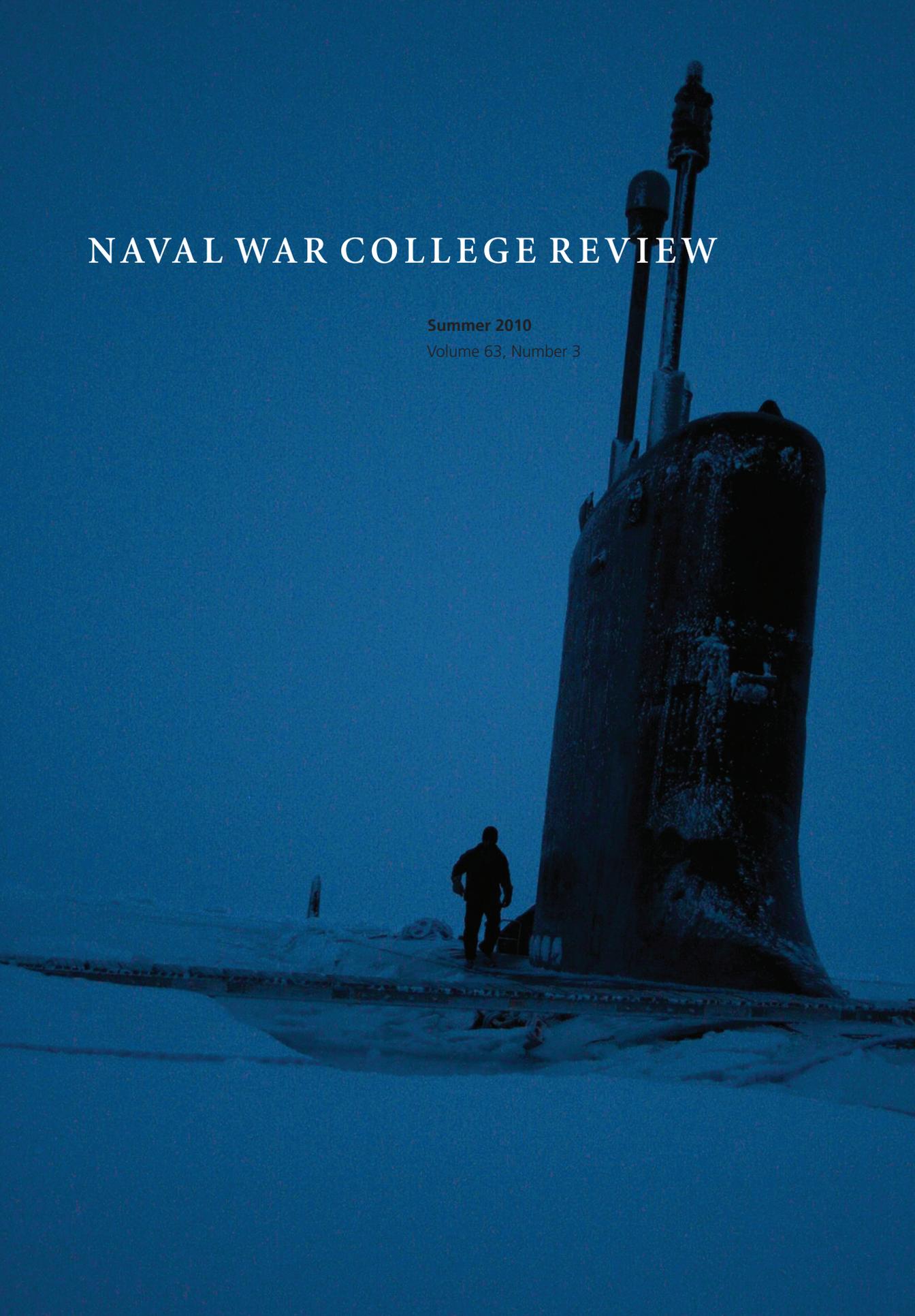


NAVAL WAR COLLEGE REVIEW

Summer 2010

Volume 63, Number 3



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Cover

Not a traditional seasonal image for our Summer issue, but as Caitlyn L. Antrim, executive director of the Rule of Law Committee for the Oceans, points out in “The Next Geographical Pivot: The Russian Arctic in the Twenty-first Century,” Arctic conditions are severe year-round. However, the fact that global climate changes are making them progressively less so, her article argues, is causing shifts that will become fundamental in the economic, security, and geopolitical realms.

