S. Navy combat formations attempt to communicate and share data with coalition partners and to achieve shared situational awareness?[26] Some would say that it is not yet what it should be. As Mitchell predicts, absent more effective means to network and exchange data, navies may even stop attempting to operate together. He raises what is perhaps the most important question regarding coalition naval communications: What level of communications and networking is required to make coalition operations at sea effective?

Mitchell did not ask this question offhandedly. For a number of years the Canadian navy has deployed surface combatants with U.S. Navy CSGs for six-month deployments. In that environment the effectiveness of coalition interoperability moves from theory to the reality of high-tempo, forward naval operations—operations that often involved combat. Mitchell has interviewed the commanding officers of seven Canadian ships that deployed with U.S. Navy CSGs to determine how effectively they were able to communicate with their U.S. Navy partners. The results indicated that while significant progress has been made, more work needs to be done.

The experience of these Canadian commanding officers, as well as of others working with U.S. naval forces in NATO exercises or operations, is that the "need for speed" in network-centric operations may result in the exclusion of even close allies. Thus, Mitchell asserts, while the guiding principle of network-centric warfare is to increase the speed and efficiency of operations, coalitions as such are rarely concerned about combat efficiency. Rather, their fundamental realities are always the scarcity of operational resources or the limits of their political legitimacy, or both. This point led Mitchell to conclude that because of the impact

of slower networks or non-networked ships in a dynamic coalition environment, the prospects of the U.S. Navy's keeping "in step" with coalition partners is not high—absent enlightened efforts by all governments concerned.[27]

At a 2003 international C4ISR symposium, Mitchell put it directly during a question-and-answer period:

> We have been trying to work with the U.S. Navy for a long time. Ten years ago when we basically communicated by the red phone [tactical voice nets] we did all right because it was pretty much a level playing field. Five years ago, with CHALLENGE ATHENA and the beginnings of networked communications, it started to become more difficult for us as the U.S. Navy sped away from its partners. Today, with the emerging FORCEnet, the U.S. Navy is in danger of leaving behind other navies because all of the background and decision making that goes on over networks like SIPRNET [Secret Internet Protocol Router Network] is lost to us [;] thus, when the order is given to do something we have none of the background for it and we are not in the battle rhythm of the operation.[28]

The situation Mitchell describes represents the reality of current coalition operations at sea and indicates that there is important work yet to be done. This is consistent with what proponents of network-centric operations have been professing for some time. In a capstone publication of the Department of Defense Office of Force Transformation, the late Vice Admiral Arthur Cebrowski opined, "The United States wants its partners to be as interoperable as possible. Not being interoperable means you are not on the net, so you are not in a position to derive power from the information age."[29]

If this is such an important issue, why have naval professionals not worked harder and more vigorously to solve it, and why have we not found a solution yet? Part of the problem lies in the differing relative success that navies have had networking at sea. Even in the days of signal flags, ships at sea found ways to communicate to some degree. As technology advanced from flashing lights to radio Morse code, to tactical radio voice circuits, to tactical data links, ships at sea often had it better than forces ashore on expanded battlefields. The assurance that "we've communicated at sea before and we're doing so today" obscures how well we could communicate and exchange data if the right technology, doctrine, tactics, techniques, and procedures were in place.

The importance of coalition partners effectively networking has perhaps been best articulated by Commander Alberto Soto, of the Chilean navy, in an article in this journal: "The availability of a cooperatively created tactical picture has long been a 'dream of naval commanders who wanted to be able to see what was over the horizon.'"[30] He argues the criticality of building and sharing an effective common operational picture within a coalition, noting that "regional navies have disparate capabilities, with major differences in terms of C4ISR. . . . [A]llies

do not acquire or develop command-and-control systems or surveillance and reconnaissance assets with the main goal of exchanging information with other potential allies."[31]

For the U.S. Navy, there is another complicating factor. Almost all officers who attain high rank in that service have served as carrier strike group commanders, typically as their first afloat assignments as flag officers. As a CSG commander, they experienced the "best of the best" in the way of communications and data-exchange capabilities—with robust displays, ample switching and routing capabilities, and high bandwidth. Additionally, coalition nets such as CENTRIXS are likely to be installed on the flagship, the aircraft carrier, and that is where coalition naval officers embark for most exercises.[32] Thus, as carrier strike group commanders advance through policy and acquisition assignments, their collective memories of coalition communications and data-exchange capabilities are often quite positive, their operational experience rarely having given them first-person knowledge of significant problems. But their experiences constitute the exception—not the rule—for they have generally not experienced coalition networking from the position of international surface combatants attempting to work with U.S. Navy ships.

There is another, perhaps more important, reason why an effective solution still eludes operators who want to solve this issue. Coalition interoperability does not fit into any requirements "bin," for either the U.S. Navy or, most likely, coalition partners. It does not fly, float, or operate beneath the seas. It does not strike the enemy from afar, like cruise missiles. It does not enhance readiness, like spare parts or training. It therefore often does not have the requisite degree of high-level advocacy. This is not to imply that those in charge of setting requirements or acquiring weapons systems are not keen on doing the right thing—clearly they are. However, the definition of operational needs, the requirements-generation process, and acquisition practices have grown up over decades, even generations, and changing them to factor in coalition communications adequately takes a great deal of time and attention.

As yet, this is a journey that is incomplete, and part of the reason is an inability to quantify the "goodness" derived from coalition networking. With naval establishments and acquisition bureaucracies increasingly driven by the rules of the marketplace—measures of effectiveness, returns on investment, best business practices, and efficiency—the absence of quantification makes it difficult to argue for scarce research and development, and especially acquisition dollars.

But it is a process that must take place if the U.S. Navy and its likely coalition partners are to operate at sea effectively for the next century. As Mitchell points out, "In network-centric warfare information is the cornerstone of all action; the existence of separate networks operating at different speeds will have an

undeniable impact on battle rhythms."[33] Clearly, overcoming uneven or uncoordinated application of C4ISR technology by nations that would work together to form a global maritime partnership is an essential first step in making that partnership a reality.[34]

HARNESSING THE SCIENCE AND TECHNOLOGY COMMUNITY: THE AUSCANNZUKUS WAY

We will win—or lose—the next series of wars in our nation's laboratories.
ADMIRAL JAMES STAVRIDIS

For the U.S. Navy, the technical challenges of networking effectively with likely coalition partners are not trivial.[35] The problem is twofold in nature: first, quantifying the difference in operational effectiveness between that of a coalition force networked via U.S. Navy infrastructure provided by the Consolidated Afloat Networks and Enterprise Services (CANES, discussed below) and that of a coalition force less robustly networked; and second, finding a way for likely coalition partners to coevolve maritime systems in a way that enables maximum networking among ships and other platforms.[36]

The issue of coevolution is an important one, because for navies determined to work with other, often smaller, navies as global maritime *partners,* a cooperative arrangement regarding technology development is crucial.[37] This implies early and frequent collaboration among scientists and engineers in the laboratories of these navies, as well as those of other prospective global maritime partners.

One vehicle for such cooperation among Australia, Canada, New Zealand, the United Kingdom, and the United States—the five AUSCANNZUKUS nations—is The Technical Cooperation Program (TTCP). Although it has existed in various forms for over half a century, TTCP is not well-known, even among AUSCANNZUKUS naval personnel. Importantly, while an analysis of coalition interoperability along other lines is certainly possible, TTCP's organization and infrastructure provide a ready-made medium that makes success *probable*.

TTCP is a forum for defense science and technology collaboration. Established as a joint effort between the defense organizations of the partner nations, TTCP is one of the largest collaborative defense science and technology activities in the world. The statistics give some indication of its scope: five nations, eleven technology and systems groups, eighty technical panels and action groups, 170 organizations, and 1,200 scientists and engineers are involved. The forum's purpose is to enhance national defense and reduce costs. To this end, TTCP provides a formal framework that scientists and technologists can use to share information.

Collaboration within TTCP acquaints participants with each other's defense research and development programs so that national programs may be planned

in concert. TTCP has its center of gravity in the applied research domain but also encompasses basic research and technology development. Its scope extends to exploration of alternative concepts prior to development of specific systems; collaborative research; sharing of data, equipment, material and facilities; joint trials and exercises; and advanced technology demonstrations. Cooperation within TTCP can catalyze project-specific collaboration farther along the acquisition path.

Enhancing Coalition Interoperability: MAR AG-1 and AG-6

In response to a mutually perceived need to assess the quantitative value of network-centric naval forces, in 2002 TTCP's Maritime Systems Group (MAR) established Action Group One (AG-1) to conduct a three-year "Network-centric Maritime Warfare" collaborative study. The study produced robust quantitative assessments of the benefits of the adoption by coalition naval forces of a networked force structure. The report of AG-1 prompted leaders of the MAR in 2005 to charter a second investigative team, Action Group Six (AG-6), to examine the impact the U.S. Navy's FORCEnet concept would have on coalition operations.[38]

In establishing the basic requirements for the technologies to be included in the study, AG-6 began by seeking a common understanding of the operational environment facing a coalition naval force. The group developed a scenario that evolved from a disaster assistance/humanitarian relief effort to a counterterrorism operation, and finally a high-tempo conflict at sea. Four principal measures of effectiveness were devised to compare the success of a coalition force that fully leveraged the U.S. Navy's FORCEnet capability to that of one not networked.

In addition, AG-6 members shared the "technology on-ramps" of their respective national acquisition programs in order to find where complementary technological capabilities could be inserted into naval C4ISR systems. The impacts and value of alternative coalition network structures were modeled and assessed. The result was a set of quantitative tools that could be adopted by the acquisition branches of the AG-6 nations.

Similarly, TTCP nations have come to regard the early manifestations of maritime net-centricity, such as FORCEnet, as stepping-stones on a path—a path marked out by the TTCP's "Maritime Net-centric Roadmap"—to becoming "fully net-enabled." The next step is the implementation of an information architecture to deliver the military capabilities and benefits that nations perceive as offered by network-centric warfare.

For its part, the U.S. Navy is committed to transforming, over the next several years, its current afloat network capability and global C2 infrastructure into the Consolidated Afloat Networks and Enterprise Services. The development of CANES will produce a "service-oriented architecture" (SOA), wherein applications, services, and data are provided to "communities of interest." SOA leverages a "publish and subscribe" messaging pattern in which information services,

often external to any given system, are published to the network, which can then be subscribed to (i.e., utilized) by other systems and users. CANES incorporates information technology and network services currently provided to coalition partners under the CENTRIXS umbrella, making the development of CANES a critical concern to the AUSCANNZUKUS community as the pathway to the Maritime Net-centric Roadmap's goal of full net enablement and ultimate convergence with the future Global Information Grid.[39]

Networking maritime forces is crucial to the effectiveness of operations that run the gamut from humanitarian operations to dealing with insurgencies, to nation-building, to state-on-state conflict.

The AG-6 study quantified how disparities in C4I capability within a U.S.-led coalition force undermine its effectiveness in a range of missions, ultimately disenfranchising less capable units. The migration of U.S. Navy networking capabilities to new architectures like CANES could increase that disparity, even introduce invasive and disruptive effects not well understood by the United States or its allies. The conclusions of the AG-1 and AG-6 studies, as well as ongoing TTCP studies, should help allied nations stay aligned as the U.S. Navy transitions to CANES. The AG-1 and AG-6 studies have given the MAR an excellent appreciation of U.S. and allied maritime capabilities, along with modeling frameworks and tools that can support recommendations to national leaderships. A further MAR study is under way that will provide an analytical assessment of requirements, funding, and execution of national programs to sustain U.S.-allied interoperability in a CANES SOA environment. It will clarify for national decision makers the impact of such technologies upon future network architecture.

As it relates to the planned integration of coalition network services (e.g., CENTRIXS), this new study will inform the U.S. Navy's CANES development process by raising awareness of the value and impact of C4I technologies potentially incorporated into CANES. (It will raise the awareness of allied navies as well—such inclusive efforts are often more useful for informing important constituencies than for providing prescient new information.) Like previous studies, it will inform national acquisition agencies of what will be required, in terms of coalition SOA, to enable TTCP navies to participate in future global maritime partnership (GMP) net-enabled maritime operations. Also, it will provide validated analytical tools and techniques that nations can reuse to explore national service-oriented architectures for their own interservice operations.

Leveraging TTCP Efforts across Global and Regional Maritime Partnerships

TTCP represents the work of only five nations, and the MAR AG-1/AG-6 effort represents only a small fraction of that work. Nonetheless, the issue of coalition networking is sufficiently compelling and the TTCP process so plainly worthy of

emulation that outside observers consider it a best-practices example and argue for similar efforts by other national groups. Commander Soto writes,

> Since 2002 the Technical Cooperation Program . . . has focused the efforts of its Maritime Systems Group (MSG) on "Networking Maritime Coalitions" and "FORCEnet and Coalitions Implications." The MSG has become an important link among national naval C4ISR acquisition programs. . . . For that very reason these [Latin American and Caribbean] nations should tenaciously strive to become involved in initiatives like the MSG.[40]

Other nations and navies, in natural clusters, can indeed take advantage of the policies and processes that TTCP has instituted within the AUSCANNZUKUS nations. They can replicate the TTCP model where it makes the most sense for them. As Commander Soto suggests, the navies of South America represent one such grouping. The ASEAN nations offer another, one that already has several collaborative forums. NATO offers yet another, and given the wide range of similar efforts already under way there, such as the NATO Network Enabled Capability (NEC) C2 Maturity Model, the way forward may be easier than some think.

It is important and necessary to use work such as TTCP or NATO's NEC as a means to harmonize national C4ISR acquisition programs, because the challenge is so great. This challenge has persisted for quite some time, as pointed out over a decade ago in an analysis of Operation JOINT ENDEAVOR, in Bosnia:

> Coalition operations such as Joint Endeavor present a complex set of challenges for the military C4ISR system planners, implementers, and operators. The most difficult challenge is the provision of integrated C4ISR services and capabilities to support the needs of ad hoc multinational military force structures and politically driven command arrangements. Although integrated C4ISR services are the desired objective, the realities tend to drive the solution to stove-piped implementations. In spite of technology advances, this will likely be the case for some time to come. There will continue to be uneven C4ISR capabilities among coalition members who will continue to rely on systems with which they are most comfortable—their own.[41]

Lest anyone think this issue is already solved in 2012 (or will solve itself shortly), effective networking is now a "wicked problem" for navies attempting to deal not with a "high end" environment like antisubmarine, antiair, or antisurface warfare but with the basic task of combating piracy. The editors of a recent collected work on piracy and maritime crime highlight the importance of effective maritime surveillance in countering piracy: "Clearly, maritime surveillance is the key to gaining a better understanding of what is happening on the oceans, but currently, systems are not integrated within each country, let alone at regional or global levels."[42]

It is beyond debate that the U.S. Navy will continue to partner with other navies to secure the rule of law on the global commons and that the effectiveness of this combined global force will rise or fall on its ability to network at sea. The Technical Cooperation Program provides an example of how nations can plant the technological seed in making C4ISR systems compatible with their partners, just as they have been able to do within their own fleets. It is a model that must be applied—and quickly—to the navies with which the U.S. Navy will work at sea. If these networking challenges are not addressed, the Global Maritime Partnership will remain only a concept and never deliver its promise.

NOTES

This article is adapted from the authors' *Networking the Global Maritime Partnership,* a forthcoming book from Sea Power Centre–Australia as part of its Papers in Australian Maritime Affairs series. The book is intended as a contribution to the ongoing dialogue regarding the global maritime partnership, specifically to address the challenges and opportunities associated with networking this partnership in a manner that enhances its effectiveness.

1. Adm. Michael Mullen, "A Global Network of Nations for a Free and Secure Maritime Commons" (keynote address, Seventeenth International Seapower Symposium, Naval War College, Newport, R.I., 19 September 2005), available at www.usnwc.edu/. The epigraph is U.S. Navy Dept., *Chairman of the Joint Chiefs of Staff Guidance for 2011* (Washington, D.C.: January 2011), available at www.jcs.mil/. The CJCS Guidance is the annual publication of the priorities of the chairman of the Joint Chiefs of Staff to guide the work of the Joint Staff.
2. Adm. Gary Roughead, "Remarks at the 19th Biennial International Seapower Symposium" (Newport, R.I., 7 October 2009), available at www.navy.mil/. Admiral Roughead speaks to the extraordinary turnout—102 countries and ninety-two maritime leaders—at this event (up from sixty-seven countries in 2005) as compelling evidence of the rapidly growing global embrace of the GMP. See, for example, "Remarks of Chief of Naval Operations Gary Roughead during the Current Strategy Forum, Newport, Rhode Island, June 8, 2010," available at www.navy.mil/.
3. While the term "globalization" has been defined in many places, the Defense Science Board's definition is one of the most widely accepted. See Defense Science Board, *Report of the Task Force on Globalization and Security* (Washington, D.C.: December 1999), pp. xxvii–xxviii.
4. Norman Friedman, *Network-centric Warfare* (Annapolis, Md.: Naval Institute Press, 2009), p. 65. See also Norman Friedman, "Netting and Navies: Achieving a Balance" (paper presented at the Royal Australian Navy Sea Power Conference, Sydney, Australia, February 2006), p. 6.
5. Vice Adm. Russ Shalders, former chief of the Royal Australian Navy, coined this phrase during his welcoming remarks at the 2007 King Hall Naval History Conference: "Naval history and its analysis is an important subject that helps alleviate the tyranny of limited experience. Only by studying history can we properly understand our own strengths and weaknesses and those of our friends and enemies." See *Proceedings of the 2007 King Hall Naval History Conference,* available at www.navy.gov.au/spc/.
6. Bradford A. Lee, "The Cold War as a Coalition Struggle," in *Naval Coalition Warfare: From the Napoleonic War to Operation Iraqi Freedom,* ed. Bruce A. Elleman and S. C. M. Paine (New York: Routledge, 2008), p. 146.

7. Bruce A. Elleman, *Waves of Hope: The U.S. Navy's Response to the Tsunami in Northern Indonesia,* Newport Paper 28 (Newport, R.I.: Naval War College Press, February 2007), available at www.usnwc.edu/press/.
8. Friedman, "Netting and Navies," p. 6.
9. Ibid.
10. The section epigraph is found in Friedman, *Network-centric Warfare,* p. 240.
11. Loren Thompson, *Networking the Navy: A Model for Modern Warfare* (Arlington, Va.: Lexington Institute, 2003), pp. 3–4. At the core of Copernicus were four overriding goals: to provide a common tactical picture to all members of the naval force; to connect them comprehensively in a web of instantaneous voice and data links; to compress the steps involved in moving information from sensors to shooters; and to conduct information operations that would degrade enemy war-fighting capabilities.
12. Arthur K. Cebrowski and John J. Garstka, "Network-centric Warfare: Its Origin and Future," U.S. Naval Institute *Proceedings* (January 1998), pp. 29–35.
13. Thompson, *Networking the Navy,* p. 6.
14. See Adm. Vernon E. Clark, "Sea Power 21: Projecting Decisive Joint Capabilities," U.S. Naval Institute *Proceedings* (October 2002), pp. 32–41, available at www.navy.mil/.
15. See Vice Adm. Richard W. Mayo and Vice Adm. John Nathman, "ForceNet: Turning Information into Power," U.S. Naval Institute *Proceedings* (February 2003), pp. 42–46.
16. Thompson, *Networking the Navy,* p. 6. See also Loren Thompson, *Netting the Navy* (Arlington, Va.: Lexington Institute, 2008), pp. 1–7, for a more contemporary look at the same subject. Also, it should be noted that "Forcenet" is spelled in various ways in the extensive literature on the subject. Generally, in U.S. Navy parlance, it is spelled "FORCEnet." This is because Adm. Vern Clark, as Chief of Naval Operations, wanted to emphasize that it was to support "the FORCE" (meaning naval forces).
17. Until 2010, the *U.S. Navy Program Guide*s, the yearly overviews of the systems, programs, and initiatives the U.S. Navy was pursuing to deliver a future navy, were organized around the four Sea Power 21 "pillars": Sea Strike, Sea Shield, Sea Basing, and FORCEnet. Grouped under FORCEnet were all the U.S. Navy's C4ISR systems that supported network-centric warfare. While the *U.S. Navy Program Guide 2010* (available at http://www.navy.mil/navydata/policy/seapower/sne10/sne10-all.pdf) did not carry forward this Sea Power 21 taxonomy, the C4ISR section featured all programs supporting network-centric warfare, including CANES (Consolidated Afloat Network and Enterprise Services), JTIDS (Joint Tactical Information Distribution System), and CENTRIXS-M (Combined Enterprise Regional Information Exchange System Maritime), among dozens of others.
18. U.S. General Accounting Office, *Military Operations: Recent Campaigns Benefited from Improved Communications and Technology but Barriers to Continued Progress Remain,* GAO-04-547 (Washington, D.C.: June 2004), p. 10, available at www.gao.gov/.
19. Paul T. Mitchell, "Small Navies and Network-centric Warfare: Is There a Role?," *Naval War College Review* [hereafter *NWCR*] 56, no. 2 (Spring 2003), p. 85.
20. Cdr. Steven C. Boraz, "Maritime Domain Awareness: Myths and Realities," *Naval War College Review* 62, no. 3 (Summer 2009), pp. 137–46.
21. Maj. Victor Huang, "Building Maritime Security in Southeast Asia: Outsiders Not Welcome?," *Naval War College Review* 61, no. 1 (Winter 2008), pp. 87–105. See also Maj. Desmond Low, "Global Maritime Partnership and the Prospects for Malacca Straits Security," *Pointer* 34, no. 2 (2008), pp. 44–57.
22. Lt. Col. Irvin Lim, "Comprehensive Maritime Domain Awareness: An Idea Whose Time Has Come?," *Pointer* 33, no. 3 (2007), pp. 13–26.
23. The section epigraph is from Dr. David Alberts (opening remarks, Seventh International Command and Control Research and Technology Symposium, Quebec City, Canada, September 2002).
24. Mitchell, "Small Navies and Network-centric Warfare," *NWCR,* p. 83, 88.
25. Gen. James Mattis (remarks, Joint Warfighting Conference, Armed Forces Communications and Electronics Association and U.S.

Naval Institute, 13 May 2010), available at www.jfcom.mil/. As commander of U.S. Joint Forces Command, General Mattis was also Commander, Allied Force Transformation, an important NATO "hat" that involves seeking solutions to allied and coalition networking challenges.

26. U.S. Navy battle formations are most often deployed as CSGs or as expeditionary strike groups (ESGs). A CSG is built around a large-deck aircraft carrier operating tactical jet aircraft; an ESG is built around a large-deck amphibious ship operating vertical/short-takeoff-and-landing aircraft and helicopters.

27. Mitchell, "Small Navies and Network-centric Warfare," *NWCR,* pp. 88–89. See also Paul T. Mitchell, *Network-centric Warfare and Coalition Operations: The New Military Operating System* (New York: Routledge, 2009), expanding on the argument that coalition partners in U.S.-led operations will have to be networked.

28. Paul Mitchell, "Small Navies and Network-centric Warfare: Is There a Role? Canada and US Carrier Battlegroup Deployments" (briefing presented at the Eighth International Command and Control Research and Technology Symposium, Washington, D.C., 17–19 June 2003). Concerning the reference to FORCEnet, Admiral Clark's Sea Power 21 taxonomy has faded from use, as noted above. The C4ISR technologies once categorized under FORCEnet in previous *U.S. Navy Program Guide*s are now categorized under "Information Dominance."

29. U.S. Defense Dept., *Military Transformation: A Strategic Approach* (Washington, D.C.: 2003), pp. 1–36, available at oft.osd.mil/.

30. Cdr. Alberto Soto, "Maritime Information-Sharing Strategy: A Realistic Approach for the American Continent and the Caribbean," *Naval War College Review* 63, no. 3 (Summer 2010), p. 145. The internal quotation is drawn from *Networking the Global Maritime Partnership* (San Diego, Calif.: SPAWAR System Center, June 2008), p. 5.

31. Ibid. See also, for example, J. Thomas, *The Military Challenges of Transatlantic Coalitions*, Adelphi Paper 333 (London: International Institute for Strategic Studies, 2000).

32. CENTRIXS is the U.S. Navy's Combined Enterprise Regional Information Exchange System, the premier network (in various versions) for U.S.-coalition interoperability in support of military operations. See B. Carter and D. Harlor, "Combined Operations Wide Area Network (COWAN)/Combined Enterprise Regional Information Exchange System (CENTRIXS)," Space and Naval Warfare Systems Center San Diego *Biennial Review* (2003), p. 87, for a detailed technical description. See also Mitchell, "Small Navies and Network-centric Warfare," *NWCR,* p. 90, for another nation's view of CWAN (COWAN) and CENTRIXS.

33. Mitchell, "Small Navies and Network-centric Warfare," *NWCR,* p. 91.

34. See, for example, D. C. Gompert, R. L. Kugler, and M. C. Libicki, *Mind the Gap: Promoting a Transatlantic Revolution in Military Affairs* (Washington, D.C.: National Defense Univ. Press, 1999), for one of the earliest works exploring the challenges of ensuring that network-centric warfare investments and technology lead to more effective networking between and among allies and coalition partners. See Thomas, *Military Challenges of Transatlantic Coalitions,* for a European point of view on this issue.

35. The section epigraph is drawn from Vice Adm. James Stavridis, "Deconstructing War," U.S. Naval Institute *Proceedings* (December 2005), pp. 42–45.

36. For more on FORCEnet see *FORCEnet: A Functional Concept for Command and Control in the 21st Century* (Norfolk, Va.: Naval Network Warfare Command, 2006), and *FORCEnet: A Functional Concept for Command and Control in the 21st Century: Annex Version 20 June 2006* (Norfolk, Va.: Naval Network Warfare Command, 2006), both available at www.enterprise.spawar.navy.mil/.

37. Gordan Van Hook, "How to Kill a Good Idea," U.S. Naval Institute *Proceedings* (October 2007), p. 33. Captain Van Hook, drawing on his experience working with coalition partners as a destroyer squadron commander, emphasizes the importance of a cooperative approach. He argues that the United States should "encourage regional maritime security arrangements to form at the grassroots level, without overt U.S. leadership."

38. In straightforward terms, FORCEnet refers to the systems and processes needed to enable fully networked naval command and control between 2015 and 2020. The objective of FORCEnet is to provide commanders the means to make better, timelier decisions than they currently can and to allow effective execution of those decisions.
39. For the Global Information Grid, see, inter alia, *Global Information Grid Architectural Vision: Vision for a Net-centric, Service-Oriented DoD Enterprise,* Version 1.0 (Washington, D.C.: DoD CIO [Department of Defense Chief Information Officer], June 2007), available at cio-nii.defense.gov/docs/GIGArchVision.pdf.
40. Soto, "Maritime Information-Sharing Strategy," p. 148.
41. A. Krygiel, *Beyond the Wizard's Curtain: An Integration Environment for a System of Systems* (Washington, D.C.: DoD Command and Control Research Program, 1999), quoting Larry Wentz, ed., *Lessons from Bosnia: The IFOR Experience* (Washington, D.C.: National Defense Univ. Press, 1998), p. 273.
42. Bruce Elleman, Andrew Forbes, and David Rosenberg, *Piracy and Maritime Crime: Historical and Modern Case Studies,* Newport Paper 35 (Newport, R.I.: Naval War College Press, 2010), p. 235, available at www.usnwc.edu/press/.

TAKING MINES SERIOUSLY

Mine Warfare in China's Near Seas

Scott C. Truver

A mine is a terrible thing that waits. The easy way is always mined. Any ship can be a minesweeper—once. Sea mines and the need to counter them have been constants for the U.S. Navy since the earliest days of the Republic. In January 1778, patriot David Bushnell used floating kegs of gunpowder fitted with contact firing mechanisms to attack a British fleet anchored in the Delaware River above Philadelphia. Four British sailors died trying to retrieve the kegs—an early example of the challenges of explosive ordnance disposal (EOD) against an unknown threat—but the ships were unscathed. Since that uncertain beginning, mines and mine countermeasures (MCM) have figured prominently in the Civil War, Spanish-American War, both world wars, Korea, Vietnam, numerous Cold War crises, and Operations DESERT STORM and IRAQI FREEDOM.[1]

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In February 1991, the U.S. Navy lost command of the northern Arabian Gulf to more than 1,300 mines that had been sown by Iraqi forces virtually under the "noses" of multinational coalition naval forces constrained by their rules of engagement. Mines severely damaged two Navy warships, and commanders aborted an amphibious assault for fear of more casualties. That mirrored the Navy's experience four decades earlier, off the east coast of North Korea, when more than three thousand mines (put in place in a matter of weeks) utterly frustrated an October 1950 assault on Wonsan by a 250-ship United Nations amphibious task force. Its commander, Rear Admiral Allen E.

Smith, lamented, "We have lost control of the seas to a nation without a navy, using pre–World War I weapons, laid by vessels that were utilized at the time of the birth of Christ."[2] The initial clearance operations saw three mine countermeasures vessels sunk by mines and more than a hundred personnel dead or wounded. By the end of hostilities in July 1953, coalition MCM forces, which accounted for just 2 percent of all UN naval forces, had suffered 20 percent of all naval casualties.

The Korean War experience served as the catalyst for the U.S. Navy's MCM renaissance in the 1950s and early 1960s, as did the Operation DESERT STORM MCM debacle for a renaissance that began in the mid-1990s and continues today (the latter revival much less extensive than the former, however). As Rear Admiral David G. Farragut wrote on 25 March 1864 to the Secretary of the Navy, "it does not do to give your enemy such a decided superiority over you."[3]

Traditional navies as well as maritime terrorists can and have used mines and underwater improvised explosive devices (UWIEDs) to challenge military and commercial uses of the seas. These "weapons that wait" are the quintessential naval asymmetric threat, pitting adversaries' strengths against what they perceive as naval and maritime weaknesses. Indeed, sea mines are key to regional navies' anti-access/area-denial (A2/AD) and sea-control strategies and operations. Perhaps a million mines of more than three hundred types are in the inventories of more than sixty navies worldwide, not counting U.S. weapons.[4] More than thirty countries produce mines, and twenty countries export them; highly sophisticated weapons are available in the international arms trade. Worse, these figures are for sea mines proper; they do not include UWIEDs that can be fashioned from fifty-five-gallon drums, other containers, and even discarded refrigerators.

Mines and underwater IEDs are easy to acquire or build and are cheap, but their low cost belies their potential for harm. With costs measured from a few hundred to several thousands of dollars, they are the weapons of choice for a "poor man's navy," providing an excellent return on investment: low cost but high effects. On 18 February 1991, for example, the billion-dollar Aegis cruiser USS *Princeton* (CG 59) suffered a "mission kill" from an Iraqi-laid Italian Manta multiple-influence bottom mine costing about $25,000; the warship was out of service for the duration of Operation DESERT STORM and longer. Several hours earlier that same day, USS *Tripoli* (LPH 10) struck an Iraqi contact mine, which ripped a twenty-three-foot hole in the hull and came close to sinking the ship. During the 1980s "tanker war" in the Arabian Gulf, only the heroic efforts of its crew saved USS *Samuel B. Roberts* (FFG 58) from sinking on 14 April 1988 after it struck a contact mine of World War I design.[5] The warship's damage-repair bill came in at more than $96 million, in fiscal year (FY) 1993 dollars. In an

accounting that usually comes as a surprise, since the end of World War II mines have seriously damaged or sunk almost four times more U.S. Navy ships than all other means of attack combined:[6]

- Mines, fifteen ships
- Missiles, one ship
- Torpedoes/aircraft, two ships
- Small-boat terrorist attack, one ship

While mines and even UWIEDs might not be naval power–projection "show-stoppers," they could certainly be "speed bumps" in critical waterways and regions, slowing the movement of warships, military sealift, and humanitarian response in crisis and conflict.[7]

FOCUS ON CHINESE MINE WARFARE

The mine warfare experiences of America and other nations are not lost on the People's Liberation Army Navy (PLAN).[8] Chinese naval analysts and historians understand the asymmetric potential for mine warfare to "baffle the enemy, and thus achieve exceptional combat results."[9] Mines provide what some have described as "affordable security via asymmetric means."[10]

The Chinese note that hundreds of thousands of mines served tactical sea-denial and strategic ends in both world wars. Throughout the Great War, Russia, Germany, Turkey, Great Britain, and the United States relied on sea mines. Their mining campaigns culminated in the "North Sea Mine Barrage" of June–October 1918, when British and American ships laid more than seventy-three thousand mines, sinking thirteen U-boats and keeping more in home ports until the armistice. Mines were also used successfully in all World War II theaters. Remarkably, Nazi submarines laid 327 mines from Halifax, Nova Scotia, to the Mississippi Delta, closing several North American ports for a total of forty days and sinking or damaging eleven ships. Toward the end of the war in the Pacific, Operation STARVATION showed the strategic value of mines. From March to August 1945, U.S. Army Air Forces heavy bombers and Navy submarines laid some 12,200 mines in Japan's shipping routes and territorial waters and ports. The results were unequivocal: mines sank or severely damaged some 670 Japanese ships and strangled all maritime commerce around the home islands.

Testimony in 2007 before the U.S.-China Economic and Security Review Commission by a member of the U.S. Naval War College's China Maritime Studies Institute can serve as a prelude to this discussion:

> We have recently completed a two-year-long study of over 1,000 Chinese language articles concerning naval mine warfare (MIW). Our three most important findings are:

> (1) China has a large inventory of naval mines, many of which are obsolete but still deadly, and somewhat more limited numbers of sophisticated modern mines, some of which are optimized to destroy enemy submarines. (2) We think that China would rely heavily on offensive mining in any Taiwan scenario. (3) If China were able to employ these mines (and we think that they could), it would greatly hinder operations, for an extended time, in waters where the mines were thought to have been laid. The obvious means of employing mines are through submarines and surface ships. Use of civilian assets should not be discounted. But we also see signs of Chinese recognition of the fact that aircraft offer the best means of quickly laying mines in significant quantity. These aircraft would be useless, however, without air superiority.[11]

With that as framework, this article addresses four broad areas of concern:

- What are the current and projected statuses of China's naval mine technologies and of its inventory, delivery systems, doctrine, and training?
- How might China employ naval mines in "Near Seas" scenarios?[12]
- To what extent are the U.S. Navy and allied/partner navies prepared to cope with Chinese mine warfare strategies and operations?
- How might the U.S. Navy employ mine warfare in Near Seas combat against Chinese forces?

There are broad MIW implications for U.S. strategies, plans, and programs, generally, but particularly for the nascent AirSea Battle Concept, which has captured the attention of the Secretary of Defense, the Chief of Staff of the Air Force, and the Chief of Naval Operations. As outlined in the 2010 Quadrennial Defense Review, the Air Force and Navy are formulating this concept to defeat adversaries that possess sophisticated A2/AD capabilities.[13] The concept is meant to help guide the development of future capabilities needed for effective power projection, including our own mines to defeat our adversaries' naval forces and strategies. Before turning to these questions, however, some mine warfare terms of reference will be useful.

AN MIW "PRIMER"

Mine warfare—at sea as well as on land—comprises two broad categories of capabilities and operations: first, mines and mining, and second, mine countermeasures.

Damn, "Torpedoes"!

The fundamental goal of a minefield is to deny access, not to damage or destroy a specific ship or submarine. Mines, or simply psychological uncertainty about them (what weapons are actually in the water, and where?) can have intended effects even without firing.[14]

Although mines or underwater IEDs can be constructed in virtually any configuration, there are four primary types: bottom (or "ground") mines, buoyant moored mines, floating (or drifting) mines, and limpet mines. They can be put in place by aircraft, surface ships, pleasure boats, submarines, or combat or suicide divers, even from pickup trucks crossing bridges over critical waterways. They are designed for operations anywhere from the surf and craft-landing zone (less than ten-foot water depth) to deep water (greater than two hundred feet), and their payloads can range from a few pounds to several tons of high explosive (see the figure). The same weapon can be used in offensive or defensive modes —to attack directly an adversary's ships or submarines or to protect one's own ships, submarines, or critical sea areas, ports, or waterways.

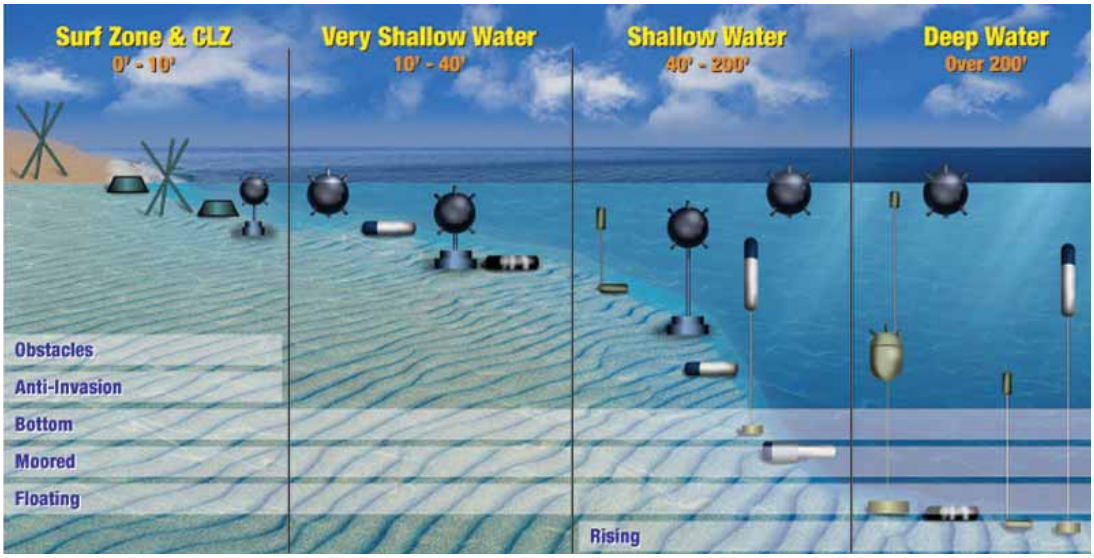
Bottom mines, resting on the seafloor (described as "proud"), are held in place by their own weight but can also be buried under sediment to confound mine hunting; strong tides and currents can result in mine "creep." Bottom mines range from thirty-six-inch cone-shaped devices to weapons twelve feet in length. Those intended to target surface ships are most effective in relatively shallow water, less than two hundred feet, although bottom mines remain effective against submarines even in deep water.

Moored mines are buoyant cases held in place by anchors. There are three types: *close-close-tethered* and *close-tethered* mines, near the seafloor; *in-volume* mines; and *near-surface* mines. A moored mine requires a large internal air space to make its case buoyant, which limits the amount of explosives it can contain. As a result, the damage radius of a moored mine is usually less than that of a bottom mine. However, they can be fitted with influence sensors or armed with torpedoes or rockets, greatly increasing their "reach."

Floating mines are positively buoyant and float on or near the surface, but they are generally anchored in place. If allowed to drift they are completely indiscriminate. A variant, the oscillating mine, drifts beneath the surface between two set depths or maintains a constant depth. International law requires that automatic contact mines—mines that fire themselves—must become inert within an hour after becoming free of their anchors.[15] Clearly, drifting mines that are not designed to become inert are prohibited, but they continue to be used.

Finally, combat or terrorist/suicide divers can attach *limpet* mines directly to hulls of targets, set to explode minutes, days, or longer after being put in place. For example, in July 1985 two time-delay limpet mines sank the Greenpeace vessel *Rainbow Warrior* in the Auckland, New Zealand, harbor. The May 2008 sinking of the Sri Lankan logistics ship M/V *Invincible* by Tamil Sea Tigers using limpets underscored the vulnerability of military vessels to suicide-diver attack in ports and waterways.[16]

MINE THREAT SPECTRUM



Source: U.S. Navy.

Some mines are mobile, capable of being launched from submarines thousands of yards from intended minefields. Old mines can be refitted with modern, highly sophisticated components to improve effectiveness and confound EOD efforts, and any mine can be equipped with counter-countermeasure features—for example, "ship counts" or antidiver sensors—to frustrate sweeping, hunting, and neutralization. They can be fabricated from fiberglass or plastic, making them extremely difficult to detect, identify, or counter once in the water. They can be designed to fire in several ways: by contact, by sensing the signatures or "influences" of a surface ship or submarine, and on command.

Contact mines are either moored or surface/drifting mines that are designed to actuate when their cases or attachments come into contact with targets. This is the oldest type of mine still in use. Most contact mines use a chemical "horn" that becomes a battery to actuate the detonator when the chemical vial in the horn is broken. Others are fitted with electric switches and internal batteries to fire the detonator.

Influence mines can be bottom or moored weapons and can have sophisticated sensors and firing mechanisms that do not require contact with targets. They are fitted with combinations of magnetic, acoustic, seismic, underwater-electrical-potential, pressure, and video sensors. Modern sensors use microcomputers that can sense a target's approach, determine whether the sensed signature is a ship or a sweep, and estimate the optimum time to detonate as the target passes.

Command-detonated mines are moored or bottom weapons that are fired on order by the miner when the target ship enters the minefield. Command-detonated

minefields are generally—but not always—limited to protective/defensive operations in harbors or restricted waterways.

Thus, mines are "tools" that can be used in peacetime as well as crisis or war. Indeed, the peacetime laying of naval mines is a legal option in a state's own internal waters and territorial sea, even on the high seas areas (though not the high-sea regions of international straits or archipelagic waters)—so long as an explicit and effective *Notice to Mariners* is issued and other rules are followed, as the U.S. multiservice *Commander's Handbook on the Law of Naval Operations* explains.[17]

Hunt If You Can—Sweep If You Must

The best MCM operations are those that prevent the minelayers from putting their weapons in place—once in the water, mines are exceedingly difficult to detect, identify, and neutralize. To keep them out of the water, aircraft, cruise missiles, naval "fires" (long-range, targeted strikes, especially by gunnery), and even special-operations forces can (assuming rules of engagement permit) attack mine depots, assembly areas, or potential minelayers.

Failing that, MCM operations can be conducted from the high-water mark on shore to water depths greater than two hundred feet. Countermeasures can be carried out in crowded ports, in narrow assault "breaching" lanes, and in fleet operating areas covering many thousands of square nautical miles. The variety of MCM operations areas and the number of mine types and characteristics, taken together, greatly complicate the mine-defense "problem." Tactics, techniques, and procedures that apply to one water regime, area, or mine threat do not usually apply to others. No other naval warfare discipline presents such a diversity of environments and threats.

Accordingly, several critical questions must be answered if MCM is to be effective:

- What intelligence do we have about the weapons?
- Where might they be deployed?
- What is the miner's objective?
- What are the local oceanographic, bottom, and environmental characteristics?
- What is already on the bottom?
- How can we know if something new is there?

With these questions in mind, MCM operations can be broken into two broad categories of tasks: mine hunting and minesweeping.

Mine hunting is effective against virtually all mine types. It comprises five steps: detection, classification, localization, identification, and neutralization.

Sonars are the primary means to detect and classify contacts as mine-like or not. Each contact can also be identified as a mine or a non-mine by specially trained divers, marine mammals, or such equipment as video cameras and laser systems on mine-neutralization or unmanned underwater vehicles (UUVs). Advanced sonars and electro-optical sensors on UUVs offer good promise to enhance mine-hunting capabilities and remove the "man and the marine mammal" from the minefield. Still, detection and classification/identification are slow: surface mine-hunting tactics using hull-mounted or towed sonars are usually carried out at very low speeds, on the order of three knots; mine hunting by helicopters is faster—depending on the sensor system, upward of fifteen knots or so—but less certain.

Once a contact has been detected and classified as mine-like and identified as a mine, it must be rendered safe before the commander can declare a route or area cleared. Depending on the accuracy with which the contact has been located, the characteristics of the bottom (i.e., smooth or rough), sediment type, amount of clutter, the amount of burial, and the depth of the water, among other factors, the detection-to-neutralization process of a single mine-like contact can take several hours if conducted by MCM ships, longer if by other systems.

In contrast, *minesweeping* is a matter of trawling defined swaths of water, using either mechanical or influence systems to expose or destroy any mines that might be there (along with any mine-like but non-mine objects that are there, too). *Mechanical* sweeping consists of cutting the tethers of mines moored in the water volume or physically damaging the mines themselves in other ways, such as chain drags to cut control wires. Moored mines cut loose by mechanical sweeping must then be neutralized (as by gunfire or explosive charges) or rendered safe for subsequent analysis.

Influence minesweeping consists of simulating the magnetic, electric, acoustic, seismic, or pressure signatures of a ship so that a mine fires harmlessly. Intelligence, surveillance, and reconnaissance of an adversary's mining objectives, doctrine, tactics, and inventories are extremely important when influence sweeping, as is specific intelligence on the operation of the sensors, firing criteria, and any counter-countermeasures (e.g., ship counters or delay arming) of mines believed to be present. Minesweeping is more risky to the platform than mine hunting and, when completed, generally leaves behind a higher residual risk to ships that transit the area. To ensure as low a risk as possible, then, most mine countermeasures operational plans include both mine hunting and minesweeping.

Before sending naval and commercial traffic through a cleared channel, a low-value guinea pig ship often transits first to demonstrate that the channel is indeed safe. These low-value ships can be configured to withstand multiple hits without sinking, in an operation called "check sweeping." During the 1980s "tanker war"

in the Arabian Gulf, for example, M/V *Bridgeton* struck a contact mine but was able to remain under way and thereafter served (inadvertently) as a guinea pig/minesweeper of sorts, leading the way for the U.S. Navy warships that had been assigned to escort it and other U.S.-flagged commercial ships.

PLAN MINES AND MINING

Chinese mine inventories total perhaps as many as a hundred thousand weapons, from relatively unsophisticated but still dangerous moored contact mines of World War I design to rocket-propelled weapons employing sophisticated signal-processing and target-detection systems. However, this figure of a hundred thousand mines is at best a guess; no one really knows for sure—at least from open sources.

U.S. Government–Published Assessments

Despite a burgeoning "cottage industry" scrutinizing virtually every aspect of the U.S./People's Republic of China (PRC) relationship in recent years, official unclassified assessments of the PLAN MIW forces are remarkably slim. For example, a U.S. Department of Defense 2010 report to Congress gives Chinese mine-warfare capabilities virtually no mention. Its single reference, which appears in two places, is indirect, simply acknowledging that in January 2010 the Barack Obama administration announced its intent to sell to Taiwan $6.4 billion worth of defensive arms and equipment, which included ex–U.S. Navy mine-hunting ships of the *Osprey* (MHC 51) class, as an element of a broader commitment to defend it against the use of force or coercion by Beijing.[18]

In its latest published assessment of the Chinese navy, the U.S. Navy's Office of Naval Intelligence provides some pertinent details about Chinese MIW:[19]

- The PLAN surface force in 2009 included forty mine warfare ships (in addition to twenty-six destroyers, forty-eight frigates, more than eighty missile-armed patrol craft, fifty-eight amphibious ships, fifty major auxiliaries, and more than 250 minor auxiliaries and service/support craft).
- The Song and Yuan advanced diesel-electric submarines and the Shang nuclear-powered attack submarines (SSNs) are the PLAN's newest indigenous submarines and the first to be designed to employ the YJ-82 antiship cruise missile in addition to traditional loadouts of torpedoes and mines.
- The Chinese-licensed copy of the French SA-321 Super Frelon helicopter, the Z-8, is a medium-lift helicopter performing troop transport, antisubmarine, antisurface, minesweeping, and minelaying tasks.
- In the last fifteen years the PLAN has moved from an obsolete mine inventory comprising primarily pre–World War II mines to a robust and modern inventory including moored, bottom, drifting, rocket-propelled,

and intelligent mines. Advanced mines feature digital microprocessors for enhanced targeting and integrated sensors to resist sweeping. The mines can be laid by submarines (primarily for covert mining of enemy ports), surface ships, aircraft, and fishing and merchant vessels.

- Although the PLAN considers its MCM capabilities to be relatively advanced—including as it does operations in complex, multiservice environments, during emission-controlled conditions, and at night—China recognizes that adversary mines could be a major impediment to its naval operations. In 1988, the PLAN launched a new minesweeper, *Wolei,* and might have developed an indigenously produced version of the French Pluto Plus mine-neutralization vehicle. The PLAN looks to be maturing into a more capable MCM force by improving its capability to protect its waters from mines, in addition to clearing minefields Chinese forces might have sown during a conflict.
- The PLAN is expanding its domestic research and development for underwater weapons, moving away from reliance on imported systems and technology. The PLAN has reportedly developed a maintenance and inspection program for the upkeep of existing mine stockpiles, necessary to ensure that the more advanced mines, using microprocessors and long-life batteries, are operational when needed.

The Congressional Research Service provides a bit more information:[20]

- China's naval modernization effort encompasses a broad array of weapon acquisition programs, including programs for antiship ballistic missiles, antiship cruise missiles, land-attack cruise missiles, surface-to-air missiles, mines, manned aircraft, unmanned aircraft, submarines, destroyers and frigates, patrol craft, amphibious ships and craft, mine countermeasures ships, and supporting C4ISR (command and control, communications, computers, intelligence, surveillance, and reconnaissance) systems.
- Although the aging Ming-class (Type 035) submarines are based on old technology and are much less capable than its newer submarines, China may decide that they have value as minelayers or as "bait," decoy submarines that can draw out enemy submarines (such as American SSNs), which can then be attacked by other Chinese naval forces. In related areas of activity, China reportedly is developing new unmanned underwater vehicles and has modernized its substantial inventory of mines.
- China's navy exhibits limitations or weaknesses in several areas, including C4ISR systems, antiair warfare, antisubmarine warfare, and MCM. Countering China's naval modernization might thus involve, among other things,

actions to exploit these limitations and weaknesses, such as developing and procuring electronic-warfare systems, antiship cruise missiles, *Virginia* (SSN 774)–class attack submarines, torpedoes, UUVs, and mines.

Current/Future PLAN Mines and Mining

Aside from these publications, interviews with U.S. Navy MIW operators, planners, and intelligence specialists at Navy headquarters and in field activities, augmented by additional sources, yield, in summary form, the following.

In the PLAN's mine inventory are more than thirty types of contact, magnetic, acoustic, water-pressure, and other multiple-influence (e.g., acoustic- or magnetic-sensor) mines, including remote-control, rocket-propelled rising, and mobile mines.[21] The inventory is mostly based on older, former Soviet technology, but it also boasts newer, more sophisticated, multiple-influence types. For example, Chinese copies of Soviet AMD (or MDM) -series multiple-influence bottom mines are common, and they can have air-, ship-, or submarine-launched variants. The PLAN is augmenting with more-capable weapons its inventory of 1970s/1980s-era (and even earlier) mines. Most of these older mines, designed to defend littoral areas, can be deployed only in shallow seas; only a fraction of them can be deployed in medium depths. (Table 1 shows selected Chinese navy mines.)

The shallow-water Chen-1, -2, -3, and -6 influence mines can be placed for defense of ports and harbors; the T-5 mobile mine can be laid in deeper waters in channels and approaches to ports; and the Soviet PMK-1 and the Chinese-developed Mao-5 rocket rising mines are intended for deeper waters farther from ports and in open-ocean areas and choke points.

China's remotely controlled mines, such as the EM-53 bottom influence mine, can be deployed and deactivated by acoustic codes to allow the safe passage of friendly vessels through a mined area and then reactivated to attack adversary ships and submarines.

China likely also possesses an inventory of submarine-launched mobile mines (SLMMs), called "self-navigating mines" in Chinese. These are similar to the U.S. Navy's Mk (Mark) 67 SLMMs. Thought to be derived from Yu-type torpedoes, China's SLMM can travel along a user-determined course for a set period of time; when it arrives at its programmed destination, the torpedo's engine shuts off and the weapon sinks to the bottom.

China began to develop rocket-propelled and rising mines in 1981 and produced its first prototype in 1989. Rising-mine systems are moored, sometimes in very deep water, and release buoyant torpedoes or warhead-tipped rockets when they detect targets. The guided, rocket-propelled EM-52 reportedly can reach attack speeds of eighty meters per second, is armed with a 140-kilogram warhead, and has an operating depth of at least two hundred meters, while the Russian

TABLE 1
SELECTED PLAN MINES

Model	TDD	Type/Mission	Laying Platform	Case Depth (meters)	Warhead (kg)
C-1 500 1000	Acoustic, magnetic	Bottom ASW, ASUW	Surface ships, aircraft Surface ships, aircraft, submarines	6–30	300 700
EM-52	Acoustic, magnetic, pressure	Rocket-propelled straight-rising ASW, ASUW	Surface ships	200	140
EM-56	Acoustic, magnetic, pressure	Mobile (13 km) ASUW	Submarines	45	380
M-3	Contact	Moored ASUW	Surface ships, submarines	12–430	(large)
M-4	Acoustic	Moored ASW, ASUW	Surface ships, submarines	200	600
PMK-2	Acoustic (passive/ active)	Rocket-propelled encapsulated torpedo ASW	Aircraft, surface ships, submarines	400 (anchor depth > 1,000)	110

Note: ASW: antisubmarine warfare; ASUW: antisurface warfare.

Sources: Erickson, Goldstein, and Murray, *Chinese Mine Warfare,* pp. 12–17; Friedman, *World Naval Weapon Systems;* Wertheim, *Combat Fleets.*

PMK-2 rising encapsulated torpedo mine can be laid in waters deeper than two thousand meters (anchor depth). (A speed of eighty meters per second means that an EM-52 in two hundred meters of water will take about three seconds from weapon launch to endgame attack—far too short a time for maneuver even if the target detects the approaching weapon.) China reportedly offers these two rising mines for export.

Minelaying platforms will likely not include dedicated MCM vessels, other than a single 3,100-ton combination minelayer/sweeper MIW command ship, *Wolei,* mentioned by the Office of Naval Intelligence. This vessel can carry as many as three hundred weapons. The MCM force is focused on near-shore defense, and the Chinese navy has several mining options among its other assets. That said, the aging T-43 minesweepers can carry from twelve to sixteen mines, and the newer *Wosao* Type 082 MCM ships are capable of carrying six mines each.

About 150 maritime patrol aircraft and naval bombers can carry mines, and the employment of aircraft-delivered mines is considered a critical element in "air blockade campaigns."[22] For example, China's Harbin SH-5 seaplane can carry six Chinese copies of the Russian ADM-500 mine. The aging force of H-6 bombers might still be employed in mining roles, each capable of carrying up

to eighteen mines, as the aircraft apparently continues to be used in minelaying exercises. The literature seems to indicate that People's Liberation Army (PLA) Air Force bombers might also be able to deploy mines, although their availability for mining missions is another question.

PLAN surface warships are equipped to lay mines. The four *Sovremenny*-class (Project 956E/956EM) destroyers have rails for up to forty mines, and the ten of the Luda class (Types 051/051D/051Z) can each carry thirty-eight mines. The twenty-five Jianghu I/V–class (Type 053H) and three Jianghu III– and IV–class (Type 053 H2) frigates each can carry up to sixty mines. The ten Hainan-class (Type 037) coastal patrol craft are fitted with mine rails, while the thirty-five gun-armed fast attack craft of the Shanghai II (Type 062) class can be fitted with rails for ten mines. Chinese planners are well aware that most sea mines laid worldwide since 1945 have been sown by merchant ships, fishing trawlers, or junks—"vessels that were utilized at the time of the birth of Christ." China has thousands of such craft available to support a mining campaign.

Submarines have attracted particular attention as deployment platforms for deepwater rising mines and SLMMs. The Chinese navy regards submarines as ideal for long-range, clandestine operations that would sow weapons in an adversary's port or naval base. The need for high-volume mine delivery is understood as well, and submarine mine belts—external, conformal containers designed to carry and release large numbers of mines—are seen as a clandestine means to complement high-volume aircraft delivery. These belts can expand otherwise limited payloads, a method pioneered in the British E-class submarines in 1915. More recently, the Soviet navy developed a mine belt capable of deploying fifty sea mines on either side of a submarine.

Approximately fifty-five PLAN submarines can sow mines in clandestine operations: the Han-class (Type 091) nuclear-powered attack submarines each carry up to thirty-six mines; twelve Song-class (Type 039/039G) diesel/guided-missile subs also carry mines; nineteen Ming (Type 035) diesel subs, thirty-two mines; the twelve Kilo (Project 877EKM/636) diesel-powered cruise-missile boats, twenty-four mines; and the residual Romeo (Project 033) diesel boats, twenty-eight mines. In all cases, however, mine loads are carried at the expense of torpedoes.

The mine warfare school is located at Dalian, adjacent to the major surface warfare officer school. Chinese minelaying training and exercises have extensively involved air, surface, and even civilian platforms. For example, *Jane's Underwater Warfare Systems* notes, "airborne minelaying is also regularly practiced and would be a significant component of defence planning considerations." Also, in particular, the PLAN views submarine delivery of mines as a critical element

of offensive and blockade operations, and it practices this "most basic requirement of submarine warfare." By 2002, minelaying had become one of the most common PLAN submarine tactics—a significant difference from the U.S. Navy submarine warfare "culture" that during the Cold War came to view mining as a diversion from more critical tasks. Indeed, PLAN crews train to handle submarines loaded with large quantities of mines and practice deploying them from shallow, in-port/near-port locations to choke points and deep water.

Chinese naval officers recognize the challenges inherent in "penetrating the enemy's antisubmarine forces and laying mines behind enemy lines." According to one PLAN assessment, "Secretly penetrating the combined mobile formation deployed by the enemy's antisubmarine forces is a prerequisite to fulfilling the mine-laying task." There is some evidence that China may rely on centralized control of its submarines when conducting offensive mining missions. In carrying out offensive mine blockades, for example, "if there is a shore-based submarine command post to handle command and guidance of the submarine for its entire course, it will not only ensure its concealment but also improve the strike effectiveness of the mines . . . that are laid."

The Research, Development, Test, Evaluation, and Industrial Base

Mindful of the Russian support to the North Korean mining of coastal waters in the late summer and early fall of 1950, China has imported Russian mines, technology, and even engineers to bolster its indigenous MIW programs. As a leading reference explains:

> China aggressively seeks foreign mine technology and is believed to have done considerable business acquiring advanced Russian mine technologies. The mine stock is estimated to number tens of thousands of weapons, mostly derivatives of USSR/Russian origin, including M-08, M-12, M-16 and M-26 moored contact mines; the MYaM shallow water and M-KB deep water contact mines; the PLT-3 contact mine (submarine laid); and KMD and air-launched AMD influence mines. Indigenously developed mines include the EM 52 rocket-propelled rising mine, which closely resembles the first Russian "Cluster" [NATO code name] rising mine and is believed to be powerful enough to break the keel of an aircraft carrier; the EM 55 (submarine laid); and the EM 56 rising mine. Ground mines include the EM 57 remote-control mine and the EM 11 multipurpose mine.[23]

Recent data suggest that the PLAN is expanding "in-house" research on enhancing its indigenous deepwater rising mines: on methods to predict rocket-propelled-mine attack probability; analysis of launch-platform stability, underwater rocket propulsion, and launch trajectory; target detection, tracking, blast maximization, and damage to ships; and the ability of targets to react to and evade deepwater rising mines.

There has been discussion of a theoretical nature in published Chinese naval analyses concerning arming sea mines with tactical nuclear weapons, although there is no direct evidence of the existence of such naval tactical nuclear weapons programs in China. (During the Cold War, the U.S. Navy tested a mine armed with a tactical nuclear warhead in Operation CROSSROADS, but the weapon never went into production.)

Several sources offer insight regarding the Chinese mine research and development (R&D) and industry infrastructure, which, particularly compared to the U.S. mine industrial base, looks to be robust. Plant 884 in Taiyuan and a satellite facility near Houma in Shanxi Province began producing contact mines in 1958 and single/multiple-influence weapons in 1965, all based on Soviet technology. Naval civilian research facilities for demagnetization and mines center in Institute 710, in Yichang. PLAN mine warfare testing has been concentrated in Huludao; other test facilities are at Lüshun, Zhoushan Island, and Changshan Island. These mine facilities are in the North Fleet area, except for Yichang and Zhoushan.

PLAN Mining Strategies and Scenarios

In late March 2011, a U.S. Navy MIW analyst cautioned:

> Do *not* "mirror-image" the PLAN. It is *not* the U.S. Navy. They will do things differently than we otherwise might expect. For example, Beijing might announce in the early, "pre-kinetic" phase of a crisis that the PLAN has laid mines in critical high sea areas for "defensive" purposes in accordance with the international legal regime—in essence daring the United States and others to attempt passage: are mines in place or not? They could even command-fire one or two weapons just to heighten the anxiety. Also, don't discount their use of "dummy" mines in great numbers to slow down and frustrate our and our partner-navies' naval maneuver and MCM operations. Their objective would be to convince regional navies and the U.S. Navy that the cost of engagement would be too high—in essence achieving "checkmate" on the first move.
>
> Finally, although it's also important not to conflate capabilities with intentions, in this case the PLAN looks to be capable of *and* intending to use mines during a crisis or conflict in both "Near" and "Far Seas" scenarios.[24]

Another senior U.S. Navy MIW official interviewed for this article was unequivocal in his assessment that the Chinese could "seriously hamper an adversary's ability to enter the First Island Chain. That's a fairly significant advantage to them in a 'Taiwan Strait' scenario—particularly if they executed this before the 'kinetic' phase of a conflict. But that's looking at the obvious." He continued,

> The open-source Chinese literature also indicates they are concerned about Guam and its strategic importance as a base for USAF [U.S. Air Force] strategic bombers and Navy attack submarines. Apra outer harbor is very narrow; outside the harbor

> entrance it gets deep quickly. We need to be concerned about the Chinese Navy's ability to place covertly small numbers of advanced mines in strategic locations, like the Apra channel, even if it does no more than slow down our ability to carry out time-phased operations.[25]

Much of the sea area and several of the choke points within the First and Second Island Chains and the approaches to Taiwan are minable, in what have been described as a "strategic interior line of defense" and a "tactical exterior line of defense," respectively. Chinese bottom mines can be deployed in water depths of approximately two hundred feet and still be effective against surface targets and shallow-running submarines, while the PLAN's rising mines can be deployed in waters some two thousand meters deep to serve as area-denial barriers—much like the U.S. Navy's Mk 60 CAPTOR (enCAPsulated TORpedo) mines in the Greenland–Iceland–United Kingdom "GIUK Gap" during the Cold War.

The United States must consider the possibility of feigned or actual deployment of Chinese sea mines in conflict arising out of a crisis over territorial claims in the South China Sea or on the Korean Peninsula. In those areas, MCM support from South Korean and Japanese naval forces will be critically important in keeping sea-lanes open.

That said, the U.S. Navy's concern seems to be focused on its ability to respond to a Taiwan crisis in which naval mines are one element of an overall, combined-arms campaign. The bathymetry of the Taiwan Strait and sea areas to the immediate north and south of the island's largest ports is sufficiently shallow for all types of PLAN mines. Although Taiwan's eastern coast has deeper waters, a multiaxis mining effort, involving primarily submarines and aircraft, could efficiently blockade Taiwan. American assessments of Chinese analyses conclude that the PLAN believes Taiwan's MCM vessels cannot effectively counter Chinese mines and that attempts by Taiwan to deploy its own mines could be defeated by PLA air forces, surface warships, and submarines.

The concept of the "air blockade campaign" looks to be critical for PLAN operations in the Taiwan scenario as well as for A2/AD efforts, particularly within the First Island Chain. According to a 2011 RAND analysis:

> In conjunction with the naval and ground force elements, air forces may also implement the blockade of maritime and ground traffic. Typically, maritime blockades are conducted jointly by the air force and navy and involve blockading maritime routes and attacks on shipping. Bombers and fighter-bombers are employed in blockading maritime routes, operations that generally involve mining port entrances and critical sea-lanes to impede and eventually sever transport traffic with the outside.[26]

This example is perhaps of most relevance for a Taiwan scenario, and aerial minelaying is regarded as one of the primary means employed in aerial blockades.

Minelaying is, according to the 2000 version of *Study of Campaigns,* one of the four important operations conducted during air blockades.

Beyond Taiwan, Chinese assessments of antisubmarine warfare suggest that mines are best employed against submarines by laying them in egress/ingress routes nearby adversaries' bases, potentially frustrating the ability of enemy submarines to reach the ocean or return for replenishment should the crisis or conflict go on for long. In view of the strategic importance to the U.S. Navy of Guam, for example, it should be expected that the PLAN would attempt to lay mines in the approaches to bases there. Guam is within the endurance limits of the more capable Chinese submarines armed with "self-navigating mines." The waters around the southern Ryukyus, including Okinawa, are also susceptible to Chinese offensive mining operations, as could be the Tsushima Strait. Offensive mining apparently has been a major impetus for Chinese research on mobile mines, and the priority would be the laying of SLMMs in each choke point of the First Island Chain, forming a blockade line and preventing U.S. nuclear and other navies' submarines—or surface forces—from entering China's Near Seas areas.

In light of the Chinese navy's intense study of historical mining campaigns and of its focus on U.S. submarine capabilities, PLAN commanders also may believe that a geographically broader "deep thrust" mining campaign—even if employing only a few weapons at each attack point—might be worth the risk. For example, sporadic mining of American West and even East Coast ports by Chinese armed forces or PRC-sponsored terrorists may join the list of options, if only as a means of diluting the U.S. Navy's constrained MCM capabilities.

Here Chinese thinking on the use of commercial vessels might come into play. Much of the Chinese merchant fleet falls under the control of the state-owned China Ocean Shipping Company (known as the COSCO Group), and COSCO container lines maintain scheduled services to several key American ports, including Los Angeles/Long Beach, San Francisco, Seattle, and Tacoma, Washington, on the West Coast, and Norfolk, Virginia, on the East Coast (as well as Kao-hsiung and Keelung in Taiwan). In addition, other, nonscheduled bulk and break-bulk vessels in COSCO's large fleet—modified into covert minelayers—might be conscripted into minelaying service in an emergency. The domestic terrorist-mining threat has become an increasing interest for the U.S. Northern Command.

Such a course of action might be difficult for the PLA should hostilities commence and key forces on both sides concentrate in the Near Seas. Prehostilities mine deployment, using time-delay or remote-control activation, could help solve the problem of laying mines without U.S. or partner navies detecting or responding to the act.

U.S. AND PARTNER NAVIES' MCM CAPABILITIES

"Brittle"—that is how several U.S. Navy mine warfare specialists described the Navy's MCM capabilities in the spring of 2011.[27] This brittleness is largely due to the state of mine warfare generally in the Navy. Mines, mining, and mine countermeasures—from the laboratories and industry to Navy headquarters and systems commands, to deployed forces—historically have accounted for less than 1 percent of the service's annual total funding for programs and operations. The vast majority of that constrained funding supports MCM, not mining, programs, or operations.[28]

Brittleness also reflects the fact that American MCM is on the cusp of a broad transformation from an aging force of specialized surface vessels, helicopters, and diver and marine-mammal EOD systems to a highly integrated, "tailored," modular mine-countermeasures "system of systems" embarked on the new littoral combat ships of the *Freedom* (LCS 1) and *Independence* (LCS 2) classes. The new "tailored" MCM forces are intended to provide direct, highly automated MCM support to naval maneuver forces in forward areas. However, it is proving difficult to maintain the material and operational readiness of in-service "legacy" platforms during the transition, raising concern that the Navy might be hard-pressed to respond to some crisis or conflict involving mines before the "tailored" future arrives.

U.S. MCM in Transition

The sea is a maneuver area. From the U.S. Navy's perspective, the goal of MCM is to enable maneuver of naval forces, not to counter every mine. If a crisis involving PLAN mining of critical regions in Taiwanese waters and inside the First and perhaps even Second Island Chains erupted today, the U.S. Navy's mine-countermeasures response would clearly be a "come as it is" force of uncertain effectiveness, due to its small numbers and increasing obsolescence. As of the spring of 2011, U.S. Navy's dedicated MCM assets fall into three main categories.

The fourteen ships of the *Avenger* (MCM 1) class constitute the Navy's dedicated surface mine-countermeasures capabilities. They are relatively slow, with top speeds of around fourteen knots, making their response to "away games" somewhat problematic (although they could be transported to the scene by heavy-lift ships). To enhance responsiveness, four are forward deployed to the Arabian Gulf (Manama, Bahrain), and four are homeported in Sasebo, Japan; the remaining six ships are in San Diego. The *Avenger*s are fitted with several hunting and sweeping systems. The Navy is upgrading these ships—which in 2011 were well beyond the midpoints of their operational lives—but their backlogged modernization and material readiness bill, just to keep them ready in the near term, amounted to some $500 million. The final MCM 1 will retire in

2024. But for the time being, in any PLAN mine-warfare scenario, the U.S. Navy's initial surface MCM response would be limited to the eight ships in Japan and the Arabian Gulf.

The airborne "leg" of the Navy's mine countermeasures "triad" comprises two squadrons of MH-53E Sea Dragon helicopters, a total of twenty-eight airframes —a figure that includes seven in training, as well as "pipeline" (out of service for rework, etc.) aircraft. Both squadrons (HM-14 and HM-15) are located at the Airborne Mine Countermeasures (AMCM) Center for Mine Warfare Excellence, at Naval Air Station Norfolk, Virginia. Two helicopters are deployed to South Korea and four to Bahrain. The helicopters carry out rapid-response MCM tasks—they can be airlifted anywhere in the world within seventy-two hours of the decision to deploy, assuming the availability of strategic airlift—with mine-hunting sonars and mechanical and influence sweeping systems. In service since 1986, the MH-53Es are capable of night operations and have a six-hour mission capability. In 2009, the Navy began a fatigue-life-extension program of structural upgrades to ensure that the helicopters can perform their missions until all are retired, by 2025.

The third leg of the triad is explosive ordnance disposal. The Navy's EOD detachments directly support mine-hunting and -clearance operations. They have specialized training in equipment, tactics, techniques, and procedures to locate, identify, neutralize, recover, or otherwise dispose of sea mines, torpedoes, and other undersea weapons, including underwater IEDs.

In addition, the Navy maintains several types of marine-mammal systems, bottlenose dolphins and sea lions specially trained for mine detection and neutralization, swimmer defense, and recovery of exercise mines, torpedoes, and other objects. In some situations the marine mammals are much more effective than humans or hardware now in service, and presently only they can detect buried bottom mines. Each "system" has several dolphins or sea lions that can be deployed quickly throughout the world by strategic airlift and worked from ships in forward operating areas. For example, Navy MCM dolphins deployed to the Arabian Gulf in 1988 during Operation Earnest Will, in 1991–92 during Desert Storm/Desert Sweep, and in 2003 in support of Operation Iraqi Freedom.

It is apparent from this summary that the U.S. Navy's dedicated mine countermeasures force is aging while the worldwide mine threat is being modernized, particularly that of the PLAN. As a result, the Navy is making investments in a future mine-defense force. Its formal requirements call for a new capability that various Navy briefings and publications describe as "fast, light, agile, adaptable, precise, and modular, to remove the man and the marine mammals from the minefield."

The focal point of this next-generation MCM force is the modular littoral combat ship (LCS), which is to be the principal host for the MH-60S multimission helicopter (which, however, unlike the MH-53E, cannot conduct MCM at night and has about half of the MH-53E's mission endurance), unmanned aerial vehicles, and several advanced "mission module" systems. (Of the two classes, *Freedom* is a primarily all-steel monohull design, while *Independence* is a predominantly aluminum trimaran.) Modular mine-countermeasures, antisubmarine, and antisurface packages are being developed to counter A2/AD strategies and contribute to littoral sea superiority.

The MCM mission modules include the Remote Minehunting System (RMS), AQS-20A mine-hunting sonar, Airborne Laser Mine Detection System (ALMDS), Airborne Mine Neutralization System (AMNS), Organic Airborne and Surface Influence Sweep (OASIS), Unmanned Influence Sweep System (UISS), and Coastal Battlefield Reconnaissance and Analysis (COBRA) system. The ships will also possess inherent capabilities for intelligence support, surveillance, reconnaissance, special operations, and maritime interception, regardless of the specific mission package installed. With top speeds in excess of forty-five knots, the LCS looks to be far more responsive than the Navy's legacy dedicated forces. Indeed, necessary mission modules could be staged in critical regions to allow any LCS to be reconfigured as an MCM platform, although there are growing concerns about the maturity of the MCM mission packages.[29]

The first units of each class, LCS 1 and LCS 2, were in service in 2011, two more are under construction and will be delivered in 2012, and the Navy has awarded contracts for an additional twenty ships (ten of each design). A total of fifty-five LCSs are in the Navy's plan, and the service intends to acquire twenty-four MCM mission packages. Two packages have been delivered, and one was in production in mid-2011. However, several systems of the MCM mission modules are not yet in service—only three (AQS-20, AMNS, and ALMDS) are even in "low-rate initial production"—so it will be years before the LCS (in its MCM configuration) replaces the *Avenger* class. In the meantime, the Navy is investigating proposals to deploy MCM mission modules on other ships, such as dock transport ships (LPDs)—or to land facilities from which the MH-60S helicopters could operate.

The U.S. Navy's future, LCS-focused MCM assets are also to be the core forces dedicated to any mine-cleanup mission after crisis or hostilities. In the aftermath of DESERT STORM, for example, it took a multilateral MCM force of vessels and helicopters from Belgium, France, Germany, Italy, Japan, the Netherlands, the United Kingdom, and the United States more than two years to make the primary channels in the northern Arabian Gulf as mine-free as possible. Since then,

periodic MCM operations have continued in this strategic waterway (as noted, four of the Navy's *Avenger*s are homeported there). It must be expected that MCM-tailorable LCSs will be included in any dedicated force, and concepts for how they are to perform such tasks need to be addressed before the first weapon fires in some future crisis or conflict.

Regional Partner Navies' MCM

Several regional navies have made a commitment to mine countermeasures, but all are focused on near-shore littoral operations using traditional sweeping and hunting, albeit in some instances complemented by remotely operated and unmanned systems. These resources might be available to assist U.S. Navy MCM operations in response to PLAN mining of critical waterways.

Australia. The Royal Australian Navy (RAN) operates six *Huron*-class mine hunters (MHCs) based on the Italian *Gaeta* class, acquired from 1999 to 2003.[30] These are modern ships, employing several types of mechanical and influence minesweeping systems and variable-depth mine-hunting sonars. In service since 1982 are the RAN's two 520-ton auxiliary minesweepers *Bandicoot* and *Wallaroo,* which also deploy reconfigurable permanent-magnet influence sweeps. The RAN has put in place a "Craft of Opportunity program" that employs fishing vessels taken up from trade and fits them with side-scan sonars and magnetic influence sweeps. The RAN also has two small (about 115 tons full-load displacement) auxiliary minesweepers—MS(S)/MSA *Bermagui* and *Koraaga*—converted from tuna boats, capable of deploying side-scan sonars and magnetic influence sweeps. Finally, the RAN operates three MCM drones employed by craft-of-opportunity vessels.

Indonesia. The Republic of Indonesia Navy operates eleven coastal mine-hunting and minesweeping ships, of which only about five are in active service.[31] Two are modern, Tripartite-class MHCs taken from Royal Netherlands Navy production in 1988: *Pulao Rengat* (ex-*Willemstad*) and *Pulao Rupat* (ex-*Vlardingen*). They embark remotely operated mine-hunting vehicles that can neutralize confirmed contacts, mechanical sweep equipment, and magnetic and acoustic influence sweeps. The remaining nine ships, ex–German navy Kondor II–class coastal patrol ships, have been employed primarily as patrol craft, although their original mechanical sweep gear has been retained and more modern magnetic-influence sweeps have been tested. The three (or fewer) active Kondor IIs are obsolescent, at best.

Japan. Like the RAN, the Japan Maritime Self-Defense Force (JMSDF) has modern and capable MCM forces.[32] The need for robust MCM is seared in the Japanese navy's memory by the experience of Operation STARVATION, the many years

needed to clear ports, harbors, straits, and nearby seas after World War II, and the mine experiences of the Korean War and Operation DESERT STORM. Published sources show a JMSDF mine warfare order of battle comprising about thirty-five surface mine hunters and minesweepers, three drone-control ships, and six radio-controlled MCM drones. These include a mix of new acquisitions (e.g., the twelve *Sugashima*-class MHCs, which joined the fleet in the late 1990s and early 2000s) and ships that were in service in the mid-1980s—certainly not "old," in comparison to those of other regional navies, including the PLAN. The two *Uraga*-class mine countermeasures support ships, which entered service in 1997–98, also serve in minelaying roles. The ships are fitted with mechanical and influence sweeping equipment and can operate remote mine-hunting vehicles. Since 1989, the JMSDF has also operated MH-53E Sea Dragon AMCM helicopters; a total of eleven were in service at this writing and employed minesweeping and -hunting equipment similar to that of the U.S. Navy's MCM helicopters. These aircraft are being replaced by the MCH-10, which will operate the OASIS minesweeping system, now under development in the United States, as well as in-service systems.

Malaysia. The Royal Malaysian Navy operates four coastal mine hunters based on the Italian *Lerici* design acquired in the middle and late 1980s.[33] They are equipped with on-board and off-board mine-hunting systems and influence and mechanical sweep gear. EOD divers can be embarked.

Philippines. The Philippines Navy operates no MCM ships or craft. Several ex-U.S. minesweepers have been modified for patrol duties and are no longer capable of mine countermeasures.

Republic of China. Rather remarkably, given the potential for extensive PLAN mining during a "Taiwan scenario," the Republic of China's MCM capabilities are poor.[34] The Taiwan navy has only twelve small coastal mine hunters and sweepers, eight of which are ex-U.S. or ex-Belgian vessels built during the 1950s. The eight older ships are capable of minesweeping only; they are fitted with acoustic and magnetic systems as well as wire sweeps to cut moored mines free for subsequent destruction. The four units of the *MWW 50*/*Yung Feng* class were delivered in 1991 but were not commissioned until 1995. They can conduct mine-hunting as well as sweeping operations. As noted earlier, in January 2010 the Obama administration announced its intent to sell to Taiwan $6.4 billion in defensive arms and equipment, which included *Osprey*-class mine hunters—Taiwan reportedly wants two MHCs—but the deal is still pending.

Republic of Korea. The South Korean navy understands well the value of mines and mine countermeasures, and in any contingency on the Korean Peninsula

or with China mine warfare would be pivotal for the coastal defense of both its coasts.[35] Critical sea lines of communication, particularly through the Tsushima Strait, are indispensable to the ability of South Korean and American forces, and perhaps Japanese forces as well, to fight and win. Despite this requirement, South Korean MCM forces are modest: a single (appropriately named) *Wonsan*-class minelayer/MCM ship, a planned ten-ship *Yangyang* class of coastal mine hunters, six SK5000-class MHCs based on the *Lerici* design, five ex-U.S. MSC 289–class coastal minesweepers (transferred between 1963 and 1975), and three ex-U.S. MSC 268–class coastal minesweepers (transferred in 1959). These last two classes, if still in service, are obsolete; the others, however, are newer (in service from 1993 on) and can operate modern minesweeping and mine-hunting systems. In July 2009 the Republic of Korea requested a Foreign Military Sales purchase of eight Seahawk multimission AMCM helicopters. (This is the same "main battery" that will operate from the U.S. LCSs, and it would employ the AQS-20A towed sonar mine countermeasures system, AES-1 ALMDS, ASQ-235 AMNS, and ALQ-220 OASIS.) Three months later, however, the deal was postponed.

Singapore. The Republic of Singapore Navy operates four *Bedok*-class MCM vessels based on the Swedish *Landsort* design.[36] All were placed in service in 1995. These are modern, capable MCM ships, carrying two remote-control mine-neutralization systems. A mine rail is fitted, allowing the ships to lay mines. Beginning in 2009, they received service-life extensions, which included advanced integrated MCM combat systems, new hull-mounted and towed synthetic-aperture sonars, and expendable mine-disposal systems.

Vietnam. Although its inclusion in this "partner navies" discussion might seem problematic, the Socialist Republic of Vietnam operates a small number of obsolescent coastal and inshore MCM vessels and craft, perhaps as many as eight, all ex–Soviet navy minesweepers.[37] They would be irrelevant in virtually any contingency involving the PLAN.

In general, the MCM assets in Pacific Rim partner navies cannot substitute for a more robust American mine-warfare capability in the region. Their technical and operational limitations and the likelihood that they would be tasked in their home waters mean that most would probably be unavailable to support Near Seas mine countermeasures. The U.S. Navy's own MCM capability—brittle or not—will undoubtedly determine the extent to which Chinese mines can frustrate American strategies and operational plans. But whether U.S. Navy mines and minelaying capabilities are sufficiently effective, in turn, to defeat PLAN strategies, operations, and forces is uncertain.

U.S. MINES AND MINING

"I have always deemed it unworthy of a chivalrous nation," wrote Admiral Farragut in 1864 of what we now call mine warfare, after having "damned the torpedoes" at Mobile Bay.[38] In that he echoed the Royal Navy's rejection half a century earlier of "a mode of war which they who commanded the sea did not want, and which, if successful, would deprive them of it."[39]

The U.S. Navy has had a "love/hate" relationship with its own naval weapons that wait, from Bushnell's screw-torpedo and floating powder kegs to advanced, autonomous, twenty-first-century, networked weapons. Since the end of World War II, Navy planners have focused on mine countermeasures to defeat adversaries' mines rather than on sustaining our own mine inventories—perhaps with good reason, given the Navy's post–World War II encounters with mines. There were a few exceptions, such as the advanced, deepwater Mk 60 CAPTOR mines targeting Soviet ballistic-missile and attack submarines.

The result has been the gradual atrophy of the "pillars" of America's naval mining capabilities: the technological/industrial base, modern and effective mines, adequate mine stockpiles, minefield planners, trained specialists to ready the weapons, and the means to put them in place. If U.S. Navy MCM capabilities are brittle, so, too, are the Navy's mines and mining capabilities. Without our own mines, we essentially give adversaries a "free pass." Instead, they should be made to solve MCM problems of their own, posed by the mines of the United States and its maritime partners.

This is particularly important in any strategy to use American mines to deny sea areas to PLAN surface ships and submarines. But in such an attempt, if undertaken today, the U.S. Navy would—in an instance of asymmetric irony—be pitting its mining weakness against the PLAN's mine-countermeasures weakness, with ultimately uncertain results.

Ramping Up Mining

That said, senior Navy leaders, including the Chief of Naval Operations and the commanders of the Third and Fifth Fleets, are warming to "offensive" mining. In the fall of 2010, Captain John Hardison, then deputy program manager of the Navy's Mine Warfare Programs Office (PMS-495) in the Naval Sea Systems Command, identified remote control and improved targeting for offensive mining as among his command's "top items of interest."[40] He echoed Admiral John C. Harvey, Jr., Commander, Fleet Forces Command, who said the Navy needs to avoid losing its naval mining capabilities—although, the admiral also admitted, funding mine R&D was not at the top of *his* list of priorities.[41]

One measure of relative priorities is the fact that U.S. Navy mine inventories pale in comparison to those of other countries. The American stockpile is

significantly smaller than even North Korea's estimated fifty thousand mines, while the PLAN might have, as noted, on the order of a hundred thousand mines, and Russia has been estimated to have about 250,000. Ominously, all three (and another twenty or so mine-producing countries) actively sell their weapons to other states and nonstate actors.

The Navy's mine arsenal includes diminishing numbers of the increasingly obsolescent Mk 67 submarine-launched mobile mine, which will be out of service by the end of fiscal year 2012. The Mk 67 is a modified Mk 37 torpedo with its wire guidance removed and a thin-wall mine warhead and multiple-influence (magnetic/seismic/pressure) target detection device (TDD) installed. A shallow-water bottom mine meant for use against submarines and surface ships, the Mk 67 is launched from the torpedo tubes of a submarine and runs to a preselected location or distance, at which point the motor shuts down and the mine sinks to the bottom. Arming takes place at a preset time or distance, and the mine either "sterilizes" (i.e., shuts itself down) or self-destructs at a predetermined end of life. This is the Navy's only submarine-delivered mine, and after FY 2012 the U.S. Navy's submarine force will have no minelaying capability. There are suggestions for a modification to the Mk 48 heavyweight torpedo into a dual-purpose weapon —that is, torpedo or SLMM, at the turn of a switch. If pursued, that would be well into the future, as no funding has been programmed.

The Navy does have the dedicated, aircraft-laid, thin-walled, two-thousand-pound Mk 65 Quickstrike (QS) bottom mine, as well as low-drag bomb-conversion kits for the aircraft-laid five-hundred-pound Mk 62 and thousand-pound Mk 63 QS bottom mines. The Mk 62/63 weapons use general-purpose Mk 82 (five hundred pound) and Mk 83 (thousand pound) low-drag bombs as explosive warheads. Arming takes place at a preset time after the mine enters the water and comes to rest on the bottom, and the mines either self-destruct or sterilize at the end of life.

The in-service multiple-influence Mk 57, Mk 58, and advanced Mk 71 TDDs are used with the converted general-purpose bomb QS weapons and the Mk 65 dedicated mine. The TDD Mk 71 for the QS Mk 65 was fielded in the spring of 2011, and the Navy has one approved software algorithm for its use, with three more ready for final testing. The Mk 71 is a programmable device capable of responding to a broad spectrum of target types, from small combatant craft and quiet, diesel-electric or air-independent submarines to major warships. The Mk 71 development program dates to the early 1990s, and acquisition began in FY 2005, but it has been chronically hamstrung by low-level funding and changing priorities, as well as by a "tech refresh" to make it more producible. The development of a new Mk 75 safe and arming fuse for Mk 62 and Mk 63 QS bomb

conversions has also taken longer than anticipated, but it should enter service by 2017–18. As an example of the fragility of the American mine industrial base, only a single company produces the Mk 71/75 TDDs, and a sole subcontractor company that provided a critical component has ceased production, forcing the Navy to look for alternative sources.

There is no surface minelaying capability in the U.S. Navy, although the service might investigate rolling Mk 62 and Mk 63 Quickstrikes off virtually any available ships (e.g., the LCS) or craft—something Libya, using Soviet/East German "export" mines, did from a ferry (M/V *Ghat*) in the Red Sea during the summer of 1984.[42]

With the demise of the Mk 67 SLMM in 2012, the nation's sole minelaying capabilities will reside in naval aviation and the U.S. Air Force. The Navy's P-3C Orion maritime patrol aircraft and F/A-18 Hornet/Super Hornet can drop QS mines (P-3C mine loadouts are four Mk 63 or two Mk 65 mines, and Hornets can carry all three QS variants), but the P-3Cs will start leaving service in 2013. They will be replaced by the P-8 Poseidon Multi-Mission Maritime Aircraft; it too will also have a mining capability, but its ability to lay mines in meaningful numbers is years away.

Minelaying training for F/A-18 Hornet pilots ramped up in 2011, and the Navy's minefield planners have seen a renaissance of sorts within the aviation strike warfare community. However, the last time the U.S. Navy aircraft laid mines "in anger" was during the DESERT STORM "air war" in February–March 1991. A sortie of four A-6 Intruders from Attack Squadron 55 embarked on USS *Ranger* (CV 61) attempted to mine the Khwar 'Abd Allah waterway with Mk 36 Destructor mines (DSTs, predecessors of the Quickstrike) in January 1991, but with uncertain results. One aircraft was shot down and the crew lost, a reminder of how dangerous airborne mining can be. The Navy did employ Mk 36 DSTs against Iraqi bridges and runways (a tactic perfected against traffic along jungle trails during the Vietnam War), with better effect and no losses.[43]

The U.S. Air Force B-52H Stratofortress, B-1B Lancer, and B-2A Spirit strategic bombers constitute the nation's only high-volume mining capability. B-1s can carry more Quickstrike mines than the seemingly ageless B-52s (expected to remain active through 2040, the first B-52H having entered service in 1961), and the B-52s and B-1s—but not B-2s—regularly train for and practice this mission.[44] Close collaboration between the Navy and Air Force has been on the rise in recent years, and in 2011 planning began for B-52s and B-1s to deliver mines for an in-water mine test. However, in wartime, high-volume mining will be only one of several missions demanded of Air Force strategic bombers and, if the minefields are at great distances, their supporting fleet of aerial tankers.

Mining-specific training continues to be a concern for planners. The focus at the Mine Warfare Training Center in San Diego has been on MCM rather than mining, although the Naval Mine and Anti-submarine Warfare Command (NMAWC) is increasingly emphasizing training for aircrews in mining tactics, techniques, and procedures. But the Navy's institutional knowledge base for mining and minefield training largely amounts to "received wisdom" passed down by experts in the Mobile Mine Assembly Division of the Navy Munitions Command. In the late spring 2011 there were only two minefield planners in the U.S. Navy—a retired Coast Guard captain and a Limited Duty/Surface Ordnance naval officer assigned to NMAWC—in addition to a handful of enlisted rated minemen (none of whom have formal training).

Looking to an ambiguous future, in the fall of 2010 Captain Mark Rios, Resource Sponsor for Mine Warfare (N852) in the Expeditionary Warfare Directorate (N85) of the Navy Staff, observed that while the Navy has a good ability to lay indiscriminate mines, it could create mines that would more effectively and discriminately target enemy ships and could be turned on and off by remote control. "We want there to be a discussion about how we can use mines," Captain Rios noted in October 2010.[45] "Clearly some of our adversaries or potential adversaries have submarines and patrol craft that are very nimble and fast. Early on in the conflict, mining their harbors or their approaches to come in and out of port would reduce the number of ships and submarines that could come out to attack us and this reduces the threat." He also mentioned that N85 is assessing concepts for "glide mines" (fitted with global positioning system targeting, they could be launched from tactical aircraft well outside the range of adversary antiaircraft weapons) and mine-laying UUV "trucks" (that could be clandestinely deployed from the Navy's special-forces/guided-missile attack submarines).[46]

That vision will likely prove optimistic. There have been only a few efforts—halfhearted and short-lived—since the Cold War ended in 1991 to develop new mines. An improved submarine-launched mine based on the Mk 48 torpedo was initiated but died in 2002, and there was the "2010 Mine," a modern air-dropped mine to complement the Quickstrike mines by 2010. That too was canceled.

Several years ago the Navy proposed a new family of mines, Sea Predator, that fell victim to the tyranny of the budget when available funds were shifted to solve the land-IED problem in Iraq and Afghanistan.[47] That said, low-level testing and proof-of-concept work have continued, and the Navy has modeled a networked-mine approach with some analytical success. The Sea Predator concept called for an advanced, remote-control, autonomous mobile mine (in some concepts more like an armed UUV than a traditional mine) that would nonetheless take advantage of the basic mine characteristics—high lethality, long endurance, "man out

of the loop" tactics, strong psychological impact, and force-multiplying features that free manned platforms for other duties. Sea Predator was to have an exceptionally large damage width. It was also to be deployable by both submarines and surface ships (the littoral combat ship was a candidate platform). Thus the distinction among smart mobile mines, torpedoes, and UUVs is becoming blurred.

Some have suggested acquiring foreign mines for American service. For example, in 2005 the Naval Research Advisory Committee concluded,

> The U.S. Navy should consider employing mines in offensive operations, to create barriers to deny areas of interest/operations to hostile submarines, UUVs, and SDVs [swimmer delivery vehicles]. The current U.S. mine capability is limited and rapidly dying. It is unlikely that the planned 2020 Mine [Sea Predator] will be developed on time, at cost, and with the capabilities originally expected. Accordingly, the Panel recommends the use of existing and in-development foreign-built mines that could be fitted with advanced sensors to meet the use described above.[48]

As this article was prepared, the Navy was considering a "drill down" study to get to the "ground truth" about acquiring and employing foreign mines.

Still, this nascent interest in advanced, sophisticated offensive mines has not yet translated to funding, and given increasing pressures on Defense and Navy budgets, "business as usual" will likely set in. Within the mine warfare community itself, investment in advanced new mines looks to be held hostage by resource competition. The Navy's mine-warfare resource sponsor (that is, the requirements and funding office) has a difficult problem: balancing MCM and mines/mining while having to fund both legacy and future MCM systems as they are brought on line, with no growth in total budget. In short, while the technologies for improving mines are mature, the Navy's will to develop, acquire, and deploy them remains uncertain.

This in turn brings into question emerging strategies to deal with the PLAN anti-access/area-denial challenges, generally, and the Chinese mine threat, specifically.

U.S. Mines in the AirSea Battle Concept

While still being refined and debated in mid-2011 (and at this writing still not formally released), an "AirSea Battle Concept" outlined in the 2010 Quadrennial Defense Review—focused largely on defeating a Chinese A2/AD strategy in both Near and Far Seas scenarios but also addressing those of Iran and North Korea—has implications for the nation's future mines and mining capabilities:

> *Develop a joint air-sea battle concept.* The Air Force and Navy together are developing a new joint air-sea battle concept for defeating adversaries across the range of military operations, including adversaries equipped with sophisticated anti-access and area-denial capabilities. The concept will address how air and naval forces will integrate

> capabilities across all operational domains—air, sea, land, space, and cyberspace —to counter growing challenges to American freedom of action. As it matures, the concept will also help guide the development of future capabilities needed for effective power projection operations.[49]

Specifically regarding U.S. mines and mining, observers have outlined several candidate AirSea Battle "future capabilities" and concepts to defeat A2/AD systems of China, Iran, North Korea, and other countries. These could include:[50]

- Enhanced capabilities are needed for undersea operations generally, including submarines, submersible robotic systems, and mines.
- Offensive mining appears particularly attractive, given its comparatively low cost and the difficulty and time-consuming nature of countermine operations. Mining will generally be effective only in areas close to hostile territory, near the approaches to ports and naval bases, and in choke points.
- Significant numbers of smart mobile mines capable of autonomous movement over extended distances to programmed locations are needed. Such mines should be deployable by submarines and stealthy Air Force bombers. Smart mobile mines might prove particularly effective in attriting PLAN submarines and surface forces or blocking their access to and from their bases.
- Stealthy minelaying platforms capable of penetrating A2/AD systems are preferable. Assuming that submarine-launched weapons—armed UUVs and more traditional mines—are in the inventory, these capabilities will likely need to be deployed almost exclusively from submarines during the early stages of a conflict, as submarines represent the only highly survivable maritime asset of the United States and its maritime partners. However, they have limited payload capacity, must trade off mine loads for torpedoes, have lengthy transit times (whereas the theater is enormous), and, perhaps most important, are needed for other high-priority missions. Establishing effective minefields near all PLAN bases would require a prolonged effort if submarines alone were assigned the mission.
- The AirSea Battle Concept would also employ stealthy Navy and Air Force aircraft to lay mines, and they could prove particularly effective in that role, given their large payloads.
- The Air Force should equip its stealthy, large, long-range/long-endurance, manned and unmanned platforms with an offensive minelaying capability and then train and conduct exercises in conjunction with the Navy for offensive minelaying missions within the PLAN's A2/AD zone.

These AirSea Battle mining initiatives are years, if not longer, away from bearing fruit, and whether they ever do depends on an American commitment to

design, engineer, and acquire modern mines—problematic at best. However, if advanced U.S. mine-development programs are pursued, they promise to challenge PLAN naval forces generally, but also Chinese MCM forces, which, like those of the United States, are "brittle," particularly when compared to China's mines and mining capabilities.

Moreover, from a broader countermining perspective, U.S. Air Force strategic aircraft, Navy and Air Force tactical aircraft, long-range land-attack cruise missiles, and aircraft carrier–based armed unmanned aircraft systems would certainly be used to attack mine depots and warehouses, assembly areas, and minelaying platforms should intelligence be sufficiently precise and accurate. While prehostilities ("prekinetic"), preemptive destruction of PLAN mining capabilities is probably out of the question for a variety of reasons—diplomatic (it would be a significant escalation of a crisis), operational (PLAN submarines would probably be deployed and weapons laid well before bombers departed bases in Guam and Missouri), and practical (how would the United States determine whether mines were on board a given COSCO merchant ship or fishing boat—that is, solve the quintessential maritime-domain-awareness challenge?)—it is unlikely that the option to do so would not be included in operational plans.