The nuclear-powered attack submarine USS Texas (SSN 775), reportedly the first boat of the Virginia class to operate in the Arctic, on the surface near the North Pole in October 2009. U.S. Navy photo by Sonar Technician (Submarines) 1st Class Hamilton Felt, USN.

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S-2

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A potentially dangerous gap exists between naval maritime security operations in high-threat situations and the management of merchant-vessel traffic—as well as between the resources available to naval forces and to nonstate threats. Naval Vessel Traffic Services could be an effective response.

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FROM THE EDITORS

The often acrimonious debate over the nature and significance of global climate change shows no signs of letting up anytime soon. There can be little doubt that many have been too ready to accept extreme claims concerning the threat potentially posed by global warming and associated changes in global sea level and weather patterns. Nevertheless, there is one part of the world where rising temperatures in recent years have indeed dramatically affected the environment and posed clear new challenges and opportunities—the Arctic. In “The Next Geopolitical Pivot: The Russian Arctic in the Twenty-first Century,” Caitlyn Antrim provides a comprehensive analysis of the meaning of a more accessible Arctic for the Russian Federation. She argues that development of the Russian Arctic has the potential for effecting a profound geopolitical transformation of Russia and its relationship with other maritime and Arctic powers, notably the United States. Antrim’s article provides a useful complement to the article in our last issue by Rear Admiral David W. Titley and Courtney C. St. John on Arctic security and the work of the U.S. Navy’s Task Force Climate Change.

In “Chinese Missile Strategy and the U.S. Naval Presence in Japan: The Operational View from Beijing,” Toshi Yoshihara of the Naval War College faculty offers a timely and groundbreaking assessment of the potential threat to U.S. naval bases in Japan from the growing ballistic-missile arsenal of the People’s Republic of China. There is a surprising amount of detailed commentary on this highly sensitive issue in the open Chinese literature. Of particular interest is Professor Yoshihara’s identification of possible Chinese misconceptions that could come into play under certain scenarios, with potentially dangerous consequences for deterrence and escalation control.

Technological innovation has long been a key strength of the American military and of the U.S. Navy in particular. Maintaining the pace of innovation and leveraging new technologies effectively will be critical for the Navy in a period of continued heavy demand for the nation’s ground forces and an increasingly stressful fiscal environment. In “The *Zumwalt*-Class Destroyer: A Technology ‘Bridge’ Shaping the Navy after Next,” George V. Galdorisi and Scott C. Truver discuss DDG 1000 as a test bed of revolutionary technologies with wide applicability throughout the Navy. Thomas J. Culora’s “Strategic Implications of

Obscurants: History and Future” shows that new technology does not have to be high technology to play an important role in the Navy of the future. He argues that low-cost obscurants based on a proven technology used by the Army hold considerable promise for protecting Navy ships at sea from attack by advanced antiship missiles. It may be added that this concept, currently in the process of validation, originated in a student research project at the Naval War College. Thomas J. Culora is chairman of the Warfare Analysis and Research Department at the College.

Two articles by senior Pakistani defense analysts serve to highlight the growing importance of South Asia in American defense and foreign policy, particularly following the recent intensification of U.S. military operations in Afghanistan and Pakistan itself, as well as the strengthening of this nation’s strategic partnership with the Pakistani government. Muhammad A. Khan, a retired commander in the Pakistan Navy, provides a detailed discussion of S-2, India’s recently launched nuclear-armed ballistic-missile submarine, and its implications for regional security and for Pakistan’s own nuclear and naval policies. Feroz Hassan Khan, in “Prospects for Indian and Pakistani Arms Control and Confidence-Building Measures,” provides an authoritative account of the history of failed Indian and Pakistani arms control discussions and makes a cogent case for the necessity and feasibility of steps by both countries to devise a range of “CBMs” in order to defuse the increasingly dangerous tensions in their relationship. Feroz Hassan Khan is a retired Pakistan Army general and senior researcher at the Naval Postgraduate School in Monterey, California. His article is based on a presentation given at a workshop titled “Asia and Arms Control” co-sponsored by the Naval War College, the Carnegie Endowment for International Peace, and the Nonproliferation Policy Education Center and held in January of this year in Washington, D.C.