CHINESE NAVY MCM CAPABILITIES

Compared to the PLAN's extensive mine/mining capabilities, Chinese mine-countermeasures forces look much less impressive.[51] Various sources indicate a total order of battle of about twenty-eight active MCM vessels (with another sixty-eight or so in reserve) and four "mine warfare drones" (with another forty-two in reserve), plus another seventy small, port- and harbor-focused MCM craft. PLAN minesweeping forces are strictly coastal and port/harbor vessels, except for the T-43 minesweepers and the single MCM command ship.

The first Chinese minesweepers were nine coastal ships delivered after the end of World War II: four former Japanese 222-ton units delivered in 1947 and five 350-ton former U.S. Navy yard minesweepers in 1948. The first postwar-design minesweepers, and the beginning of a credible Chinese mine warfare force, were the four T-43 minesweepers obtained from the Soviet Union in 1955. China began building copies at Wuchang Shipyard in Wuhan and at Donglang Shipyard in Canton (Guangzhou). The first two were launched in 1956, and by 1976 a total of twenty-three had been built. Wuchang ceased production in 1960, but Donglang continued until a total of forty minesweepers had been built. As many as sixteen T-43s may remain active, with the rest in reserve or modified for patrol duties, if not scrapped. Chinese MCM equipment on the T-43s includes mechanical and magnetic sweep gear.

In the late 1970s/early 1980s, the Chinese copied the German remote-control Troika minesweepers, producing more than fifty, designated the *Futi* class (Type 312). These are capable of magnetic and acoustic sweeping under remote control up to five kilometers from a shore control station. Although several PRC minesweepers have been marketed for export, the only sales were to Thailand and Pakistan.

Four steel-hulled, 320-ton *Wosao* (Type 082)–class coastal minesweepers are in service, the first of them commissioned in 1988. The second was not seen until 1997. They are equipped with mechanical, magnetic, acoustic, and low-frequency/infrasonic sweeps.

At least five *Wochi*-class mine countermeasures vessels (MCMVs) are in service and are capable of acoustic and magnetic minesweeping. The first of the class, *Zhangjiagang,* was commissioned in 2007; the second, *Jingjiang,* in November 2007; and the remaining vessels at regular intervals. Final numbers in the class are not known, but indications are that it might replace the remaining T-43s.

Only one *Wozang*-class MCMV is known to be in commission. Commissioned in July 2005, it was thought to be a successor to the T-43; however, no additional hulls have been seen. The hull seems to be built of glass-reinforced plastic to reduce its magnetic signature and to have acoustic-reduction features to reduce self-noise. It is believed to be capable of remotely operating mine-hunting/sweeping vehicles.

Wolei can serve as a command ship during mine-clearing operations. Another one-of-a-kind unit is hull 4422 of the *Wosao* class; it was designed for export, but there were no customers. In 1976, about twenty Shanghai II patrol boats were built for minesweeping and named the *Fushun* class.

China's approximately seventy smaller coastal and auxiliary minesweepers are attached to various maritime-district control roles. Examples include the four-hundred-ton *Lienyun*-class minesweepers, which are designated with district letters—such as *J-141* and *J-143,* under the Shanghai Maritime Military District—and the *Fushun* 250-ton coastal sweeper *E-303.* All of the coastal and harbor minesweepers are equipped solely with simple, mechanical sweeps that counter only moored contact mines.

The PLAN has apparently developed towed-array MCM sonars operated from helicopters. The Changhe Z-8, similar to the French Super Frelon design, is the largest helicopter yet built in China. The Z-8 carries out auxiliary roles in the PLAN, such as towing of mine-clearing systems, vertical in-flight refueling of ships, and support to the submarine fleet.

In short, the PLAN MCM force appears to be quite limited and devoted primarily to minesweeping in near-shore regions, ports, and waterways. In direct

counterpoint to the U.S. Navy's MIW posture, PLAN attention seems to be focused on mines and mining rather than the countermeasures needed to deal with its adversaries' mines.

AN EXCELLENT RETURN ON INVESTMENT

Mines, like the poor, will always be with us. Mines and their terrorist-counterpart underwater IEDs are easy to acquire or build and are cheap, but their low cost belies their potential to do significant damage. With costs measured from a few hundred to several thousand dollars, they are asymmetric weapons of choice for a "poor man's navy," providing an excellent return on investment. To summarize the discussions of this article:

- Current and projected future Chinese naval mine technologies, inventories, delivery systems, doctrine, and training are robust. The PLAN seems to take mining seriously.
- China could rather easily employ sea mines in several Near Seas as well as Far Seas scenarios, in addition to the "Taiwan scenario." Also, given development of stealthy minelaying systems, particularly advanced submarines, the PLAN could extend mining operations to key targets beyond the First Island Chain. Indeed, mines could be employed in virtually any crisis or conflict.

TABLE 2
PLAN/U.S. NAVY MIW COMPARATIVE ASSESSMENT

Mine Warfare Area	PLA Navy	U.S./Partner Navies
Mines and mining	"Quantity has a quality all its own." Mix of many older but still dangerous weapons with new, sophisticated devices supported by strong RDT&E efforts. Doctrinal foundation for mining appears to be strong. Uneven capabilities with regard to submarine, surface, and airborne mine-delivery platforms.	Limited mine capabilities and likely to worsen without significant investment in RDT&E and acquisition of modern weapons and delivery platforms. Doctrinal foundation for mining is weak. With the demise of the Mk 67 SLMM in 2012, the only U.S. minelaying capability resides in Navy tactical aircraft and Air Force strategic bombers.
Mine countermeasures	"Brittle," obsolescent platforms and systems, mixed with small numbers of more modern technologies, systems. MCM command, control, communications, intelligence, reconnaissance, and surveillance capabilities uncertain.	"Brittle" and worsening in near term until LCS and MCM mission modules in service in numbers post-2020. Need concept of operations for post-2020 "hybrid organic/dedicated" MCM forces. Other than Australia and Japan, regional partner navies' MCM capabilities are limited and constrained to coastal operational environments.

Note: RDT&E: research, development, testing, and evaluation.

U.S., allied, and partner navies in the region thus must be mindful of the potential that they will have to counter Chinese weapons that wait.

- The U.S. Navy and its allied and partner navies are ill prepared to cope with Chinese mine warfare strategies and operations. In addition to the eight American MCM ships in the region, only the Australian and Japanese MCM forces look up to the task of countering Chinese mines in approaches to ports and harbors, in choke points, and in the open sea. All others are likely to be held back for local or littoral operations. Assuming the eventual success of the LCS and its organic tailored-mission MCM systems, however, the balance might become more even.
- The U.S. Navy is significantly hamstrung in types and numbers of mines and in its ability to deploy them in the Near Seas with precision and in high volume. The lack of sufficient numbers of modern, sophisticated, and effective mines casts doubt on emerging concepts like the AirSea Battle, exposing the reality behind the rhetoric, at least in the mine warfare arena.

Table 2 provides a thumbnail assessment of the PLAN, U.S. Navy, and regional-partner navy mine warfare balance as of the spring of 2011.

The conclusions reached in 2009 by analysts of the U.S. Naval War College's China Maritime Studies Institute remain sound.[52] First, China has a large inventory of naval mines, many of which are obsolete but still deadly, and somewhat more limited numbers of sophisticated modern mines, some of which are optimized to destroy enemy submarines. Second, we think that China would rely heavily on offensive mining in any Taiwan scenario. Third, were China able to employ these mines—and *all* think that it could—they would greatly hinder operations, for an extended time, in waters where the mines were even *thought* to have been laid.

In short, the U.S. Navy and its regional maritime partners damn China's "torpedoes" at their peril.

NOTES

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Although the views presented here are the author's alone, he thanks the valuable contributions of several key people: uniformed and civilian MIW analysts, planners, engineers, scientists, and operators at U.S. Navy headquarters, systems commands, laboratories, and fleet commands; Dr. Andrew Erickson; Edward Feege; Capt. George Galdorisi, USN

(Ret.); Dr. Lyle Goldstein; Capt. Robert O'Donnell, USN (Ret.); George Pollitt; Norman Polmar; and William S. Murray.

1. Tamara Moser Melia, "*Damn the Torpedoes": A Short History of U.S. Naval Mine Countermeasures, 1777–1991,* Contributions to Naval History 4 (Washington, D.C.: Naval Historical Center, 1991); Gregory K. Hartmann and Scott C. Truver, *Weapons That Wait: Mine Warfare in the U.S. Navy* (Annapolis, Md.: Naval Institute Press, 1991); National Research Council, *Naval Mine Warfare: Operational and Technical Challenges for Naval Forces* (Washington, D.C.: Naval Studies Board, 2001); U.S. Navy Dept., *Mine Warfare Plan: Meeting the Challenges of an Uncertain World* (unclassified version) (Washington, D.C.: 29 January 1992); U.S. Navy Dept., *21st Century U.S. Navy Mine Warfare: Ensuring Global Access and Commerce* (Washington, D.C.: PEO LMW/N85, June 2009); and U.S. Navy Dept., *Mine Warfare,* NWP 3-15/MCWP 3.3.1.2 (Washington, D.C.: Chief of Naval Operations and Headquarters, U.S. Marine Corps, August 1996).
2. Melia, "*Damn the Torpedoes,*" p. 76; Hartmann and Truver, *Weapons That Wait,* pp. 78–79.
3. Melia, "*Damn the Torpedoes,*" p. 3; Hartmann and Truver, *Weapons That Wait,* pp. 4, 35–36.
4. Adm. Gary Roughead, USN, Chief of Naval Operations, statement before the Congressional Mine Warfare Caucus, 10 June 2009.
5. Bradley Peniston, *No Higher Honor: Saving the USS* Samuel B. Roberts *in the Persian Gulf* (Annapolis, Md.: Naval Institute Press, 2006).
6. U.S. Navy Dept., *21st Century U.S. Navy Mine Warfare,* pp. 7–8.
7. H. Dwight Lyons, Jr., et al., *The Mine Threat: Show Stoppers or Speed Bumps?,* Occasional Paper (Alexandria, Va.: Center for Naval Analyses, July 1993). For example, in late April 2011 NATO officials announced that alliance warships had intercepted pro-Qadhafi forces trying to lay mines in the approaches to Misurata harbor, which served as a lifeline for ships ferrying the injured to hospitals in the rebel stronghold, Benghazi, and also for aid entering the city. As many as three mines had been put in place; two were rendered safe, and the third floated away but was later rendered safe. Other accounts indicate that NATO cruise-missile and tactical aircraft strikes targeted Qadhafi's mine warehouses and assembly facilities early on as a means of crippling his minelaying capabilities. Had the mines not been interdicted, they would have had a chilling effect on humanitarian missions and support to the rebels. "Libya: Nato Says Gaddafi Tried to Mine Misurata Harbour," *BBC News Africa,* 29 April 2011, www.bbc.co.uk/; and Rob Crilly, "NATO Warships Clear Misurata of Sea Mines as Gaddafi Remains Defiant," *Telegraph,* 30 April 2011. See note 42 below for a 1984 example of Libyan peacetime mining, in this instance of the Red Sea and Gulf of Aqaba.
8. This discussion of the People's Liberation Army Navy naval mine warfare capabilities and implications for the U.S. Navy draws heavily on two principal secondary sources: Andrew S. Erickson, Lyle J. Goldstein, and William S. Murray, *Chinese Mine Warfare: A PLA Navy "Assassin's Mace" Capability,* China Maritime Study 3 (Newport, R.I.: Naval War College Press, 2009), and "China's Undersea Sentries," *Undersea Warfare* (Winter 2007), pp. 10–15. Important also were background interviews conducted during February–April 2011 with U.S. Navy mine warfare personnel in the Office of the Chief of Naval Operations and the Naval Sea Systems Command in Washington, D.C.; in the Naval Surface Warfare Center, Panama City (Fla.) Division; and the Naval Mine and Anti-submarine Warfare Command, San Diego, Calif. U.S. Navy MIW operators, planners, and intelligence specialists at Navy headquarters and field activities interviewed for this article unanimously pointed to *Assassin's Mace* as the best unclassified open-source information on PLAN mines, mining, and MIW capabilities.
9. Erickson, Goldstein, and Murray, *Chinese Mine Warfare,* p. 70 note 188, citing Ren Daonan, "Submarine Minelaying," *Modern Ships* (February 1998), p. 26.
10. Ambassador Chas (Charles W.) Freeman, former Assistant Secretary of Defense, remarks ("China's Strategy for the Near Seas" conference, Naval War College, 10 May 2011).

11. Dr. Andrew S. Erickson, "PLA Modernization in Traditional Warfare Capabilities," statement before the U.S.-China Economic and Security Review Commission, 29 March 2007, p. 73ff, esp. p. 74.

12. "Near Seas" is a Sino-centric concept and refers specifically to seas near China: the South China Sea, East China Sea, and Yellow Sea areas within the First Island Chain. Seas beyond the First Island Chain are generally known as the "Far Seas." China's Near Seas defense strategy requires the PLAN to develop capabilities to operate effectively in the seas within and slightly beyond the First Island Chain, which stretches from the Aleutian Islands through the Kurile Islands, the main islands of Japan, the Ryukyu Archipelago, Taiwan, and the Philippines to the Greater Sunda Islands. Far Seas operations, by contrast, would extend the range of effective PLAN operations from the First Island Chain up to the Second Island Chain, which extends from Japan's southern islands (including Iwo Jima and the Bonin Islands) to the Mariana Islands (including Guam) and Caroline Islands, and beyond. See Nan Li, "The Evolution of China's Naval Strategies and Capabilities: From 'Near Coast' and 'Near Seas' to 'Far Seas,'" *Asian Security* 5, no. 2 (2009), pp. 144–69.

13. U.S. Defense Dept., *Quadrennial Defense Review Report* (Washington, D.C.: February 2010).

14. Scott Savitz, *Psychology and the Mined: Overcoming Psychological Barriers to the Use of Statistics in Mine Warfare,* CRM D0013693.A2/Final (Alexandria, Va.: Center for Naval Analyses, April 2006); William L. Greer and James C. Bartholomew, *Psychological Aspects of Mine Warfare,* Professional Paper 365 (Alexandria, Va.: Center for Naval Analyses, October 1982).

15. Among other provisions, the Hague Convention VIII of 1907 focuses on "The Laying of Automatic Submarine Contact Mines" (sec. VII). Relevant are articles 1–5, available at Yale Law School, *Avalon Project,* avalon.law.yale.edu/. In the late twentieth/early twenty-first centuries, the Hague mine warfare rules have been honored more in the breach than in observance, and technological advances (e.g., autonomous armed UUVs) look to outstrip the legal regime.

16. In addition to the mine threat to military operations, mines and UWIEDs are among many threats to maritime homeland security. See U.S. Homeland Security Dept., *National Maritime Terrorism Threat Assessment,* CG-HSEC-006-08 (Washington, D.C.: USCG Intelligence Coordination Center, 7 January 2008); Scott C. Truver, "Mines and Underwater IEDs in U.S. Ports and Waterways: Context, Threats, Challenges, and Solutions," *Naval War College Review* 61, no. 1 (Winter 2008), p. 106ff; and George Pollitt, *Maritime 911: A Threat and Economic Effects Analysis,* briefing JNO2:g2p (Laurel, Md.: Johns Hopkins University Applied Physics Laboratory, May 2010).

17. U.S. Navy Dept., *Commander's Handbook on the Law of Naval Operations,* NWP 1-14M (Washington, D.C.: July 2007), pp. 9-2 and 9-3, especially arts. 9.2.2 (Peacetime Mining) and 9.2.3 (Mining during Armed Conflict), available at www.usnwc.edu/. NWP 1-14M has been issued by the U.S. Marine Corps as MCWP 5-12.1 and by the Coast Guard as COMDTPUB P5800.7A.

18. U.S. Defense Dept., *Annual Report to the Congress: Military and Security Developments involving the People's Republic of China* (Washington, D.C.: 2010), pp. 7, 49.

19. U.S. Navy Dept., *The People's Liberation Army Navy: A Modern Navy with Chinese Characteristics* (Suitland, Md.: Office of Naval Intelligence, April 2009), pp. 18, 23–24, 29–30.

20. Ronald O'Rourke, *China Naval Modernization: Implications for U.S. Naval Capabilities—Background and Issues for Congress,* RL33153 (Washington, D.C.: Congressional Research Service, 22 April 2011), pp. 3, 4, 21, 62, 63.

21. This discussion relies heavily on Erickson, Goldstein, and Murray, *Chinese Mine Warfare* and "China's Undersea Sentries"; "Mine Warfare Forces (China)," in section Mine Warfare Platforms—Mine Warfare Forces, in *Jane's Underwater Warfare Systems,* articles.janes.com/; Bernard D. Cole, *The Great Wall at Sea: China's Navy Enters the Twenty-First Century* (Annapolis, Md.: Naval Institute Press, 2001), pp. 80, 102–103, 156–57; James C. Bussert, "Chinese Mines Pose Taiwan Blockade Threat," AFCEA *Signal,* June 2005, pp. 69–71; Norman Friedman, *The Naval Institute Guide*

to World Naval Weapon Systems (Annapolis, Md.: Naval Institute Press, 2006) [hereafter Friedman, *World Naval Weapon Systems*], pp. 777–78; and Eric Wertheim, *The Naval Institute Guide to Combat Fleets of the World,* 15th ed. (Annapolis, Md.: Naval Institute Press, 2007) [hereafter Wertheim, *Combat Fleets*], pp. 109–10.

22. Roger Cliff et al., *Shaking the Heavens and Splitting the Earth: Chinese Air Force Employment Concepts in the 21st Century* (Washington, D.C.: RAND, 2011), pp. 160–62. See also Milan Vego, "China's Naval Challenge," U.S. Naval Institute *Proceedings* (April 2011), pp. 36–40.
23. "Mine Warfare Forces (China)."
24. Background interview conducted in March 2011 with U.S. Navy mine warfare analysts.
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39. Melia, "*Damn the Torpedoes,*" pp. 3, 7; Hartmann and Truver, *Weapons That Wait,* pp. 4, 35–36.
40. PMS-495, "Future Mine Warfare Business" (presentation, National Defense Industrial Association conference, 21 September 2010), slide 7. Although "offensive mining" was at the top of this list, the briefing noted that the list of priorities was "not in rank order."
41. Cid Standifer, "Navy Examines Improved Offensive Mine Warfare Capabilities," *Inside the Navy,* 18 October 2010; and Rios, N852 Mine Warfare Branch program briefing, 4 October 2010.
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43. U.S. Navy Dept., *Mine Warfare Plan,* p. 62. See also Edward J. Marolda, *Operation End*

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44. The seventy-seven active B-52s each can carry about forty-five Mk 62 QS mines, eighteen Mk 63 mines, or eighteen Mk 65 mines; the sixty-six B-1s can carry eighty-four Mk 62, twenty-four Mk 63, or eight Mk 65 mines; and the twenty B-2s carry eight Mk 62s.

45. Standifer, "Navy Examines Improved Offensive Mine Warfare Capabilities."

46. For "special-forces/guided-missile attack submarines," see Charles D. Sykora, "SSGN: A Transformation Limited by Legacy Command and Control," *Naval War College Review* 59, no. 1 (Winter 2006), pp. 41–62.

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WHAT MILITARY OFFICERS NEED TO KNOW ABOUT CIVIL-MILITARY RELATIONS

Mackubin Thomas Owens

Civil-military relations describe the interactions among the people of a state, the institutions of that state, and the military of the state. At the institutional level, there are "two hands on the sword."[1] The civil hand determines when to draw it from the scabbard and thence guides it in its use. This is the dominant hand of policy, the purpose for which the sword exists in the first place. The military's hand sharpens the sword for use and wields it in combat.[2]

From the time of the Revolution to the present, U.S. civil-military relations essentially have constituted a bargain among the aforementioned parties—the people, the civil government, and the military establishment—concerning the allocation of prerogatives and responsibilities between the government and the military, in answer to five questions:[3] Who controls the military instrument? What is the appropriate level of military influence on society? What is the role of the military? What pattern of civil-military relations best ensures military success? Who serves?[4]

From time to time throughout American history, certain circumstances—political, strategic, social, technological, etc.—have changed to such a degree that the terms of the existing civil-military bargains have become obsolete. The resulting disequilibrium and tension have led the parties to renegotiate the bargains in order to restore equilibrium.

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This is not to say that in the United States the parties to the bargain are equal. The American civil-military bargain is the outcome of an "unequal dialogue." It is "a dialogue, in that both [the civilian and military] sides expressed their views bluntly, indeed, sometimes offensively, and not once but repeatedly—and [an] unequal [one], in that the final authority of the civilian leader was unambiguous and unquestioned."[5] In the United States, the military, despite having a monopoly on coercive power, has generally accepted its position relative to the other parties.

As the idea of a periodic renegotiation of the civil-military bargain would suggest, there have been some fairly serious civil-military clashes over the past two decades. They primarily reflect changes in the security environment but also have been driven to some degree by changing social and political factors.

For example, a substantial renegotiation of the civil-military bargain took place with the end of the Cold War. The change in the security environment occasioned by the collapse of the Soviet Union led to a lack of consensus regarding what the military was expected to do in the new security environment. The result was a period of drift that had an impact on civil-military relations. During this period, some observers worried that the military had become more alienated from its civilian leadership than at any time in American history, that it had become politicized and partisan, that it had become resistant to civilian oversight, that officers had come to believe that they had the right to confront and resist civilian policy makers—to insist that civilian authorities heed their recommendations—and that the military was becoming too influential in inappropriate areas of American society.[6]

Arguably another renegotiation of the civil-military bargain began to take shape after the attacks of 9/11, as the military found itself fighting protracted irregular wars instead of the conventional wars it prefers. Illustrative of civil-military tensions were clashes between the uniformed services and President George W. Bush's first secretary of defense, Donald Rumsfeld, over efforts to "transform" the military from a Cold War force to one better able to respond to likely future contingencies, and the planning and conduct of U.S. military operations in Afghanistan and Iraq. These tensions peaked with the so-called revolt of the generals in the spring of 2006, which saw a number of retired Army and Marine Corps generals publicly and harshly criticize Secretary Rumsfeld.[7]

With Rumsfeld's departure and the apparent success of the "surge" in Iraq, some expressed hope that harmony might return to American civil-military relations. To be sure, Rumsfeld's successor as secretary of defense, Robert Gates, did a great deal to improve the civil-military climate. But subsequent events—including Gates's decision to fire two service secretaries and a service chief, to recommend against renominating the chairman of the Joint Chiefs of Staff for a second term, and to force the retirement of a combatant commander, as well as a

public disagreement on military strategy between President Barack Obama and the ground commander in Afghanistan, General Stanley McChrystal, and the latter's subsequent relief—make it clear that the state of U.S. civil-military relations remains contentious at best.[8]

The new secretary of defense, Leon Panetta, and chairman of the Joint Chiefs of Staff, General Martin Dempsey, as well as new service chiefs and combatant commanders, will be deeply involved in a likely renegotiation of the civil-military bargain as the country draws down from a decade of war just as it faces severe fiscal constraints. It is a given that the Defense Department will face substantial budget reductions, placing a great deal of stress on civil-military relations. Whether they realize it or not, military officers of all grades, not only the most senior commanders, will be deeply involved in the constant negotiating that shapes the U.S. civil-military bargain. Here's some of what they need to know.

CIVIL-MILITARY RELATIONS INCLUDE MORE THAN CIVILIAN CONTROL

Most of the debate over American civil-military relations since the 1990s has been dominated by concerns about civilian control of the military establishment. Indeed, some observers believe that the focus on civilian control has obscured other equally important elements of civil-military relations.[9] But as noted above, the domain of civil-military relations encompasses four questions in addition to control of the military.

The first additional question raises the issue of *what degree of military influence is appropriate* in a liberal society such as the United States. The extreme form of military influence in society is militarism, a state of affairs in which military values predominate and the military devours a disproportionate share of society's resources. What is the proper scope of military affairs? In today's environment, what constitutes military expertise? Does it go beyond what Samuel Huntington called in *The Soldier and the State,* his classic study of civil-military relations, the "management of violence"?[10] Should it?

For instance, to what extent should the military influence foreign policy? Has American foreign policy become "militarized"? Do combatant commanders exercise too much power? Have they become the new "viceroys" or "proconsuls"?[11] What is proper regarding the military and domestic politics? Should active-duty officers be writing op-eds in support of particular programs or policies? Should retired officers get involved in partisan politics? What is the military's proper role in influencing the allocation of resources?

Next, what is *the appropriate role of the military*? Is the military establishment's purpose to fight and win the nation's wars or to engage in constabulary actions? What kind of wars should the military prepare to fight? Should the focus of the

military be foreign or domestic? The United States has answered this question differently at different times and under different circumstances. For example, throughout most of its history the U.S. Army was a constabulary force. It permanently oriented itself toward large-scale conflicts against foreign enemies only in the 1930s. The end of the Cold War and the attacks of 9/11 have suggested new answers—for example, a focus on "irregular warfare" (counterinsurgency and counterterrorism), as well as an openness to the use of the military in domestic affairs, such as disaster relief in response to emergencies like Katrina, domestic law enforcement during the Los Angeles riots, or border security. What impact do such issues have on civil-military relations?

Next, *what pattern of civil-military relations best ensures the effectiveness* of the military instrument? All of the other questions mean little if the military instrument is unable to ensure the survival of the state. If there is no constitution, the question of constitutional balance doesn't matter. Does effectiveness require a military culture distinct in some ways from the society it serves? What impact does societal structure have on military effectiveness? What impact does political structure exert? What impact does the pattern of civil-military relations have on the effectiveness of strategic decision-making processes?

And finally, *who serves*? Is military service an obligation of citizenship, or something else? How are enlisted members recruited and retained? How should the U.S. military address issues of "diversity" in the force? What about reserves, racial and ethnic minorities, women, and homosexuals?

Obviously, questions regarding military service have been answered by Americans in various ways. Through most of its early history, the United States maintained a small regular peacetime establishment that mostly conducted limited constabulary operations. During wartime, the several states were responsible for raising soldiers for federal service, either as militia or volunteers.

While the United States resorted to a draft during the Civil War and again during World War I, conscription became the norm in the United States only from the eve of World War II until the 1970s. Today the U.S. military is a volunteer professional force. But even now the force continues to evolve, as debates over such issues as the role of the reserve components in the post-9/11 military force, women in combat, service by open homosexuals, and the recruitment of religious minorities, especially Muslims, make clear.

The question of *civilian control* is important, but a myopic focus on this issue means that other important questions are often ignored. In addition, the fact that liberal societies like the United States often take civilian control for granted raises several further questions: Does civilian control refer simply to the dominance of civilians within the executive branch—the president or the secretary of defense? What is the role of the legislative branch in controlling the military instrument?

Is the military establishment "unified," that is, does it speak with anything like a single voice vis-à-vis the civil government?

What is the nature of military advice? Should military leaders "insist" that their advice be heeded? What courses of action are available to military leaders who believe the civilian authorities are making bad decisions? In other words, is there something that might be called a "calculus of dissent" that military leaders can invoke in cases where they believe civilian decisions are dangerous to the health of the country? These issues, addressed below, are part and parcel of what officers need to know about civil-military relations.[12]

CIVILIAN CONTROL INVOLVES NOT ONLY THE EXECUTIVE BRANCH

It involves Congress as well. As the constitutional scholar Edward Corwin once famously observed, the Constitution is an "invitation to struggle for the privilege of directing American foreign policy" between Congress and the president.[13] But there is a similar tension at work with regard to civil-military relations. Those who neglect the congressional role in American civil-military relations are missing an important element.[14]

The military has *two* civilian masters, and this has implications for civil-military relations that officers must understand. For instance, while the president and secretary of defense control the military when it comes to the use of force, including strategy and rules of engagement, Congress controls the military directly with regard to force size, equipment, and organization, and indirectly regarding doctrine and personnel. Indeed, Congress is the "force planner" of last resort.

The U.S. military accepts civilian control by both Congress and the president but offers advice intended to maintain its own institutional and professional autonomy. On use of force, the military is usually granted a good deal of leeway regarding the terms and conditions for such use.

By not dissenting from executive-branch policy, American military officers implicitly agree to support presidential decisions on the budget and the use of force, but they also must recognize an obligation to provide their alternative personal views in response to Congress. However, officers must recognize that Congress exerts its control with less regard for military preferences than for the political considerations of its individual members and committees. Thus congressional control of the military is strongly influenced by political considerations, by what Samuel Huntington called "structural," or domestic, imperatives as opposed to strategic ones.

When the president and Congress are in agreement, the military complies. When the two branches are in disagreement, the military tends to side with the branch that most favors its own views, but never to the point of direct disobedience

to orders of the commander in chief. Military officers are obligated to share their views with Congress. Doing so should not be treated as an "end run" undermining civilian control of the military.[15]

THE ABSENCE OF A COUP

The absence of a coup does not indicate that civil-military relations are healthy or that civilian control has not eroded. All too often, officers seem to believe that if the United States does not face the prospect of a Latin American– or African-style military coup d'état, all is well in the realm of civil-military relations. But this is a straw man. A number of scholars, including Richard Kohn, Peter Feaver, the late Russell Weigley, Michael Desch, and Eliot Cohen, have argued that although there is no threat of a coup on the part of the military, American civil-military relations have nonetheless deteriorated over the past two decades.[16]

Their concern is that the American military "has grown in influence to the point of being able to impose its own perspective on many policies and decisions," which manifests itself in "repeated efforts on the part of the armed forces to frustrate or evade civilian authority when that opposition seems likely to preclude outcomes the military dislikes." The result is an unhealthy civil-military pattern that "could alter the character of American government and undermine national defense."[17]

In theory, Kohn argues, "civilians have the authority to issue virtually any order and organize the military in any fashion they choose."

> But in practice, the relationship is far more complex. Both sides frequently disagree among themselves. Further, the military can evade or circumscribe civilian authority by framing the alternatives or tailoring their advice or predicting nasty consequences; by leaking information or appealing to public opinion (through various indirect channels, like lobbying groups or retired generals and admirals); or by approaching friends in the Congress for support. They can even fail to implement decisions, or carry them out in such a way as to stymie their intent. . . . We are not talking about a coup here, or anything else demonstrably illegal; we are talking about who calls the tune in military affairs in the United States today.[18]

But this seems to support the contention that actual civil-military relations represent the outcome of constant bargaining.

Kohn argues that balanced civil-military relations in the United States have traditionally rested on four foundations, which, he argues, have eroded: the rule of law and reverence for the Constitution; a small force in peacetime; reliance on the citizen-soldier; and the military's own internalization of military subordination to civilian control. Kohn cites Major General John J. Pershing's instructions to First Lieutenant George Patton in 1916: "You must remember that when we enter the army we do so with the full knowledge that our first duty is toward the

government, entirely regardless of our own views under any given circumstances. We are at liberty to express our personal views only when called upon to do so or else confidentially to our friends, but always confidentially and with the complete understanding that they are in no sense to govern our actions." Or in the words of Omar Bradley, the first chairman of the Joint Chiefs of Staff, "Thirty-two years in the peacetime army had taught me to do my job, hold my tongue, and keep my name out of the papers."[19]

While Kohn acknowledges that civil-military tensions are not new, he argues that current conditions are such that the threat of military insubordination is much greater than in the past. First, 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. Of course in view of the upcoming budgetary battles that can be expected over the next few years as resources for defense are substantially reduced, this unity may well deteriorate.

Second, many of the issues in play today reach far beyond the narrowly military, not only to the wider realm of national security but often to foreign relations more broadly. In certain cases military affairs even affect the character and values of American society itself. Kohn argues that this expanded role represents a significant encroachment on civilian control of the military. Third, military advice and advocacy are now much more public than they once were. Fourth, senior officers now lead a large, permanent peacetime military establishment that differs fundamentally from any of its predecessors. Kohn argues that this military is increasingly disconnected, even estranged, from civilian society, while at the same time it is becoming a recognizable interest group, "larger, more bureaucratically active, more political, more partisan, more purposeful, and more influential than anything similar in American history."[20]

According to Kohn, the erosion of civilian control gives rise to "toxic" civil-military relations, which, he argues, damage national security in at least three ways: by paralyzing national security policy; by obstructing or even sabotaging the ability of the United States to intervene in foreign crises or to exercise international leadership; and by undermining the confidence of the military as an institution in its own uniformed leadership.[21]

The military has "pushed back" against civilian leadership on numerous occasions during the last two decades. This pushback has manifested itself (to use Peter Feaver's formulation) in various forms of "shirking"—"foot dragging," "slow rolling," and leaks to the press designed to undercut policy or individual policy makers.[22] Such actions were rampant during the William Clinton presidency and during the tenure of Donald Rumsfeld as secretary of defense. Such pushback is

based on the claim that civilians are making decisions without paying sufficient attention to the military point of view. This leads to the next principle of civil-military relations: officers have an obligation to make their case as strongly as possible but do not have the right to "insist" that their advice be accepted. However, there must be a "calculus of dissent."

MILITARY ADVICE: PROFESSIONAL SUPREMACISTS VS. CIVILIAN SUPREMACISTS

During the 1990s, some military officers explicitly adopted the view that soldiers have the right to a voice in making *policy* regarding the use of the military instrument, that indeed they have the right to *insist* that their views be adopted. This assumption has been encouraged by a serious misreading of a very important book by H. R. McMaster, *Dereliction of Duty: Lyndon Johnson, Robert McNamara, the Joint Chiefs of Staff, and the Lies That Led to Vietnam.*[23]

The subject of *Dereliction of Duty* is the failure of the Joint Chiefs to challenge Defense Secretary Robert McNamara adequately during the Vietnam War. Many serving officers believe the book effectively makes the case that the Joint Chiefs of Staff should have more openly opposed the Lyndon Johnson administration's strategy of gradualism and then resigned rather than carry out the policy. But the book says no such thing. While McMaster convincingly argues that the chiefs failed to present their views frankly and forcefully to their civilian superiors, including members of Congress, he neither says nor implies that they should have obstructed President Johnson's orders and policies through leaks, public statements, or resignation.

This misreading of *Dereliction of Duty* has dangerously reinforced the increasingly widespread belief among officers that they should be advocates of particular policies rather than simply serving in their traditional advisory role. For instance, according to a survey of officer and civilian attitudes and opinions undertaken by Ole Holsti for the Triangle Institute for Security Studies (TISS) in 1998–99, "many officers believe that they have the duty to force their own views on civilian decision makers when the United States is contemplating committing American forces abroad."

Peter Feaver has called this view "McMasterism," in order to distinguish it from McMaster's own, more nuanced argument. McMasterism essentially argues that, first, civilians actively try to suppress the military's opinion; second, military opinion is right, or at least more right than civilian opinion; and third, the military should ensure not only that its voice is heard but also that it is *heeded.* McMasterism essentially blames the U.S. failures in Iraq that predated the surge on the generals, because, it claims, they went along with civilian preferences rather than blocking them.[24]

Two recent and widely disseminated examples of McMasterism are Army lieutenant colonel Paul Yingling's "A Failure of Generalship" and Marine lieutenant colonel Andrew Milburn's "Breaking Ranks." The former exhorts the generals to "find their voices" and excoriates them for not making "their objections public." The latter states that "there are circumstances under which a military officer is not only justified but also obligated to disobey a legal order."[25]

Feaver argues that McMasterism reflects the viewpoint of what he calls the "professional [military] supremacists," who argue that the primary civil-military-relations problem during wartime is ensuring that the military can prevent the civilians from micromanaging and mismanaging. But "civilian supremacists" contend that this view of the role of military leaders is questionable and at odds with the principles and practice of American civil-military relations.

McMasterism is reflected in the TISS study cited above. When "asked whether military leaders should be neutral, advise, advocate, or insist on having their way in the decision" to use military force, 50 percent or more of the up-and-coming active-duty officers who responded answered that leaders should "insist" regarding the following issues: "setting rules of engagement, ensuring that clear political and military goals exist, developing an 'exit strategy,'" and "deciding what kinds of military units will be used to accomplish all tasks." In the context of the questionnaire, "insist" definitely implied that officers should try to compel acceptance of the military's recommendations.[26] There is little to suggest that this view has changed.

According to the civilian supremacists, the uniformed military in the American system does not possess a veto over policy. Indeed, civilians even have the authority to make decisions in what would seem to be the realm of purely military affairs. This school of thought holds that "the primary problem of [wartime civil-military relations] is ensuring that well-informed civilian strategic guidance is authoritatively directing key decisions, even when the military disagrees with that direction."[27] They add that the record illustrates that the judgment of the military is not necessarily superior to that of civilian decision makers.

Consider some historical examples. During the Civil War, Abraham Lincoln constantly prodded George McClellan to take the offensive in Virginia in 1862. McClellan just as constantly whined about insufficient forces. During World War II, despite the image of civil-military comity, there were many differences between Franklin Roosevelt and his military advisers. George Marshall, the greatest soldier-statesman since Washington, opposed arms shipments to Great Britain in 1940 and argued for a cross-channel invasion before the United States was ready. History has vindicated Lincoln and Roosevelt.

Similarly, many observers, especially those in the uniformed military, have been inclined to blame the U.S. defeat in Vietnam on the civilians. But the

American operational approach in Vietnam was the creature of the uniformed military. The consensus today is that the operational strategy of General William Westmoreland was counterproductive; it did not make sense to emphasize attrition of People's Army of Vietnam forces in a "war of the big battalions"—that is, one involving sweeps through remote jungle areas in an effort to fix and destroy the enemy with superior firepower. By the time Westmoreland's successor could adopt a more fruitful approach, it was too late.[28]

During the planning for Operation DESERT STORM in late 1990 and early 1991, General Norman Schwarzkopf, commander of U.S. Central Command (CENTCOM), presented a plan calling for a frontal assault against Iraqi positions in southern Kuwait followed by a drive toward Kuwait City. The problem was that this plan was unlikely to achieve the foremost military objective of the ground war—the destruction of the three divisions of Saddam's Republican Guard. The civilian leadership rejected the early war plan presented by CENTCOM and ordered a return to the drawing board. The revised plan was far more imaginative and effective, a further indication that in wartime the military does not always know best.[29]

This pattern persisted in Iraq. For instance, while Secretary of Defense Rumsfeld did not foresee the insurgency or the shift from conventional to guerilla war, neither did his critics in the uniformed services. In December 2004, Tom Ricks reported in the *Washington Post* that while many in the Army blamed "Defense Secretary Donald H. Rumsfeld and other top Pentagon civilians for the unexpectedly difficult occupation of Iraq," one close observer—U.S. Army major Isaiah Wilson III, an official historian of the campaign and later a war planner in Iraq—placed the blame squarely on the Army.[30] In an unpublished report, he concluded that senior Army commanders had failed to grasp the strategic situation in Iraq and therefore did not plan properly for victory, that Army planners suffered from "stunted learning and a reluctance to adapt," and that Army commanders in 2004 still misunderstood the strategic problem they faced and therefore were still pursuing a flawed approach.

Critics also charged that Rumsfeld's Pentagon shortchanged the troops in Iraq, in part by failing to provide them with armored "Humvees." Yet a review of Army budget submissions makes it clear that the Army did not immediately ask for the vehicles; its priority, as is usually the case with the uniformed services, was to acquire "big ticket" items. It was only after the insurgency began and the threat posed by "improvised explosive devices" became apparent that the Army began to push for supplemental spending to "up-armor" the utility vehicles.

While it is true that Rumsfeld downplayed the need to prepare for postconflict stability operations, it is also the case that in doing so he was merely ratifying the preferences of the uniformed military. Only recently has the uniformed military

begun to shed the "Weinberger Doctrine," a set of principles long internalized by the U.S. military that emphasize the requirement for an "exit strategy." But if generals are thinking about an exit strategy, they are not thinking about "war termination"—how to convert military success into political success, which is the purpose of postconflict planning and stability operations. This cultural aversion to stability operations is reflected in the fact that operational planning for Operation IRAQI FREEDOM took eighteen months, while planning for postwar stabilization began (halfheartedly) only a couple of months before the invasion.[31]

It should also be noted that the most frequently cited example of prescience on the part of the uniformed military—General Eric Shinseki's February 2003 statement before Congress suggesting that "several hundred thousand" troops might be necessary in postwar Iraq—was no such thing. As John Garofano has observed, "no extensive analysis has surfaced as supporting Shinseki's figures, which were dragged out of him by Senator Carl Levin only after repeated questioning." Garofano notes that in fact the figures were based on a "straight-line extrapolation from very different environments."[32] That is, the Army's Center of Military History based a figure of 470,000 troops for Iraq on the service's experiences in Bosnia and Kosovo, where the primary mission had been peacekeeping. This effort to estimate necessary troop strength was inept—critics called it naive, unrealistic, and "like a war college exercise" rather than serious planning.[33]

Finally, to the extent that Shinseki was correct, he was correct for the wrong reasons. His focus was on humanitarian concerns rather than on the critical society-building work that the U.S. military had to implement in Iraq.[34] Garofano concludes that the oft-made charge against Rumsfeld—that he punished Shinseki for "being right"—is not supported by the evidence. War planning "comes down, as it did in Vietnam, to analysis, getting it right, and providing clear alternatives that address or confront policy goals."[35] This the uniformed military in general and Shinseki in particular failed to do.

THE "CALCULUS OF DISSENT"

This is not to suggest that the military has no option if military advice is not heeded. The minimalist position is articulated in *The Armed Forces Officer,* an official publication that lays out the moral-ethical aspects of officership and the question of military deference to civilian authority in very stark terms: "Having rendered their candid expert judgment, professionals are bound by oath to execute legal civilian decisions as effectively as possible—even those with which they fundamentally disagree—or they must request relief from their duties, or leave the service entirely, either by resignation or retirement."[36]

Many have argued that the choices provided by *The Armed Forces Officer* are too narrow. They contend that in terms of Albert Hirschman's classic study of

responses to decline in firms, organizations, and states, the publication offers officers only the choices of "loyalty" and "exit." But Hirschman argues that under certain circumstances, the institutionalization of greater "voice"—that is, dissent—can help stem massive exit.[37]

For instance, Leonard Wong and Douglas Lovelace write that there are alternatives "beyond blind obedience, resignation or retirement."[38] They propose a range of actions available to senior military leaders to achieve Hirschman's "voice" when confronted with decisions by civilian leaders that they believe are flawed. They identify two variables: the degree of civilian resistance to military advice and the seriousness of the threat to national security that the policy embodies.

When the degree of civilian resistance to military advice is low and the magnitude of the threat is low, the options for the military are acquiescence or compromise. When resistance to military advice is low but the threat is high, options involve frequent interaction between the uniformed military and the civilians, work to achieve consensus, and cooperative analysis.

When the degree of civilian resistance to military advice is high and the magnitude of the threat is low, the options for military officers include declining advancement or assignment, requesting relief, waiting the civilians out, or retiring. When both civilian resistance to military advice and the level of the threat are high, the authors suggest, options range from a public information campaign, writing articles, testifying before Congress, and joining efforts with others to resignation.[39]

Don Snider accepts the idea of broadening the choices available to uniformed officers when faced with what they believe to be flawed policy decisions by civilians but questions whether the two variables employed by Wong and Lovelace alone provide adequate guidance for a strategic leader of the American military profession who is considering dissent.[40] For Snider, the imperatives of military professionalism and the "trust" relationship between the military profession and other entities within American society and government also must play roles.

Snider suggests three trust relationships, to be rated along a continuum ranging from "fully trusted"—the ideal—to "not trustworthy." The three relationships are that between the military profession and the American people; that between the military profession and the people's elected representatives, in both the executive and legislative branches; and that between senior leaders of the military profession and their subordinate leaders.[41]

Following Huntington, Snider identifies three responsibilities of military leaders. The first is the "representative function," the professional requirement "to represent the claims of military security within the state machinery"—that is, to "express their expert point of view on any matter touching the creation, maintenance, use, or contemplated use of the armed forces." The second responsibility is

to exercise the "advisory function." This is the professional imperative "to analyze and to report on the implications of alternative courses of action from the military point of view," and to provide "candid professional military advice to elected and appointed civilian leaders, regardless of whether the advice was solicited or regardless of whether the advice is likely to be welcomed." Such advice does not include policy advocacy, which both Huntington and Snider consider beyond the legitimate role of military officers. The third responsibility is to exercise the "executive function." This requires the military professional "to implement state decisions with respect to state security even if it is a decision which runs violently counter to his military judgment."[42]

Having laid out the three trust relationships and the three responsibilities of professional military leaders, Snider addresses how the "other" in each trust relationship involving the military profession—respectively, the American people, civilian leaders, and junior leaders within the military profession itself—perceives and understands acts of dissent on the part of the military profession's senior leaders. Such a moral analysis, he argues, must address at least five considerations.

The first is the *gravity of the issue* to the nation and therefore to the clients of the military profession. The second is the *relevance of the strategic leader's expertise* with regard to the issue that might impel dissent. Does the issue at hand fall squarely within the scope of the dissenter's expertise as a military professional? The third consideration is the *degree of sacrifice on the part of the dissenter.* Is the dissent motivated solely by a disinterested desire to serve the nation, even in the face of personal sacrifice, or does it involve a self-serving subtext, such as the advancement of the dissenter's own professional or political ambitions? The fourth consideration is the *timing of the act of dissent.* Was it timed to undercut the actions or policy from which the officer wishes to dissent? Finally, is the act of dissent congruent with the prior, long-term character and beliefs of the dissenter? Does the dissent strike those who know the dissenter as uncharacteristic or atypical?[43] Snider goes on to argue that a complete assessment on the part of the dissenter would analyze the five considerations in the light of the three trust relationships.

Of course, in practice, argues Snider, some factors are more salient than others. Like Wong and Lovelace, he believes that the gravity of the issue with regard to national security is most important. "Logically, the higher the stakes, the greater the temptation and justification will be for dissenters to speak out."[44] This is the case because the only reason to have a military is to ensure national security. That is what the military profession is all about. Of course, to engage in dissent, no matter the stakes, seems to be in conflict with the inviolate principle of the subordination of the military to civilian authority. The interpretation of acts of dissent is complicated, argues Snider, by the deeply polarized nature of American politics

today and the perception on the part of some that the military as an institution has become too identified with the Republican Party.[45]

The moral calculus of dissent also requires that we consider the relevance of the expertise and knowledge of the dissenter. Why should we listen to the dissenter? "If the issue does not fit within the compass of the profession's expertise, or only marginally so, one would expect observers to dismiss dissenters as freelancers operating without standing, much as an Oscar-winning Hollywood actor who sets up shop as an authority on national defense."[46]

Part of the problem with this criterion is that the meaning of professional military expertise has changed since Huntington's time. Following Harold Lasswell, Huntington referred to the expertise of the professional military officer as the "management of violence." But today that description seems far too narrow. The fact is that today's military officer is really a "national security professional," whose expertise extends to the interconnected intellectual space of everything from strategic theory, strategic thinking, and strategy formation to diplomacy, nation building, and homeland defense.[47] Thus in practice it is sometimes difficult to differentiate between what military and civilian national security professionals do.[48] As historical examples cited earlier illustrate, even when it comes to purely military affairs the professional military officer is not necessarily more correct than the civilians.

The sacrifice incurred by the dissenter and the timing of the dissent must be judged according to the standard of common sense. "For the true professional, a right understanding of one's loyalties always places loyalty to self dead last. Thus, absent personal sacrifice, such dissent quickly leads to the suspicion of and the search for ulterior motives."[49] The same applies to the timing of the dissent. "If something is worthy of an act of dissent, then it is worthy. Thus, as soon as that is discerned and decided by the strategic leader, the act should follow immediately." If there is a substantial delay, the other partners in the trust relationship, especially the subordinate leaders within the profession, may suspect a lack of moral agency on the part of the dissenter as well as the impact of ulterior motives on the act.

Finally, it is critical that the strategic leader contemplating dissent be an authentic leader of competence and moral integrity who has previously displayed a steadfastness of character. Subordinates who judge leaders to be cynical or lacking in integrity are unlikely to construe an act of dissent by such individuals as disinterested.

In principle, U.S. military officers accept civilian control and recognize the limits of dissent. But as the previous discussion illustrates, the actual practice of military subordination is complicated by a number of factors. The first of these is organizational and institutional—the separation of powers related to military

affairs between the executive and legislative branches. But even more important is the tension between the loyalty and obedience of military professionals, on the one hand, and their military judgment and moral beliefs, on the other. The civil-military tensions visible both before and since 9/11 are illustrative of these complications.

CIVIL-MILITARY RELATIONS AND SERVICE DOCTRINES

The combination of civil-military relations patterns and service doctrines affect military effectiveness. In essence, the ultimate test of a civil-military relations pattern is how well it contributes to the effectiveness of a state's military, especially at the level of strategic assessment and strategy making.[50] However, Richard Kohn has explicitly called into question the effectiveness of the American military in this realm, especially with regard to the planning and conduct of operations other than those associated with large-scale conventional war. "Nearly twenty years after the end of the Cold War, the American military, financed by more money than the entire rest of the world spends on its armed forces, failed to defeat insurgencies or fully suppress sectarian civil wars in two crucial countries, each with less than a tenth of the U.S. population, after overthrowing those nations' governments in a matter of weeks."[51]

He attributes this lack of effectiveness to a decline in the military's professional competence with regard to strategic planning. "In effect, in the most important area of professional expertise—the connecting of war to policy, of operations to achieving the objectives of the nation—the American military has been found wanting. The excellence of the American military in operations, logistics, tactics, weaponry, and battle has been manifest for a generation or more. Not so with strategy."[52]

This phenomenon manifests itself, he argues, in recent failure to adapt to a changing security environment in which the challenges to global stability are "less from massed armies than from terrorism; economic and particularly financial instability; failed states; resource scarcity (particularly oil and potable water); pandemic disease; climate change; and international crime in the form of piracy, smuggling, narcotics trafficking, and other forms of organized lawlessness." He observes that this decline in strategic competence has occurred during a time in which the U.S. military exercises enormous influence in the making of foreign and national security policies. He echoes the claim of Colin Gray: "All too often, there is a black hole where American strategy ought to reside."[53] Is there something inherent in current U.S. civil-military affairs that accounts for this failure of strategy?

The failure of American civil-military relations to generate strategy can be attributed to the confluence of three factors. The first of these is the continued

dominance within the American system of what Eliot Cohen has called the "normal" theory of civil-military relations, the belief that there is a clear line of demarcation between civilians who determine the goals of the war and the uniformed military who then conduct the actual fighting. Until President George W. Bush abandoned it when he overruled his commanders and embraced the "surge" in Iraq, the normal theory has been the default position of most presidents since the Vietnam War. Its longevity is based on the idea that the failure of Lyndon Johnson and Robert McNamara to defer to an autonomous military realm was the cause of American defeat in Vietnam.

The normal theory can be traced to Samuel Huntington's *The Soldier and the State,* in which he sought a solution to the dilemma that lies at the heart of civil-military relations—how to guarantee civilian control of the military while still ensuring the ability of the uniformed military to provide security. His solution was a mechanism for creating and maintaining a professional, apolitical military establishment, which he called "objective control." Such a professional military would focus on defending the United States but avoid threatening civilian control.[54]

But as Cohen has pointed out, the normal theory of civil-military relations often has not held in practice. Indeed, such storied democratic war leaders as Winston Churchill and Abraham Lincoln "trespassed" on the military's turf as a matter of course, influencing not only strategy and operations but also tactics. The reason that civilian leaders cannot simply leave the military to its own devices during war is that war is an iterative process involving the interplay of active wills. What appears to be the case at the outset of the war may change as the war continues, modifying the relationship between political goals and military means. The fact remains that wars are not fought for their own purposes but to achieve policy goals set by the political leadership of the state.

The second factor, strongly reinforced by the normal theory of civil-military relations, is the influence of the uniformed services' organizational cultures. Each military service is built around a "strategic concept" that, according to Samuel Huntington, constitutes "the fundamental element of a military service," the basic "statement of [its] role . . . or purpose in implementing national policy."[55] A clear strategic concept is critical to the ability of a service to organize and employ the resources that Congress allocates to it.

It also largely determines a service's organizational culture. Some years ago, the late Carl Builder of the RAND Corporation wrote *The Masks of War,* in which he demonstrated the importance of the organizational cultures of the various military services in creating their differing "personalities," identities, and behaviors. His point was that each service possesses a preferred way of fighting and that "the unique service identities . . . are likely to persist for a very long time."[56]

The organizational culture of a service, in turn, exerts a strong influence on civil-military relations, frequently constraining what civilian leaders can do and often constituting an obstacle to change and innovation. The critical question here is this: Who decides whether the military instrument is effective, the civilian policy makers or the military itself?

An illuminating illustration of this phenomenon at work has been the recent attempt to institutionalize counterinsurgency doctrine within the U.S. Army. This is a difficult task, given the service's focus on the "operational level of war," which manifests itself as a preference for fighting large-scale conventional war—despite the fact that throughout most of its existence, the conflicts in which the U.S. Army engaged were actually irregular wars. Beginning in the late 1970s, the Army embraced the idea of the operational level of war as its central organizing concept. This made sense in light of that service's major war-fighting concern of the time—defeating Warsaw Pact forces on the Central Front of Europe—but also, as Hew Strachan has observed, "the operational level of war appeals to armies: it functions in a politics-free zone and it puts primacy on professional skills."[57]

Herein lies the problem for civil-military relations: the disjunction between *operational excellence* in combat and *policy,* which determines the reasons for which a particular war is to be fought. The combination of the dominant position of the normal theory of civil-military relations in the United States and the military's focus on the nonpolitical operational level of war means that all too often the conduct of a war is disconnected from the goals of the war.

As an essay published by the U.S. Army War College's Strategic Studies Institute puts it, the operational level of war has become an "alien" that has devoured strategy.

> Rather than meeting its original purpose of contributing to the attainment of campaign objectives laid down by strategy, operational art—practiced as a "level of war"—assumed responsibility for campaign planning. This reduced political leadership to the role of "strategic sponsors," quite specifically widening the gap between politics and warfare. The result has been a well-demonstrated ability to win battles that have not always contributed to strategic success, producing "a way of battle" rather than a way of war.
>
> The political leadership of a country cannot simply set objectives for a war, provide the requisite materiel, then stand back and await victory. Nor should the nation or its military be seduced by this prospect. Politicians should be involved in the minute-to-minute conduct of war; as Clausewitz reminds us, political considerations are "influential in the planning of war, of the campaign, and often even of the battle."[58]

The task of strategy is to bring doctrine—concerned with fighting battles in support of campaigns—into line with national policy. But instead of strategy, we have Gray's "black hole."

The third factor contributing to the perseverance of the American strategic black hole is one that was, ironically, intended to improve U.S. strategic planning—the Goldwater-Nichols Department of Defense Reorganization Act of 1986. In passing Goldwater-Nichols, Congress sought to address two central concerns: the excessive power and influence of the separate services and the mismatch between the authority of the combatant commanders and their responsibilities. The act increased the authority of the chairman of the Joint Chiefs of Staff while reducing that of the Joint Chiefs themselves, and it increased the authority of the theater commanders. Congress expected that such reorganization would, among other things, improve the quality of military advice to policy makers.

The Joint Chiefs of Staff are responsible for integrating theater strategy and national policy. But if they are marginalized, as they were during much of the Bush administration, such integration does not occur. This is an institutional problem illustrated by the case of General Tommy Franks, the commander of U.S. Central Command, who, in directing the war in Afghanistan after 9/11 and the first phase of the war in Iraq, was able to bypass the Joint Staff. His justification is found in his memoirs, *American Soldier:* "Operation Enduring Freedom in Afghanistan had been nitpicked by the Service Chiefs and the Joint Staff, and I did not intend to see a recurrence of such divisiveness in Iraq." He essentially sent a message to the chairman, the service chiefs, and the Joint Staff: "Keep Washington focused on policy and strategy. Leave me the hell alone to run the war."[59]

Of course, such an attitude is a dysfunctional consequence of the well-intentioned institutional arrangement created by Goldwater-Nichols, reinforcing as it does the idea that there is an autonomous realm of military action within which civilians have no role. The result of such a disjunction between the military and political realms is that war plans may not be integrated with national policy and that strategy, despite lip service to its importance, in practice becomes an orphan. In the absence of strategy, other factors rush to fill the void, resulting in strategic drift.

The current civil-military framework fails to provide strategic guidance for integrating the operational level of war and national policy. Rectifying this situation requires that both parties to the civil-military bargain adjust the way they do business.

U.S. civil-military relations since 9/11 raise a number of issues. How informed are civilian leaders when they choose to commit the military instrument? How well does the prevailing pattern of civil-military relations enable the integration

of divergent and even contradictory views? Does this pattern ensure a practical military strategy that properly serves the ends of national policy?

The state of post-9/11 American civil-military relations also points to the issue of *trust*—the mutual respect and understanding between civilian and military leaders and the exchange of candid views and perspectives between the two parties as part of the decision-making process.

Establishing trust requires that both parties to the civil-military bargain reexamine their mutual relationship. On the one hand, the military must recover its voice in the making of strategy, while realizing that politics permeates the conduct of war and that civilians have the final say, not only concerning the goals of the war but also how it is conducted. On the other, civilians must understand that implementing effective policy and strategy requires the proper military instrument and therefore must insist that soldiers present their views frankly and forcefully throughout the strategy-making and implementation process. This is the key to healthy civil-military relations.

NOTES

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4. I have addressed these questions in depth in Mackubin Thomas Owens, *US Civil-Military Relations after 9/11: Renegotiating the Civil-Military Bargain* (New York: Continuum, 2011).
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9. See Mackubin Thomas Owens, "Civil-Military Relations and the Strategy Deficit," E-Note, *Foreign Policy Research Institute,* February 2010, www.fpri.org/; and Hoffman, "Dereliction of Duty *Redux*?"
10. Samuel Huntington, *The Soldier and the State: The Theory and Politics of Civil-Military Relations* (Cambridge, Mass.: Belknap of Harvard Univ. Press, 1957).
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18. Ibid., p. 16.
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20. Ibid., pp. 21–22.
21. Ibid., p. 12.
22. See Feaver, *Armed Servants.*
23. H. R. McMaster, *Dereliction of Duty: Lyndon Johnson, Robert McNamara, the Joint Chiefs of Staff, and the Lies That Led to Vietnam* (New York: HarperCollins, 1997).
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Samuel P. Huntington and the Political Dimensions of Military Professionalism

Dayne E. Nix, PhD

Samuel P. Huntington died in December 2008, but this Harvard academic continues to have a significant impact on the conduct and state of American civil-military relations. Mackubin Owens's recent *US Civil-Military Relations after 9/11: Renegotiating the Civil-Military Bargain* and Suzanne Nielsen and Don M. Snider's 2009 edited work *American Civil-Military Relations: The Soldier and the State in a New Era* both challenge and contextualize Huntington's work for contemporary theorists and practitioners of civil-military relations. This is indeed a worthwhile effort, as America's civil-military relations have received much "airtime" over the past few years. General Stanley McChrystal's seeming challenge to the political leadership over proposed Afghanistan troop levels, Lieutenant Colonel Andrew Milburn's *Joint Force Quarterly* article challenging traditional conceptions of civilian control, and Bob Woodward's revelations in *Obama's War* regarding the 2009 tensions between the Pentagon and the administration over Afghanistan strategy highlight the relationship between the military and our civilian leaders while raising the issue of the military's participation in political discourse.[1] Do these instances point to "the troubled quality of American civil-military relations," or do they serve as continuing proofs of the vitality inherent in the American constitutional system as created by the founders?[2]

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In this article, I will discuss Huntington's view that the American constitutional system inevitably draws our military leaders into the political process and therefore requires astute and well-developed political expertise on their part in order to maintain the

uniquely American civil-military relationship. In doing so, I will address Huntington's theory of civil-military relations, some historical examples of the military's involvement in the political process, the contemporary security missions and roles that require political insight on the part of military leaders, and barriers to acquiring and utilizing that insight. In pursuing this discussion I argue in no way that the unique system of civil-military relations in the United States should be overturned but rather that our leadership's failure to recognize and train for the political roles and requirements inherent in today's global security environment threatens the effectiveness of U.S. grand strategy and accomplishment of national security goals.

THE CLASH OF THEORY WITH REALITY: HUNTINGTON'S OBJECTIVE-SUBJECTIVE THEORY

In January 2011, Fareed Zakaria, a former student of Huntington's, published a reflection on his mentor that offers particular insight regarding Huntington's approach to political theory. "Sam would often say to me, 'You have to find a big independent variable and a big dependent variable'[;] . . . you've got to start with something big to explain. . . . 'Your job is to distill it, simplify it, and give them a sense of what is the single, or what are the couple, of powerful causes that explain this powerful phenomenon.'"[3] In Huntington's own words,

> A good theory is precise, austere, elegant, and highlights the relations among a few conceptual variables. Inevitably, no theory can explain fully a single event or group of events. An explanation, in contrast, is inevitably complex, dense, messy, and intellectually unsatisfying. It succeeds not by being austere but by being comprehensive. A good history describes chronologically and analyzes convincingly a sequence of events and shows why one event led to another.[4]

The Soldier and the State follows the approach outlined above and is the Huntington treatment of civil-military relations that has become the standard in professional and academic discourse. Huntington suggests a theory of civil-military relations caught between the variables of military professionalism and the military's participation in the political process.[5] The author outlines the historical development of military professionalism in Europe and the United States, with some emphasis on the constitutional intentions of America's Founding Fathers. *The Soldier and the State* also provides a somewhat limited, even "messy and intellectually unsatisfying," explanation of the development of military professionalism and civilian control of the military in the U.S. constitutional system.

Huntington's theory suggests two types of civil-military relations, *subjective* control and *objective* control of the military by political leaders. In the subjective-control model, the military is closely integrated with and participates in the political and social system. Officers and enlisted personnel are drawn from civil

society to form a militia when danger threatens; once the danger is past, they return to society and serve in multiple capacities, including political ones. In this system, Huntington suggests, military professionalism is minimal. His objective-control model describes a very different type of military and political system, one that is both differentiated and professional. Here military professionals and political leaders focus their efforts in distinct arenas of expertise. The military remains separate from the political system and focuses on developing expertise in the profession of arms, that body of knowledge embodying the "management of violence."[6] In this model, military professionalism is maximized.[7] Huntington's objective model adopts a purely Clausewitzian approach whereby "war is the continuation of policy by other means," with senior military professionals providing security for the state while serving as military advisers to the politicians, who practice their own expertise in the realm of politics and national strategy.[8] Professionalism in one area precludes competence in the other.[9]

Huntington clearly prefers the objective model;[10] his preference has served as a source of discussion and controversy since *The Soldier and the State* was first published. In spite of his preference, however, Huntington clearly demonstrates that U.S. civil-military relations do not actually correspond to his objective model. Instead, our military and our civilian government operate somewhere on the continuum between his subjective and objective poles—to the detriment of military professionalism, at least in Huntington's view.[11]

Huntington's "Civilian Control and the Constitution," published a year before *The Soldier and the State,* examines the civil-military dilemma from the founders' perspective and provides us with additional insight into the professor's thinking. It suggests that the subjective approach was the more familiar of the two in the political and cultural context of the early United States and that it influenced the founders' treatment of the civil-military problem in writing the Constitution. Military professionalism, in Huntington's view, did not exist in late-eighteenth-century America; instead, the military art was part and parcel of every gentleman's knowledge base.[12] The founders placed great confidence in the citizen-soldiers of the militia as guarantors of the country's security and defense and had great distrust for standing armies. Yet they also recognized the potential for a crisis that would require a national military organization and so provided Congress the authority to raise and fund an army and a navy. Concerned as they were for the defense of the young nation from outside forces, the founders were also wary of concentrating too much power in any one arm of the government and thus divided control over the military between Congress and the executive.[13] The president serves as the commander in chief, while Congress declares war, raises the military establishment, and pays for its operations.

Thus developed that particularly American approach to civil-military relations, the division of authority over the military between Congress and the executive.[14] Huntington suggests that as a result of this constitutional arrangement, his objective form of civil-military control is literally impossible in the United States. Military leaders, obligated to provide military advice to both the president and Congress, are constantly drawn into political controversy. In fact, Huntington states that the unintended consequence of the founders' constitutional construction is that "the separation of powers is a perpetual invitation, if not an irresistible force, drawing military leaders into political conflicts."[15]

Since World War II, the military in the United States has developed significant political power, generally exercised by senior military leaders during budget and strategy debates in the rarefied atmosphere of the nation's capital. The exercise of this political muscle has been most evident during budget battles on Capitol Hill; when political leaders have attempted to modify popular military institutions (as when President Harry Truman attempted to eliminate the U.S. Marine Corps and ran into a political buzz saw); and, especially, during attempts at defense reorganization (e.g., the political infighting that preceded passage of the 1986 Goldwater-Nichols Act).[16] Most recently, Bob Woodward reported in *Obama's War* that the Barack Obama administration perceived the military's efforts to publicize its views on Afghanistan strategy as a deliberate campaign to influence and limit the president's options regarding troop levels there.[17] The political tactics utilized by the military in such cases are familiar to those acquainted with interest-group politics: press releases, interviews by senior military officials, back-channel discussions with congressional leaders, public speeches discussing military and political strategies, publication of studies supporting military or service views, congressional testimony, and, most recently, expert opinion offered on national news programs by recently retired officers.

The political power of the military has developed and matured since Huntington published *The Soldier and the State* in 1957. During the post–World War II and Korean War periods, interservice rivalry was so intense that military leaders often exhausted their political energy in turf and budget battles with each other, resulting in enhanced civilian control.[18] Huntington sounded a cautionary note as he regarded this contentious environment, suggesting that should the services unite their efforts, "inter-service peace would probably have certain costs in decreased civil-military harmony."[19] In fact, an unintended consequence of the Goldwater-Nichols Act, which strengthened the chairman of the Joint Chiefs of Staff and forced jointness on an unwilling military, has been a strengthening of the military's political power. The military has become a political constituency that must be addressed in the Washington power equation.[20] Richard Kohn, a well-known commentator on contemporary civil-military relations, observes,

"The professional military, with its allies and communities, has developed into a potent political force in American government. Knowledgeable people, particularly those who, in each administration, are charged with the direction of national security affairs, recognize this, even if they cannot, for political reasons, admit it openly."[21]

These considerations regarding the military's participation in the political process relate specifically to the development of military policy within our government—an inherently political, competitive, and often contentious process. That process pits the needs of foreign policy against those of domestic policy, and the military, commanding a significant portion of our national resources, is a key player in that process.[22] In order to operate effectively in that arena, our military leaders must develop and practice sophisticated political acumen, a capability not traditionally associated with military professionalism. Yet it is one they ignore at their peril as they are inevitably drawn into the political process by America's unique constitutional system. It is also a capability required in today's international security environment, one that draws our military leaders into missions that require a similar application of political expertise.

THE CONTEMPORARY GLOBAL SECURITY ENVIRONMENT DRAWS THE MILITARY INTO POLITICAL ISSUES

The contemporary security environment requires a transformation of skill sets for our military. Even before the terror attacks on 9/11, the military was coming to grips with the fact that the post–Cold War world had changed.

> In the past twenty years . . . the quest for "security" has replaced war aims, and the result has been a more nuanced approach to international power. National security is now seen as a complex arrangement of political, economic, social, and military factors. American military power is hegemonic but it is recognized that even overwhelming military power can accomplish only limited security objectives. . . . The frame of reference is less about "victory" and more about "prevailing" in a globalized competitive environment.[23]

During the William Clinton administration, the military was used extensively for "military operations other than war," in Haiti, Somalia, and other distant hot spots. These operations facilitated security for a global economic engine that demands a stable environment—the reality being that the "hidden hand of the market will never work without a hidden fist."[24] The U.S. military is universally understood to provide and facilitate that security. Many in the American military have resisted this role, arguing that our armed forces were not structured for "nation building" or stability operations. The issue even made it into the 2000 election, when George W. Bush campaigned on a platform deriding the Clinton

administration's nation-building missions, which, he contended, had overextended the U.S. military.

The issues became more focused after 9/11, with the realization that the United States was now engaged in a new kind of war, a "global war on terror," in which the overriding concern became security against religiously inspired radicals who threatened the world with weapons of mass destruction. American citizens were reminded daily of their new insecurity, as airport scanners became ever more intrusive and suicide bombings dominated the nightly news. This new war included a number of "small war" missions familiar from our nation's past, as well as some new ones, but all required the transformation of a military that had been created in the Cold War for battles in Europe against the massed armored divisions of the Soviet Union. In this new environment, our military's firepower "would become an instrument of last rather than first resort."[25] "Asymmetric warfare," "counterterrorism," "counterinsurgency," "limited war," "fourth-generation war," "stability operations," and "complex irregular war" all began to compete for pride of terminological place and led to the creation of a new acronym, ROMO—the range of military operations.

All of the missions within the ROMO share a common denominator: success requires the application of extensive and well developed political skill by our nation's armed forces. This is true because of the characteristics of limited war in the contemporary world. Clausewitz's dictum cited above certainly applies in major theater war, but it has special application in today's conflict environments where unity of effort, legitimacy, and perseverance are essential to success and involve our operational forces and their leaders in extensive political interaction.

Today's security environment is a coalition environment. Every war the United States has fought in the twentieth and twenty-first centuries has been waged with allies. As Churchill so famously quipped, "The only thing worse than fighting a war with allies is fighting one without them."[26] The requirement to conduct operations with United Nations (UN) forces, the North Atlantic Treaty Organization (NATO), and "coalitions of the willing" indicates that this reality will not change in the near future. It forces our military to forge a unity of effort with coalition partners rather than the unity of command preferred by all military leaders. However, the maintenance of coalitions is difficult. Differing military and social cultures, languages, and home constituencies involve military leaders in often difficult interactions with their international counterparts to maintain strategic, operational, and tactical direction. These efforts are fundamentally political, and local misunderstandings can endanger mission accomplishment as well as the relationship between partner nations. These realities were highlighted during Operation IRAQI FREEDOM at Basra, where the U.S. command dictated direct confrontation against local enemy forces, while the British preferred a

more "indirect" approach, that of negotiating with the opposition.[27] A similar situation was reported in Afghanistan, where the Italian contingent was reported to have paid bribes to the local Taliban in exchange for a reduction in attacks on its forces.[28] These differences of approach, as well as inherent cultural differences, doctrinal mismatches, and domestic political realities (e.g., European sensitivity to troop casualties and opposition to Iraq and Afghanistan deployments), make the sustainment of coalition unity of effort a delicate political matter.

The requirement for legitimacy in today's security operations involves our military forces in political issues on a number of levels—in the tactical (local) area, internationally, and back home. In the tactical area, our forces are required to pay attention to "hearts and minds." This is not a new reality. Colonel C. E. Callwell, in his classic work on Britain's small wars, held that the goodwill of the local population was never assumed.[29] This is certainly true in today's threat environments. Whether engaged in a humanitarian relief operation, a noncombatant evacuation operation, or counterinsurgency, America's military must earn the goodwill of local populations and their leaders, as well as the support of political leaders and supporters at home. The concept of the "strategic corporal" is well known—that the acts of every member of the military have direct impact on hearts and minds on the local scene. Those actions can also have potentially strategic impact, either positive or negative, due to the ubiquitous media environment. A single misstep by any member of coalition forces can receive immediate exposure on 24/7 news programs, with the potential for significant impact on public opinion.

As the U.S. involvement in Afghanistan passes the ten-year mark, the requirement for perseverance takes on new meaning for our nation and its military. The recent Quadrennial Defense Review (QDR) suggests that the United States must plan and prepare to fight the kinds of wars it is engaged in now, which is a significant shift from previous QDRs, which were more future oriented.[30] The counterinsurgency, peace-building, and stability operations we face today require long-term perseverance and commitment. Yet perseverance in such operations inevitably draws the military into political discussion, for it is dependent on the will of Congress, the president, and the American people, as well as their counterparts in coalition and partner nations. The United States could be in Afghanistan another ten years, in spite of the scheduled drawdown of U.S. forces there. Indeed, sensitive to the charge that the United States abandoned Afghanistan after the Soviet defeat there in the 1980s, one American leader is reported to have said, "We're never leaving."[31] Our continued military presence is a necessary guarantor of security and stability for the region. In light of this requirement, the strategy of the Taliban has been to focus its efforts on the coalition center of gravity, the political will undergirding that presence.[32] American military leaders understand

this essential point and wisely engage the media, Congress, the president, and the international community in order to sustain that will. It is no surprise that General David Petraeus (formerly commander of U.S. forces in Afghanistan and currently director of the Central Intelligence Agency) is known as one of the most politically astute of America's military leaders since Dwight D. Eisenhower.

Eliot Cohen emphasizes the political realities that the U.S. military must successfully negotiate in counterinsurgency, indeed, across the entire range of military operations our nation faces today:

> While all the elements of national power have a role in successful counterinsurgency, political objectives must retain primacy. All actions, kinetic or nonkinetic, must be planned and executed with consideration of their contribution toward strengthening the host government's legitimacy and achieving the U.S. Government's political goals. The political and military aspects of an insurgency are usually so bound together as to be inseparable, and most insurgents recognize this fact. In counterinsurgencies, military actions conducted without proper analysis of their political effects will at best be ineffective and at worst aid the enemy.[33]

If American forces are to be successful in the diverse environments of the ROMO, they must consider the political implications of every action and mission, a reality requiring significant political expertise and practice on the part of military commanders and the personnel they lead. However, the very characteristics of what Huntington termed "the military mind" may limit their effectiveness.

ADAPTING THE MILITARY MIND TO THE CONTEMPORARY SECURITY ENVIRONMENT

The evidence is clear: the U.S. military is inevitably drawn into political issues both at home and abroad. There is, however, a paradox regarding the political power that the military possesses. The effective use of political power requires nuance and skillful political calculation, traits not usually associated with the military personality. In exercising its power in political situations, the military often comes off as a "bull in a political china closet." General McChrystal's firing is a case in point. Viewpoints differ as to whether the general's public comments during President Obama's Afghanistan strategy review were calculated or innocent, but his interactions with the press and those of his staff do not attest to great political skill. This seeming lack was also evident during General Colin Powell's tenure as chairman of the Joint Chiefs of Staff. He adapted the "Weinberger Doctrine" to then-current military strategy, advising that the military should be used only when victory was certain and pursuant to a clear political strategy. He often argued against committing the military to far-flung contingency operations. "Powell seemed to ignore the need to bend operational capabilities to political imperatives, as Secretary of State Madeleine Albright somewhat testily

acknowledged when she responded, 'What's the point of having this superb military you're always talking about if we can't use it?'"[34]

Huntington might comment that these events prove important points of his theory—that there exists a "military mind" and that true military professionals must necessarily be "incompetent" in political affairs.[35] Yet the contemporary security environment requires that they operate competently both in the charged atmosphere of the U.S. capital and across the global commons. To do so, the military must address a number of tendencies inherent in the "military personality."

The first of these tendencies involves the practical application of the principle that the military is and should remain apolitical. Military members are appropriately taught, whether in "boot camp," Officer Candidate School, or other entry-level training, that military personnel should limit their participation in the political process to voting and are prohibited from participation in political events in uniform. As a result, military members generally view politics with distaste, if not downright hostility. Many view themselves as separate from and morally superior to politicians, whom they see engaged in political turf wars and nasty electoral campaigns. Indeed, Professor Huntington defines the military professional as separate from politics, giving as an example General George C. Marshall, who refrained from voting in order to preserve his political neutrality and professionalism.[36] Eisenhower also kept his political views private, to such an extent that President Truman offered him an opportunity to run on the Democratic presidential ticket—an offer that was refused due to what turned out to be "Ike's" Republican leanings.[37] However extreme and unrealistic these examples sound in a communications culture where retired admirals and generals serve as commentators on the nightly news, Admiral Mullen's 2011 guidance reminds the military of the necessity to remain "apolitical."[38] The danger is that political partisanship is mistaken for political competence by military leaders and personnel. The effort to remain apolitical may lead military members to avoid the necessary political education and awareness they require to operate in today's complex environments. The unintended consequence is ignorance and downright incompetence when the mission requires awareness of political sensitivities and repercussions.[39]

A second dynamic that mitigates military effectiveness in the contemporary security environment is a failure to appreciate fully the application of the Clausewitzian view of war as the continuation of politics. Clausewitz is taught in every military school, a key element in the Joint Professional Military Education curriculum of service colleges and at the military academies. Yet the realities of the modern battlefield bring political requirements into conflict with the ingrained instincts of the military mind, a conflict of which the result is a tendency to ignore the political implications of Clausewitz in favor of victory—"to view military victory as an end in itself, ignoring war's function as an instrument of

policy."[40] Military leaders who believe that their role is to "break things and kill people" are often insensitive to and frustrated by the political requirements of contemporary missions.

Korea was perhaps the first war in which the U.S. military had to face the challenges of a limited war in which political requirements contradicted its intuitive drive for battlefield victory.[41] General Douglas "No Substitute for Victory" MacArthur, especially, chafed under the political guidelines laid down by President Truman. In an aptly titled chapter—"Frustration in Korea"—of his memoirs, MacArthur reports feeling that President Truman's will to win had been "chipped away by the constant pounding whispers of timidity and cynicism."[42] His eventual relief "confirmed civilian control over the military services and revealed the General as a heroic figure, single-mindedly committed to victory on the battlefield, but seemingly without any real appreciation of the larger political implications of the war he was fighting."[43] MacArthur was not the only Korean War military leader uneasy with the political limitations set by politicians unwilling to engage in a larger war with China and, possibly, the Soviet Union. The majority of Korean War generals, with the World War II experience of unconditional surrender just a few years behind them, were focused on battlefield success at the expense of political realities. These generals experienced, Huntington writes, "a feeling of unease because victory was denied, a sense of frustration and a conviction that political considerations had overruled the military. . . . General [Mark] Clark reported that all the commanders in the Far East with whom he discussed the issue hoped that the government would remove the political restrictions which denied them victory."[44]

This frustration with the limitations imposed by political restrictions on military operations has not disappeared over time. As recently as the Kosovo campaign of 1999, General Wesley Clark, Supreme Allied Commander, Europe, concluded, "Using military force effectively requires departing from the political dynamic and following the so-called 'principles of war.'"[45] An even more recent example of this frustration is the storm of criticism, from both military and civilian quarters, that arose in response to the restricted rules of engagement established by General McChrystal (later confirmed by General Petraeus) in pursuit of the "hearts and minds" strategy in Afghanistan, an obviously political move by military leaders who "wrote the book" on counterinsurgency.

Additional traits of the military mind that might limit the military's effectiveness in the ROMO are those that facilitate operational mission accomplishment but potentially violate political considerations.

- The military is adept at independent worldwide operations and minimizes the need for outside assistance. Officers are taught that, should a leadership

vacuum arise, they must exercise initiative, exert leadership, and bring order out of chaos. Where military members consider this "gung ho" approach an operational necessity, other U.S. agencies and coalition partners often consider them pushy and overaggressive.

- Huntington suggests that the military mind is realist in perspective, seeing the world in terms of competition for power. Numerous observers report (and my personal experience bears out) that military personnel generally see the world as a realm of conflictual, zero-sum competition for power. Often, if military people do not have an external enemy, they create one—even from within their own ranks or from "the interagency." This tendency leads to competition within the ranks as well as conflict with partner organizations. Unity of effort is difficult to establish in this type of environment.
- Senior commanders require regular, sometimes daily, briefings on the accomplishments of units in the field. Subordinate commanders are generally in the area of operations for limited tours, ranging from four to fifteen months, during which they are subject to, and must produce for their own subordinates, regular personnel evaluations. The result is an emphasis on "metrics" and on short-term gains easily transferrable to the next day's briefing graphics (and perhaps upcoming fitness reports). This "results orientation" may create impatience with interagency or nongovernmental-organization efforts that produce transparent or long-term effects, such as relationships with and influence on local leaders. It is difficult to quantify human relationships and interaction, and State Department civilians in the field frequently chafe at their military partners' emphasis on "bricks and mortar" projects that look good on briefing slides.
- A final dynamic that undercuts the political expertise of U.S. military leaders is the "American way of war," as characterized by a number of writers. This dynamic involves the complete Clausewitzian triad: our military leaders, our civilian political leaders, and the people of the United States. There is a historical preference on the part of these constituencies for wars of limited duration, with clearly defined "bad guys," clear paths to victory through overwhelming "high tech" force, and a rapid return of forces to America's shores after conflict termination. Fundamental to this approach is an idealism that seeks to spread democracy to those denied the benefits of the American political system. In short, "War [should be] clean, independent of politics, and fought with big battalions."[46]

This last characteristic deserves added attention, as it arises from within the military culture and self-image as well as from our national approach to war,

growing out of our shared history and cultural context. It is also a result of the pressures placed on the military by its loyal supporters, friends, families, and the media. Our nation's "short attention span" does not contribute to the political will necessary to support complex and long-term contingencies across the world in pursuit of global security needs. One needs only remember the image of President Bush on board the USS *Abraham Lincoln* with the words "Mission Accomplished" emblazoned in the background. It is a fundamental strategic error to conceive that the defeat of the enemy's military and the achievement of political aims are synonymous. Unfortunately, this mistake is all too common, as the American experience in Iraq illustrates.

The military traits discussed here often work effectively to accomplish military ends but conflict with successful political outcomes. The direct, confrontational manner of the American military may seem offensive and brash to many within the interagency realm, more used to diplomatic approaches. The competitive orientation and need for an enemy may result in an inability to "play well with others"; the zero-sum and realist perspective may neglect the possibility of compromise or nuanced approaches to problems and relationships. The upshot of these traits—admittedly generalized here—is to make the military generally ineffective in the political realm. These aspects of the military mind and personality do not make the military incapable of political mission accomplishment. But they do reveal the limitations inherent in utilizing the military for stability, reconstruction, nation building, and other tasks requiring a nuanced, political approach.

In the military's defense, of course, there are senior officers who thrive in the political environment. Generally, they have served in geographic combatant commands, where they are required to exhibit international political expertise and engage coalition partners effectively. They have also learned how best to combat their enemies on their home turf. As one commentator put it, "'Political' generals do better in counter-insurgency than 'gung-ho' warriors," an insight that applies to many dimensions of the contemporary security environment.[47] But military leaders with highly developed political acumen, such as an Eisenhower or a Petraeus, are the exception rather than the rule. American military culture values, and is more likely to produce, a George S. Patton, Jr.

A REDEFINITION OF VICTORY?

The contemporary military finds itself actively participating in the political process, both at home and abroad. At home, this involvement is a result of the constitutional process established by the founders, a process that requires the military to advise both the president and Congress and to participate in the crafting of the nation's military policy. Overseas, the missions the military has been called on to

perform involve it in political issues at every level, from the general serving as a combatant commander to the corporal assigned to a provincial reconstruction team. The following recommendations are offered to assist both military and civilian leaders in accomplishing the goals of the nation's national security strategy.

First, the military needs to redefine its concept of professionalism to embrace all the missions that it has been assigned, including stability, peace-building, and reconstruction operations. The Defense Department has designated "stability operations" as a core mission;[48] accordingly, the military must incorporate the requirements and capabilities (including appropriate political training) of stability operations and other, associated missions into its training regimens. This will require abandonment of debates as to whether we "do" nation building or whether a force designed for a major theater war can adapt to such missions. American military forces are amazingly flexible and will accomplish whatever mission is assigned to them. The reality of today's security environment requires their leadership to come up with the means to address the thorny issues that will arise and to adapt training and deployment cycles accordingly.[49]

Second, the military needs to recognize that the political and governance expertise required for many of the missions on the "lower end" of the ROMO resides within other agencies of government, especially the State Department and the U.S. Agency for International Development (USAID). Overcoming institutional barriers and forging working relationships with interagency personnel is a requirement of the contemporary battlefield, and meeting it will greatly facilitate mission accomplishment. Karl Eikenberry, former U.S. ambassador to Afghanistan (as well as a retired lieutenant general and former commander of U.S. forces in Afghanistan), advised 2010 graduates of the Army Command and Staff College "to see our civilian counterparts as empowered partners who complement your work. And welcome them as part of your engagement team. Take them with you and provide the security they need to do their jobs."[50] His comments also hint at the need for civilian members of the interagency to develop the skills and understanding necessary to work effectively with the military. After a decade of improvisation, "State" and USAID are themselves developing in-house expertise on stability operations, emphasizing training and lessons learned. One Senior Foreign Service officer with political-military experience in both Iraq and Afghanistan notes,

> State is not the modern equivalent of the British Colonial Office, and the governance and development work Foreign Service Officers find themselves doing on Provincial Reconstruction Teams was not a core State competence a decade ago. But just as the Army and Marines have had to accept the centrality of Stability Ops, so State has recognized we're in the grass-roots stability business for the long haul.[51]

Third, civil affairs units and their expertise (where military political experience does exist) must be incorporated at every level of the military. Currently, the majority of Army civil affairs units reside in the reserves. Their numbers have been increased in recent years, and they are currently seeing extensive duty in Afghanistan. The Marine Corps and Navy have also expanded their civil affairs capabilities, establishing responsibilities for that function within artillery battalions, on each coast, and in teams throughout the Department of the Navy. These capabilities must be expanded and given the additional role of training all members of the military in the political requirements of their missions. As we have seen in current conflicts, each military member, regardless of rank, can have a potentially strategic impact, if only through an unfortunate act that flies in the face of political sensibilities.

A further need is for military leaders to adapt to the contemporary reality of "fourth generation warfare: . . . [a] political and not a military struggle."[52] In fact, everything about contemporary warfare has a political component, and military leaders must apply themselves to understand and plan for the political dimensions of conflict and security. These dimensions require advanced specialized training and assignments to billets where military members can gain experience in political settings and the opportunity to practice political skills. This might include personnel exchanges with interagency partners. Such contact would make it easier for military officers to take orders from civilian executives, whose department may be the "lead government agent" in particular contingencies. In a similar vein, as Eliot Cohen points out, civilian leaders should take the initiative in "prodding" military leaders with probing questions to discern the advisability of their operations.[53] Finally, the military must address its definition and its vision of victory. The political requirements of a conflict may dictate that success be a matter of negotiation, treaty, or UN resolution rather than the defeat of a military force or the surrender of opposing commanders.

Finally, the political realities of the contemporary security environment require that civilian leaders establish political expectations and end states. "The military man has the right to expect political guidance from the statesman. Civilian control exists when there is this proper subordination of an autonomous profession to the ends of policy."[54] But in order for this appropriate subordination to take place, civilian leaders must clearly state what the "ends of policy" are. They do not always do so, for a number of reasons. Policies may shift over time as a result of victory on the battlefield or shifts in political will at home. Political leaders may hesitate to communicate clear expectations, aware that they will be held accountable by their constituencies. Coalition considerations may hinder the development and communication of clear political guidance. Whatever the cause, lack of guidance from political leaders results in confusion on the battlefield and

the squandering of resources. Sir Basil Henry Liddell Hart reminds us of a precious truth: "The object in war is to attain a better peace—even if only from your own point of view. Hence it is essential to conduct war with constant regard to the peace you desire."[55]

In the end, General MacArthur's words, written after he had been relieved of his Korean command, are instructive: "The supremacy of the civil over the military is fundamental to the American system of government, and is wholeheartedly accepted by every officer and soldier in the military establishment."[56] Whether our military is drawn into political engagement through the constitutional form of government or as a result of the missions it must undertake in pursuit of global security, and whatever the decisions of the nation's civilian leaders, the American military is committed to that constitutional form of government and the supremacy of the civilian over the military. As Huntington so forcefully stated, in the U.S. system the rightness or wrongness of civilian policy "does not concern the military man. He must assume that policy is 'the representative of all the interests of the whole community' and obey it as such."[57]

The opening paragraph of this article cited continuing questions regarding the nature of civil-military relations in the United States and the constitutional system created through the wisdom of the founders. This discussion and the ongoing dialogue between our civilian and military leaders regarding the nature of that relationship are indeed evidence of the vitality of our constitutional system and of the theory that Samuel P. Huntington so thoughtfully formulated.

NOTES

1. Andrew R. Milburn, "Commentary: Breaking Ranks—Dissent and the Military Professional," *Joint Force Quarterly,* no. 59 (4th Quarter 2010), pp. 101–107; Mackubin Thomas Owens, *US Civil-Military Relations after 9/11: Renegotiating the Civil-Military Bargain* (New York: Continuum, 2011). The other works mentioned are cited below.
2. Quote from Barry McCaffrey, foreword to *American Civil-Military Relations: The Soldier and the State in a New Era,* ed. Suzanne Nielsen and Don M. Snider (Baltimore: Johns Hopkins Univ. Press, 2009), p. xiii.
3. Fareed Zakaria, "Remembering Samuel Huntington," Foreign Policy.com, 5 January 2011.
4. Samuel P. Huntington, *The Third Wave: Democratization in the Late 20th Century* (Norman: Univ. of Oklahoma Press, 1991), p. xiii.
5. Samuel P. Huntington, *The Soldier and the State: The Theory and Politics of Civil-Military Relations* (Boston: Belknap of Harvard Univ. Press, 1957) [hereafter SPH, *Soldier and State*], p. 2.
6. Ibid., p. 11.
7. Ibid.
8. Ibid., p. 58.
9. Samuel P. Huntington, "Civilian Control and the Constitution," *American Political Science Review,* no. 3 (1956) [hereafter SPH, "Civilian Control"], pp. 676–99.
10. SPH, *Soldier and State.*
11. SPH, "Civilian Control," p. 690.
12. Ibid., p. 679.
13. Ibid., p. 681.

14. The militia clauses further divide control of the military between the national government and the state governments.

15. SPH, *Soldier and State,* p. 177.

16. These battles are dutifully recorded in James R. Locher III, *Victory on the Potomac: The Goldwater-Nichols Act Unifies the Pentagon* (College Station: Texas A&M Univ. Press Consortium, 2004).

17. Bob Woodward, *Obama's War* (New York: Simon & Schuster, 2010). "McChrystal's comments marked a seminal moment for the White House staff. What better proof that the military was on a search-and-destroy mission aimed at the president? . . . On top of that, the military was out campaigning, closing off his choices, and the White House was losing control of the public narrative" (pp. 194–95).

18. Samuel P. Huntington, *The Common Defense* (New York: Cambridge Univ. Press, 1961) [hereafter SPH, *Common Defense*], p. 378.

19. Ibid., p. 417.

20. Woodward, *Obama's War,* p. 338. Woodward's book serves as a history of civil-military relations in the first two years of the Obama administration.

21. Richard H. Kohn, "Building Trust: Civil Military Behaviors for Effective National Security," in *American Civil-Military Relations,* ed. Nielsen and Snider, p. 274.

22. SPH, *Common Defense,* p. 2.

23. Pauletta Otis, "Religion and War in the Twenty-First Century," in *Religion and Security: The New Nexus in International Relations,* ed. Robert A. Seiple and Dennis R. Hoover (Lanham, Md.: Rowman & Littlefield, 2004), p. 14.

24. Thomas L. Friedman, *The Lexus and the Olive Tree* (New York: Anchor Books, 1999), p. 464.

25. Jeffrey Record, "Why the Strong Lose," *Parameters* (Winter 2005), p. 29.

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A REMARKABLE MILITARY FEAT

The Hungnam Redeployment, December 1950

Donald Chisholm

The difficulty . . . to be got over is to know how not only to invade with success; but likewise to retreat with safety.

THOMAS MORE MOLYNEUX

I kept the sea always on my flank; the transports attended the movements of the army as a magazine; and I had at all times, and every day, a short and easy communication with them. The army, therefore, could never be distressed for provisions or stores, however limited its means of land transport; and in case of necessity it might have embarked at any point of the coast.

SIR ARTHUR WELLESLEY

Amphibious operations exploit the great facility and inherent flexibility of movement and maneuver that the sea affords in order to concentrate military power at the decisive time and place ashore.[1] Such operations are founded on sea control, regularly capitalize on surprise and enemy weakness, and are usually carried out in support of broader operational and campaign objectives ashore—severing enemy land lines of communication, establishing lodgments for follow-on forces, establishing control of choke points or denying the enemy use of decisive physical points, outflanking less mobile enemy land forces, and the like.

We are wont to identify amphibious *operations* with amphibious *assaults,* especially those executed during World War II, when the assault was refined to a high art. In truth, however, militaries have for many centuries found it useful to conduct an olio of amphibious operations during peace as well as war. Appropriately, therefore, in addition to the assault, U.S. joint doctrine identifies four other categories of amphibious operation: raids, demonstrations, withdrawals, and those in support of other kinds of operations with objectives

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of conflict prevention or crisis mitigation (e.g., disaster relief and noncombatant evacuations).[2] The last type has constituted the majority of amphibious operations conducted since World War II. Still, the amphibious assault, as such, remains most vivid in the mind's eye. Notwithstanding Omar Bradley's 1949 declaration that atomic weapons had rendered the large-scale amphibious assault anachronistic, events of the ensuing decades—famously, Inchon, less than a year later—suggest that the practical utility of the amphibious operation neither has dimmed nor is likely to do so in the foreseeable future.[3] Its successful execution still poses the greatest risk to potential and actual enemies, as Argentina learned through hard experience in 1982, Saddam Hussein recognized during Operation DESERT STORM, and Task Force (TF) 58 demonstrated to the Taliban in Afghanistan in November 2001. And now the U.S. Navy and Marine Corps are returning their attention to the amphibious assault, after ten years in the desert.[4]

The present discussion, however, contemplates the amphibious *withdrawal,* those "operations conducted to extract forces by sea in ships or craft from a hostile or potentially hostile shore."[5] The capability to plan and execute amphibious withdrawals, no less than their more glamorous and practiced assault siblings, remains a practical essential in the military repertoire. Forces successfully withdrawn and redeployed will live to fight again another day, and the enemy must honor and plan against such a capability. If the amphibious assault against a hostile shore is among the most complex, technologically and organizationally, of all military undertakings, the amphibious withdrawal does the assault one better —its execution comes as a "branch," a contingency, against reversal of fortune, thus as reaction rather than proaction.

History records a great many military situations in which the success or failure of amphibious withdrawals of land forces profoundly altered operational and strategic outcomes. Arguably, the inability of Cornwallis in 1781 to extract his troops at Yorktown led to his surrender and success for the American revolutionaries. Certainly Lord Wellington thoroughly understood the power this capability afforded him during his Peninsular Campaign against Napoleon's forces. The Royal Navy permitted him not only to reinforce by sea at the places and times required by the ground situation but also to withdraw troops under pressure. He did so on several occasions, most importantly in January 1809 at Vigo and Corunna, where nearly thirty thousand British troops were evacuated, thereby saving Britain's only field army, as well as perhaps the government and the war.[6]

A surprising number of major military extractions from the beach, shown in table 1, were executed in the twentieth century.[7] In every event, ground forces facing destruction by superior enemy strength and position were withdrawn by naval forces. All these withdrawals were executed without any doctrinal foundation; some without air or sea superiority; most absent purpose-built amphibious

TABLE 1

Month/Year	Location	Actor(s)	Scale
Dec. 1915–Jan. 1916	Gallipoli, Turkey	Britain	140,000 British, Australian, and New Zealand troops
Dec. 1915–Feb. 1916	Durazzo/San Giovanni, Albania	Serbia, Italy	136,000 troops, 36,350 horses
May 1940	Dunkirk, France	Britain, France	338,000 troops
April 1941	Attica and Peloponnesus, Greece	Britain	43,000 troops
Oct. 1941	Odessa	USSR	86,000 troops, 150,000 civilians
Dec. 1941	Hangö, Finland	USSR	20,000+ troops
Feb. 1943	Guadalcanal	Japan	12,000+ troops
Aug. 1943	Sicily, Italy	Germany, Italy	39,660 German and 62,000 Italian troops
Aug. 1943	Sardinia, Italy	Germany	25,000 troops, 2,300 vehicles, 5,000 tons
Aug. 1943	Kolombangara, Solomon Islands	Japan	9,000 troops
Sept.–Oct. 1943	Sea of Azov, USSR	Germany, Romania	200,000 troops, 16,000 wounded, 27,000 civilians, equipment
Sept.–Oct. 1943	Corsica, France	Germany	6,250 troops, 1,200 POWs, 3,000+ vehicles, 5,000 tons
March 1944	Odessa, USSR	Germany	24,300 troops and civilians, 54,000 tons
May 1944	Crimea, USSR	Germany	130,000 German and Romanian troops
March 1945	Courland, Latvia	Germany	2.2 million troops and civilians
Dec. 1950	Wonsan, Korea	United States	3,800 troops, 1,146 vehicles, 10,000 tons, 4,800 civilians
Dec. 1950	Chinnampo, Korea	United States	1,800 U.S. troops, 5,900 ROK troops, 3,000 refugees
Dec. 1950	Hungnam, Korea	United States	105,000 U.S. and ROK troops, 91,000 civilians, 17,500 vehicles, 350,000 tons[a]
Dec. 1950–Jan. 1951	Inchon, Korea	United States	4,963 UN troops, 63,220 ROK troops, 64,200 civilians, 1,404 vehicles, 62,144 tons

a. U.S. Marine and Air Force transport aircraft lifted an additional 3,600 troops, 196 vehicles, and 1,300 tons of cargo from Yongpo Airfield adjacent to Hungnam.

shipping; some over very short distances, some over long; some by commanders and staffs inexperienced in amphibious techniques; and others were poorly planned, if at all. In some, the withdrawing force suffered significant casualties in the process; in most, the bulk of heavy equipment was left behind. In every one, however, the amphibious withdrawal permitted the commander to retrieve forces

otherwise doomed to destruction or captivity and subsequently to reinsert them into combat. For this alone, the amphibious withdrawal demands our attention.