Finally, two papers, also by foreign authors, address aspects of global maritime security cooperation. F. J. Sluiman and Philip de Koning, officers in the Royal Netherlands Navy Reserve, in “Naval Vessel Traffic Services: Enhancing the Safety of Merchant Shipping in Maritime Security Operations,” propose an innovative concept for improving naval monitoring and protection of merchant shipping in dangerous waters such as the Gulf of Aden. Alberto A. Soto, a commander in the Chilean Navy and recently a student at the Naval War College, discusses the political and operational challenges involved in maritime information sharing in the Americas.

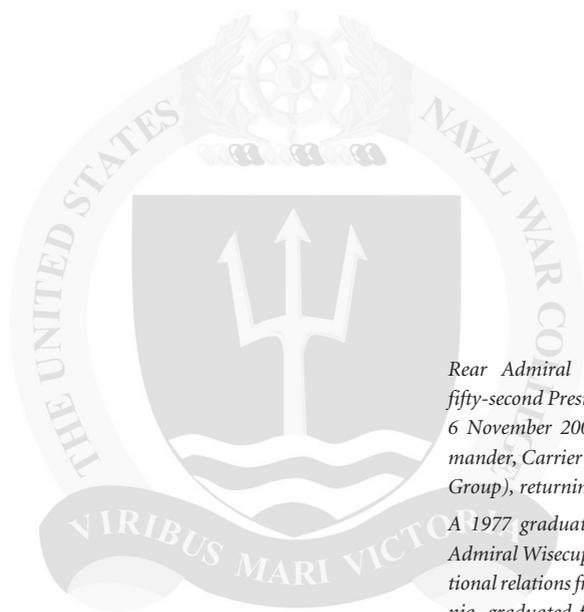
NEW FROM THE NAVAL WAR COLLEGE PRESS

The newest (thirty-fifth) title in our Newport Papers monograph series, *Piracy and Maritime Crime: Historical and Modern Case Studies*, edited by Bruce A. Elleman,

Andrew Forbes, and David Rosenberg, is now available from the editorial office, in addition to its posting on our website (www.usnwc.edu/Publications/). Dr. Elleman, of the Naval War College Maritime History Department, and his coeditors have collected twelve case studies that allow conclusions to be drawn on uses and limitations of naval antipiracy operations in the context of new technology and modern national policy goals.

Nineteen-Gun Salute: Case Studies of Operational, Strategic, and Diplomatic Naval Leadership during the 20th and Early 21st Centuries, edited by John B. Hattendorf and Bruce A. Elleman, is now available for sale by the Government Printing Office's online bookstore, at bookstore.gpo.gov/. This collection of brief biographies of nineteen U.S. Navy admirals, from W. S. Sims to Joseph W. Preuher, with conclusions by the editors focusing particularly on leadership skills in the operational and strategic arenas, was sponsored by the Naval War College's College of Operational and Strategic Leadership and was jointly produced by the Naval War College Press and the Government Printing Office.

The seventeenth in our Historical Monograph series—*Digesting History: The U.S. Naval War College, the Lessons of World War Two, and Future Naval Warfare, 1945–1947*, by Hal M. Friedman—has been delivered by the printer and is available for sale by the Government Printing Office's online bookstore, at bookstore.gpo.gov/. Dr. Friedman, professor of modern history at Henry Ford Community College in Dearborn, Michigan, describes how the staff, instructors, and students at the Naval War College attempted between 1945 and 1947 to determine the shape of future wars and what the Navy would have to do in order to prepare to fight those wars in a Cold War context.



Rear Admiral James “Phil” Wisecup became the fifty-second President of the U.S. Naval War College on 6 November 2008. He most recently served as Commander, Carrier Strike Group 7 (Ronald Reagan Strike Group), returning from deployment in October 2008.

A 1977 graduate of the U.S. Naval Academy, Rear Admiral Wisecup earned his master’s degree in international relations from the University of Southern California, graduated from the Naval War College in 1998, and also earned a degree from the University of Strasbourg, France, as an Olmsted Scholar, in 1982.