Dunkirk and Hungnam represent the antipodes of the twentieth-century amphibious withdrawal. Dunkirk in May 1940 amounted to a hurried *evacuation,* executed under great pressure from the Luftwaffe, by a hasty assemblage of British and French naval vessels, augmented by myriad civilian ships and small craft. The British Expeditionary Force left behind most of its heavy equipment and arms, as well as about forty thousand British soldiers (along with many more French). However, the nearly 350,000 troops successfully returned to England, when recovered, rearmed, and reequipped, once again confronted the Germans in North Africa and Europe.

Conversely, Hungnam constituted a planned, carefully staged massive *redeployment* of forces against enemy pressure. Most of General Douglas MacArthur's X Corps ground troops—the 1st Marine Division (Reinforced) and the battered 7th Infantry Division—arrived at and staged off the beach at Hungnam as organized fighting units. In addition, X Corps's 3rd Infantry Division moved by road and amphibious lift from Wonsan to Hungnam before being redeployed south. All these units brought out their fighting equipment and supplies. The Marines brought their wounded (many others had already been evacuated by air) and virtually all of their dead down the gauntlet from the Chosen Reservoir. The Navy immediately treated the wounded and provided the troops with showers and warm food on board ship.[8] The Navy also lifted the Republic of Korea (ROK) I Corps from Songjin to Hungnam, where it was reembarked and lifted to Bokuko Ko. When the U.S. Navy closed out Hungnam on 24 December 1950, it destroyed all facilities, leaving behind nothing for advancing enemy forces. The Navy also redeployed United Nations (UN) forces from Chinnampo and Inchon on the west coast. Thus, during December 1950, the U.S. Navy conducted *five* nearly simultaneous amphibious redeployments from both coasts of Korea. The total evolution was remarkably well organized and executed; not a single life was lost to enemy action, and material losses were light.[9]

Oddly, Hungnam and its associated efforts never worked their way into the American mythological consciousness—although, justifiably, the 1st Marine Division's epic fighting withdrawal from Chosen to Hamhung did.[10] It was, rather, the brilliantly conceived and executed landing at Inchon in September 1950—a masterstroke that reversed the tide of the Korean War—that immediately captured the popular imagination and continues to receive the lion's share of attention from military historians and the military itself.[11]

More important, the amphibious withdrawal, generally speaking, has never worked its way into U.S. doctrine in a meaningful way. Recognizing the requirement for seizing advanced bases in support of War Plan ORANGE, the U.S. Marine

Corps in its 1934 *Tentative Manual for Landing Operations* laid the intellectual foundation for the great amphibious assaults of Campaign GRANITE in the Central Pacific, General MacArthur's Southwest Pacific campaign, and the Mediterranean and European campaigns. By war's conclusion, the amphibious assault, even of the magnitude and complexity of that planned for the September 1945 invasion of Kyushu, largely had been rendered a well-structured problem.[12]

Conversely, the *Tentative Manual* did not contemplate amphibious withdrawals. The Navy's 1938 *Manual for Landing Operations,* known as FTP-167, provided doctrinally only for planning and organizing the amphibious *assault*—ditto for the Army's 1941 *Landing Operations on Hostile Shores* (FM 31-5); both were derived from the *Tentative Manual.* As it happened, World War II brought no such reversals of fortune for U.S. forces. Although it was believed at certain junctures that, the situation being in doubt—notably, in the 1943 operations at Buna (New Guinea) and Anzio (Italy)—amphibious extraction might be required, in the event it was not, and no practical experience was gained. The extent to which narratives of the various World War II withdrawals conducted by other militaries then penetrated American military consciousness remains unclear, but it cannot have been very great.

We are only slightly better off today. Joint Publication (JP) 3-02, *Joint Doctrine for Amphibious Operations* (its current edition was issued in August 2009), recognizes and defines amphibious withdrawal but devotes only two pages, out of more than two hundred, to it.[13] The subsidiary 1989 JP 3-02.1, *Joint Doctrine for Landing Force Operations,* last updated in 2004, granted the withdrawal several more pages, but surprisingly the current (2010) JP 3-02.1, now entitled *Amphibious Embarkation and Debarkation,* fails even to mention withdrawal—presumably "embarkation" (an aspect of movement) and "withdrawal" (a form of maneuver) are to be treated as synonymous.

Perhaps a certain misplaced optimism now makes it difficult to imagine a future situation in which an amphibious withdrawal might be appropriate. This would be thin gruel for the commander who confronts the real-world necessity for such an operation. Consequently, even though now sixty years in the past, the Hungnam redeployment still warrants our careful consideration. It offers enduring lessons with regard to the problem of amphibious withdrawal; to the process by which it was conceptualized, planned, and organized; to the practical value of sea control to the conduct of land operations; and to effective approaches to solving ill-structured military problems.

KOREA IN 1950

The Korean War was a land war, and yet, because of the theater's geography and the state of its communications infrastructure, friendly naval forces played an

essential role throughout. The Korean Peninsula, which runs roughly six hundred miles north to south, has an east-to-west span of mostly less than two hundred miles, leaving few locations more than a hundred miles from the coast. Its area totals about eighty-three thousand square miles. The northern part is defended by high mountains—a long mountain string isolates a major portion of the east coast—and the west is marked by hills and river drainage basins. In 1950, notwithstanding forty years of Japanese occupation, land communications remained difficult at best, with few sealed roads or railroads available to negotiate the difficult terrain. These few road and rail lines described more or less an X, with its intersection at Seoul. Movement north and south, though problematic, was easier than east and west.

Militarily usable ports, shown on map 1, then comprised, on the west coast, Chinnampo, Inchon, and Kunsan, dominated by the great tidal range of the shallow Yellow Sea; on the east were Songjin, Hungnam, Wonsan, and Pusan, with deep water just offshore. Sailing distances from major American naval installations in Japan to Korean ports were short enough to allow quick turnaround; even Yokosuka, for example, on Japan's east coast, lay only 655 sea miles from Pusan. Terrain and hydrography afforded additional opportunity and flexibility to forces capable of amphibious operations over the beach, as UN forces were.

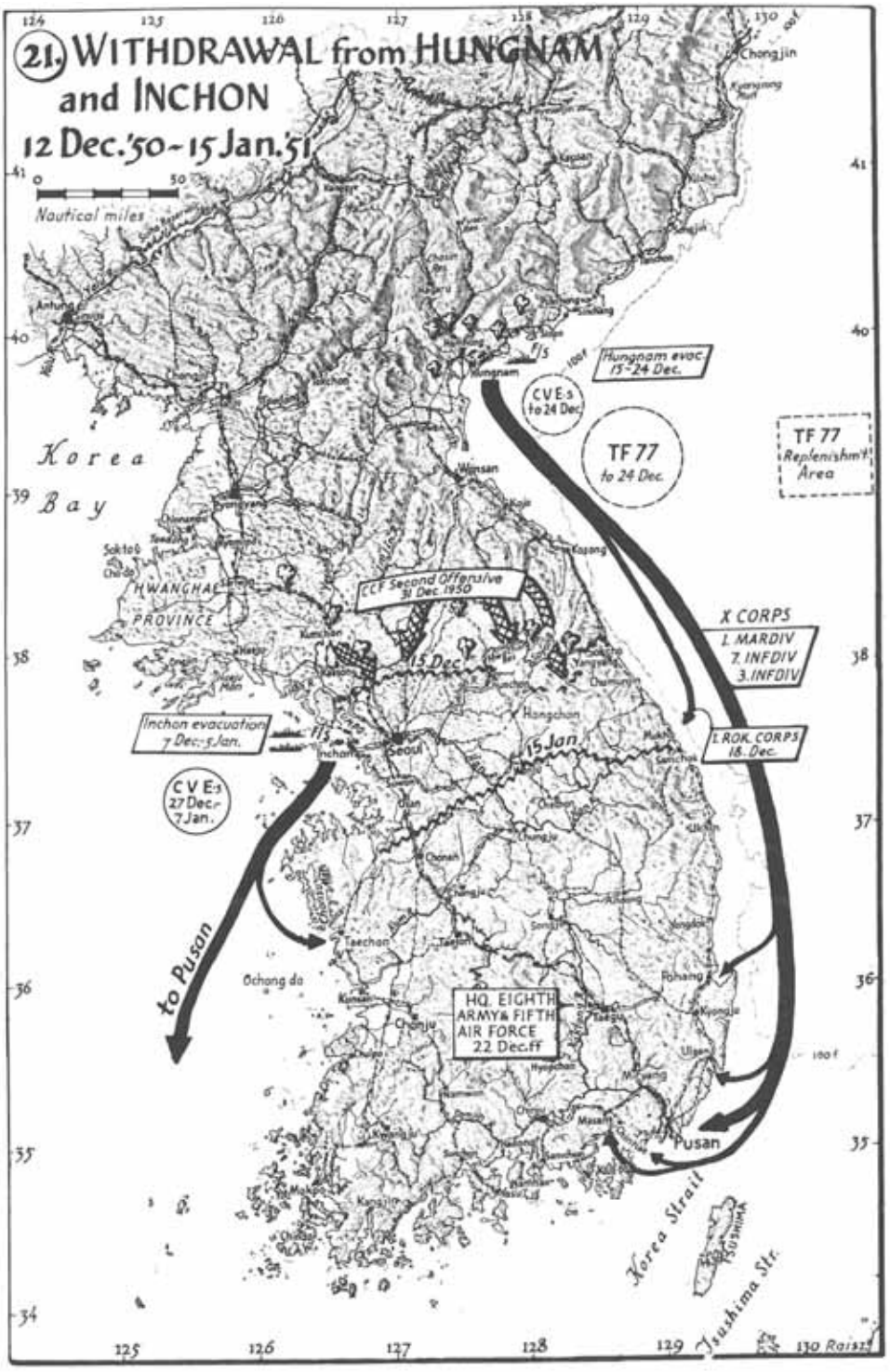
In short, the factor of space greatly favored the force able to assert and maintain sea and air control, granting it thereby greater freedom of movement and maneuver than a land-restricted opponent enjoyed. This essential fact had not escaped General MacArthur, who had learned the lesson during World War II and subsequently noted, in reference to the Inchon landing, that "deep envelopment, based upon surprise, which severs the enemy's supply lines is, and always has been, the decisive maneuver of warfare."[14] The general also properly understood that naval support secured his own lines of supply and provided the ability to hold necessary beachheads more or less indefinitely.

United Nations forces had promptly established sea and air control in the first days of the war and effectively exploited it for naval gunfire support, air strikes, air-to-ground support, and amphibious lifts and assaults. During the first year of the war North Korea and its Russian and Chinese sponsors made few attempts at sea denial, but among these, notably, were the extensive sea mining at Wonsan, the mining of Hungnam harbor, and the sowing of free-floating mines along the east coast.[15] The affected ports would play pivotal roles in the war.

THE ROAD TO HUNGNAM

Against this physical backdrop unfolded the events of the first six months of the Korean War. North Korean forces attacked across the thirty-eighth parallel in the small hours of Sunday, 25 June 1950. Four days later, General Douglas

MAP 1



Field, *History of United States Naval Operations.*

MacArthur, Commander, Far East Command, personally visited the active front just south of Seoul and concluded that U.S. naval and air support would be insufficient by themselves to stop the invaders, who were already sweeping aside the South Korean defenders. Absent immediate employment of U.S. ground troops, the North Koreans would surely overrun the entire peninsula. Piecemeal insertion of small U.S. units by airlift was succeeded by disparate small sealifts from Japan as MacArthur sought to buy time in order to mount an amphibious operation that would lay bare the North Koreans' lines of communications and enable their forces' envelopment and destruction. Events moved rapidly, however: the forces initially designated for a July assault at Inchon landed instead, on 17 July, at Pohang Dong, in order to reinforce the fragile Pusan perimeter—enabled by friendly sea and air control.

That perimeter held, and with the heroic deployment of the 1st Marine Division, speedy assembly of the requisite amphibious shipping over the next two months, and organization of X Corps, the general realized his operational vision with the 15 September Inchon landing. Although follow-on land operations failed to envelop and destroy the North Koreans as intended, the latter's offensive largely culminated, and, mostly no longer fighting in large, organized units, they fled north, pursued by Eighth Army units from the Pusan perimeter.

A second X Corps amphibious landing, this time on the east coast at Wonsan, aimed to cut off and complete the destruction of the invaders. Unfortunately, the Soviets had anticipated such an assault and had covertly commenced extensive mining in late July, the clearance of which delayed landing X Corps, reembarked after Inchon. The 1st Marine Division did not land until 26 October, while the 7th Infantry Division landed instead farther north, at Iwon. By that time the ground war had already largely passed north of Wonsan, although guerrilla activity plagued the mountainous areas just inland.

Meanwhile, an early October United Nations resolution had expanded the strategic objective from simply destroying the North Korean army and restoring South Korea's integrity to pacifying North Korea, which for the moment seemed entirely possible. The X Corps commander, Major General "Ned" Almond, repeatedly urged his subordinate ground commanders to move faster toward the northern reaches of Korea in the mountains adjacent to the Yalu River, which they did, as did their Eighth Army counterparts in Korea's west. Almond established his headquarters at Hamhung; the Navy cleared and opened the port at Hungnam for its support.

The Chinese had other ideas, however. Feeling threatened by the looming presence of United Nations forces near their border, beginning in late October they had secretly started moving vast numbers of ground troops into the mountains

of northern Korea. American forces took Chinese prisoners almost immediately. However, ambiguity initially obtained as to whether these were individual volunteers or from organized units. All doubt disappeared on 7 November, when the 1st Marine Division was hit hard by sizable Chinese units. Nonetheless, each succeeding estimate of Chinese strength was obsolete by the time it was published: 16,500 on 2 November; 100,000 a week later; 145,000 on the 15th; a range of 142,000 to 167,000 on the 23rd.[16] In fact, the Chinese had moved across the border in even greater numbers than those, and it was now an entirely new war.

On 15 November, in concert with an all-out air effort against the Yalu River bridges, MacArthur ordered X Corps to redirect its efforts to the west to assist Eighth Army; the Marines were to attack west against the enemy's line of supply —apparently on the assumption that they would meet little resistance—while other X Corps units moved north along the east coast. On 24 November, having opened Chinnampo for naval logistic support, and supported by Fifth Air Force, Eighth Army units attacked north from the Chongchon River—II Corps on the left, IX Corps in the middle, and the ROK II Corps on the right—with orders to link up with X Corps. Shortly, however, Chinese forces counterattacked heavily against the ROK II Corps, which broke, exposing the IX Corps right flank. The 5th and 7th Marine Regiments, by this time nearing the Chosen Reservoir, met heavy opposition and on the 27th were struck by two Chinese divisions.

"NO, GENERAL, WE DON'T KNOW HOW TO DO THAT"

The stage was now set for Eighth Army to commence its hasty retrograde movement in the west, while the Marines and fellow X Corps units were to begin their fighting withdrawal back to Hungnam.[17] Meanwhile, what of the Navy, which was cast in a supporting role to the land forces and might very well have to pull them all off the beach?

Within a week of the 7 November Chinese attack against the Marines, Vice Admiral C. Turner Joy, Commander, Naval Forces Far East, had published his Operation Plan 116-50, outlining general procedures for emergency evacuation of UN forces from Korea to Japan. It included hydrographic data on Korean ports, along with capabilities of available shipping, and it established command relations for the redeployment. On 15 November, the commanding general of 1st Marine Division, General Oliver P. Smith, conveyed his serious concern about the ground situation to the chiefs of staff of Vice Admiral Joy and of Rear Admiral James H. Doyle, commander of Amphibious Force, Far East, reinforcing the need for contingency plans. Joy, at the prescient recommendation of his deputy chief of staff, Rear Admiral Arleigh Burke (who had arrived in Japan in late August), began accumulating time-charter shipping in Japan rather than releasing it for return to the United States.

As was well known, and had just been proved once again in Korea, the U.S. Navy, Marine Corps, and Army were well prepared to make amphibious assaults. But they were not so well prepared for extractions. Although veteran amphibious professionals all, the commanders and their staffs on the scene in Korea had neither previous directly comparable practical experience nor specifically applicable doctrine to guide their thinking and decision making for Hungnam. Where the assault had been rendered a well-structured one by World War II experience, the withdrawal remained ill structured.

"Ill structured" problems are distinguished from "well structured" ones by the degree to which their boundaries, constituent parts, and the relationships among those parts are *understood.* That is, "ill" and "well structured" refer to the fidelity of the decision maker's representation of the problem to the existential problem itself. Well-structured problems are readily recognizable and assignable to discrete categories and are therefore directly susceptible of solution by computational means—that is, by selection and application of courses of action from existing solution sets. The pre–World War II *Tentative Manual for Landing Operations* had begun the practical structuring of the amphibious assault, which was understood to be necessary for acquiring the forward operating bases required for the anticipated Pacific campaign against Japan; forces required, phases, timing, sequencing, and synchronization were all roughed out. Careful assessments of initial wartime amphibious experience refined that structuring: shipping requirements, command relations, prelanding bombardment, coordination of close air support, and hydrographic intelligence were all adjusted. The organization of boats for ship-to-shore movement was carefully reworked. By the time of the June 1944 Marianas operations, the problems had been so thoroughly structured that the plans were confidently executed against more or less alerted opposition.

Conversely, ill-structured problems require decision makers to impose structures on them and to *generate* solutions for them—often at the same time. Typically, ill-structured problems are those that have not been encountered previously in quite the same forms and for which no predetermined, explicit sets of ordered responses (i.e., doctrines) exist.[18] In war, it may be said, each opponent attempts to present the other with enough surprise that the problem posed cannot be structured and made solvable in the time and with the forces available.

Thus, Japan's systematic employment of thousands of kamikazes and hundreds of *Shinyo* and *Renrakutai* surface suicide boats against U.S. naval forces at Okinawa for a time rendered ill structured the problem of force protection. The practical challenge was simultaneously to figure out the structure of these threats and to devise effective methods for dealing with them.[19] Out of 1,300 ships involved at Okinawa, assaulted in the teeth of that dual challenge, the "Fleet That

Came to Stay" sustained thirty-six ships sunk and another 368 damaged, with more than 4,900 sailors killed.[20]

Neither do ill-structured problems remain constant while decision makers seek to impose structure on them. Their components and their interrelationships often change in a very short time frame, rendering initial efforts to understand them obsolete—especially in war, which we understand as a complex interactive system. This was the case in November–December 1950 in Korea. Both the operational situation and understanding of that situation changed rapidly. The Navy's practical challenge was to ascertain what rapidly changing conditions on the ground and successive decisions by MacArthur and his principal ground commanders would demand of it for support.[21]

The learning curve for ill-structured problems is generally very steep, and trial and error constitute the main mechanism for generating information and reducing uncertainty about the problem—that is, converting it into a well-structured one. Notably, the centralized, hierarchical organization structures effective for well-structured problems do not fit ill-structured ones, which are more readily addressed by decentralized, self-organizing systems, within which discretion resides at many points. Such systems allow experts to exercise their best judgment, adjusting as required, while achieving unity of effort principally through lateral communications.[22] Even then, the most that can be attained in real time is to render such problems well structured in the small, while the larger problem remains ill structured.[23] The structure of the overall problem will likely only be known in retrospect, *after* its attempted solution.

Although no name for the concept had yet been coined, Rear Admiral Doyle implicitly grasped the challenges posed by an ill-structured problem and the relationship between type of problem and the command-and-control (C2, in today's shorthand) relations that would be appropriate. He proceeded accordingly.

Doyle realized that the unprecedented character of the potential problem of extracting large numbers of troops and amounts of equipment from widely separated hostile beaches on two coasts dictated against a programmed, standard C2 structure below. As Commander, Task Force (CTF) 90, he had at his disposal Amphibious Groups 1 and 3. Facing the prospect of simultaneous retrograde movements by Eighth Army on the west coast and by X Corps on the east, Doyle retained overall command of the redeployments but directed Amphibious Group 3, under Rear Admiral Lyman Thackrey, to attend to Eighth Army at Chinnampo and Inchon, leaving Amphibious Group 1, under his direct command, to support X Corps at Songjin, Wonsan, and Hungnam.

At MacArthur's request, Amphibious Group 1, under Doyle, had arrived in Japan in early June 1950 to train Eighth Army in battalion-level amphibious operations. The day North Korea attacked, it was conducting a landing exercise at

Sagami Wan. Initially little more than a token training unit, during the months preceding Hungnam the group grew many times over to become a full-fledged amphibious force.

Doyle was a distinguished veteran amphibious officer, arguably the most amphibiously experienced serving senior officer. He had been Admiral R. Kelly Turner's operations officer at Guadalcanal, 1942–43, and had then served in Admiral Ernest King's Commander in Chief Amphibious Section, 1943–45, including work on the Joint Amphibious Warfare Committee. In early 1948 he had assumed command of the Amphibious Training Command at Coronado, California; in January 1950 he reported as Commander, Amphibious Group 1.

Officers with extensive World War II amphibious experience populated Doyle's staff. They were overqualified and technically too senior for their billets—the fortuitous result of a difficult civilian economy and a greatly drawn-down Navy. They knew in detail the intricacies of amphibious planning. They were used to working together, having experienced little turnover in the preceding two years, and had planned and executed three major amphibious exercises in the spring of 1950, followed by the three major Korean amphibious operations. The admiral knew his staff, its members knew each other, and all had developed effective working relationships.

Doyle, in his capacity as CTF 90, had a second capable amphibious force in Thackrey's Amphibious Group 3. It had arrived in Korea shortly following Inchon. Thackrey had run that port's operations after its capture and in October landed the Army's 7th Division at Iwon.

Mobile Training Team Able of the Amphibious Training Command's Troop Training Unit had embarked with Amphibious Group 1 when it went to Japan. Commanded by Colonel Edward H. Forney, USMC, Team Able's officers and men had worked together for some time and were personally known to Doyle. Team Able had been integral to all three previous amphibious operations. Doyle had seconded the unit to the 1st Cavalry Division (which lacked amphibious-experienced personnel) to plan that division's part in the Pohang Dong landing. Doyle then placed the unit on a similar temporary assignment with X Corps for the Inchon and Wonsan-Iwon operations; Forney served as the corps's deputy chief of staff. He and his men did the bulk of that command's amphibious planning for those operations.[24] Thus, Team Able and Amphibious Group 1's staffs were no strangers to each other; neither were Team Able and X Corps staffs strangers. Doyle later commented that Forney "could get along with anyone—and without compromising himself. This facility proved invaluable, for the corps commander [Almond] was at best prickly, at worst arrogant and overbearing."[25] Conversely, Doyle and Major General Smith had quickly developed a close and mutually respectful relationship in planning and executing the Inchon and

Wonsan-Iwon operations, which was mirrored in the effective working relationships between their staffs (Smith and most of his staff had sailed on board Doyle's flagship for both operations).

Secure in the knowledge that they were seasoned professionals who had learned their craft not in peacetime training but in the hard schools of the Southwest and Central Pacific, Mediterranean, and European campaigns of World War II, Doyle, as we shall see shortly, would grant his subordinates considerable independence to make such arrangements for the Hungnam redeployment as their professional experience suggested were appropriate. The several elements were then to coordinate as required to achieve unity of effort through direct lateral communication.

Doyle understood that effectively addressing the problem of amphibious withdrawal also required that he be afforded by his own superiors considerable leeway in the exercise of command. Shortly after October 1950's Wonsan-Iwon operation, Doyle plainly told his "old and very close friend" Vice Admiral Joy that he could not and would not come under the Seventh Fleet commander, Vice Admiral Arthur D. Struble, in any future operation. (Figure 1 shows the Naval Forces Far East command organization obtaining in November 1950.) Doyle's conflict with Struble, eight years his senior, no doubt had roots in personalities, and perhaps in competition for credit, but it extended well beyond into profound differences in professional philosophy and practice.[26]

For Inchon and Wonsan-Iwon, Doyle had reported directly to Struble. During these operations, Doyle felt, Struble had regularly interfered in his exercise of command. Consequently, judging that he needed Doyle's expertise more than Struble's, Joy issued on 13 November a preliminary plan for evacuation of UN forces from Korea that established a naval task organization as shown in figure 2. It had Doyle reporting directly to him, while granting Doyle considerable discretion and unusually wide-ranging responsibilities, not only for the redeployment itself but for shipping protection, control of air support and naval gunfire support in the embarkation areas, and maintenance of the blockade along the Korean east coast. Joy directed Struble to provide support to Doyle.[27] At the same time, this unusual arrangement allowed Struble freedom of maneuver and the ability to address whatever threats the Soviets and Chinese might pose from the sea, either to Doyle's operations or, in the worst case, to Formosa or Japan.

Subsequently, however, the Chief of Naval Operations (CNO), Admiral Forrest Sherman—who believed Hungnam carried potential for great disaster—intervened. He did not want an amphibious commander to control the fast carriers. He was also well aware of continuing friction between Struble (who was his protégé) and Doyle. Sherman had previously weighed in with Joy after July 1950's Pohang Dong landing, and as a result the command relations that had obtained

for both Inchon and Wonsan-Iwon had been those acceptable to Struble (but not to Doyle). For his part, Doyle believed that "Sherman knew little, if anything, about amphibious operations"; of his own relationship with the CNO, he later commented, "We never were mutual admirers."[28]

Sherman directed Admiral Arthur Radford, Commander, Pacific Fleet, to give Lieutenant General Lemuel C. Shepherd, Commander, Fleet Marine Forces, Pacific, verbal orders (of which Joy was ultimately made aware) to go to Korea (his fifth trip there) and assume command at Hungnam if, in *his* judgment, Doyle was not executing effectively. Doyle learned of Shepherd's orders only years later.[29] Major General Smith knew only that Shepherd was the CNO's representative at Hungnam.[30]

In the end, however, Joy's C2 structure stood, with its great leeway granted Doyle to organize and execute the redeployment operations, as well as the forces requisite to the job—amphibious shipping, naval gunfire ships, escort-carrier-based aircraft, and Marine ground-based air. Doyle coordinated additional air and naval gunfire support with Struble as needed. Although the Air Force did not contribute air-to-ground support to X Corps, it provided night "heckler" coverage, and its transports proved essential for evacuating the wounded from Chosen Reservoir.[31]

FIGURE 1
NAVAL OPERATING COMMANDS, KOREA—NOVEMBER 1950

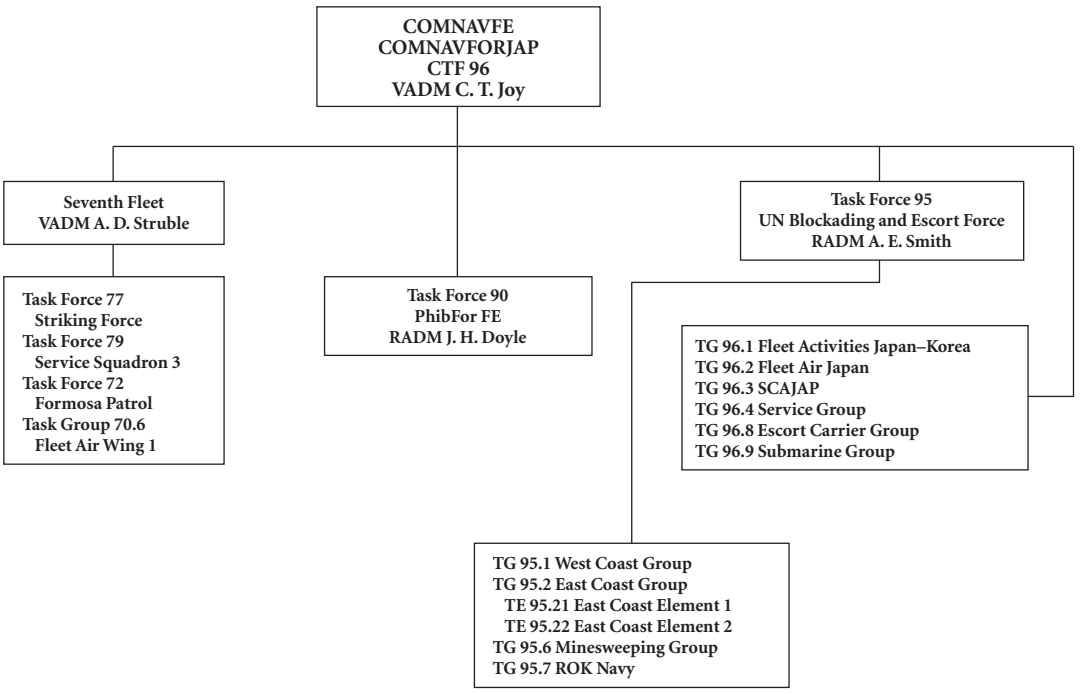
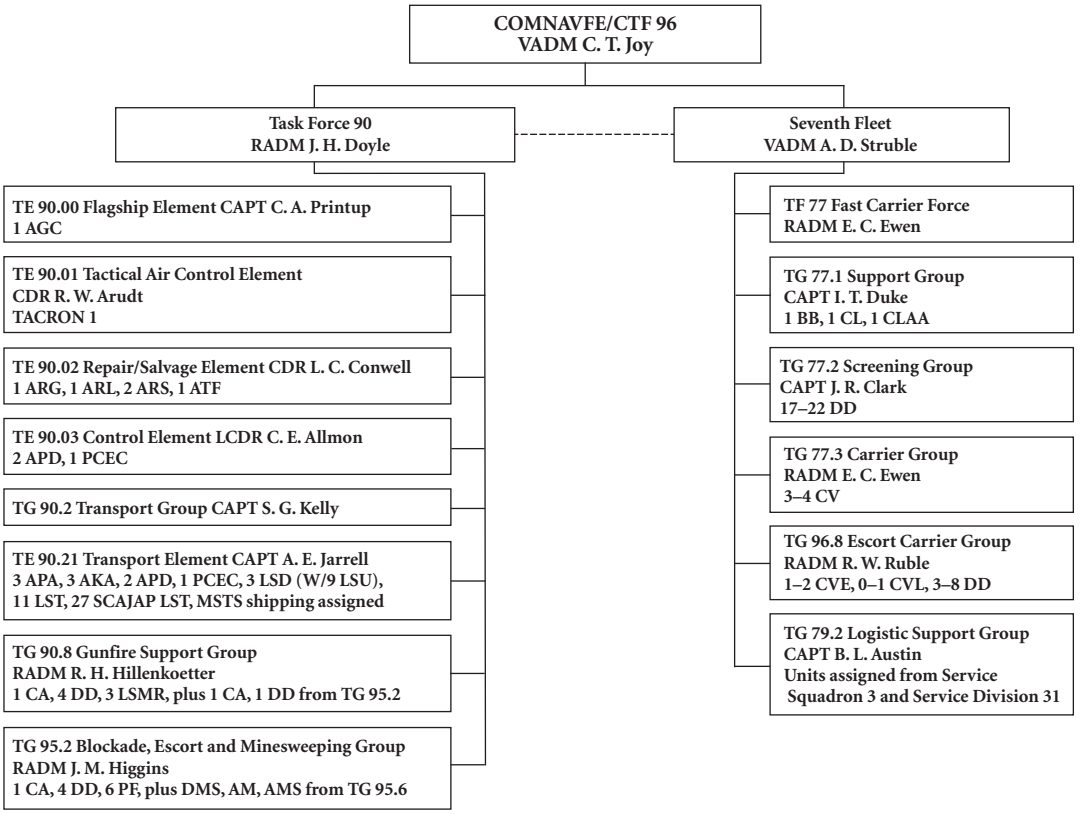


FIGURE 2
NAVAL TASK ORGANIZATION FOR HUNGNAM—DECEMBER 1950



ACCELERATING EVENTS ON THE GROUND

On 28 November Joy alerted Doyle to the high probability of major evacuation operations. Doyle immediately commenced planning for "redeployment by water of own and friendly troops in Korea either as an administrative 'outloading' or a general emergency based on Joy's OpPlan 116-50." Joy advised Doyle to put his ships, then still in Japan, on six-hour notice for movement to Korea. Doyle in turn directed his ships to assemble in Sasebo (a short 165 miles from Pusan) and issued Operation Order 19-50 for planning purposes. His basic plan was for Amphibious Group 3 to conduct west-coast operations and Amphibious Group 1 east-coast operations, while overall responsibility remained with Doyle as Commander, Task Force 90.

On 30 November, MacArthur directed X Corps to concentrate in the Hamhung–Hungnam area, while Eighth Army retired southward to Pyongyang and Seoul. Doyle now placed all ships in port on two-hour notice, and Amphibious Group 3 departed Japan for Inchon. However, Eighth Army's rapid southward movement had already uncovered Chinnampo, necessitating redirection of the group to that

port. Late on 3 December the transport group steamed up the eighty-four-mile swept channel to Chinnampo, on the assumption that an evacuation was imminent but without specifics on troops and equipment to be extracted, the tactical situation, or even who was to command the operation.

Fortunately, Thackrey discovered that shipping already in place at Chinnampo was adequate to requirements. He had extracted 1,800 Army and Navy port personnel and 5,900 ROK troops, along with civilian refugees who showed up unannounced, by late 4 December.[32] At Inchon, from 7 December to 5 January, when the port was closed and destroyed even as Chinese troops entered the city, Thackrey outloaded 4,693 UN and 63,220 Korean military personnel, 1,404 vehicles, and 62,144 tons of cargo, along with 64,200 Korean civilians, all subsequently landed at Pusan.[33]

For the moment, it remained unclear whether United Nations forces would have to withdraw entirely from Korea to Japan or could and would maintain lodgments at Pusan and Hungnam throughout the winter. However, on 1 December the Joint Chiefs of Staff instructed MacArthur to withdraw X Corps and "coordinate" that movement with Eighth Army, which was to hold its position across the waist of Korea. On 7 December high-level discussions in Tokyo modified that plan to have Eighth Army hold Seoul until it became necessary to retire upon Pusan.[34] The following day, when the senior Navy and Marine commanders conferred on board Doyle's flagship, they still had to consider two possibilities: that of establishing and maintaining a lodgment at Hungnam and the more likely one of withdrawal. Fortunately, the next day the Joint Chiefs approved the revised plan, and the decision was made to redeploy south.

Such fluidity does not conduce to easy operational planning, but Doyle and his staff met the challenge, having preliminary plans already in hand both for defending a perimeter at Hungnam and for withdrawing from that port, as well as from other east- and west-coast ports. Now they knew they would be executing a withdrawal: "Troops and supplies that had reached the theater through three ports and troops that had arrived overland now had to be funneled out through a single harbor; personnel and gear that had come in over a period of two months were to be removed in the space of two weeks."[35] At the same time, the amphibious forces had to continue unloading supplies required by the withdrawing troops and those supplies necessary to the defense of the perimeter around Hungnam.

Doyle and his staff initially made the analogy between the operant conditions of the redeployment problem and an "amphibious landing in reverse." Suppose one filmed an amphibious assault and then ran it backward—what would the operation look like? It proved an apt connection and provided the starting point (but only that) for imposing a structure on the problem and devising a course of

action for its solution. Doyle decided that excess supplies and supporting troops would embark first; thereafter, as the beachhead shrank with the embarkation of combat forces, naval gunfire and air support would ensure that there was no diminution of combat power ashore. At the conclusion, naval bombardment would be the only force "ashore."[36] Doyle had previously commenced mine clearance at Hungnam to expand the safe anchorage area, provide an expanded safe channel from the anchorage to seaward, and establish channels for gunfire-support ships.

On 1 December X Corps reported that 3rd Infantry Division at Wonsan was under heavy enemy pressure and that road and rail lines between there and Hungnam had been cut, and it requested an amphibious redeployment of the division. Doyle decided to conduct this initial evacuation as a small-scale test of his tentative plans and procedures for Hungnam. It would illuminate the strengths and weaknesses of the proposed staged reduction of the defense perimeter around the Hungnam harbor—in effect, telling him whether or not he had gotten about right the structure of the problem. In the event, at Wonsan the

> evacuation plan was simple and direct. The troops ashore described around the city an arc whose radius they progressively reduced as supplies and personnel within the beachhead loaded and left. The fire support ships isolated Wonsan by shellfire, fired any observed missions [i.e., spotted by controllers, in observation aircraft] requested, and at night provided random harassing and interdiction fires on pre-selected targets and fired star shells for battlefield illumination.[37]

Fortunately, it was already clear when Doyle arrived at Wonsan on 4 December that there was no significant enemy pressure and that all but the rear elements of 3rd Division had already moved by road to Hungnam. Consequently, he revised lift requirements downward. Ultimately, 3,800 3rd Division troops, seven thousand refugees, 1,146 vehicles, and ten thousand tons of cargo outloaded by ship from Wonsan from 3 to 5 December.

The experiment validated Doyle's initial hypothesis, and his staff began preparing detailed plans for Hungnam based on lessons learned there. Subordinate units proceeded simultaneously in their own planning, communicating continually with Doyle and his staff, who remained on board his flagship, USS *Mount McKinley* (AGC 7), anchored in Hungnam harbor. On 6 December, Doyle sent a small force from Wonsan to lift ROK I Corps from Songjin to Hungnam. Operations at Songjin closed out on 10 December.

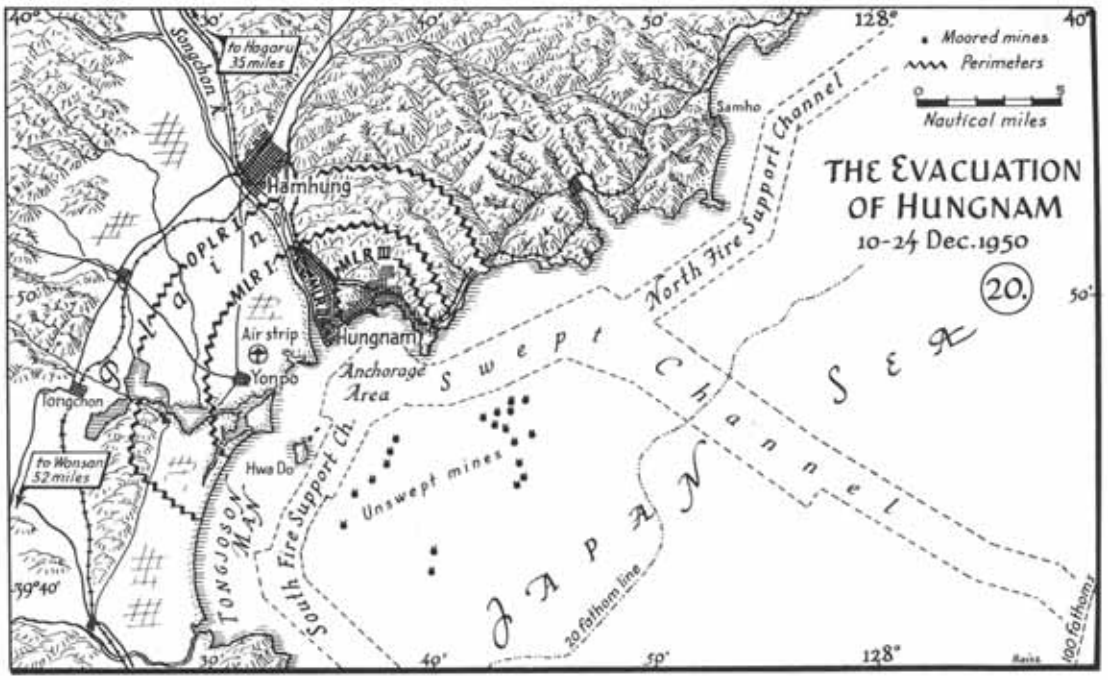
ORGANIZATION AT HUNGNAM

As map 2 indicates, Hungnam was well suited to serve as the principal port for the redeployment. As one historian describes it, the

> city of Hungnam, manufacturing center as well as seaport, lies in the northwestern corner of the Korean Gulf near the delta of the Songchon River. Although Hamhung, its inland satellite, is an important road and railway center, Hungnam is the larger of the two, with a population in 1950 a third again that of Wonsan. The bay on which the city lies is open to the south, but the inner harbor is protected by a 2,200-foot wharf with four fathoms of water and by a breakwater. Other smaller wharves existed, as did heavy loading equipment, developed to handle the products of the city's chemical industry. As at Wonsan, a 100-fathom curve runs 30 miles offshore and the approaches are easily mined.[38]

In addition to the inner port facilities, shown in map 3, which would allow effective employment of standard cargo and transport shipping, Hungnam possesses beaches immediately adjacent to the port, shown in map 4, that were entirely suitable in their hydrography for beaching amphibious shipping and were readily defensible within the planned perimeter. Nearby Yongpo Airfield (see maps 2 and 4) served as the primary base for the 1st Marine Air Wing, which was to provide a major portion of the close air support and combat air patrol. Equally important, X Corps headquarters had been established and remained at Hamhung, facilitating easy communication between the ground commander and the amphibious commander and their staffs.[39] Moreover, in order to facilitate the logistic support

MAP 2



Field, *History of United States Naval Operations.*

of X Corps, beginning on 7 November the Navy had addressed the Soviet-laid mines at Hungnam, declaring the port open four days later. Thus, the port was well located, suitable to the endeavor, and for Doyle a known quantity.

The amphibious group staff held an operations planning conference on board *Mount McKinley* on loading and ship control on the afternoon of 9 December, followed by another planning conference ashore with representatives of X Corps and the Army 2nd Engineer Special Brigade. Firm plans for loading were made during a final staff conference that night and were approved by Doyle. The Control and Loading Plan, based on a staff study of the harbor's physical capabilities, established a series of control posts, for which a special task organization was formed. Doyle assigned to each control station the most able and experienced officer and enlisted personnel available from the staffs of CTF 90; the Military Sea Transportation Service (MSTS), Hungnam; Fleet Activities, Hungnam; and other naval units. "The general experience and 'know how' of all hands was utilized to the utmost *as no one present* [had] *previous actual experience with an operation of this type.*"[40]

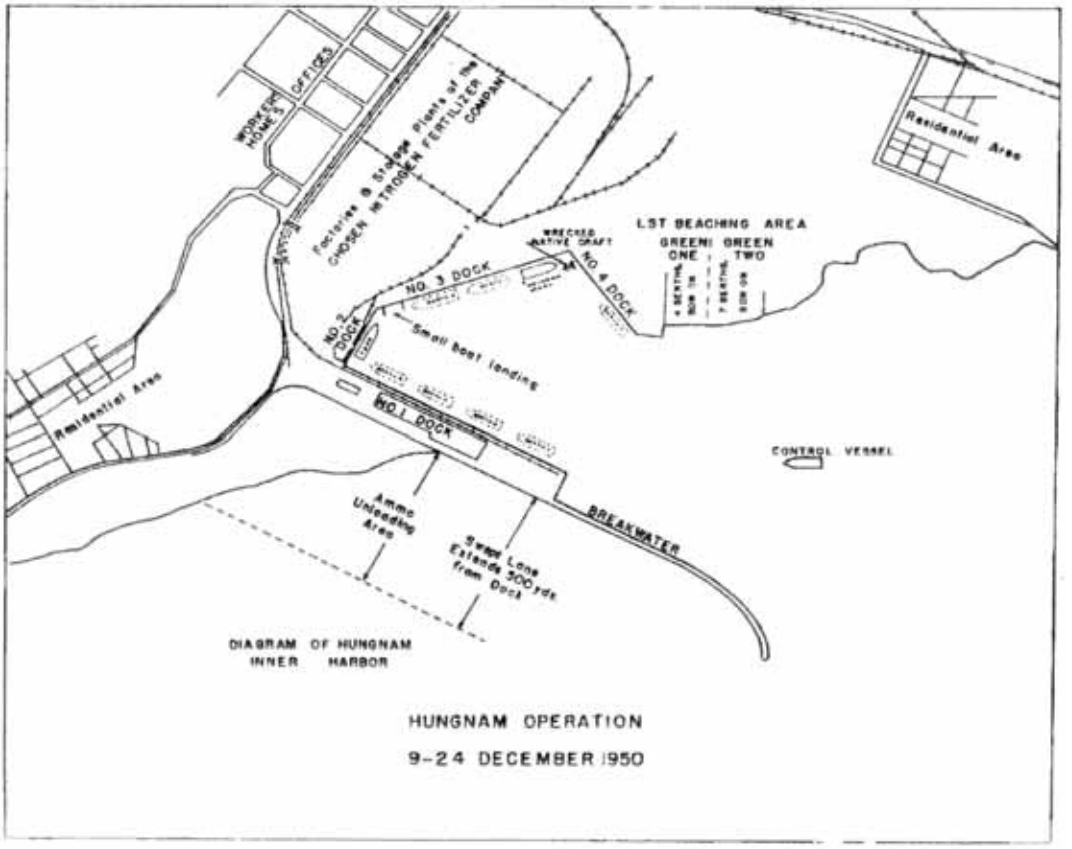
The CTF 90 operations section (on board *Mount McKinley*) constituted one of the control stations; it coordinated all ship movements, assigned anchorages, issued docking instructions, and prepared and issued sailing orders for all Navy and SCAJAP (Shipping Control Authority, Japan) shipping.[41] It also supervised operations of all other control stations. MSTS activities at Hungnam were integrated with the operations section on the flagship, with responsibility for all MSTS shipping engaged in the operation. Physical colocation facilitated easy, close, and clear communication between the two entities.

A radio-equipped harbor-control vessel stationed in the port managed shipping, twenty-four hours a day. An officer boarded each MSTS-operated ship immediately on its arrival to assess its load status, capacity, amount and condition of loading equipment, and any peculiarities relevant to loading. This information went to CTF 90 Operations by radio. All such ships were directed to be ready for movement on immediate, two-hour, or later notice as required.

On 9 December a X Corps embarkation control group was established to provide overall Army supervision of corps loading, with a control officer, an executive officer, representatives from each of the corps's technical services, and the CTF 90 staff combat cargo officer as liaison officer. Transient members, as required, included embarkation control groups from 1st Marine Division, 7th Division, 3rd Division, and ROK I Corps. As during the Inchon and Wonsan-Iwon landings, Colonel Forney's Marines did the actual planning for X Corps.

Forney himself served as the shore-based control and loading officer, performing with "consummate skill." Set up in a shed on the docks, Forney assigned his

MAP 3



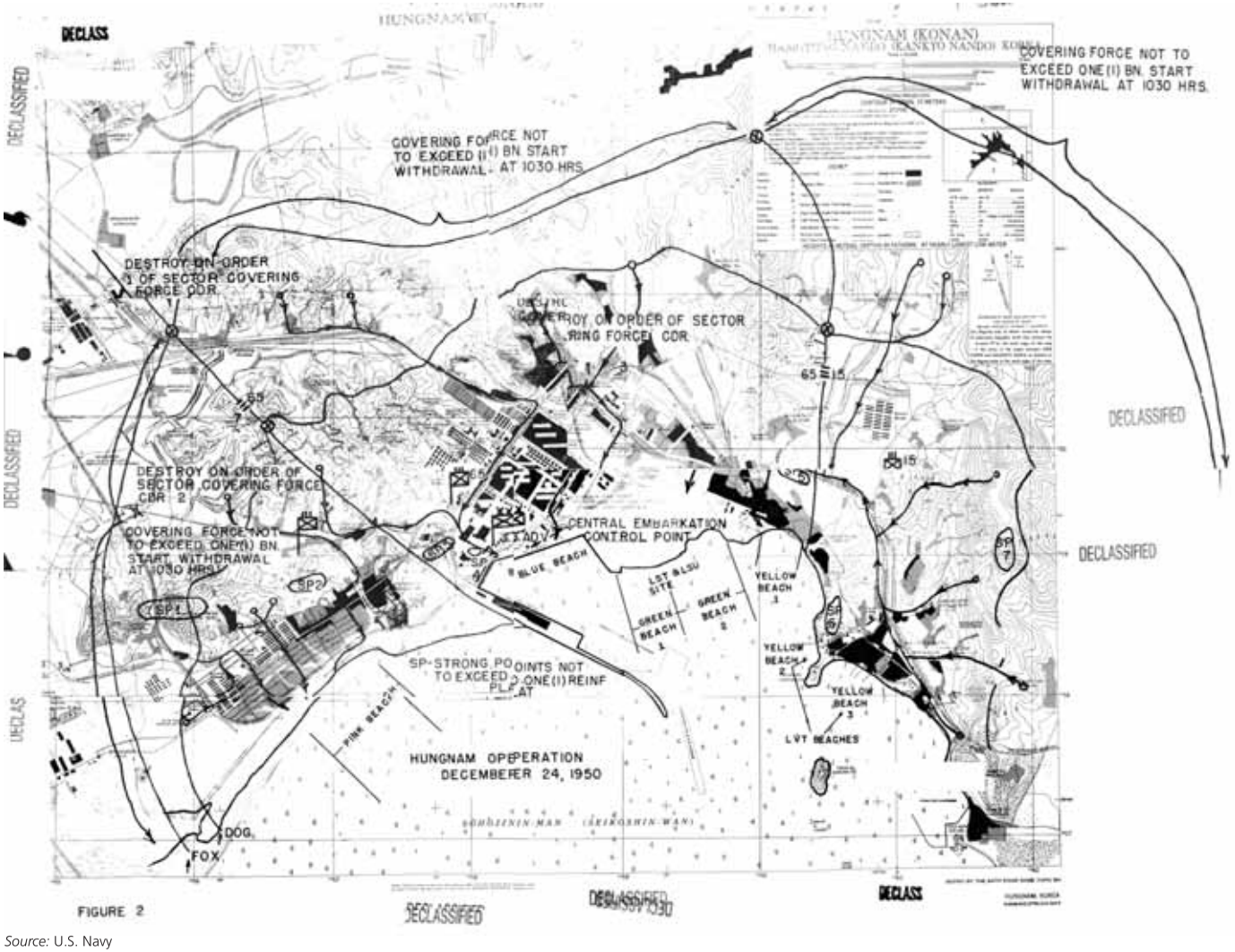
U.S. Navy

officers and enlisted personnel to key positions in this control station, "where their four months on the X Corps staff resulted in excellent relationships." Doyle found that General Almond "cooperated fully and ensured that his subordinates followed his example. He established X Corps embarkation priority as personnel, [then] vehicles, [then] equipment, supplies, and refugees. But he never objected to departures from that order, knowing that we had good reason when we did so."[42]

Forney and his staff "selected the X Corps units to be loaded on the basis of available tactical and administrative information and assigned shipping in consultation with the operations section of TF 90. Port operating units were then advised of dockside requirements, the loading section ground out its plans, the movement section got the traffic down to the water, and the rations people laid down these useful items alongside."[43] This control group maintained nearly constant direct telephone communication with all relevant units and CTF 90 Operations.

Each corps unit provided its embarkation control group with a "readiness for loading" report (covering personnel, vehicles, and bulk cargo, etc.) prior to its

MAP 4



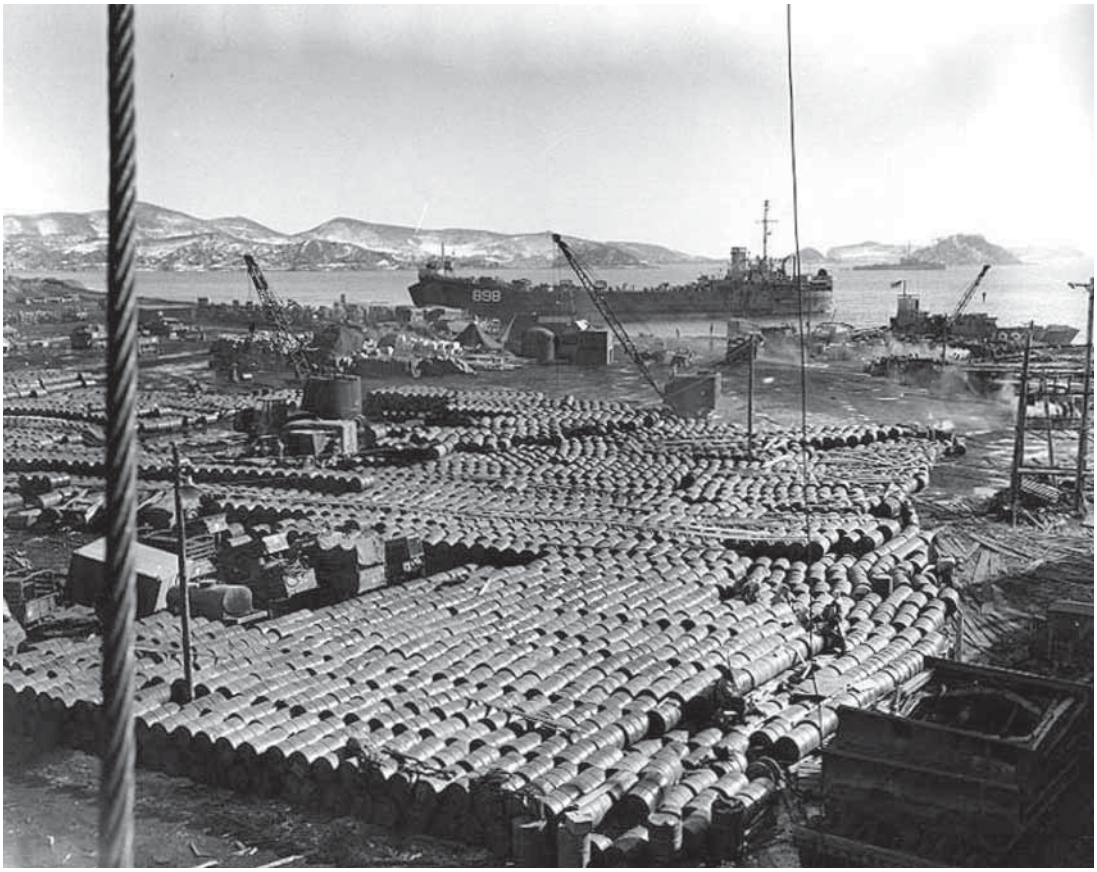
Source: U.S. Navy

time to commence loading as promulgated in the master schedule, which hinged on the tactical situation. X Corps broke the report data into shipping requirements, as advised by the combat cargo officer. CTF 90 Operations assigned suitable shipping, on the basis of these requirements and available berths. The embarkation control group was provided the identities of the ships assigned, along with data on their capacity, booms, etc., and planned a "paper load." Shortages and overages of shipping space were immediately reported to CTF 90 Operations, and the embarkation control group adjusted plans as necessary.

The port director maintained operational control of actual docking and undocking of all ships and of the movement of all shipping in the inner harbor. Three qualified CTF 90 staff officers were assigned to Port Director Control. A radio-equipped landing craft assigned to the port director (and shared with the beachmaster, described below) served as a dispatch boat. Ships moored at one of seven berthing spaces alongside four docks. Experimentation quickly led to procedures for the most efficient use of these limited spaces (including, importantly, double-banking ships at the docks). Two radio-equipped Army yard tugs made it possible to dock and undock ships rapidly.[44]

CTF 90 Operations advised the port director that a given ship was to be docked at a given berth as a replacement for the ship there, then directed it to proceed from its anchorage and wait in the vicinity of the breakwater for a pilot, who docked the ship. Doyle and his staff contrived so to "time the process that the new ship reached her berth at the same time the first troops and supplies to be loaded came alongside," and they usually met that goal.[45] The embarkation control liaison officer advised CTF 90 Operations of the time a given ship would finish loading, and the latter assigned it a "chop time" that was given to the port director. At that time the ship was undocked and got under way.

The Beachmaster Control Unit controlled beaching and retracting all tank landing ships (LSTs) in the LST beaching area (Green Beaches 1 and 2; see map 4), a function analogous to that of the port director. An MSTS officer with a great deal of previous LST experience, assigned as beachmaster, piloted most of the SCAJAP LSTs onto the beach (where they would open their bow doors, drop a ramp, and "onload" vehicles and cargo directly, backing off the beach, with the help of an anchor dropped astern, when ready). The beaching area could handle eleven LSTs simultaneously; additionally, three LSTs could be berthed at Dock No. 4 when the Green Beaches were full, or immediately adjacent to that dock at Blue Beach. CTF 90 Operations delivered sailing orders to each LST before it was loaded. Once the Shore Party (below) notified the beachmaster that an LST was loaded, the latter forwarded that information to the CTF 90 liaison officer at X Corps headquarters by radio. The liaison officer then obtained final clearance for sailing and in turn informed the beachmaster, who directed the LST to



Hundreds of aviation gasoline drums await evacuation on the Hungnam docks, 14 December 1950. USS *LST-898* is in the center, with a LCU at right and the harbor entrance control frigate (PF) in the background. View looking northeast from Blue Beach across the inner harbor.

U.S. Navy

execute its sailing orders (and assisted, with boats, in its retraction from the beach if required). Additional assistance was provided by a SCAJAP headquarters staff officer temporarily assigned to CTF 90 Operations.

A control officer and small staff (on board the Control Ship) directed movement of all utility landing ships (LSUs) and smaller craft in the inner harbor. The control officer also assisted in directing movements of the LSTs, in coordination with the beachmaster and the port director. This was a busy station, twenty-four hours a day.

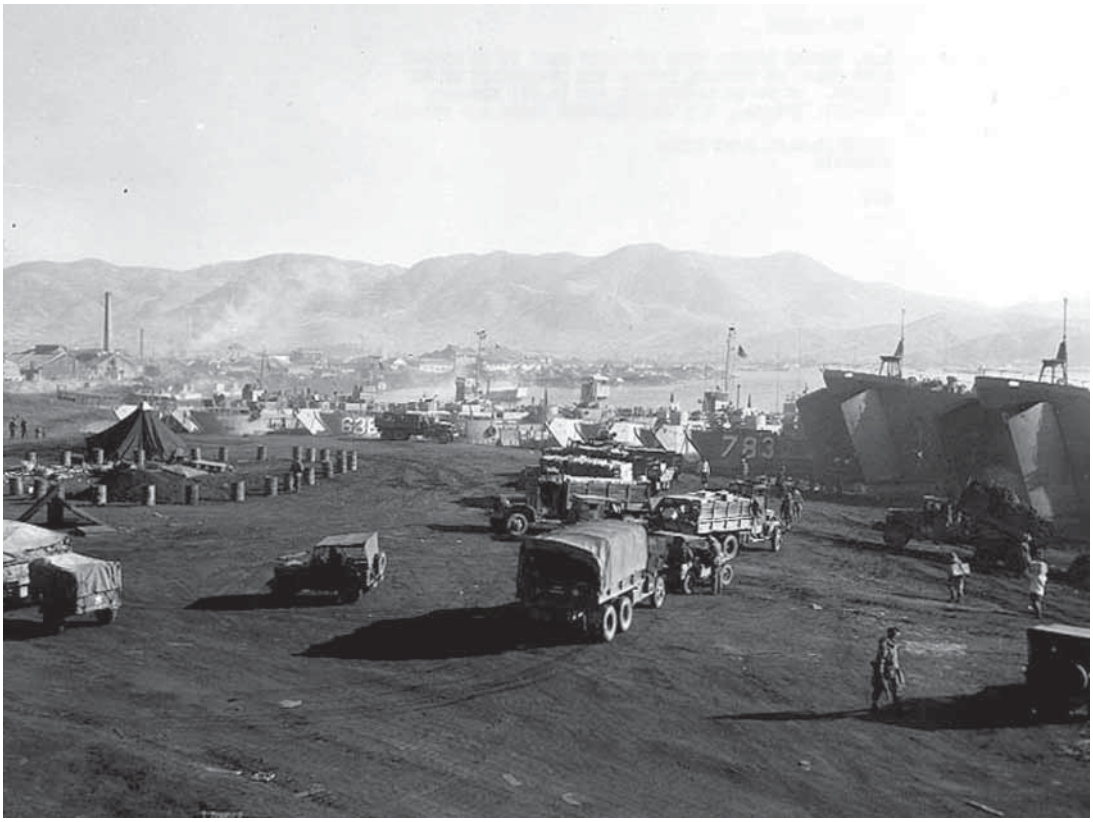
Doyle assigned his staff civil engineer to the Army 2nd Engineer Special Brigade, which served as the Shore Party—responsible for physical aspects of the loading. The civil engineer liaison officer advised the brigade in order to expedite loading and kept CTF 90 Operations informed of loading progress in real time. Doyle later commented that this "Liaison Officer solved any problems which arose and was extremely valuable as an 'expediter' who had direct contact with all Army and Navy Control Stations connected with the operation."[46]

A truck convoy moves along a beach road to the evacuation beach, 18 December 1950. Two Japanese-manned LSTs and USS *LSM-419* are loading.

U.S. Navy

Each control element worked independently on those matters that it could handle without reference to the other elements and coordinated with the others when required. However, given the extremely compressed time frame, the discretion Doyle granted his subordinates would have been for naught absent a simple, effective, real-time communications system: the admiral believed that "the most important factor in the operation of the control organization was the establishment of special primary and secondary very-high-frequency voice radio circuits directly connecting Control Stations." All stations used the primary circuit except the station manned by the CTF 90 liaison officer at the X Corps embarkation control group, who had near-exclusive use of the secondary circuit. Ultimately, however, both circuits were used whenever necessary due to difficulties in communication. A simple numerical code was employed to identify ships easily and still maintain security.

Qualified operators served on each station on both circuits, but in order to eliminate delay or misunderstanding in operational traffic, "*all except routine messages of minor importance were transmitted by the officers concerned speaking directly to each other.*"[47] Officers spoke directly to other officers and therefore



Amphibious shipping beached at Hungnam during the evacuation, December 1950. LCUs present include *LCU-520, LCU-638, LCU-742,* & *LCU-783.*
U.S. Navy

solved problems, kept everyone concerned informed, made or obtained decisions rapidly, and issued orders in the most efficient manner possible under the circumstances.

In the harbor, CTF 90 Operations primarily used visual signals (flag hoist and flashing light) to handle administrative traffic and to communicate with MSTS ships present. During 7–24 December, *Mount McKinley*'s signal bridge handled 1,124 outgoing and 1,104 incoming dispatches. Overall, 44,750 dispatches were handled on the flagship during the period, including 24,630 on the tactical circuits and 17,982 in Radio One (the ship's "radio shack"). Such communications arrangements permitted ready adjustment and adaptation as circumstances changed and as new, unanticipated problems arose. At the same time, individual control posts were not overburdened with information they did not require to conduct their activities.

"WALK, DON'T RUN TO THE NEAREST EXIT"

Because the outloading could function smoothly without Doyle's direct supervision, he was able to focus on "preventing the enemy from establishing itself close

enough to our troops to cause casualties. To that end [he] used air attacks and naval gunfire to maintain the necessary separation. Basically, [he] put in front of the U.N. units a zone of fire through which the enemy could not pass."[48]

Doyle directly controlled the naval gunfire support element. From 7 to 15 December he stationed ships of this element where, as shown on map 2, they could simultaneously deliver emergency "call fire" (that is, requested by troops without notice) for X Corps and defend local shipping against enemy air attack. On 15 December, stationed in the assigned mineswept channels (extending ten miles north and south of Hungnam), the ships of the element began deep-support fires (while X Corps artillery provided close support)—principally eight-inch interdiction and harassing fires and five-inch illumination rounds (enemy forces tended to press on friendly lines at night). As the perimeter contracted, the gunfire support ships moved to closer stations as required for direct troop support. Both observation and fighter aircraft located targets of opportunity and supplemented ground observation. *Missouri* (BB 63) arrived at Hungnam on 24 December to provide additional fire.[49]

The 1st Marine Air Wing at Yongpo Airfield (see maps 2 and 4) provided air support during the initial phase of the operation. It controlled all air support (including carrier-based) and served as the tactical air control center until 15 December, when Yongpo was uncovered by the contracting perimeter and it was flown out. The center moved to *Mount McKinley,* and CTF 90 assumed control of all air support within a thirty-five-mile radius of Hungnam, including TF 77 aircraft and Task Group (TG) 96.8 escort carrier aircraft, night hecklers from the Air Force and TF 77, and all reconnaissance and transient aircraft (see figure 2).

Throughout, Marine pilots in observation aircraft provided forward air control —they "understood the requirements of the troops and the capabilities of the covering aircraft and their armament loads."[50] Detachments from the Marine Air and Naval Gunfire Liaison Company (ANGLICO) served with X Corps Army units to maintain radio contact with the forward air controllers, supporting aircraft, and naval gunfire ships—the "ANGLICO's had the expertise necessary to call for and control the available support."[51] At sea, under TF 77, there were never fewer than four *Essex*-class carriers to provide air support, coordinated by CTF 90 Operations with CTF 77, as for the July 1950 Pohang Dong landing. Doyle handled air and naval gunfire communications in the manner prescribed for *assault* amphibious operations.

Doyle also shifted from shore-based to seaborne logistics, using floating petroleum and ammunition dumps, along with an evacuation center and a prisoner-of-war camp afloat. He ordered life jackets and debarkation ladders. He directed Thackrey to send all available attack transports and attack cargo ships (along with

one dock landing ship, or LSD) from Inchon to Hungnam and requested that Joy provide ten empty cargo ships daily at Hungnam until further notice.[52]

Doyle published his loading and control plan for Hungnam on 11 December. He issued Operation Order 20-50 on 13 December, incorporating his Operation Order 19-50 and consolidating previous dispatches. Plans for gunfire support and air support were finalized in coordination with the TF 77 operations officer, X Corps, and Commander, Cruiser Division 1.[53] Operations would proceed twenty-four hours per day.

That same day, Doyle assumed direct command of Hungnam port functions and commenced loading X Corps personnel, vehicles, and supplies. General Almond had proposed that the 1st Marine Division provide security for the operation. However, because the Marines had already borne the hardest fighting, Doyle insisted that they load first, while the 3rd Division supplied security, with the 7th Division taking over portions of the perimeter until the ROK I Corps cleared the port; then the last U.S. division would embark.[54]

The operation continued to present surprises. Doyle's staff had initially estimated, for example, based on Wonsan, that lift would be required for twenty-five thousand refugees. The number evacuated grew to almost four times that number. Aside from the shipping they required, the refugees had to be fed and kept warm while awaiting embarkation. Similarly, when the redeployment order was received 9 December, ships were still unloading supplies; some of the supplies were required to maintain the defensive perimeter, and the necessity for unloading them tied up some port facilities for several days. Doyle halted unloading when possible, but then his loading officer had to devise loading plans for ships that were not empty at the outset.

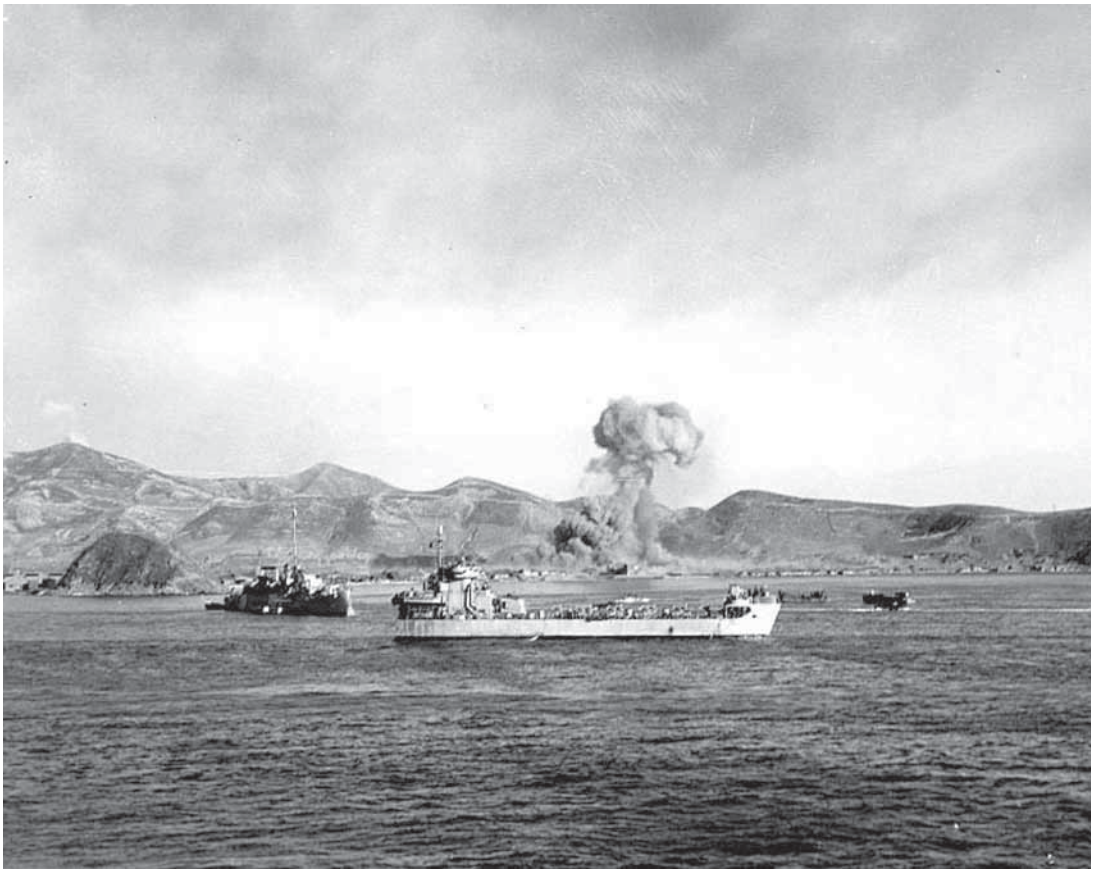
The 12th showed a marked acceleration of the loading operations. By the next day, 55 percent of the personnel, 40 percent of the vehicles, and 70 percent of the bulk cargo of the Marines had been loaded. Doyle finalized plans for lifting the ROK I Corps from Hungnam to Samchok, as requested by X Corps. The corps had estimated a requirement for twelve thousand personnel and "a few vehicles," and accordingly three ships had been committed. However, X Corps continued to revise the lift requirements upward—now twenty-five thousand personnel, seven hundred vehicles (including four hundred two-and-a-half-ton trucks), fifty tractors, and other heavy equipment. Consequently, additional shipping was allocated. Intelligence studies and aerial reconnaissance on 13 December led to the selection of Bokuko Ko as the landing site for the Korean units. Doyle formed TG 90.8 for that purpose on 16 December. It departed for Bokuko Ko on 17 December and commenced disembarking the following day. Meanwhile, by the 14th, 90 percent of the Marines' personnel, 95 percent of their vehicles, and 97 percent of

their bulk cargo had been loaded. The division sailed for Pusan the following day, and the 7th Division commenced loading.

Loading continued on the 17th, amid forty-knot winds, heavy seas, and freezing temperatures. Ships dragged anchor, and small boats drifted loose in and out of the harbor. Winds reached sixty knots in the open sea, and all carrier flight operations were suspended.[55] At 1600 (four o'clock in the afternoon) on 19 December, General Almond embarked on *Mount McKinley,* and command of all shore operations, including defense of the perimeter, passed to Doyle. The admiral pointedly told the general, so that there could be no mistake, "You understand . . . that these troops are now under my command."[56] It was precisely the reciprocal of the procedure by which during an amphibious assault command passes to the ground commander once he has established his command post ashore and so notified the amphibious commander. At the same time, 3rd Division took over the ground defenses.

By 20 December Doyle was confident enough of the operation's trajectory to set the 24th as the tentative "reverse" D-day—or "Dog Day," as it was then known. On the 20th, 7th Division completed loading and 3rd Division commenced loading. By the 22nd it emerged that sufficient shipping was available to outload another four thousand tons of ammunition and thirteen railroad boxcars (South Korea desperately needed rolling stock). Instructions for the Dog Day embarkation were completed and distributed. On the 23rd, additional refugees went on board U.S. ships, and *Missouri* reported to its assigned fire support station. Doyle informed the beachmaster of prospective movements and the beaching sequence of LSTs and LSUs on Dog Day. For the final withdrawal, Doyle maintained a naval gunfire barrage in a zone 2,500 yards wide about three thousand yards from the beaches and harbor. Call fires in addition to this barrage prevented enemy movement through the zone during the day. Doyle ordered the port director to commence undocking all ships at the quays at 2000 (8 PM) and increased harassing fire from naval gunfire support ships. When the last friendly troops were off the beaches, destructive fires rained down on the port area. Particular attention was given the destruction of the remaining railroad cars.[57] Hungnam port closed at 2300. The beaches remained to be cleared the next day.

Early on the day of Christmas Eve, Doyle confirmed H-hour as 1100 (11 AM). Simultaneously, aircraft napalmed a hundred to three hundred enemy troops who had begun to press on the perimeter. As shown on map 4, the perimeter was progressively and rapidly reduced until at 1100 initial combat elements, less the covering forces, commenced loading into the LSTs and LSUs. At 1217, Army personnel prematurely detonated two Pink Beach ammunition dumps, causing loss of personnel and boats. By 1405, friendly forces had cleared all beaches. Five



USS *LSMR-404* and USS *Begor* (APD-127) stand by as U.N. troops demolish the Hungnam port facilities at the end of the evacuation, on 24 December 1950.
U.S. Navy

minutes later, demolition charges were detonated around the waterfront of the inner harbor. At 1457, the hospital ship *Consolation* (AH 15) got under way, and the general sortie from the harbor commenced. *Mount McKinley* departed at 1632, and the operation concluded. Not a single friendly had been left behind.[58]

In the end, the Chinese and North Koreans elected not to attempt any serious interference with operations at Hungnam—in part, because the 1st Marine Division and Navy and Marine air had combined with Old Man Winter to render their forces substantially ineffective, and also, no doubt, because they understood that "their losses would certainly have been greater than they could have hoped to inflict. Fire power from the sea would have dwarfed what they had already absorbed during their attack on the Marines at Chosen."[59] More ammunition was ultimately expended at Hungnam than at the Inchon landing—but then, the operation lasted much longer, plenty of ammunition was available, and as Doyle later pointed out, powder and metal were much less valuable than human life.[60]

Koreans prepare to board an LST during the Hungnam evacuation, 19 December 1950. Other Koreans are transferring their belongings from an ox cart to a fishing boat, at left. Taken on Green Beach.

U.S. Navy

During fourteen days at Hungnam, the U.S. Navy embarked and redeployed 105,000 troops, 17,500 vehicles, and 350,000 measurement tons of supplies (including fuel and ammunition stores). It also lifted 91,000 civilian refugees to safety—a number limited only by time and available shipping. Marine and Air Force air transports flew out an additional 3,600 troops, 196 vehicles, and 1,300 tons of cargo. The number and types of ships employed reveal the operation's magnitude and complexity: one amphibious command ship (AGC), three attack transports, three attack cargo ships, eight MSTS-operated transports and one MSTS cargo ship, five heavy-lift time-charter vessels, fifty-one regular time-charter vessels (Victory ships), two SCAJAP time-charter vessels, eleven U.S. Navy LSTs, twenty-six SCAJAP LSTs, and three LSDs. Most vessels made multiple trips in and out of Hungnam; for example, thirty-seven LSTs made a total of eighty-one trips.

A DECENTRALIZED, SELF-ORGANIZING SYSTEM

Doyle later commented that the command relationships and operational procedures for Hungnam were unique to that special situation and probably ought not

to be used as a template for future amphibious operations. Insofar as the principal factors (and their interrelationships) of future operations were not largely identical to those that obtained at Hungnam, the admiral was absolutely correct.

At another level, however, the admiral was quite wrong and altogether too modest. The key to the remarkable military feat at Hungnam resided in Doyle's implicit recognition that, however experienced they were in amphibious operations, he and his staff had never before encountered a problem even remotely resembling that presented by Hungnam, nor did amphibious doctrine provide any foundation. That is, he and his staff correctly assessed that they faced an ill-structured problem—although they did not have that name for it.

Doyle's decision to devise an ad hoc plan and C2 organization predicated on the analogy of an amphibious operation executed in reverse therefore proved pivotal. That approach allowed experts to exercise their professional judgment freely in their areas of responsibility, to impose structure on the problems each confronted and generate solutions for them, and to communicate informally, directly, and quickly with others whose advice, cooperation, and coordination were necessary. Doyle essentially established and maintained a decentralized, self-organizing system that proved highly adaptive and flexible, well suited to the primary constraint on the operation—time. Experimentation and rapid learning, inevitably essential to the solution of ill-structured problems, were the rule, not conformity to preconceived notions of doctrine and to military formalities. Even the plan and organization themselves resulted from unusually consultative staff planning conferences that facilitated input from those with the requisite expertise. The profound lesson of Hungnam is to be found in the manner in which the operation was approached and organized.

UN control of adjacent sea and air enabled Doyle the complete freedom of action sought by every commander but rarely attained by any. The responsible naval commanders correctly understood that they could hold a perimeter at Hungnam as long as they wished to do so, given established and sustainable control of the sea and air, and the ready availability of naval air and gunfire support. This allowed United Nations forces to control the timing and completion of a well organized and well executed extraction. Conversely, the enemy was limited to ground action only, and that by an already attrited force without the heavy weapons to threaten seriously the redeploying forces.[61]

That historians and the popular imagination have heretofore focused on the Inchon landing is understandable (after all, it was an audacious assault, while Hungnam was a withdrawal) but unfortunate. Although the decision to land at Inchon was a difficult and daring one and succeeded operationally and tactically, it presented no particular novelties to Doyle and his amphibious experts. MacArthur's insistence on Inchon may have violated their professional sensibilities,

but they possessed both doctrine and experience by which to act effectively.[62] By contrast, Hungnam presented novelty at almost every turn, and yet the amphibious group rose to the occasion.

Doyle's ability to emplace a self-organizing system at Hungnam was predicated on the granting by Vice Admiral Joy of his demand that unlike in the Inchon and Wonsan operations, he be permitted to exercise command independently of the Seventh Fleet commander. Joy acceded because of his long-standing professional and personal relationship with Doyle and his practical understanding that amphibious expertise was *the* factor critical to success at Hungnam. Notwithstanding his own misgivings about Joy's decision, the CNO was unwilling or unable to overturn it directly, and his subterfuge of sending a "representative" to Hungnam had, in the event, no effect. For his part, Admiral Struble of Seventh Fleet, for whom Joy's decision must have been a bitter pill, responded fully to Doyle's requests for air and naval gunfire support and at the same time was able to focus on his broader Seventh Fleet responsibilities. Similarly, the presence of a second fully capable amphibious group in Korea under Doyle meant that Doyle could allocate responsibility for west-coast redeployment operations to that group, freeing himself from their detailed supervision and allowing him and his staff to focus on Hungnam.

Several other factors also contributed both to Doyle's willingness to employ a self-organizing system and to its success. His initial amphibious operational experience was as operations officer at Guadalcanal. Because such an operation had never before been attempted, it constituted an ill-structured problem, unlike later operations in the Central Pacific, which were much better structured.[63] Subsequently, Doyle served for two years in Admiral King's amphibious planning section. He thereby had firsthand experience with the practical matters of dealing with ill-structured problems and the need for an adaptable and self-organizing C2 organization.

Doyle's staff comprised entirely officers with extensive World War II amphibious experience, men who were virtually all overqualified for their billets. The same obtained for the officers and men of Forney's Mobile Training Team Able. Doyle's staff was no ordinary collection of skilled individual officers. Rather, it had seen little turnover and had worked together on landing exercises both stateside and in Japan prior to planning and conducting the Pohang Dong, Inchon, and Wonsan landings, along with myriad lesser amphibious lifts. In consequence, Doyle knew his staff members (and those of Team Able) personally and professionally in detail; the staff members knew each other in like manner, and they had evolved effective working relationships. Experience at Inchon and Wonsan had also established effective working relationships also with the principal ground commanders and their staffs. These factors all conduced to the development and

maintenance of trust among the key participants. These men could be depended on to do their jobs without central direction and to improvise when required. Underlying all of this was an effective communications system at Hungnam that permitted ready lateral coordination among the control posts.

In the end, the worst fears of the military commanders in Korea and of the American popular press were not realized in December 1950. Hungnam was no Dunkirk, nor from the Navy and the Marine Corps perspective had it at any time been likely to become one. Many factors contributed to success in Hungnam, including the availability of specialized amphibious shipping and complete control of air and sea, but the defining factors were the presence of experienced professionals, organized effectively, and the willingness of their commander to let them do their jobs.

After rest and recuperation at the "Bean Patch," near Ulsan, 1st Marine Division, still part of X Corps but the latter now integrated with Eighth Army, was ordered out of Army reserve on 9 January 1951 to reenter the fight. The Army's 3rd and 7th Divisions followed close behind.

In spring 1951, Rear Admiral Doyle returned to the United States for a well deserved rest and new duties. In September that year he became president of the Board of Inspection and Survey, serving until the following May, when he assumed the chairmanship of the Joint Amphibious Board. Doyle retired in November 1953, in the grade of vice admiral on the retired list, on the basis of his combat awards. He practiced law for many years in Austin, Texas, and died in 1982.

His work on the Joint Amphibious Board, rewriting existing doctrine for amphibious operations (then embodied in Naval Warfare Publication 22), proved, in the aftermath of the defense unification battles, highly contentious. The board completed its work at the end of Doyle's tenure, publishing its report in January 1954. The report set forth divergent service views on "doctrines and procedures governing joint amphibious operations" that were delaying finalization of a jointly acceptable solution—each page was divided into thirds, with the views of the Navy and Marine Corps, Army, and Air Force for each issue given separately. Curiously, given its chairman's immediate past experience at Hungnam, the report addressed only the problems of the *assault,* primarily matters of phasing and of command and control.[64]

Today, joint doctrine, although entirely consistent with the lessons of Hungnam, provides only minimal guidance for structuring the problem of the amphibious withdrawal. Naval commanders and staffs not already well practiced in the amphibious assault will find only a very rough outline for approaching the problem of the amphibious withdrawal. They are better advised to study Hungnam and its many relatives systematically, to consult the superseded Joint Publication 3-02.1,

Joint Doctrine for Landing Operations, of 2004, and regularly to plan and exercise the amphibious withdrawal. The requirement for such does not come along often, but when it does, fortune will favor the prepared.

NOTES

The author thanks Capt. James Cook, USN (Ret.), and his colleagues in the Joint Military Operations Department of the Naval War College for their thoughtful comments on earlier drafts.

1. The title refers to a 21 December 1950 message (date-time group 210836Z) from Vice Adm. C. Turner Joy, Commander, Naval Forces Far East, to the Chief of Naval Operations, Adm. Forrest Sherman, and Commander, Pacific Fleet, Adm. Arthur Radford, in reference to the Hungnam operation: "Doyle with Struble's excellent air cover and complete support is performing *remarkable military feat* in withdrawal plan [*sic*] army with all of their equipment and without heavy losses" [emphasis supplied]; U.S. Navy Operational Archives, Naval History and Heritage Command, Washington, D.C. [hereafter Navy Operational Archives]. The epigraphs are as quoted from the original sources in Michael Duffy, "Festering the Spanish Ulcer: The Royal Navy and the Peninsular War, 1808–1814," in *Naval Power and Expeditionary Warfare: Peripheral Campaigns and New Theaters of Naval Warfare,* ed. Bruce A. Elleman and S. C. M. Paine (London: Routledge, 2011), pp. 15–28. The epigraphs: from Molyneux's *Conjunct Expeditions: or, expeditions that have been carried on jointly by the fleet and army, with a commentary on a littoral war* (1759); an observation by Wellesley (later Lord Wellington) on his 1808–1809 Peninsular Campaign.

2. U.S. Defense Dept., *Amphibious Operations,* Joint Publication 3-02 (Washington, D.C.: Joint Staff, 10 August 2009) [hereafter JP 3-02], p. xi, available at Defense Technical Information Center, *Joint Electronic Library,* www.dtic.mil/doctrine/.

3. *The National Defense Program: Unification and Strategy: Hearings before the U.S. House of Representatives Committee on the Armed Services,* 81st Cong., 1st sess. (October 1949) (Washington, D.C.: U.S. Government Printing Office [hereafter GPO], 1949), p. 521. Strictly speaking, as has been pointed out, the general was correct: massive over-the-beach assaults against strong enemy defenses, such as those at Sicily and Normandy, have not been, and are not likely to be, practiced by the U.S. military—although one suspects that they just might be by other nations perhaps less chary of high casualty rates. The United States has found other ways to skin that cat, given developments in improved intelligence, vertical-lift capabilities, long-range precision fires, and the concept of ship-to-objective maneuver; see Keith F. Kopets, "Omar Bradley Was Right . . . ," *Marine Corps Gazette* (August 2003), available at www.mca-marines.org/. One need observe only casually the trend of investment by rising powers, such as India and China, in amphibious capabilities to grasp the continued importance of such operations in both peace and war.

4. Recognizing that an entire generation of Navy and Marine officers has, after the wars in Afghanistan and Iraq, virtually no practical experience of amphibious operations, U.S. Fleet Forces Command in 2011 conducted an amphibious training exercise, BOLD ALLIGATOR. Its follow-on, "BA12, tentatively scheduled for early in 2012, will be the largest amphibious exercise conducted by the Navy and Marine Corps in the last ten years. While planning is ongoing, it currently includes: An Amphibious Task Force (ESG-2) consisting of two Amphibious Ready Groups (ARGs—7–8 ships) and a Naval Beach Group (NBG); a Marine Expeditionary Brigade–sized Landing Force (2d MEB) consisting of a complete Marine Expeditionary Unit (MEU), a Regimental Landing Team (RLT), a Marine Air Group (MAG) and a Combat Logistics Regiment (CLR); a Carrier Strike Group (CSG—aircraft carrier, carrier air wing, 3–4 surface combatants); Military Sealift Command (MSC) ships; Mine Counter-Measures

(MCM) forces; Navy Expeditionary Combat Command (NECC) forces; Joint supporting forces; and Coalition amphibious, landing, and MCM forces." See "Bold Alligator 2012 Update," *U.S. Fleet Forces Command Blog* (9 June 2011), usfleetforces.blogspot.com/.

5. JP 3-02, p. xii.
6. See Duffy, "Festering the Spanish Ulcer."
7. The data presented in table 1 are drawn primarily from Milan N. Vego, *Naval Strategy and Operations in Narrow Seas* (London: Frank Cass, 1999), pp. 274–82.
8. Oliver P. Smith to Esther Smith, 14 December 1950, Oliver P. Smith Papers, U.S. Marine Corps Archives, Marine Corps Historical Center, Quantico, Va. [hereafter O. P. Smith Papers].
9. On 20–22 December, eight soldiers died and twelve became severely ill from ingesting methyl alcohol. On 24 December, an Army captain prematurely detonated an ammunition dump while boats and amphibian tractors were still on the beach, killing two men and injuring thirty-four; Commander, Amphibious Group One (CTF [Commander, Task Force] 90), "Report of Operations for Period 25 June 1950 to 1 January 1951," pp. 39–40, Navy Operational Archives; Oliver P. Smith, personal log, entry for 26 December 1950, p. 123, O. P. Smith Papers. The freighter *Senzan Maru,* carrying fifty thousand hundred-pound bags of flour, was mined outside Hungnam harbor on 10 December but was repaired and sailed to Japan. *Enid Victory* grounded at Hungnam but was refloated and sailed to Pusan. A ROK tank landing ship (LST) fouled its propellers in Manila line and wire. Loaded with more than seven thousand civilian refugees, this LST was extracted from the beach but remained in the harbor overnight while the propellers were cleared. A gale came up, during which an uncounted number of the refugees on board died of exposure; see Walter Karig, Malcolm Cagle, and Frank A. Manson, *Battle Report,* vol. 6, *The War in Korea* (New York: Rinehart, 1952), pp. 432–33.
10. Of the many published accounts of the Chosen withdrawal, see Edwin H. Simmons, *Frozen Chosin: The U.S. Marines at the Changjin Reservoir* (Washington, D.C.: U.S. Marine Corps Historical Center, 2002); Gail B. Shisler, *For Country and Corps: The Life of General Oliver P. Smith* (Annapolis, Md.: Naval Institute Press, 2009); and Lynn Montross and Nicholas A. Canzona, *U.S. Marine Operations in Korea, 1950–1953,* vol. 3, *The Chosin Reservoir Campaign* (Washington, D.C.: Historical Branch, G-3, Headquarters U.S. Marine Corps, 1956). The most complete, balanced account of naval operations during the Korean War is to be found in James A. Field, Jr., *History of United States Naval Operations, Korea* (Washington, D.C.: GPO, 1962). See also Malcolm W. Cagle and Frank A. Manson, *The Sea War in Korea* (Annapolis, Md.: Naval Institute Press, 1957). Both of the latter devote considerable attention to Hungnam.
11. The author is indebted to Col. Phillip Ridderhof, USMC, for providing the unpublished essay by Daniel F. Harrington, "Brigadier General Edward Hanna Forney, USMC: Lessons from the Hungnam Redeployment, December 1950—Implications for Operational Maneuver from the Sea"(student thesis, U.S. Army Command and General Staff College, Fort Leavenworth, Kans., 1997). Colonel Forney, who served as X Corps deputy chief of staff for Inchon and Wonsan but made his single greatest contribution at Hungnam, elected to write only about Inchon. For details of the Marine personnel running various sections of the embarkation control group, see Lynn Montross, "The Hungnam Evacuation: Amphibious Operation in Reverse," *Marine Corps Gazette* (December 1951), pp. 18–27. (Notably, the *Gazette* republished Montross's account online in 2010.) Rear Adm. James H. Doyle, who commanded at Hungnam, never published his version of the operation. However, the historian Arthur J. Mayer, on the basis of interviews he conducted with the admiral, composed and published a Hungnam account not long before Doyle died: James H. Doyle and Arthur J. Mayer, "December 1950 at Hungnam," U.S. Naval Institute *Proceedings* (April 1979), pp. 44–65.
12. Fleet Adm. Chester W. Nimitz famously said to a 1960 Naval War College class that "the war with Japan had been re-enacted in the game rooms here [Newport] by so many people and in so many different ways that nothing that happened during the war was a surprise—absolutely nothing except the kamikaze tactics towards the end of the war."

At a strategic level the admiral was largely correct; at the operational and tactical levels, however, the Navy had much to learn about the planning and execution of amphibious assaults.

13. Aside from oblique references passim, JP 3-02, the current doctrinal publication, devotes not quite two full pages to amphibious withdrawal. See JP 3-02, pp. III-70 to III-71.

14. Gen. Douglas MacArthur to Cdr. Malcolm W. Cagle, 19 March 1956, Vice Adm. Malcolm W. Cagle Papers, box 3, Navy Operational Archives [hereafter Cagle Papers].

15. The Soviets had based nearly eighty submarines at Vladivostok, and through five months of the war there were more than six dozen sightings of unidentified submarines in Korean and Japanese waters, of which about one-third were confirmed as Soviet boats; see "Pacific Fleet Interim Evaluation Report, Antisubmarine Operations, 25 June to 15 November 1950," Navy Operational Archives. However, the Soviets elected not to intervene directly, knowing that so doing would risk a wider war, of which they wanted no part. Nonetheless, the United States took the threat seriously, conducting aircraft carrier replenishments some distance from Korea's east coast and, during December 1950, secretly depth-charging what was believed to be a Soviet submarine but turned out to be an uncharted sunken World War II Japanese ship.

16. Field, *History of United States Naval Operations, Korea,* p. 259.

17. The subhead is Admiral Doyle's response during a pre-Inchon briefing to a comment by General MacArthur that if things went awry at Inchon, UN forces would withdraw. Vice Adm. James H. Doyle, USN (Ret.) (lecture, Naval War College, Newport, R.I., 14 March 1974) [hereafter Doyle lecture], p. 12, Naval Historical Collection, Naval War College, Newport, R.I.

18. Henry Mintzberg, Duru Raisinghani, and Andre Thoret, "The Structure of 'Unstructured' Decision Processes," *Administrative Science Quarterly* 21 (1976), p. 246.

19. The surface suicide-boat threat, in particular, necessitated simultaneous structuring of the problem and generation of solutions for it. Initial antiboat efforts were soon complemented by counterboat strikes. Even before the operation was concluded, Adm. R. K. Turner appointed a board to draft doctrine for such efforts. Plans based on that doctrine were included as an annex to Turner's plan for the invasion of Kyushu. See Donald Chisholm, "Industrial Scale Asymmetric Warfare: Japanese Surface Suicide Boats" (paper presented at the 2002 Annual Meeting of the Society for Military History, Univ. of Alberta, Calgary, Canada).

20. Roy E. Appleman et al., *Okinawa: The Last Battle* (1948; repr. Washington, D.C.: U.S. Army Center of Military History, 2000), app. C, available at www.history.army.mil/.

21. Much message traffic among senior Navy officers focused on what would happen on the ground, how Eighth Army, X Corps, and Far East Command would respond, and how the Navy might most effectively operate in light of those conditions. Joy initiated a series of "Flag Officers Dope" messages. See COMNAVFE [Commander, Naval Forces Far East], message date-time group 020642Z, to COM7THFLT [Commander, Seventh Fleet] (information addressees CNO [Chief of Naval Operations]/CINCPACFLT [Commander in Chief, Pacific Fleet], COMPHIBGRU [Commander, Amphibious Group] 1 and 3), 2 December 1950, Navy Operational Archives: "Army 8 has withdrawn to new line. 2nd Division and Turks badly cut up and are no longer effective. CAVDIV [1st Cavalry Division], 24 and 25 Divisions in better shape. Casualties all divisions very heavy. Army 8 right flank exposed. COMNAVFE estimates enemy may have capability of driving down central Korea to Seoul area without opposition and at the same time [send] out large elements to west to cut off straggling units. They may also launch heavy attack from about Yangdok [*sic*] to Wonsan within 2 days. There [is] now lull in Army 8 sector which may be caused by Chinese preparing for new attack or to reform since he has had heavy casualties. The danger of Chinese so engaging Army 8 [that they may] force it to fall back on Chinnampo is fully realized and will be avoided if at all possible. 10 [X] Corps trying effect accelerated withdrawal to 20 mile perimeter around Hungnam except 3rd Division who defends Wonsan at 1st probably later retiring Hungnam since only 1 port can be well defended."

22. See, for example, James D. Thompson and Arthur Tuden, "Strategies, Structures and Processes of Organizational Decision," in *Readings in Managerial Psychology,* ed. H. J. Leavitt and R. Pondy (Chicago: Univ. of Chicago Press, 1964); and W. Ross Ashby, "Principles of the Self-Organizing System," in *Principles of Self-Organization,* ed. Heinz von Foerster and George W. Zopf, Jr. (New York: Pergamon, 1962), pp. 255–78. More than five decades of empirical research into disaster response has consistently demonstrated that emergency responders, facing both surprise and the criticality of time, self-organize even as they address the disaster. In effect, the actual organization is known only after the response is complete.
23. See Donald Chisholm, "Ill-Structured Problems, Informal Mechanisms, and the Design of Public Organizations," in *Bureaucracy and Public Choice,* ed. Jan-Erik Lane (London: Sage, 1987), pp. 77–94.
24. "Because of the lack of essential knowledge of amphibious operations existing in the Tenth [X] Corps, and the lack of time for instruction and training of Army personnel, the only practical solution was to provide qualified personnel for temporary duty with the Tenth Corps. Fortunately such personnel were available to Mobile Team Able. Their services on Tenth Corps staff took on an added importance because the Marine Division was part of the Tenth Corps and the Navy furnished all close air and naval gunfire support." "Summary of Employment of Mobile Training Team ABLE, Troop Training Unit, Amphibious Training Command, Pacific Fleet for the Period 5 July 1950 to 2 January 1951," p. 3, Navy Operational Archives.
25. Doyle and Mayer, "December 1950 at Hungnam," p. 50.
26. Joy later noted that "Doyle complained to me that at Inchon Struble was continually in his hair and interfering with his exercise of command. As Doyle was more valuable to the success of Hungnam than Struble I thought it best to keep them separated as much as possible"; Vice Adm. C. Turner Joy, USN (Ret.), to Malcolm Cagle, 30 April 1956, Cagle Papers. Struble also had amphibious experience: he had served as chief of staff to Adm. Alan Kirk during the Normandy landings, subsequently commanding an amphibious group in 7th Amphibious Force (August 1944–August 1945). After the war, Struble was responsible for western Pacific mine clearance followed by a stint as Commander, Amphibious Force Pacific. He then became Deputy CNO (Operations), April 1948–May 1950, when he was sent to command Seventh Fleet. When the Korean War started, operational control of Seventh Fleet shifted, based on prior arrangements, from the Pacific Fleet commander, Adm. Arthur Radford, to Vice Adm. Joy as CINCNAVFE. Joy was several numbers junior to Struble (that is, below him on the official listing that establishes the relative seniority of officers within a given grade).
27. On the evolution of amphibious command relationships in Korea, see Donald Chisholm, "Negotiated Joint Command Relationships: Korean War Amphibious Operations, 1950" *Naval War College Review* 53, no. 2 (Spring 2000), pp. 65–124. See also Thomas B. Buell, *Naval Leadership in Korea: The First Six Months* (Washington, D.C.: Naval Historical Center, 2002).
28. Vice Adm. James H. Doyle, USN (Ret.), interview with Robert D. Heinl, 31 July–1 August 1966 [hereafter Doyle interview], Robert D. Heinl Papers, U.S. Marine Corps Archives, Marine Corps Historical Center, Quantico, Va.; Doyle lecture, p. 12.
29. Doyle and Mayer, "December 1950 at Hungnam," p. 49.
30. Shepherd's written account departs substantially from the narrative presented here. In his war diary he wrote that he was "informed by Admiral Radford that he had received a dispatch from Vice Admiral Joy stating the military situation was critical and requested that I be ordered to Tokyo for temporary duty with COMNAVFE." Shepherd arrived in Tokyo on 6 December 1950; there, as he recorded, "Admiral Joy gave reasons for asking me to come out. Thought one of the senior commanders might be relieved and if I were present, I might get the job." This was an apparent reference to Lt. Gen. Walton Walker. On 8 December, Shepherd wrote, "In view of MacArthur's orders to evacuate the X Corps from North Korea through the Port of Hungnam, Admiral Joy directed me to remain in Hungnam as his representative . . . on matters relating to the Marine Corps and for counsel and advice in connection with the

amphibious evacuation being planned. I requested Admiral Joy to confirm these orders in writing which he did"; "Korean War Diary," period 2 July to 7 December 1950, pp. 85–86, 92–93, Lemuel C. Shepherd, Jr., Papers, U.S. Marine Corps Archives, Marine Corps Historical Center, Quantico, Va. [hereafter Shepherd Papers]. In a 1956 letter to Lynn Montross, Shepherd commented, "Although it was not necessary for me to exercise my command functions, I had been orally directed to do so by both Admirals Radford and Joy if I considered it expedient. As I recall, I was directed to take charge of the naval phase of the evacuation of Hungnam as Representative of the Commander, Naval Forces, Far East. In compliance with these instructions I exercised close overall supervision of this phase of the operation and made suggestions to both Admiral Doyle and General Almond relative to the embarkation and evacuation of the Marine Forces from Hungnam"; quoted in Montross and Canzona, *Chosin Reservoir Campaign,* p. 337 note 7. Shepherd left Hungnam on 15 December. The following day, after conferring with Joy, he flew to Hawaii, where he reported to Admiral Radford that the evacuation of Hungnam was proceeding satisfactorily and should be successfully completed by 25 December. It seems doubtful that Shepherd "supervised" Doyle.

31. Joy instructed Struble on 2 December 1950, "Based on the overall situation at the time COM7THFLT will decide what fire support ships from the 7th Fleet can be furnished upon request by CTF 90 [Doyle]. . . . As soon as evacuation becomes necessary those ships in the evacuation area will be under the command of CTF 90. COM7THFLT has authority to withdraw ships he supplies when in his opinion this is necessary. COM7THFLT will of course furnish ships for fire support to the maximum extent possible consistent with the demands of the overall situation." Message date-time group 020030Z, Navy Operational Archives.

32. For a detailed account of the operation, see Field, *History of United States Naval Operations, Korea,* pp. 272–74.

33. Commander Amphibious Group Three–Commander Western Redeployment Group (CTG 90.1), "Inchon, Korea: Report of Operations, 4 December 1950 to 10 January 1951," p. 37, Navy Operational Archives.

34. Those discussions included the Army Chief of Staff, Gen. Lawton Collins; General MacArthur; the Commanding General, Far East Air Forces, Lt. Gen. George E. Stratemeyer; Vice Admiral Joy; Lieutenant General Shepherd; the Deputy CNO (Logistics), Vice Admiral Low; and others from the Far East Command staff. Walker did not wish to defend at Seoul–Inchon but rather to withdraw in successive stages to Pusan. MacArthur supported Walker in this and proposed "upon the assembly of the X Corps within a defended beachhead area, to evacuate it by water to Pusan or some place on the southeast coast of Korea, possibly in the vicinity of Samchok, where the X Corps would be landed and united with the 8th Army. At that time the X Corps as a unit would be dissolved and the 3rd and 7th Divisions placed in the 1st and 9th Corps and the 1st Marine Division in Army reserve, all under a unified command." Shepherd commented that the Army's general officers appeared defeated and demoralized. Lemuel C. Shepherd, "Top Secret Staff Conference GHQ, Thursday, 7 December 1950," Shepherd Papers.

35. Field, *History of United States Naval Operations, Korea,* p. 289.

36. Doyle and Mayer, "December 1950 at Hungnam," pp. 47–48.

37. Ibid., p. 48. There had been one previous, little-publicized, amphibious extraction: on 17 August the ROK 3rd Division, cut off and surrounded south of Yongdok, had been withdrawn in landing ships under supporting naval gunfire and redeployed without loss of personnel.

38. Field, *History of United States Naval Operations, Korea,* p. 249.

39. See Richard W. Stewart, *The X Corps in Korea: Staff Operations, December 1950* (Fort Leavenworth, Kans.: U.S. Army Combat Studies Institute, 1991), for a detailed examination of the X Corps end of things during the Hungnam redeployment.

40. "CTF 90 Action Report: Hungnam Redeployment, 9–24 December 1950–21 January 1951," p. 000, Navy Operational Archives.

41. SCAJAP under Vice Admiral Joy, operated U.S. shipping on long-term loan, including the much-needed LSTs. Japanese manned and commanded, these ships were used for Japanese domestic trade and for repatriating Japanese troops and civilians from mainland Asia and the Pacific islands. SCAJAP LSTs had already played vital, if publicly invisible, roles in all of the Korean War amphibious operations. MSTS was formed and placed under Navy control by the Defense Unification Act of 1947.
42. Doyle and Mayer, "December 1950 at Hungnam," pp. 51–52.
43. Field, *History of United States Naval Operations, Korea,* p. 291.
44. "These 390-ton diesel-electric tugs were excellent for the purpose. Fortunately neither broke down except for a period of about three hours each and were speedily repaired. . . . The Harbor Pilot, CAPT Merle R. Dawson, AUS [Army of the United States, i.e., retired], of the 2nd ESB [Engineer Special Brigade] (a professional pilot and Merchant Marine master in civil life) was a most accomplished dockmaster and pilot. His skill saved a great deal of time and further made possible operation of ships even during adverse weather conditions in a congested harbor. . . . Each of the tug crews of eleven were augmented by an additional eight men so that after a few days of training two crews were available on each tug. This was absolutely essential in order for the tugs to operate continuously." "CTF 90 Action Report," p. 14.
45. Doyle and Mayer, "December 1950 at Hungnam," p. 52.
46. "CTF 90 Action Report," p. 17. One thousand two hundred Japanese stevedores secured through the efforts of Rear Adm. Arleigh Burke and quartered on board *Shimano Maru,* also loaded cargo.
47. Ibid., p. 12 [emphasis added].
48. Doyle and Mayer, "December 1950 at Hungnam," p. 53. The subhead is from the Doyle lecture.
49. Doyle believed there was no need for *Missouri*'s additional firepower but acceded to Almond's request that it be employed.
50. Doyle and Mayer, "December 1950 at Hungnam," p. 53.
51. Ibid.
52. Field, *History of United States Naval Operations, Korea,* p. 288. The eight thousand cargo nets ordered and supplied to the amphibious group from Japan indicate the magnitude of the operation.
53. There was some back-and-forth over dusk-to-dawn combat air patrol. Struble recommended that night defense of Hungnam from air attack be based on antiaircraft (AA) fire rather than night combat air control. Doyle, however, stated that AA would not be used except in extreme emergency, because of air cargo operations and congestion in the harbor and embarkation area. He requested two night fighters on station. Struble directed CTF 77 to "comply in-so-far as practicable." "Commander in Chief U.S. Pacific Fleet, Interim Evaluation Report No. 1, Period 25 June to 15 November 1950, annex AA, 'Commander Amphibious Group ONE (CTF 90), Report of ComPhibGru One (CTF 90) Operations for Period 25 June 1950 to 1 January 1951,'" 17 January 1951, file A12/31-wt, ser. 002, p. AA-19, Navy Operational Archives.
54. Doyle and Mayer, "December 1950 at Hungnam," p. 51.
55. Four landing craft drifted out to sea. Two later had to be sunk by naval gunfire.
56. Doyle commented to Heinl that "it was necessary to hold Almond down." Doyle interview.
57. "CTF 90 Action Report," p. 27.
58. Doyle directed that "officers of at least commander rank function as beachmasters with orders to check personally that not a single U.N. soldier, sailor, or marine was left behind." Doyle and Mayer, "December 1950 at Hungnam," p. 55.
59. Cagle and Manson, *Sea War in Korea,* p. 188.
60. Naval gunfire support for TF 90 during 7–24 December 1950 totaled 162 rounds of sixteen-inch gunfire, 2,932 of eight-inch, 18,637 of five-inch, and 71 of three-inch, as well as 185 40 mm rounds and 1,462 rockets. Ibid.
61. By the time of Hungnam the Soviets had already begun delivering MiGs to the North Koreans in Manchuria, but they elected not to approach the perimeter closely.
62. See Donald Chisholm, "Amphibious Assault as Decisive Maneuver in Korea," in *Naval*

Power and Expeditionary Warfare, ed. Elleman and Paine, pp. 113–28.

63. See Donald Chisholm, "Right Man, Right Place, Right Time: Richmond Kelly Turner (1885–1961)," in *Nineteen-Gun Salute: Case Studies of Operational, Strategic, and Diplomatic Naval Leadership in the 20th and Early 21st Centuries,* ed. John B. Hattendorf and Bruce A. Elleman (Newport, R.I.: Naval War College Press / Washington, D.C.: U.S. Government Printing Office, 2010), pp. 35–50, for a discussion of the rapid evolution of practical thought about the problems of amphibious operations in the Pacific theater during World War II.

64. Joint Amphibious Board, *Doctrines and Procedures Governing Joint Amphibious Operations, with Divergent Service Views,* Report on Joint Amphibious Board Project No. 1-52 (Little Creek, Va.: 15 January 1954), available at U.S. Army Center of Military History Library, Carlisle, Pa.

THE SOUTH AFRICAN NAVY AND AFRICAN MARITIME SECURITY

Deane-Peter Baker

The onset of pirate attacks on merchant vessels off the Horn of Africa in recent years has put Africa's maritime security increasingly in the international spotlight. Recent times have also seen the advent of the African Union and with it a commitment to "African solutions to African problems." Despite this, African states have made little active contribution to securing Africa's maritime domains. Yet, as the scholar and analyst Augustus Vogel, of the Africa Center for Strategic Studies in Washington, D.C., points out, doing so

> is vitally important to Africa: illegal fishing undercuts Africa's economic development and exacerbates its food security challenges; piracy makes badly needed trade and investment in Africa more risky and expensive; the continent is becoming an increasingly active drug trafficking hub; the growing drug trade, in turn, is giving international criminal syndicates a foothold within certain African governments, weakening their ability to address other national priorities; and illegal commerce (such as oil bunkering, transport of counterfeit materials, and theft) impacts legitimate businesses and world markets. In short, many of Africa's emerging threats arrive by sea.[1]

Most glaring has been the lack of a significant contribution by the South African Navy (SAN), arguably sub-Saharan Africa's most capable naval force. This article begins with a brief outline of the history of South Africa's navy—a history that accounts for some of the

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contemporary navy's shortcomings. The article then outlines the SAN's current capabilities and addresses the current constraints it faces. The article closes by looking to the future and advocating steps and measures that will need to be taken if the South African Navy is to make a significant contribution to African, or indeed even South African, maritime security.

A BRIEF HISTORY OF THE SOUTH AFRICAN NAVY

To grasp fully what we might call the "philosophical" factors that limit the effectiveness of today's South African Navy, it is helpful to have a sense of the history of this force. The first officially recognized naval unit formed in South Africa was raised in 1885 in what was then the Natal Colony, as a consequence of a perceived threat emerging from tensions between Britain and Russia over Afghanistan. Technically a coastal artillery force, this unit, the Natal Naval Volunteers, never took part in a maritime engagement. It did, however, serve with some distinction as part of the British forces engaged in the second Anglo-Boer War, and again during the Zulu rebellion of 1906.[2]

In 1905 the Cape Colonial government followed the lead of the Natal Colony by establishing a branch of the Royal Naval Volunteer Reserve (RNVR), commonly known as the Cape Naval Volunteers.[3] With the 1910 formation of the Union of South Africa in the aftermath of the second Anglo-Boer War, this system of naval volunteers was extended to include the whole of the Union, through the formation in 1912 of the South African Division of the Royal Naval Volunteer Reserve (RNVR[SA]), under the command of the Royal Navy.[4] Mobilized for service in World War I, the RNVR(SA) contributed twelve officers and 267 sailors, who between them served in every theater of the war.[5]

The experience of the First World War convinced the Union government of the need for a full-time naval capability, and in 1922 the South African Naval Service (SANS) was established to complement the capability provided by the volunteers of the RNVR(SA). The advent of the SANS brought with it South Africa's first naval vessels—a survey vessel and two minesweeping trawlers on loan from the Royal Navy. The recommissioning of these vessels under the prefix HMSAS (His [or Her] Majesty's South African Ship) on 1 April 1922 is marked as the South African Navy's birthday.[6]

Despite this promising start, things quickly went badly for the fledgling SANS. The global effects of the Great Depression led to severe budget cuts. By 1934 all three of the SANS's vessels had been returned to the Royal Navy, and by the time of the outbreak of the Second World War in 1939 it "had virtually ceased to exist."[7] The pressing demands of the war stimulated the Union government to relaunch its full-time naval capability under a new name, the South African Seaward Defence Force (SDF).[8] The service experienced rapid growth, and by 1945

the authorized personnel establishment "had grown to more than 10,000 officers and ratings, with some 89 assorted vessels [all converted commercial vessels] in commission."[9] SDF vessels did duty in the South African and Mediterranean theaters. In addition, as in the First World War, the volunteers of the RNVR(SA) provided manpower to the Royal Navy, with members eventually serving in every maritime theater of the war. South Africa's navy was once again renamed in 1942, this time as the South African Naval Forces, and in 1944 it received its first genuine warships, in the form of three Loch-class antisubmarine frigates. (One of these vessels, HMSAS *Natal,* performed a remarkable, probably unique feat: only hours after leaving the builder's yard and en route to workup training, it located and sank a German submarine, *U-714.*)[10]

In the aftermath of the Second World War the navy underwent its final name change, becoming known in 1951 as simply the South African Navy.[11] What followed was a period of expansion that is generally considered to have been the navy's heyday. Between 1957 and 1962 the SAN received six blue-water-capable vessels—a Type 15 frigate, two W-class destroyers, and three Type 12 frigates—all purchased from Britain under the terms of the Simon's Town Agreement.[12] The addition of a squadron of Avro Shackleton long-range maritime patrol aircraft and a squadron of Blackburn (later Hawker Siddeley) Buccaneer maritime strike aircraft to the inventory of the South African Air Force (SAAF), as well as Westland Wasp shipboard antisubmarine helicopters, added significantly to South Africa's ability to patrol and secure its maritime environment. The purchase of the Danish tanker *Annam* in 1967 and its subsequent conversion into the underway replenishment vessel SAS *Tafelberg* gave the SAN the ability to conduct long-duration and long-range missions. The additional acquisition of three *Daphné*-class submarines from France during the late 1960s and early 1970s rounded out the SAN as a small but capable and well-balanced navy, optimized for operations against other naval forces.[13]

The Afrikaner nationalist government that ruled South Africa from 1948 until the end of the apartheid era in 1994 harbored a deep hostility toward Britain, as a consequence of that nation's colonial history in South Africa. Despite this, and because of the perceived threat posed by the Soviet Union, from the end of the Second World War until the mid-1970s it seemed virtually axiomatic that South Africa would side with Britain and the West in any future war against the Soviet bloc, serving as "the vigilant 'Guardian of the Cape Sea Route.'"[14] For this reason, in light of the close historical ties between the South African Navy and the Royal Navy, "the SA Navy was perceived by many of the senior officers in both navies as simply an extension of, and in all but name and administrative function, an operational section of the Royal Navy."[15] However, the South African government's policy of apartheid led to British withdrawal from the Simon's Town Agreement

in 1975, thereby ending the historical close ties between the South African and Royal Navies.[16]

By the latter part of the 1970s South Africa was facing increasing international isolation as well as the heavy budgetary demands imposed by its counterinsurgency campaign in South West Africa (now Namibia) and its involvement in civil war in Angola and warfare in Rhodesia (now Zimbabwe). This isolation and the imposition of a mandatory United Nations (UN) arms embargo made it increasingly unlikely that the SAN would be called on by the West to play a role in countering the Soviet navy. As a result, in February 1977 the leadership of the South African Defence Force (SADF) effectively reduced the role of the SAN to that of a coastal force.[17] The planned acquisition of two Type A69 corvettes and two *Agosta*-class submarines from France was canceled. A project to acquire *Reshef*-class missile strike craft from Israel did, however, go ahead, with a final tally of nine entering into service, three built in Israel and six in Durban.[18] The strike craft, armed with between six and eight Scorpion surface-to-surface missiles (SSMs) and two OTO Melara 76/60 mm compact dual-purpose guns, entered service between July 1977 and July 1986.[19] By the latter date the last remaining frigates that had entered service with the SAN in the late 1950s and early 1960s had been withdrawn from service;[20] the strike craft were left as the backbone of South Africa's coastal navy of the 1980s and 1990s.

Struggling under a much-reduced budget, by the end of the 1970s the SAN had nonetheless found a niche that enabled it to maintain its relevance. The strike craft were used on a regular basis to insert and recover special forces teams behind enemy lines, and "for some of the more distant and covert operations the Navy demonstrated how rapidly and how effectively it had mastered the complex and difficult task of operating submarines by using them to insert small numbers of men and then recover them on completion of their task."[21] More traditional naval tasks were also carried out. It was proclaimed by one observer in 1985 that "Soviet naval movements in the region are shadowed routinely . . . [mainly by] the submarines. Apparently they [South African submarines] have grown quite adept at [these operations], not least vis-à-vis other submarines."[22]

Apart from the purchase of four small, locally built minehunters in the early 1980s, the only major naval acquisition of that period was the domestically designed and constructed six-thousand-ton (12,500 tons full load) support vessel SAS *Drakensburg,* which was commissioned in 1987. Three years prior to that, the navy's other support vessel, the ageing SAS *Tafelberg,* had completed a refit "that allowed her to carry a company-strength landing force, two medium helicopters and six small landing craft as well as the addition of a small hospital. This provided the SA Navy with a limited amphibious support capability."[23] This was, in all likelihood, an attempt to afford additional maneuver capability to SADF

commanders conducting cross-border operations against the South West Africa People's Organization (SWAPO) and the supporting People's Movement for the Liberation of Angola (MPLA) and Cuban forces in Angola. This amphibious capability was, however, never used operationally, and SAS *Tafelberg* was decommissioned in 1993.[24]

The period of South Africa's transition to democracy (from 1990 to 1994) was a particularly painful one for the South African Navy. Massive cuts to the defense budget forced the SAN to cut its personnel complement by 23 percent, with effect from the SAN's sixty-eighth birthday, 1 April 1990. Another consequence of the cut was the cancellation of a long-running and fairly advanced program to build submarines in South Africa. The one positive development of this period was the purchase in February 1993 of *Juvent,* originally built as an icebreaking Arctic supply vessel for the Soviet navy. Renamed SAS *Outeniqua,* this vessel replaced the decommissioned *Tafelberg* and proved particularly useful in supporting the South African research base in Antarctica. The capability represented by this vessel was, however, lost to the SAN in 2005, when *Outeniqua* was sold back into the private sector as a cost-cutting measure.[25]

THE SOUTH AFRICAN NAVY TODAY: CAPABILITIES

With the fall of the apartheid regime, the African National Congress (ANC), under the leadership of Nelson Mandela, came to power in South Africa's first democratic elections in 1994 and has remained in power since. The South African Navy inherited by the new government was in a poor state. The personnel cuts instigated in 1990 had affected both morale and capability, and operational capability amounted primarily to two support vessels (reduced to one in 2005), a handful of small ageing strike craft optimized for the more peaceful waters of the Mediterranean, and three diesel-electric submarines rapidly reaching the ends of their useful service lives (all three *Daphné*s would be decommissioned by 2003).[26] There was considerable concern that the SAN might not survive at all in any useful form. Given the very pressing socioeconomic needs that had to be addressed by the new government and the fact that South Africa was now at peace with its neighbors and facing no discernible military threat, many believed that the South African military would be significantly reduced in size and capability, possibly even disbanded altogether.

Thankfully for the SAN, this did not happen. Rather than "disarm, demobilize, and reintegrate" the apartheid-era South African Defence Force, its proxies, and the armed wings of the liberation movements, the new government instead integrated them into a new national military force, the South African National Defence Force (SANDF).[27] The ANC government also launched an ambitious and controversial Strategic Defence Procurement (SDP) package, announced in

September 1999, which focused on purchasing new ships for the navy and new aircraft for the air force.[28] Under the terms of the SDP the navy has since received four MEKO A200SAN frigates, three Type 209/1400 submarines (SSKs), and four Westland Super Lynx maritime helicopters.[29]

The frigates, designated as the Valour class in SAN service and displacing 3,590 tons, combine a modular architecture with an X-form superstructure that very effectively reduces radar signature. Propelled by two MTU sixteen-cylinder, V-configuration 1163 TB 93 diesel engines and a fully independent "combined diesel and gas turbine–waterjet and refined propellers" (CODAG-WARP) propulsion system, these vessels have a sustained speed of twenty knots, with a cruising range of eight thousand nautical miles, and they are capable of over twenty-eight knots. Primary armament consists of eight MM40 Block 2 Exocet SSMs and one OTO Melara 76/62 mm compact dual-purpose gun. Air defense is secured by sixteen vertically launched, locally developed Umkhonto surface-to-air missiles (plus sixteen reloads), missiles that can engage multiple targets at ranges in excess of twelve kilometers. Secondary weapons include one twin 35 mm gun, two 20 mm guns, and two 12.7 mm machine guns. Antisubmarine warfare capability is provided by hull-mounted sonar and an embarked Super Lynx Mk 64 helicopter. (Each ship can accommodate two medium helicopters, though normally only one will be deployed.)[30]

The Type 209/1400 submarines displace 1,454 tons dived and are capable of a dived speed of 21.5 knots (ten knots surfaced). They can dive 250 meters and can cruise up to fifty days without replenishment. Primary armament comprises eight twenty-one-inch torpedo tubes that can be reloaded under way (and, if necessary, submerged) from a store of an additional six torpedoes. Four of the tubes are also capable of minelaying, and the South African Type 209s have been modified from the standard design to give them the ability to support special forces.

In addition to the new frigates and submarines, the SAN of today is rounded out by a number of legacy vessels. Chief among these is the support vessel *Drakensburg.* Two of the original nine Warrior-class strike craft remain operational, now with their SSMs removed and redesignated as offshore patrol vessels.[31] Three small T-Craft inshore patrol boats of glass-reinforced-plastic sandwich construction, ordered in 1991, were commissioned in 2003. The unarmed SAS *Protea,* commissioned in 1971, undertakes hydrographic survey duties, and the SAN also operates two small minehunters, a number of locally built Namacurra harbor patrol boats, and three tugs.

THE SOUTH AFRICAN NAVY TODAY: CONSTRAINTS

On paper, at least, the South African Navy is the most capable naval force in sub-Saharan Africa. Despite this, barring a handful of fishery protection and

antismuggling operations conducted in home waters and the occasional sea rescue operation, the SAN has made little apparent contribution to African maritime security.[32] Yet securing the maritime domain must be considered to be among Africa's more significant challenges.

The SAN's relative inactivity in this regard is somewhat surprising, given the leading role South Africa has taken on itself in addressing security challenges across the continent over the past fifteen years. Since being welcomed back into the international fold and shedding its pariah status, South Africa has played a leading role in addressing conflict and defusing tensions in the Democratic Republic of the Congo, Burundi, Côte d'Ivoire, and São Tome and Principe, and it has contributed additional forces to African Union (AU) and UN missions in the Comoros, Darfur, Ethiopia, Eritrea, and Liberia. Under the leadership of former president Thabo Mbeki (Mandela's successor), South Africa was also one of the driving forces behind the creation of the AU out of the ashes of the largely irrelevant Organization of African Unity. In recent times the AU has increasingly acknowledged the importance of maritime security. Despite all this, until recently the only direct use of South Africa's naval capability in support of African security was the deployment of a flotilla of three Namacurra harbor patrol boats (increasing to five in 2005) to the Burundian section of Lake Tanganyika between 2003 and 2007, as part of the AU and subsequent UN peacekeeping forces in Burundi.[33]

One notable operational contribution by South Africa to maritime security in recent times, however, involved the Southern African Joint Surveillance Patrols.[34] For one month, March 2009, officials from Kenya, Mozambique, South Africa, and Tanzania conducted joint patrols on board the South African offshore patrol vessel *Sarah Baartman.* During the operation forty-one vessels were inspected, ten of which were fined; a further six were arrested for violations of national maritime laws. One of the seized vessels, detained in Tanzanian waters, had on board over three hundred tons of illegal tuna. While this cooperative venture was an important step in the right direction, it must be noted that it did not involve South African Navy assets but rather an environmental-protection ship from the Department of Agriculture, Forestry, and Fisheries.

An important recent exception to the SAN's disengaged status quo has been the commencement of antipiracy patrols in the Mozambique Channel. According to comments by Lindiwe Sisulu, South Africa's Minister of Defence and Military Veterans, the first informal steps in launching these patrols were taken in response to an attack by Somali pirates on a Mozambican vessel in "the waters of SADC [Southern African Development Community] around the 28th of December," in 2010.[35] Although information is somewhat scarce, calls for assistance by the Mozambican government and that of Tanzania seem to have led to the

formalization of these patrols. The patrols involve a single frigate on station at any one time, apparently "carrying a contingent of Special Forces and Maritime Reaction Squadron (MRS) commandos to conduct boarding operations."[36] An unconfirmed report suggests that additional support is being provided by land-based aircraft launched from a strip at the popular diving resort of Pemba, in northern Mozambique.[37]

Though antipiracy patrols in the Mozambique Channel by the SAN must be seen as encouraging, this seems to be largely a symbolic and ad hoc arrangement, and there are questions as to whether it can be sustained. It must, therefore, be conceded that thus far the SAN's contribution to African maritime security has been very limited indeed. What, exactly, explains the lack of impact of this seemingly capable naval force? The answer is a combination of a mismatch between the assets the navy has available and the security challenges it needs to combat, budget constraints, and a lack of political will.

The Capability/Challenge Mismatch

As its brief history as given above illustrates, the South African Navy has traditionally played the role of "Guardian of the Cape Sea Route," first in service of Great Britain in the First and Second World Wars and later as a perceived part of the "West," in response to the threat posed by the naval forces of the Soviet Union. This history is relevant today because of the impact it has had on the SAN's perception of its own role and function. First and foremost, the SAN of today is conceived of and equipped as a "counternavy" force. That is to say, it is structured and equipped to give South Africa the ability to engage in battle with an as-yet-undefined enemy naval force.

This is clearly evident when one considers its primary assets—stealth frigates, armed primarily with surface-to-surface and surface-to-air missiles, and torpedo-armed diesel-electric submarines. One can easily see in these acquisitions a harking back to the service's "golden era" of the 1960s and early 1970s. Yet it is plain that the likelihood of the SAN engaging enemy surface combatants, maritime strike aircraft, or submarines in the Cape sea-lanes is extremely remote indeed. While the frigates do have a certain general-purpose utility beyond their conventional war-fighting capabilities, that same utility could most certainly have been achieved with cheaper vessels. Also, one has to wonder at the usefulness of the SAN's submarine force: only three ships have been sunk by submarine-fired torpedoes in the sixty-six years since the end of the Second World War.[38] The submarines do obviously have some value in their ability to conduct surveillance operations and support special forces, but this hardly seems to justify the expense of these demanding and sophisticated vessels.

As Vogel points out, this misalignment of operational philosophy, structure, and equipment with the actual threats being faced is a common one in the African context:

> Of the 33 independent maritime nations in sub-Saharan Africa, only five—Cape Verde, Liberia (when legislation is finalized), São Tome and Principe, the Republic of Mauritius, and the Republic of Seychelles—have maritime forces that identify themselves as coast guards rather than navies. Yet Africa's maritime security challenges are most often comprised of threats such as illegal fishing, narcotrafficking, and maritime disaster response—threats requiring the technical skills and collaborative relationships with civilian organizations typical of a coast guard.[39]

Given that the most pressing maritime threats facing South Africa and the continent as a whole are in fact illegal fishing, piracy, drug trafficking, and illegal commerce, the most glaring gap in the SAN's current capabilities is the lack of a genuine inshore/offshore patrol capability.[40] The frigates can be used for offshore patrol, but as Minister Sisulu recently commented, "some of our frigates are too big to move around the coast."[41] The two remaining operational Warrior-class strike craft, though redesignated as offshore patrol vessels, are of limited utility, having reached the end of their effective service lives. The three T-Craft inshore patrol vessels have inadequate range and often struggle in the rough seas off South Africa's coast. The SAN shares responsibility for patrolling its waters with the Department of Agriculture, Forestry, and Fisheries (which operates *Sarah Baartman* and three *Lilian Ngoyi*–class inshore patrol vessels) and the South African Police Service (or SAPS, operating a handful of small boats), but even this collective capability falls well short of what is necessary to patrol effectively South Africa's territorial waters and its vast (1,553,000 square kilometers) exclusive economic zone (EEZ).[42]

Exacerbating the situation is a much-eroded South African Air Force maritime patrol capability. Since the retirement in 1984 of the venerable Avro Shackletons and, in 1993, of the smaller P166S Albatross maritime patrol aircraft purchased in the late 1960s, the SAAF has relied for maritime patrol primarily on five ancient, though upgraded, Second World War–era Douglas C-47TP Turbo Dakotas (referred to affectionately as the "TurboDaks" or as "Dakletons," in reference to the Shackletons they replaced).[43] Even setting aside their frailty, these senior citizens of the air lack the necessary range to cover the far reaches of South Africa's maritime area of responsibility. As one analyst points out,

> In September 1996 the South African Air Force flew its last long range patrol to the South African owned Prince Edward Island group in the South Atlantic. The aircraft that undertook this flight, a Boeing 707, has since been retired from service because

> of a lack of funding to maintain it. Since that time it is estimated that nearly a million tonnes of Patagonian toothfish have been illegally harvested from the area because of a lack of military control over the area by the South African Government, resulting in a substantial financial loss to South Africa.[44]

The air force's Buccaneer maritime strike aircraft once offered a secondary maritime patrol capability, but they have been discarded and not replaced. There is no evidence that the SAAF plans to employ its new light, multirole SAAP Gripen fighters in this role; given their relatively short range, these aircraft are not particularly suited for maritime patrol, even as a secondary function. Some capability is provided by the SAAF's Cessna C208 Caravan light turboprop aircraft, for which three sets of Argos 410-Z airborne observation systems were purchased in 2007.[45] However these aircraft, along with the "Dakletons," are scheduled for retirement in 2015, with no certain replacements on the horizon.

Budget Constraints

The creation of the South African National Defence Force in 1994 was, in domestic political terms, a considerable success. While there were inevitable tensions among former enemies, the process was achieved relatively smoothly, and significant follow-on hostilities were averted. In purely military terms, however, the SANDF has been less successful. Perhaps inevitably, the impressive war-fighting capability that it inherited from its primary predecessor, the apartheid-era SADF, has been eroded by such factors as the higher priority accorded to the ten-year process of integrating the various former apartheid-era forces into one national defense organization; downsizing of the SANDF (particularly the army) and the slow pace at which it is proceeding; the increasing obsolescence of military equipment (despite big-ticket purchases for the air force and navy under the Strategic Defence Procurement package); and severe budgetary constraints in the face of pressing national social and health problems, especially a high rate of HIV/AIDS. In addition, the SANDF, particularly the army, has faced an unexpectedly high operational tempo in its contributions to peacekeeping missions across the African continent.

All of this has meant that, as has often been the case in its eighty-eight-year history, the SAN currently finds itself low on the budgetary priority list. Defense expenditure in South Africa is a mere 1.3 percent of gross domestic product (GDP);[46] this amounts to a paltry ZAR 30.4 billion (about U.S.$4.4 billion) for the 2010–11 financial year.[47] Approximately 7 percent of the defense budget is allocated to the navy's operational budget, around ZAR 2.1 billion (about U.S.$308 million). In a briefing to South Africa's parliament in March 2010, a Department of Defence spokesperson announced that this budget meant that in 2010–11 the SAN would be able to spend only ten thousand hours on patrol at sea. According

to a media account of the briefing, "in 2012 and 2013 this would be cut . . . to just 9000 hours. Divided between the operational fleet [not including inshore patrol vessels or support vessels,] . . . this translates to just over 41 days per ship for the financial year . . . ; or about one ship or submarine patrolling SA's 71,460 square km territorial waters on any given day. Each ship will spend about 324 days in port."[48]

Lack of Political Will

Limitations in budget and capability, while obviously important, do not alone explain why the South African Navy has not contributed to such maritime security efforts as the multinational effort to combat piracy in the waters off the Horn of Africa. In a briefing to Parliament's Defence Portfolio Committee in November 2010, Rear Admiral Bernhard Teuteberg (SAN Director Maritime Strategy) stated that the SAN is capable of mounting antipiracy operations off the coast of Somalia (though he warned that this would be difficult to sustain for more than six months and that even a short deployment would have "implications").[49] To paraphrase an old saying, where there is political will, there is a way. For example, "in December 2004, SAS *Drakensberg* deployed to Haiti with SA Police Service, SA Special Forces, SA Air Force and SA Military Health Service assets to provide logistic support and protection for the South African and Haitian Presidents during the . . . island's 200th Anniversary of its independence."[50] That round-trip journey of over twelve thousand miles illustrates the South African government's willingness to order significant naval operations when it deems necessary. So what accounts for South Africa's lack of willingness to employ its naval assets for significant maritime security operations, particularly beyond its home waters?

One possible contributing factor for South Africa's reluctance to contribute to antipiracy efforts is that it has virtually no merchant fleet (the only vessel on the commercial register, SA *Oranje,* will soon be retired). Political rhetoric aside, therefore, policy makers may have felt that South Africa has little vested interest in antipiracy operations in international waters. This view would unquestionably ignore the broader impacts of piracy on trade affecting the South African economy.[51] (The newly commenced antipiracy patrols in the Mozambique Channel, as well as other developments I will discuss below, suggest that this perception that "piracy is not our business" is now starting to change.) Another factor in the short and medium terms has been the continuing effects of South Africa's focus on the FIFA World Cup, which ran to its completion in mid-July 2010. Preparations for the World Cup included large-scale government investment in public works, from new and upgraded stadia to public transport infrastructure, at an estimated cost of U.S.$3.5 billion.[52] This included a very significant investment in security, with the SAN playing its part in Operation KGWELE (the SANDF

World Cup security mission) by deploying three of its Valour-class frigates off Cape Town, Port Elizabeth, and Durban in support of army special forces and the navy's own MRS. The frigates also provided radar feed to assist the air force in securing the skies over the World Cup venues against a 9/11-style attack. Two submarines were also sent on patrol, and a number of other vessels were deployed as support platforms.[53] This operation, while apparently successful, absorbed considerable resources, leaving the SAN, already suffering under the budget constraints outlined above, somewhat anemic.

Perhaps more significant is the fact that recent defense decisions under South Africa's current president, Jacob Zuma, suggest a shift in policy. Under his predecessor, Thabo Mbeki, South Africa's foreign policy was driven by the notion of an emerging "African Renaissance," to be made possible in part by a vigorous commitment to peace and stability operations on the continent. President Zuma was elected to the leadership of the ruling ANC in an acrimonious contest with then-president Mbeki in 2007 (thereby effectively reducing Mbeki to lame-duck status), largely riding on a wave of dissatisfaction over Mbeki's perceived lack of focus on domestic issues. Zuma was elected president in 2009, and since then South Africa has maintained its existing peacekeeping and related commitments but has notably taken on no significant additional external missions. This is particularly noteworthy in that June 2009 marked the end of the SANDF's ten-year deployment to Burundi.[54] That effectively reduced the number of externally deployed troops by around a third.[55] The Zuma administration has preferred to commit troops to secure South Africa's borders, reversing a decision made under Mbeki to turn over border security entirely to the SAPS. Currently it is planned that under Operation CORONA over 3,600 SANDF troops, a significant proportion of the South African Army's deployable manpower, will be on South Africa's borders by 2014.[56] Taken together, these factors suggest that South African national policy is shifting away from expeditionary engagements involving military forces and focusing more on domestic priorities.

INTO THE FUTURE

Despite the many negatives outlined in this article, there have in recent times been signs of movement in the right direction. One has been the emergence of a new, as yet unpublished, maritime security strategy. While the value of this strategy will obviously depend on its content, the fact that maritime security has received high-level attention is itself encouraging. Comments made in Parliament relating to the content of the strategy also give reasons for hope. For example, Minister Sisulu indicated in response to a question posed by a member that there are plans afoot to cover all of South Africa's EEZ with "some form of sensor, or combination of sensors that will produce the most optimal coverage."[57]

Another potentially positive development is the possible revival of Project BIRO, a program to replace the SAN's ageing and limited inshore and offshore patrol capability. By Minister Sisulu's admission, BIRO had been "shelved," but a recent media report indicates that the Simon's Town–based Institute for Maritime Technology has been issued a "request for quotation" by the SAN for "strategic technology and engineering support services during the project study phase of the acquisition of a multi-mission patrol capability." Furthermore, "the Estimates of National Expenditure (ENE) tabled by Minister of Finance Pravin Gordhan in February noted that the National Treasury will fund the acquisition of new ships for the Navy from the 2013/14 financial year," specifically "the replacement of the offshore and inshore patrol vessels, procurement of new harbour tugs and the replacement of small boats."[58]

Further potentially good news concerns Project SAUCEPAN, the South African Air Force's program to replace its almost septuagenarian Douglas C47 Dakota maritime surveillance aircraft. In the words of the chief of the SAAF, Lieutenant General Carlo Gagiano, SAUCEPAN has been "pulled to the left"—that is, pushed higher on the agenda—by the arrival of piracy in southern African waters and is now considered "urgent and important."[59]

While these are certainly encouraging signs, they do not necessarily indicate that South Africa is moving toward a comprehensive and well designed approach to ensuring its own maritime security and contributing to that of other African nations. For one thing, there is every chance that these developments will founder on the rock of budgetary constraint. Perhaps even more importantly, there are worrisome indicators that the new maritime security strategy is an ad hoc, knee-jerk reaction to the fact that piracy has finally reached SADC waters.[60] While piracy is one of the things the SAN must be capable of addressing, it is by no means the only, or even the main, security threat that must be considered.

Ultimately what is needed is a broad and comprehensive rethinking of South Africa's approach to securing its borders, people, and interests. A recalibration of this kind will have to be realistic about the level of defense expenditure South Africa can afford (given the pressing social challenges that must be addressed by the government on a very small tax base) and must be set against a realistic assessment of the threat environment that South Africa is likely to face.[61] These considerations together will likely point to a reduction of South Africa's ability to contribute to peace and stability operations on the ground in far-flung parts of Africa (as mentioned above, this reduction seems already to have begun, under the current administration's policy priorities), but this must be weighed against the impact that a more stable and economically successful South Africa will have on the southern African region in the long term.

As I have argued elsewhere, South Africa should focus to a considerable degree on engagement with neighboring countries, with the goal of ensuring their viability as secure and prosperous democratic states.[62] The primary tools in achieving this goal will be economic, legal, and diplomatic. The SANDF and other security organs of the state will have roles to play as well, through such activities as offering training and assistance and sharing intelligence. The tools of so-called developmental peacekeeping will be critical here, though employed preemptively rather than only when an emergency arises that requires the deployment of a traditional peacekeeping or peace-enforcement mission.[63] From another perspective, this approach is what one counterinsurgency expert has called "anti-insurgency."[64]

Critical in this approach is, first, the fact that it could potentially have a far greater impact on African security in the long term than the current "firefighting" model (in which South African efforts go primarily toward addressing conflicts that have already broken out). Second, though self-interested, this approach does not represent a shirking of South Africa's international responsibilities. For as South Africa's neighbors grow in prosperity and security they will develop both the desire and the capability to sustain that success by seeking the security and prosperity of their own neighbors. What should ideally emerge is something like the "ink-spot theory" of counterinsurgency, in which "spots" or areas of security and stability spread and eventually merge with other zones of security and stability, just as drops of ink coalesce on paper.[65]

Like those of most African nations, South Africa's military has historically been, and is currently, "army heavy," most of its budget and capabilities invested in (largely conventional) land forces. A reconceptualized force would undoubtedly better serve South Africa's interests. Given that a conventional military threat emerging from one of South Africa's neighbors or any combination thereof is extremely unlikely, even more so from a power outside the region, South Africa should redirect a significant proportion of its current military expenditure toward the formation of a gendarmerie-style border guard (with a secondary counterinsurgency capability) and the development of a significant coast guard —what, together, I call "Shield forces."[66] The remainder of the SANDF should be converted into a small but well trained and well equipped joint expeditionary formation—a "Spear force."

Under this "high-low" model, the SAN would have two primary functions—namely, providing a coast guard–style Shield capability as well as assets to enable and support Spear forces. For the Shield capability, "coverage" will be more important than "clout." Airborne surveillance assets, such as maritime patrol aircraft and unmanned aerial vehicles, will be vital for situational awareness of the nation's vast EEZ. An adequate number of naval platforms, split between

inshore and offshore patrol vessels, will be required to take advantage of the situational awareness these aerial surveillance assets provide. Significantly more platforms than are currently in the SAN inventory will be necessary to ensure that the nation's EEZ is adequately patrolled. Here the navy's 2030 forward-planning process, as articulated in November 2010 by its Chief Director Maritime Strategy, Rear Admiral Bernhard Teuteberg, seems to point in the right direction, proposing adding three inshore patrol vessels to the currently mandated force structure —an increase of 100 percent.[67] Funding indications from the government, however, suggest an inclination toward maintenance of the status quo, replacing, but not adding to, the current patrol vessels.[68]

Expeditionary (Spear) missions would in all likelihood primarily engage land targets, but naval forces nonetheless would have a critical role to play, particularly given the fact that 70 percent of African states are littoral. Recent examples abound of operations of kinds likely to be undertaken. In the first three months of 2011 alone the SANDF stood up forces for one actual and two potential noncombatant evacuation operations, in South Sudan, Côte d'Ivoire, and Libya. Crisis in Côte d'Ivoire led in January to SAS *Drakensburg*'s being diverted from its duty as a communication and guard vessel for the 2011 Cape to Rio yacht race to the Gulf of Guinea to render "possible assistance to SA diplomats, designated personnel and other South African citizens in Ivory Coast."[69] A special operations force was also put ashore in Guinea. One might hope that similar situations in the future, if political circumstances and SANDF capabilities are appropriate, will see intervention by South African forces. (It is arguable that early intervention by an African force in Côte d'Ivoire in early 2011 could have saved the lives of many of the hundreds, if not thousands, who were killed in what is now being called the Second Ivorian Civil War.) The noncombatant evacuation actually conducted by the SANDF, the extraction of South African embassy personnel and other citizens from Libya, could well also have involved maritime assets, Libya being a littoral state. In the end, though, lack of appropriate capabilities forced the SANDF to rely on goodwill from the Qadhafi regime (itself an embarrassment) and a chartered Boeing 767 to fulfill its mandate.

What is clearly missing from the SAN's current capabilities is the ability to offer strategic lift, firepower, and force protection for joint Spear forces. The ability to project significant force from the sea is in general of inestimable value for deterrence, dissuasion, denial, disruption, and defeat of potential adversaries, and to the SAN it would be of equal value as a means to contribute to African maritime security and deliver humanitarian and other support to neighbors and allies. This fact is not lost on its leaders, and their plans for 2030 include, under Project MILLENNIUM, the addition of three "strategic sealift and sustainment (SSS) vessels" within a planned fleet of twenty-two warships and submarines.[70] No official

details have yet been given as to the nature of these proposed SSS ships. If, as has been suggested by some, the vessels are to be like the twenty-seven-thousand-metric-ton *Canberra*-class amphibious assault ships (LHDs) being built for the Royal Australian Navy by Navantia, or the similar but smaller French *Mistral*-class LHDs, the idea of adding three of them is probably overreaching somewhat, given their cost (though perhaps the idea is to ask for three in hope of securing one or two). Smaller vessels, perhaps even in the range of the 1,500-metric-ton *Spearhead*-class Joint High Speed Vessel, are more likely to be affordable and may even be of greater utility for the kinds of Spear operations the SANDF might realistically conduct, and are more likely to contribute significantly in a secondary Shield function.[71] Whatever vessel, or mix of vessels, is chosen, there can be no doubt that adding a capability to project force from the sea, even on a relatively limited basis, would radically shift and enhance the utility of the South African Navy's force structure in a way appropriate to the nation's position as a regional power. To add this capability will, however, require a significant rethinking of approach and resource allocation within the South African National Defence Force and the government.

CLEARER POLICY AND MORE FOCUSED ENGAGEMENT

> African maritime security forces are currently misaligned to meet the security threats they face. They have navy bureaucratic affiliations and training programs but have a predominance of coast guard missions, operate in coast guard zones, and require coast guard partnerships. . . . Accordingly, they are not efficiently organized and trained to meet their challenges. They are also hampered by their dependence upon the poorly matched foreign equipment they purchase or are given. Inefficiency and small budgets reinforce each other, allowing maritime security challenges to remain substantially unchecked. Billions of dollars of fish are stolen every year from a continent facing some of the world's highest levels of malnutrition. International drug syndicates are gaining a foothold among what are already some of the world's most fragile states.[72]

This statement is as true of South Africa in particular as it is of African nations in general. Given the additional need for South Africa, as a regional power, to be able to project force where necessary within its sphere of influence, it is clear that the SAN of today is inadequate to the task of carrying out South Africa's maritime security mandate. There is, however, currently a window of opportunity by which just such a significant change could come about. On 20 April 2010 President Zuma appointed members to a newly devised national planning structure, the National Planning Commission (NPC), which is to "produce reports on a range of issues that impact on our long term development, such as water security, climate change, food security, energy security, infrastructure planning,

human resource development, defence and security matters, the structure of the economy, spatial planning, demographic trends and so forth."[73]

It is at least conceivable that the influence of the NPC could lead to the reshaping of the SANDF, and South Africa's national security forces in general, into structures that are equipped, trained, and employed in ways calibrated to the actual needs of the nation. It is very much in the interests of the United States and other members of the international community having an interest in Africa's maritime security, and in African security more generally, to assist the NPC and the South African government in developing an appropriate national security strategy and matching structures.

What can the United States, and other members of the international community, do? Vogel suggests a useful first step when he writes that

> for Africa, a series of threat assessments would be highly beneficial, as no one really knows what is going on in African waters. Many of the statistics frequently advanced on drug traffic, illegal fishing, illicit commerce, and other prohibited activities are at best educated guesses. It is also not known how much activity is occurring relatively close to shore (within territorial waters) or over the horizon in EEZs. A comprehensive survey using satellite imagery to quantify ship traffic would be a good place to start.[74]

At a more general level, more purposeful engagement with the SANDF and the South African government could help to bring about constructive change. Regular exchanges with the U.S. Coast Guard would be of benefit in reshaping the philosophy and operational approach of the SAN, more than is, for example, the hosting of SAN personnel at U.S. Navy "schoolhouses." Diplomatic assistance in such projects as collaborative southern African production for the navies of the region of inshore patrol vessels (craft that the SAN greatly covets, to ensure the viability of Project BIRO) could also be of great benefit. Other opportunities would emerge, given clearer policy and more focused engagement. Clearly it is in the long-term interests of the United States and allied nations to expend the resources necessary to ensure that this happens.

NOTES

1. Augustus Vogel, *Navies versus Coast Guards: Defining the Roles of African Maritime Security Forces,* Africa Security Brief 2 (Fort McNair, D.C.: Africa Center for Strategic Studies, December 2009), p. 2.
2. C. H. Bennett and A. G. Söderlund, *South Africa's Navy: A Navy of the People and for the People* (Simon's Town: SA Navy, 2008), p. 15.
3. Ibid.
4. Ibid., p. 17.
5. Helmoed-Römer Heitman, *South African War Machine* (Johannesburg: Central News Agency, 1985), p. 74.
6. Bennett and Söderlund, *South Africa's Navy,* p. 17.

7. Heitman, *South African War Machine,* p. 75.
8. Bennett and Söderlund, *South Africa's Navy,* pp. 19–21.
9. Ibid., p. 21.
10. Ibid., p. 29.
11. Heitman, *South African War Machine,* p. 79.
12. Bennett and Söderlund, *South Africa's Navy,* p. 33. The Simon's Town Agreement allowed South Africa to purchase the facilities of the Royal Navy base at Simon's Town (near Cape Town) and to purchase British-built naval vessels. In exchange the Royal Navy was granted unrestricted access to Simon's Town's harbor and facilities. See ibid., pp. 39–49.
13. Ibid., p. 33.
14. Heitman, *South African War Machine,* p. 74.
15. Bennett and Söderlund, *South Africa's Navy,* p. 48.
16. Heitman, *South African War Machine,* p. 82.
17. In 1978 then–minister of defence (and later prime minister of South Africa) P. W. Botha stated bluntly in a speech that "in future the safety of the West's Tanker and cargo fleets will be its own responsibility in the southern Indian and Atlantic Oceans. We have been forced into this situation by the Western arms boycott against us and from now on our attitude can be summed up like this—no arms, no service." Quoted in ibid., p. 83.
18. Bennett and Söderlund, *South Africa's Navy,* p. 35.
19. Ibid., p. 95.
20. One, SAS *President Kruger,* was sunk, with the tragic loss of sixteen lives, after SAS *Tafelberg* collided with it on 18 February 1982. See ibid., p. 37.
21. Ibid., p. 35.
22. Heitman, *South African War Machine,* p. 86.
23. Bennett and Söderlund, *South Africa's Navy,* p. 37.
24. Ibid., p. 121.
25. Ibid., p. 51.
26. Ibid., p. 109.
27. "Proxies" refers to a number of quasi-independent "homelands," or "Bantustans," set up under the apartheid government's policy of "separate development." The concept was that the majority of South Africa's black population would become citizens of these "independent nations," leaving the rest of South Africa to the ruling white minority. These Bantustans, known collectively by the initialism TBVC (Transkei, Bophuthatswana, Venda, and Ciskei), each had their own military forces.
28. The SDP was and remains controversial, mainly for reasons of alleged corruption in the procurement process.
29. The frigates were initially referred to as "corvettes," as a political ploy to downplay the scale of the purchase of these vessels. The helicopters are operated by the South African Air Force but fall operationally under SAN command.
30. Bennett and Söderlund, *South Africa's Navy,* pp. 83–93.
31. The strike craft SSMs were transferred to the new frigates as a cost-saving measure.
32. As an example of a sea rescue operation, in early May 2011 SAS *Isandlwana* was dispatched to Tristan da Cunha to bring medical assistance to, and recover, sailors from the Taiwanese trawler *Lai-Ching,* which had suffered an explosion caused by an ammonia gas leak. "SA Navy Sends Frigate on Rescue Mission," *Mail and Guardian Online,* 4 May 2011, mg.co.za/.
33. Bennett and Söderlund, *South Africa's Navy,* p. 63.
34. "Southern African Joint Surveillance Patrol Gets Tough on Illegal Fishers," *Stop Illegal Fishing,* March 2009, www.stopillegalfishing.com/.
35. Leon Engelbrecht, "*Mendi* on Patrol off Mozambique," *DefenceWeb,* 15 April 2011, www.defenceweb.co.za/. The Southern African Development Community, originally formed (under a slightly different name) to promote the liberation of southern African states, now promotes their economic integration. Its member states are currently Angola, Botswana, the Democratic Republic of the Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, the Seychelles, South Africa, Swaziland, the United Republic of Tanzania, Zambia, and Zimbabwe; "About SADC," *Southern African Development Community,* www.sadc.int/.

36. Leon Engelbrecht, "Cabinet: Piracy Strategy Approved?," *DefenceWeb,* 21 April 2011, www.defenceweb.co.za/.
37. Engelbrecht, "*Mendi* on Patrol off Mozambique."
38. INS *Khukri,* sunk by the *Daphné*-class diesel-electric submarine PNS *Hangor* in the 1971 Indo-Pakistani war; the Argentine cruiser *General Belgrano,* sunk by the *Churchill*-class nuclear-powered submarine HMS *Conqueror* in the 1982 Falklands/Malvinas War; and ROKS *Cheonan,* sunk by, probably, a torpedo fired from a North Korean minisubmarine in March 2010.
39. Vogel, *Navies versus Coast Guards,* pp. 1–2.
40. On illegal commerce, ibid., p. 2.
41. Engelbrecht, "Cabinet."
42. On the *Lilian Ngoyi* class, Leon Engelbrecht, "DEAT Keeping Poachers at Bay," *DefenceWeb,* 5 November 2008, www.defenceweb.co.za/. The Department of Agriculture, Forestry, and Fisheries, at its formation in 2009, took over these vessels from the now-defunct Department of Environment and Tourism (DEAT).
43. For the P166S, "The South African Air Force," *SAAF: The Unofficial Website of the South African Air Force,* www.saairforce.co.za/.
44. Anton Kruger, "Defence vs Finance: The Long-Term Implications for South African Security," *ISS Today,* 2 November 2010, www.issafrica.org/.
45. "According to Carl Zeiss Optronics, the Argos 410-Z is a stabilised airborne observation system equipped with the latest generation thermal imager, a 3-CCD daylight TV camera with powerful zoom lens, eye-safe laser rangefinder, autotracker, and mission awareness positioning system (MAPS). The MAPS function provides the operator with GPS coordinates of 'objects of interest' by means of a high accuracy integrated inertial measurement unit (IMU). Built to military specifications, the Argos 410-Z offers day and night images. The thermal imager offers four fields of view and advanced image processing features, including edge enhancement, local adaptive dynamic compression and electronic zoom. The Caravan is equipped with a removable onboard operator station which is data linked to a ground station, providing the joint operations centre with a real-time imagery." Leon Engelbrecht, "41 Squadron Gives Security Forces a World Cup Eye in the Sky," *DefenceWeb,* 14 June 2010, www.defenceweb.co.za/.
46. This figure is comparable with that of New Zealand, a geographically isolated island nation with benign neighbors. Given the role that South Africa seeks to play as a regional power and its situation in a far less secure neighborhood, South Africa's defense expenditure might reasonably be expected to be at least 2 percent of GDP. By comparison, Great Britain's defense expenditure as a percentage of GDP was 2.5 percent in 2009, and France's was 2.7 percent, according to "Military Expenditure Database for 2010," *Stockholm International Peace Research Institute,* 11 April 2011, www.sipri.org/.
47. Anton Kruger, "Defence Budget: Expecting Too Much from Too Little?," *ISS Today,* 8 April 2010, www.iss.co.za/.
48. Leon Engelbrecht, "DoD R7.335bn Underfunded," *DefenceWeb,* 31 March 2010, www.defenceweb.co.za/.
49. South African Press Association, "Antipiracy Ops Would Stretch SA Navy, MPs Told," Polity.org.za, 16 November 2010.
50. Bennett and Söderlund, *South Africa's Navy,* p. 63.
51. For *Oranje,* Leon Engelbrecht, "SAMSA Wants SA Merchant Fleet," *DefenceWeb,* 3 June 2010, www.defenceweb.co.za/.
52. David Goldblatt, "Footing South Africa's World Cup Bill," *Focus on Africa Magazine/BBC News,* 4 June 2010, news.bbc.co.uk/.
53. Dean Wingrin, "Navy Demonstrates Its World Cup Capabilities," *DefenceWeb,* 16 April 2010, www.defenceweb.co.za/.
54. "Ten Years of Peacekeeping," *Department of Defence, Republic of South Africa,* September 2009, www.dod.mil.za/.
55. Leon Engelbrecht, "SANDF Operations: 2010," *DefenceWeb,* 16 February 2010, www.defenceweb.co.za/.
56. Leon Engelbrecht, "3600+ Soldiers Headed for SA Borders," *DefenceWeb,* 28 April 2011, www.defenceweb.co.za/.

57. Leon Engelbrecht, "SA Looking to Monitor EEZ," *DefenceWeb,* 24 May 2011, www.defenceweb.co.za/.

58. Leon Engelbrecht, "Navy Cranking Up for Biro?," *DefenceWeb,* 26 April 2011, www.defenceweb.co.za/.

59. Leon Engelbrecht, "Airbus Military Keen on Saucepan," *DefenceWeb,* 23 May 2011, www.defenceweb.co.za/.

60. See Engelbrecht, "Cabinet" and "SA Looking to Monitor EEZ."

61. At the end of 2009 there were a reported 5.3 million individual taxpayers in South Africa; "Every Individual Taxpayer Now Supports 2.32 People," *Human Action: Free the Markets,* www.humanaction.co.za/. This figure is out of a total population estimated at fifty million people; "Mid-year Population Estimates 2010: Statistical Release P0302," *Statistics South Africa,* July 2010, www.statssa.gov.za/.

62. See Deane-Peter Baker, "Securing South Africa: A Guide for the National Planning Commission," *African Security Review* 19, no. 4 (2010), pp. 90–101.

63. On developmental peacekeeping, see Nozizwe Madlala-Routledge and Sybert Liebenberg, "Developmental Peacekeeping: What Are the Advantages for Africa?," *African Security Review* 13, no. 2 (2004), pp. 125–31.

64. Mark O'Neill explains, "The Australian counterinsurgency expert Ted Serong was correct in his bleak assessment that . . . 'The only good counter-insurgency operation is one that never had to start.' Given, however, that counterinsurgency is by definition a reactive activity, one cannot conduct it without an insurgency. Following on from the idea of an indirect approach, and informed by Serong's observation, an ideal strategic approach would be to conduct actions to inoculate a society or a state against the development or maturation of an insurgency. An appropriate title for this form of activity might be 'anti-insurgency.' This approach assumes that the best defence against an insurgency is to ensure that legitimacy (the trust the people place in their government) is developed and maintained. One way to do this is through assisting states of potential concern with the necessary skills and resources to be able to satisfy the reasonable needs of their people. This requires institution building and adoption of a long-term whole of society approach, but need not necessarily go as far as accepting responsibility for 'nation building' in another state. Indeed, if the supported government is to portray the necessary legitimacy and effectiveness for 'anti-insurgency' to work, it is a key requirement that it is seen to be acting in partnership with others with legitimate interests in its stability, rather than as a client or satellite state." Mark O'Neill, *Confronting the Hydra: Big Problems with Small Wars* (Sydney, Australia: Lowy Institute for International Policy, 2009), p. 68.

65. See Ben Schott, "Ink Spot Strategy," *Schott's Vocab* (blog), *New York Times,* 16 November 2009, schotts.blogs.nytimes.com/.

66. As to the improbability of conventional military threats, the combined GDP of the ten countries occupying the first and second layers of countries contiguous to South Africa's borders (Angola, Botswana, Lesotho, Malawi, Mozambique, Namibia, Swaziland, Tanzania, Zambia, and Zimbabwe) is little more than *half* of South Africa's GDP. According to the *CIA World Factbook*'s estimates for 2008, the ten combined GDPs come to $272,294,000, while South Africa's is $506,100,000. In the unlikely event that one or more neighboring countries decide to build forces to the point of being able to pose a catastrophic, conventional threat, South Africa should (unless it dramatically mishandles the situation) have no difficulty in addressing so long-term a problem.

67. Engelbrecht, "Navy Cranking Up for Biro?"

68. Ibid.

69. Leon Engelbrecht, "SANDF Executes NEO," *DefenceWeb,* 18 April 2011, www.defenceweb.co.za/.

70. Engelbrecht, "Navy Cranking Up for Biro?"

71. Some "out of the box" thinking might help with affordability. For example, there is currently no uncomplicated transport route between two of South Africa's three major cities, Cape Town and Durban. (There is no direct rail link—all rail traffic between the two cities must transit via Gauteng—and the only direct road between the two cities, the N2, is relatively poor.) Given the *Spearhead* class's 80 percent commonality with the

Hawaii superferry, the cost of these vessels could be kept down by operating them (when not needed for military operations) under subcontract to the parastatal Transnet as ferries between Cape Town and Durban.

72. Vogel, *Navies versus Coast Guards,* p. 5. On African maritime challenges generally see Michael L. Baker, "Toward an African Maritime Economy: Empowering the African Union to Revolutionize the African Maritime Sector," *Naval War College Review* 64, no. 2 (Spring 2011), esp. pp. 39–41.

73. "Statement by President Jacob Zuma" (on the appointment of commissioners to the National Planning Commission, Pretoria, Presidential Guesthouse, 30 April 2010), *The Presidency: Republic of South Africa,* www.thepresidency.gov.za/.

74. Vogel, *Navies versus Coast Guards,* p. 5.

REVIEW ESSAY

A RELATIVELY INDECISIVE WAR

Jack A. Gottschalk

Daughan, George C. *1812: The Navy's War*. New York: Basic Books, 2011. 411pp. $32.50

This is an excellent book about a relatively unknown war. Perhaps only the Mexican War (1846–48) is less known to Americans. The War of 1812 was America's first declared war, one that neither side really wanted and that resulted in a military draw.

Beginning with the introduction, George Daughan, a distinguished academician and recipient of the 2008 Samuel Eliot Morison Award, has created a work that is almost the equivalent of an exciting novel. The first three chapters provide a clear understanding of the relationship between the United States and Great Britain in the years following the Revolution. The political scene in America is also examined to show the deep differences that existed between the Federalists in the north, particularly in New England, and the Republican interests. These differences were to persist throughout most of the war. From the earliest days of the nation, the Federalists held that a positive relationship with England was of benefit to the United States given, among other things, a common language and an established history of trade. Southern leaders, including Thomas Jefferson, were hostile toward Great Britain and highly sympathetic to France and its perceived democratic ideals.

Daughan notes, as he sets out the prewar years, that the Jay Treaty (also known as the Treaty of London) was a disappointment to George Washington. One important point was its restriction on American trade with France, a fact that eventually led to the undeclared maritime conflict between the United States

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and France, the Quasi-War (1798–1800), during the John Adams administration. The American navy grew rapidly during that conflict, but once the war ended the Navy became a political issue and fell into disfavor in the eyes of Thomas Jefferson, even though he had deployed warships against Tripoli's pirates.

By the time Jefferson took office in 1801, the problems caused by Napoleon were major and growing, and the questions of sailors' rights and free trade increasingly came into focus. In 1806, Napoleon sealed European ports to all British ships. Great Britain responded by restricting neutral shipping with France, and at about the same time British warships off the New Jersey coast seized American merchant ships and impressed sailors.

American political disagreement on the issues of ship seizure and impressments only gave way to a united front in June 1807 when there was a confrontation between the USS *Chesapeake* and HMS *Leopard* that resulted in the seizure of several seamen aboard the American ship. Tensions ran high, but Jefferson avoided a war by successfully having Congress pass the Embargo Act in December 1807, which was a crippling blow to American foreign trade since it prohibited all shipments abroad.

The intent had been to force Great Britain to end its seizure of seamen and to cancel its neutral shipping restrictions. The measure failed on both counts and was so unpopular that it was replaced after James Madison's election with the passage of the Non-Intercourse Act, which allowed Americans to trade with every nation except Great Britain and France.

Meanwhile, the British continued to impress sailors on American merchantmen despite warnings from Madison and attempts to resolve issues by negotiation. By the end of 1811 Madison was convinced that the only action that would force meaningful negotiations was a declaration of war. With the exception of the Federalists, in June 1812, both the House and the Senate voted for war, even though America was ill prepared.

The Army was small, with too much reliance placed on the militia; however, the Navy, which Madison initially believed to be of little use, proved instead to be of enormous value on the lakes and rivers, and as a blue-water force. Experienced naval officers and hundreds of privateers were used to raid British commerce.

Despite the lack of preparation, the author notes that Madison did have a war plan that called for the invasion of Canada, a move motivated by the fact that the British Army was tied down in Europe. The British strategy called for invasions from the north and south, a naval blockade along the Atlantic and Gulf coasts, and coastal raids.

The Canadian land actions were marked by a lack of American success—notable campaign examples were those of Generals William Hull and Henry

Dearborn. American naval actions on Lake Erie, Lake Ontario, and Lake Champlain were, however, critical to the prosecution of the war.

On the ocean, well-known American victories included such blue-water ship-to-ship contests as those between the USS *Constitution* and HMS *Guerrière;* the USS *Constitution* and HMS *Java;* the USS *Hornet* and HMS *Peacock;* and the USS *United States* and HMS *Macedonian.* Naval officers to include Commodore Oliver Hazard Perry, Captain Stephen Decatur, Commodore Thomas Truxtun, and Commodore William Bainbridge all gained permanent historical notice in America.

Daughan points out that it was a relatively indecisive war, marked by events of which neither side could be proud. Those incidents included the American burning of York (Toronto); the later burning of Washington by the British (in retaliation for York); the unnecessary shelling of Stonington, Connecticut; and the raid—complete with rape and pillage—by the British at Hampton, Virginia. Finally, it seems somehow fitting for a war that neither side wanted that the Battle of New Orleans took place two weeks after the war ended.

Almost until the end of hostilities, the political division in America between the antiwar Federalists and the Republicans continued. So deep were antiwar feelings among some that New York and Vermont farmers openly provided supplies to British forces along the Canadian border, and New England merchantmen carried supplies to Field Marshal Wellington's armies in Spain.

By the autumn of 1814 both sides were looking to end the conflict. The war was unpopular in Great Britain and some Federalists were urging secession of New England states and a separate peace. Discussions about the war took place in Hartford, Connecticut, in December, but secession was either not on the agenda or not seriously discussed.

On Christmas Eve 1814, the Treaty of Ghent was signed by American and British representatives and ratified in Washington in February 1815. Many issues over which the war had been fought were not addressed in the treaty, such as British blockades and impressments, these having ended with the defeat of Napoleon.

This work is marred by some editorial errors that are unfortunate since they tend to jar the reader, who is otherwise proceeding happily through the book. They are as follows: on page 212 "ordinance" is incorrectly used instead of "ordnance"; on page 278 "coarse" is incorrectly used instead of "course"; on page 400 "manage" is mistakenly used instead of "managed"; and on page 416 "initiating" is used instead of "initiated."

However, despite these lapses, the book should win a place on the shelf of any student of American history. There are an excellent glossary, many relevant maps, and a helpful illustration that shows the names and locations of sails on a square-rigged ship.

BOOK REVIEWS

"OUR FIRST TRUE WAR"

Maffeo, Steven. *The Perfect Wreck—"Old Ironsides" and HMS* Java: *A Story of 1812.* Tucson, Ariz.: Fireship, 2011. 382pp. $19.95

Singapore Harbor, 1845—Commodore Henry Ducie Chads, Royal Navy, is rowed over to an American frigate visiting the port where he is senior officer. Chads is met by the second in command of USS *Constitution* and ushered below to pay his respects to the captain. After a friendly chat, Chads notes that he has been on the ship before, in 1812. He had then been first lieutenant of HMS *Java,* and he had stood on that very spot while surrendering his ship to Commodore William Bainbridge. This opening scene is a poignant and accurate account of an actual meeting.

So begins this outstanding and fascinating novel by Steven E. Maffeo, a retired U.S. Navy captain and author of two previous books on the age of sail.

During the war between Britain and France, both countries routinely violated American neutrality at sea. The stakes were high, and the sensibilities of small powers were easily overlooked. The depredations of the British were much worse, however, than those of the French, and in June 1812 the United States declared war.

The two sides were not a match. The Royal Navy possessed 180 ships of the line—the battleships of the day, sporting at least seventy-four guns (some had over a hundred). The U.S. Navy had nothing so large, but its pride was six frigates, some carrying over fifty guns. The most famous of these was USS *Constitution,* nicknamed "Old Ironsides" during a victory over HMS *Guerrière* when British round shot bounced off its thick oak sides. The Royal Navy hoped to redress this embarrassment, but the frigate HMS *Java,* commanded ably by Captain Henry Lambert but saddled with a raw crew, left Portsmouth in November with a load of passengers and cargo, hoping to avoid a fight.

In contrast, *Constitution* was newly commanded by Commodore William Bainbridge. Not well liked, Bainbridge was known throughout the service as "Hard-Luck Bill." He had been the first U.S. Navy captain to surrender his ship to the enemy; indeed, within a period of five years Bainbridge "hauled down the flag of the United States *three times* in the face of the enemy—*without any fighting.*" Nonetheless, *Constitution*

left Boston in late October to seek out and engage British shipping.

Maffeo alternates between the two vessels and their crews, providing an outstanding primer on the workings of a large warship two centuries past. He is adept at describing everything from victualing to lading and storage, rigging, discipline, sail maintenance, and gunnery. In a clever device, the author uses three British Army officers traveling aboard *Java* as props. These men—who were actually present on the voyage—are tutored by Chads on the strategy and tactics of naval warfare. The reader listens in on these chats and learns a great deal.

The climax of the book occurs on 29 December 1812, when the ships meet off the coast of Brazil. The description of the battle itself is masterful. Lambert worries about his largely untrained crew of "landmen," but Maffeo implies that he had not trained his green crew nearly often or rigorously enough. Bainbridge, a stickler for discipline, had made no such mistake. The sea battle at close range, with heavy cannon disgorging round shot, grape, and canister—as well as the continuous musket fire of the marines on board both ships—takes a murderous toll. Although initially *Constitution* suffers worse and Bainbridge himself goes down twice with wounds, the battle slowly and inexorably reverses. The bigger guns and thicker sides of the American frigate, combined with its more seasoned crew, allow "Old Ironsides" to wreak havoc on *Java*. Dismasted and its bowsprit shot off, *Java*'s ability to maneuver is lost. Lieutenant Chads, taking command from his mortally wounded captain, sees that all hope is illusory—an attempt to board *Constitution* so as to carry on the fight with cutlasses and pistols is skillfully thwarted by Bainbridge. *Java* is a perfect wreck and strikes its colors.

This ripping yarn fascinates, educates, and entertains. The exploits of the U.S. Navy in our country's first true war after independence should never be forgotten. This terrific account is a must-read for naval personnel of all ranks.

COL. PHILLIP S. MEILINGER, U.S. AIR FORCE, RETIRED
West Chicago, Illinois

Vogel, Ezra F. *Deng Xiaoping and the Transformation of China.* Cambridge, Mass.: Belknap of Harvard Univ. Press, 2011. 928pp. $39.95

For those seeking to understand China's place in the world, Ezra Vogel has performed a great service through his meticulous decadelong work on this biography of Deng Xiaoping, who emerged as China's leader following the death of Mao Zedong in 1976. Vogel may be overstating the case when he suggests that Deng was the most important world figure of the twentieth century, but it is hard to find a serious rival for the last quarter of that century.

Deng ruled China between 1978 and 1992, when he retired at the age of eighty-eight. Since his retirement, to the present day, Deng's policies have continued, in contrast to the immediate changes that took place following the death of Mao. No Western scholar of China in 1976 predicted the "rise of China" that resulted from Deng's leadership. How did Deng come to be central to the transformation of China?

Born in 1904, Deng took the reins of leadership at age seventy-four, long after most give up trying to change the world. Despite many hurdles, he energetically steered China back on track, continually pursuing his vision. He was an unwavering nationalist as well as a communist. His focus was on a competent, proud, and successful China, not the humiliated China into which he had been born, the descendant of literati in Sichuan Province, to which he never returned. His years in France and Moscow in the 1920s developed in him a mind cognizant of the ways of the world, well before his leadership role began. Deng went on to do political work with Zhou Enlai, his mentor, during the 1930s, and he jointly commanded the 129th Division of the Eighth Route Army from 1937 to 1949 in Shanxi. Although he worked side by side with Mao to become general secretary of the Central Committee, Deng was purged by Mao as a "capitalist roader" early in the Cultural Revolution. Vogel offers a vivid account of Deng's exile in Jiangxi.

The author emphasizes that Deng was very successful in his conduct of foreign affairs. While many scholars consider Deng a student of Zhou Enlai, less polished and capable than his teacher, Vogel turns this idea on its head, using the example of how Deng broke through the U.S.-China normalization impasse during the December 1978 talks with American negotiator Leonard Woodcock. Despite Deng's red-faced ranting that China would never accept weapons sales to Taiwan, he, perhaps realizing that Woodcock was unable to guarantee subsequent decisions by Congress, in the end simply said "*Hao,*" fine. The deal was finally complete six years after the Nixon-Kissinger initiatives.

Regarding domestic affairs, Vogel outlines a mixed record for Deng. Once in control, he consistently moved China toward the First World and increased the country's wealth. However, Deng is most remembered for the cloud he cast over what Vogel calls the "Tiananmen tragedy." The author has come under attack by Fang Lizhi and others for glossing over Deng's repressive role in crushing the demonstrations at Tiananmen Square in the spring of 1989.

While Deng was being elevated to the position of power over Hua Guofeng at the Eleventh Party Congress Third Plenum in December 1978, in what the author refers to as "succession without coronation," Vogel was just publishing his best-selling nonfiction work *Japan as Number One.* Vogel directed the East Asian Studies program at Harvard University, subsequently publishing more on China than on Japan, until his retirement in 2000. Like Deng, Vogel wished to make an impact in his later years and so determined to write a detailed account of the man who had transformed China during his own lifetime of studying East Asia affairs. To prepare himself, Vogel spent a year refreshing his Chinese, so he could conduct his interviews unassisted and read primary sources more easily. He interviewed scores of Deng's colleagues and most of his family. It took him ten years to complete the project.

This work raises the research and literary standard for political biography. We must thank Ezra Vogel for giving us this detailed and measured look at China's great man at the hinge of history between the twentieth and twenty-first centuries.

GRANT F. RHODE
Brookline, Massachusetts

Swaine, Michael D. *America's Challenge: Engaging a Rising China in the Twenty-First Century.* Washington, D.C.: Carnegie Endowment for International Peace, 2011. 690pp. $49.95

Since 2009, U.S.-China relations have lurched from crisis to crisis, jeopardizing the "long peace" that has enabled an extraordinary era of prosperity in East Asia and beyond. As Washington gropes for a new paradigm to structure this all-important bilateral relationship, diplomats, military strategists, and concerned citizens on both sides of the Pacific would do well to reflect carefully on Michael Swaine's new treatise, which is a masterpiece that will set the standard in the field of policy analysis for decades to come.

Among the book's many virtues are the balance and objectivity of its assessments. Swaine explores alternative strategies, such as a more zero-sum approach, on the one hand, that would rely on a "grand coalition of democracies" to balance China, as well as, on the other, the possibilities of a more positive-sum approach that would emphasize both compromise and joint action against common, nontraditional security threats. Ultimately, Swaine concludes that the above approaches are both "extreme . . . because they do not share many of the assumptions underlying America's current strategic objectives." The judgment is based on dozens of interviews with this country's most esteemed Asia hands. He reports that a consensus exists on a mixed strategy, incorporating a delicate simultaneous balance between hedging and engagement.

Another key strength of this volume is the extraordinary attention to detail—a feature that will make this work, with its more than two hundred pages of endnotes, an extremely valuable desk reference and a capable survey of what we collectively understand about U.S.-China relations. The fact that the book covers issues as disparate as naval strategy, trade negotiations, and energy cooperation—handling each of these complex topics and many others with admirable sophistication—is a tribute to the wide experience, intellectual depth, and solid research of the author. In this respect, the book is without peer.

What makes this work truly exceptional, however, is the bold and sober recommendations that flow from Swaine's dense analysis. To be sure, he offers a panoply of practical solutions, such as advocating the creation of a genuinely strategic (vice policy) planning entity in the While House and promoting a much-needed regular, trilateral forum bringing together Tokyo, Beijing, and Washington around one table. However, he also directly challenges current conventional wisdom among U.S. policy makers, asserting that "U.S. maritime predominance in the Western Pacific is probably unsustainable over the long term . . . [and] attempts to sustain this predominance . . . are likely to prove . . . destabilizing." Also, breaking with longtime U.S. policy, Swaine is critical of Washington's "hands-off" approach to the Taiwan issue, an approach that has traditionally included a refusal to negotiate with Beijing regarding arms sales to Taiwan. Finally, Swaine also boldly declares (contrary to deeply embedded U.S. political culture) that "China's democratization should not be a strategic objective of the United States." Such conclusions collectively offer American strategists a new approach and much food for thought.

In short, this comprehensive volume offers a much-needed corrective to tendencies in American strategic discourse that significantly favor military solutions to the dilemmas posed by China's rise over the hard work of cooperation and compromise.

LYLE GOLDSTEIN
Naval War College

Arquilla, John. *Insurgents, Raiders, and Bandits: How Masters of Irregular Warfare Have Shaped Our World.* Lanham, Md.: Ivan R. Dee, 2011. 336pp. $27.50

Irregular warfare has been the topic du jour over the last few years. A search of any bookseller's website turns up literally hundreds of recently published titles on the subject. While not a bad thing, this makes it harder for nonspecialists to separate the wheat from the chaff. Much recent literature in the field centers on irregular tactics and techniques, especially U.S. efforts in Iraq and Afghanistan, while a smaller portion focuses on armed groups. John Arquilla, however, takes a different approach in *Insurgents, Raiders, and Bandits: How Masters of Irregular Warfare Have Shaped Our World,* by focusing more on irregular warriors than on irregular wars. Like the figures he portrays, Arquilla attacks the conventional-war methods and heroes of military history. He laments continuing overreliance on traditional methods and classical theorists, given the evidence that the world is now far from conventional. As a Naval Postgraduate School professor, Arquilla has studied and taught this topic for over two decades.

At the time of this book's publication there were more than thirty ongoing conflicts worldwide, all irregular in nature, "primarily conducted through acts of terrorism or more classic guerrilla hit and run tactics." This supports the argument that "irregular is becoming the new regular." Arquilla asserts that we must now look closely at the masters of earlier times to understand the implications of this new age. The eighteen individuals chosen here come from a wide variety of backgrounds. Some, such as Nathanael Greene and T. E. Lawrence, will be familiar to most readers. However, warriors like Abdelkader and Christiaan de Wet are probably largely unknown to all but specialists in the field. Instead of trying to categorize each of them, he draws out common themes they exhibited, most notably their "sheer indomitability" and recurring encounters with advanced technology.

In addition to thematic threads of continuity, the author weaves connecting strands along national lines. The French appear in seven chapters, six times fighting against insurgents and once, during the American Revolution, on the side of the insurgency. The experience gained in these conflicts is another theme used by the author to bind several hundred years of warfare. A similar continuity exists among supporting actors. British involvement in multiple insurgencies provides several opportunities to study Winston Churchill's personal connections.

Of note, most of the irregular warriors highlighted in these chapters gained fame by opposing the conventional masters of their time. Commanders like Charles Cornwallis or Ulysses S. Grant usually found traditional methods insufficient when facing guerrilla or

other unusual techniques. In these cases, the raiding tactics of Greene and Nathan Bedford Forrest simply proved too effective. The obvious implications are made clear by the author and should give readers plenty to reflect on, in terms of evaluating the U.S. position in either regular or irregular warfare.

This is a useful book for both specialists and general audiences, although the themes presented here in plain, clear writing have special implications for military readers. *Insurgents, Raiders, and Bandits* represents an important and unique contribution to the crowded field of books on irregular warfare.

LT. COL. FREDERICK H. BLACK, JR., USA
Naval War College

Stone, Peter G., ed. *Cultural Heritage, Ethics and the Military.* Woodbridge, Suffolk, U.K.: Boydell, 2011. 228pp. $90

When the National Museum of Iraq (originally the Baghdad Archaeological Museum) was damaged and looted in 2003, along with archeological sites across Iraq, international concerns were raised by a wide variety of political, military, and other professional leaders regarding the protection of historical and cultural treasures. Observers around the world were reminded that the consequences of military operations across the spectrum of war are far-reaching and long lasting. So too are the responsibilities of political and military leaders during conflict. Proponents of the just-war tradition have long understood this and have thus shaped ideas regarding the parameters of actions before, during, and after a conflict. But there is sometimes a failure to appreciate fully the breadth of responsibility. The editor of this collection, Peter Stone, addresses several of the many issues pertaining to protecting and maintaining the cultural heritage within the space of a battle. The work also addresses questions surrounding the tension (and sometimes hostility) between the military and civilian specialists from, for instance, the archeological, anthropological, religious, and medical communities. Drawing from a wide range of Western and non-Western authors, the editor has assembled a useful volume for both military and nonmilitary professionals.

The volume consists of fourteen chapters on various ethical challenges and professional responsibilities of parties involved in the preservation of cultural heritage in war zones. After an introduction, in which the editor (who served as an archeological adviser to the United Kingdom's Ministry of Defence in 2003) provides context, there are essays on restitution, World War II, African perspectives on cultural preservation, academia and the military, archeology in war zones, and case studies from Lebanon and Iraq.

Three essays stand out as particularly helpful for gaining perspective: Margaret M. Miles provides a historical overview of the issue of restitution in "Still in the Aftermath of Waterloo: A Brief History of Decisions about Restitution"; "Christian Responsibility and the Preservation of Civilisation in Wartime: George Bell and the Fate of Germany in World War II," by Andrew Chandler, shows the influence of the Anglican bishop of Chichester, who as a member of the House of Lords and vocal cleric was an outspoken critic

of area bombing and the decision to pursue the unconditional surrender of Germany; and Fritz Allhoff's "Physicians at War: Lessons for Archaeologists?" looks at ethical dilemmas of medical professionals with respect to military ethics, medical ethics, and torture in an endeavor to provide insight and parallels for other professions.

Whether one is interested in archeology and cultural preservation in a war zone, the archeology of military and battle sites, the erection of military monuments, or considerations for military planners and those who subsequently execute their plans in combat zones, there is much to consider in this book. The final chapter consists of a series of responses from archeologists to queries concerning relations between them and the military during the war in Iraq. Some of the respondents have had experiences both in Iraq and with the military, and some have not. However, the respondents all have connections with the preservation of cultural heritage, and their comments show that professionals outside the military must also evaluate the ethics of their own disciplines with respect to war. For example, should a member of a community outside the military, such as an archeologist, provide information and advice before a conflict commences, or only later? Though these are not questions for the military professional, military professionals should be aware of them. Stone is to be commended for bringing together in a single volume essays and perspectives on this important issue. Interested readers will not be disappointed.

TIMOTHY J. DEMY
Naval War College

Tillman, Barrett. *Whirlwind: The Air War against Japan, 1942–1945.* New York: Simon & Schuster, 2010. 336pp. $28

Over sixty years after its conclusion, the air war that was waged against Japan remains one of the most controversial and brutal campaigns conducted by any of the Allied powers during World War II. The debate centers on the questions of the morality and necessity of the bombing campaign against Japan, primarily its cities, that culminated in the dropping of two atomic bombs, and whether the campaign hastened the end of the war.

In his richly detailed and well written *Whirlwind,* Barrett Tillman addresses these two arguments and the decision making that led the United States to wage aerial war. He starts by laying the groundwork with the surprise bombing of Tokyo by U.S. Army Air Forces (USAAF) B-25s led by Lieutenant Colonel James Doolittle in April 1942, relating how Japan's leaders, shocked at the audacity of the carrier-borne attack on the home islands, moved forward with a complex plan to eliminate the U.S. Pacific Fleet once and for all, thus setting the stage for Japan's strategic loss at the battle of Midway less than two months later.

However, the USAAF and its chief, General Henry H. "Hap" Arnold, had bigger plans of their own for Japan. Arnold, a disciple and friend of General Billy Mitchell, resolutely believed in the power of strategic bombing to bring about an enemy's surrender. The Royal Air Force and USAAF had thoroughly tested this theory in the skies over

Germany, with mixed results. Despite a relentless and costly air campaign, the German Wehrmacht could only be defeated on the ground. A basic concept of strategic-bombing theory held that heavy civilian casualties would force enemy leaders to sue for peace, but the theorists and practitioners did not factor in the callous nature of despotic leaders who cared little for the welfare of their citizenry. (For more information on this subject see *Among the Dead Cities: The History and Moral Legacy of the WWII Bombing of Civilians in Germany and Japan,* by A. C. Grayling.)

Japan was a different story. Arnold envisioned unleashing the as-yet-unfielded B-29 Superfortresses on Japan en masse. The USAAF first tried conducting operations from China, but that proved untenable for a variety of reasons. Eventually airfields on Guam, Saipan, and Tinian, islands that were taken at great cost, came into existence for sustained B-29 operations.

The air war against Japan was much more than the story of B-29 raids on Tokyo and other targets. One little-known operation went under the dark moniker of Operation STARVATION, the deployment of aerial mines by B-29s. These sorties proved quite effective in whittling down Japan's merchant marine, thus devastating Japan's morale and eroding its capability for war production. USAAF crews delivered twelve thousand mines, sinking 293 ships between March and April 1945. Yet for all the successes that the United States had in the skies over Japan, the USAAF and U.S. Navy cooperated little in the planning and implementation of the overall campaign. Each service pursued its own air operations, the Army going after Japan's cities and the Navy after Japan's fleet and coastal shipping.

Tillman's excellent book is well researched and well written. He reintroduces the reader to the pivotal leaders who played a role in the execution of the air war on Japan. He rounds out his narrative with accounts from B-29 aircrews and naval aviators who flew at the tip of the spear aimed at Japan; their observations and recollections add an excellent sense of humanity to the story. His account also serves to validate joint operations, a lesson borne out by the experience of this war and one that our military continues to observe today.

This book will not end the debate on the value and moral justification of the U.S. air war on Japan. Tillman clearly makes the point that while the air war against Japan did not end the conflict on its own, it did affect Japan's ability to continue to wage war. In the end it is clear that Japan was willing to fight despite the destruction of its cities and that it was preparing mightily for the expected invasion of the home islands. However, it was the atomic attacks on Hiroshima and Nagasaki that finally forced Japan to seek peace and end the slaughter.

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

Jordan, Jonathan W. *Brothers, Rivals, Victors: Eisenhower, Patton, Bradley, and the Partnership That Drove the Allied Conquest in Europe.* New York: NAL Caliber, 2011. 672pp. $28.95

This is an exceptional book. Although it has its share of strategy, logistics, and technology, it is primarily a book about relationships and leadership.

In what is ostensibly a triple biography, George S. Patton, Jr., and Omar Bradley get their fair share of attention, but in the end it is Dwight David Eisenhower who dominates the pages.

Jordan has produced what is in many ways a paragon of modern biographies. The darker sides of his subjects are not overlooked or glossed over, as in E. B. Potter's *Bull Halsey,* nor does the book descend into the merely salacious and prurient, as sometimes occurs in Evan Thomas's *Sea of Thunder.* Jordan paints pictures of whole men, and with remarkable fidelity. Meticulously researched, this work neither shies away from nor lingers on the flaws each man possessed. For example Patton's philandering and alcohol abuse in the 1930s are reasonably depicted as characteristic of an ambitious warrior trapped in a peacetime army, bored, restless, and desperately worried that his moment had come and gone. Likewise, Eisenhower's relationship with Kay Summersby is addressed directly. The relationship was inappropriate and, from a security point of view, reckless. Bradley worried about this, as did Marshall and members of Eisenhower's personal staff. However, Jordan concludes that Eisenhower needed Kay to maintain some sense of stability in his life and that whatever degree of infidelity it entailed was compensated by Ike's resulting performance. Jordan also discusses in detail the episode in which Eisenhower reached a point where he was willing to force his superiors to fire either Montgomery or him. This was an example of superb political acumen and the use of power.

Jordan documents Patton's remarkable churlishness and childishness, as well as his extraordinary drive and sense of the operational moment. Jordan displays both a keen understanding of and sympathy for the flamboyant Patton, just as he does with Eisenhower. With Bradley, however, Jordan is just a touch less surefooted, perhaps because Bradley was by nature a more private man. Yet for all that, there are few passages more moving and superbly depicted than those describing Bradley's reaction when, during the Battle of the Bulge, Eisenhower took the First and Ninth Armies and assigned them to Montgomery. Bradley's rage and hurt were only magnified when his threat of resignation was ignored. However, his rage was nothing compared to the mean-spiritedness of Patton, who, removed from command, savaged in his diary his boss and former friend, alleging that Eisenhower suffered from moral turpitude and cowardice.

Because Jordan understands the nature of these men's relationships, he is able to convey the tragedy that accompanied them. Above all, he documents with marked sympathy the forging and the gradual undoing of the Eisenhower-Patton friendship, as much a casualty of Patton's selfishness and lack of empathy as the inevitable consequence of friends occupying different levels of command responsibility. The friendship between Eisenhower and General Bradley was equally damaged but much more rapidly, stemming from what Bradley felt was a betrayal.

These friendships would in time be, if not fully repaired, reconciled. Eisenhower, following the death of Patton, focused more and more on his late friend's sterling qualities. Perhaps this was easier in Patton's absence. Paradoxically, when Patton's reputation had threatened to eclipse those

of other generals, Eisenhower went out of his way to laud Bradley as the "best combat general of the war."

Although the troika holds center stage, Jordan looks at other relationships these men had. The central role of George Marshall is explored, along with that which Bedell Smith played in supporting Eisenhower. Junior combat commanders such as Lucian Truscott and Mark Clark are given their due.

If all this book delivered were a deeper understanding of these three iconic military figures, it would be well worth the read, but it provides much more. For, in addition to revealing the human side of three generals, it also compares and contrasts their very different leadership styles and methods. Although understated, this comparison elevates the book even further and makes it a must-have for any shelf of serious leadership texts.

RICHARD NORTON
Naval War College

OF SPECIAL INTEREST

RECENT BOOKS

A selection of books of interest recently received at our editorial office, as described by their publishers:

Blake, John. *The* Titanic *Pocketbook: A Passenger's Guide.* Annapolis, Md.: Naval Institute Press, 2011. 128pp. $18.95

"*The* Titanic *Pocketbook* is a unique guide to all aspects of this great ship, incorporating authentic period literature from sources including White Star Line themselves, Harland & Wolff shipyards, and important publications from the period."

Orsini, Alessandro. *Anatomy of the Red Brigades: The Religious Mind-Set of Modern Terrorists.* Ithaca, N.Y.: Cornell Univ. Press, 2009. 317pp. $29.95

"This is a uniquely insightful and comprehensive account of one of history's most fascinating terrorist groups, shedding new light on understanding the modern terrorist mind-set in general and the motivations of the Red Brigades specifically."

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

"More than just a vivid account of the war that seafarers and pirates have waged, *Pirate Hunting* is invaluable reading in a world where acts of piracy are once more a significant threat to maritime commerce and voyagers. It will appeal to readers interested in the history of piracy, anti-piracy operations, and maritime, naval, and military history worldwide."

REFLECTIONS ON READING

Professor John E. Jackson is the Naval War College's Manager for the CNO's Navy Professional Reading Program.

As Facebook, YouTube, Twitter, and other forms of communication have exploded in recent years, some have seen the Navy Professional Reading Program's mission of advocating the reading of worthwhile books as rather "quixotic." This term, derived from the great Spanish novel *Don Quixote of La Mancha,* in which the title character does battle with a windmill, is often used to describe wasted effort and foolish endeavors. But in fact, promoting literature is less quixotic these days than ever, in part because of technological developments in electronic reading devices. The popularity of such electronic readers as the iPad, Kindle, and Nook has actually revived the art of reading. These devices don't replace the art of reading—they make it easier! They also make it, in the eyes of many, a "cool" thing to do. While reading a dusty old book from some library shelf is decidedly "old school," reading the same material as an electronic book (e-book) on the screen of a high-tech tablet computer is somehow more socially acceptable.

The purchase of an e-book reader, now costing less than a hundred dollars in some formats, opens the door to literally hundreds of thousands of books from every genre, most for a minimal fee and many for free. As a bonus, the wireless communications technology that makes such devices possible means that the time lapse between thinking about obtaining a book and beginning to read it can be measured in mere seconds. Never in recorded history have information and entertainment been so readily available. So, if e-book readers make reading easier (and more socially acceptable), how do we encourage people to read books on these devices and in hard copy? One way is to consider what some well-known and highly intelligent folks have had to say over the centuries about the value of reading.

- One of the earliest recorded quotes about reading came from Chinese philosopher Confucius, who noted: "No matter how busy you may think you are, you must find time for reading, or surrender yourself to self-chosen ignorance."

- Dutch scholar Desiderius Erasmus (ca. 1466–1536) wrote, "When I get a little money, I buy books; and if any is left, I buy food and clothes."
- In the eighteenth century, columnist Richard Steele said, "Reading is to the mind what exercise is to the body."
- One of America's greatest writers and humorists, Mark Twain, was quoted as saying, "The man who does not read good books has no advantage over the man who can't read."
- At least two U.S. presidents have shared their thoughts about reading. Harry S. Truman noted, "Not all readers are leaders, but all leaders are readers," and Lyndon Baines Johnson once said, "A book is the most effective weapon against intolerance and ignorance."
- In more recent years, management consultant and best-selling author Stephen Covey has written, "There's no better way to inform and expand your mind on a regular basis than to get into the habit of reading good literature. . . . You can get into the best minds that are now or that have ever been in the world."
- The highly popular and prolific author Stephen King calls books "a uniquely portable magic."
- Publisher Charles Scribner says, "Reading is a means of thinking with another person's mind; it forces you to stretch your own."
- Educator and reading expert Mortimer Alder says, "It's not how many books you get through, it's how many books get through to you."
- Finally, motivational speaker Charlie "Tremendous" Jones has declared, "You're the same today as you'll be in five years except for the people you meet and the books you read."

Many of these pithy quotes would make great bumper stickers, and they serve an important purpose by helping to capture the joy and fascination that can be found in reading. The Navy Professional Reading Program is a focused effort to make books of consequence available at little or no cost to sailors throughout the fleet. Our hope is that they will be read, in hard-copy or e-book form, in order to improve the professionalism of the men and women of the finest navy in the world.

JOHN E. JACKSON