At sea, he served as executive officer of USS Valley Forge (CG 50) during Operation DESERT STORM. As Commanding Officer, USS Callaghan (DDG 994), he was awarded the Vice Admiral James Stockdale Award for Inspirational Leadership. He served as Commander, Destroyer Squadron 21 during Operation ENDURING FREEDOM after 9/11.

Ashore, he was assigned to NATO Headquarters in Brussels, Belgium; served as Force Planner and Ship Scheduler for Commander, U.S. Naval Surface Forces, Pacific; and served as action officer for Navy Headquarters Plans/Policy Staff. He served as a fellow on the Chief of Naval Operations Strategic Studies Group; as Director, White House Situation Room; and as Commander, U.S. Naval Forces Korea.

Rear Admiral Wisecup’s awards include the Defense Superior Service Medal, Legion of Merit, Bronze Star, and various unit, service, and campaign awards.

PRESIDENT'S FORUM



Some Reflections on Innovation, Problem Solving, and Original Research

WE RECENTLY HAD VISITS from the Chief of Naval Operations (CNO) and General James Mattis (Commander, U.S. Joint Forces Command) to Newport. CNO likes to talk about the advantages of students having “unstructured” time to think while at the Naval War College. Granted, there are courses, research, conferences, and the like constantly in progress, so it’s not completely unstructured. That said, a famous scholar of the Middle Ages, Joseph Strayer of Princeton, liked to critique his students’ work as needing more “looking out the window” time.¹ Having in mind the million-dollar view out the windows in Newport, rain or shine, it is the idea of taking this time to think about our profession and problems that I’d like to talk about. In his recent remarks General Mattis made the point that we always need to know “what problem we’re trying to solve”—good guidance for a place like Newport.

If you read the books *Plan Orange* or *Agents of Innovation*, you will find that in the period leading up to the Second World War there was a relatively simple process by which the fleet and the Navy’s leadership could use the intellectual capital of the Naval War College to look at issues of importance to the Navy and Marine Corps.² The results took the form, for example, of “Naval War College Suggestions” to the General Board (naval leadership and senior action group, which lasted for just over fifty years and was disestablished in 1951). Gaming done in Newport was predominantly tactical, but it also involved campaign planning, trying to resolve issues that were considered problems for the Navy. This was not just a matter of the introduction of new technologies, like naval aviation, but of attempts to overcome the nonfortification clause of the Washington Naval Treaty, to study logistics, and to conceptualize the network of bases that would be needed to conduct operations over vast distances. Resolving that

latter issue led to thinking about the scale of operations needed to capture and hold the many islands that would have to be taken in the coming war with Japan. Another good example is the story of Naval War College faculty member Captain Joseph Mason Reeves, who as head of the Tactics Department at the height of the controversy over battleship vulnerability in 1925 convincingly showed the General Board that naval aviation would undoubtedly influence the outcome of future sea battles.³ Later, in 1929, as the Navy's first qualified aviator to become a flag officer, Reeves participated in Fleet Problem IX, in which he "attacked" the Panama Canal, showing in practice how to use this new capability for offense and demonstrating that aviation could do far more than scout for the battleships.

My point is that though the Goldwater-Nichols Defense Reorganization Act of 1986 made the fight much more joint, and for good reason, there are still naval problems to solve. Here in Newport we are chartered to put intellectual effort into looking for the solutions to these and other problems. Frustration breeds innovation. To paraphrase John Boyd, "machines don't fight wars, people do. And they use their minds."

It's the "using our minds" piece that has my attention—and trying to answer the "why" questions with a huge dose of intellectual honesty.

Sitting in my office last week, I was listening to a recording made in 1962, now transferred to a CD, of a talk Admiral Chester Nimitz gave here at the College. I had never heard Nimitz's voice. He said that his preparation in Newport had given him the intellectual wherewithal to consider the scale of operations that would have to be accomplished in a Pacific campaign. When the time came, he already had an idea what it would mean—for instance, he needed to expand the Navy's officer corps by a "factor of fifteen." That's a huge impact. (Remember, Nimitz established one of the first six Naval Reserve Officer Training Corps units, at the University of California at Berkeley.) He went on to say that during the war he hardly had to look at a map, as he had become familiar with the Pacific islands and atolls during his studies in Newport in 1923, which had forced him for the first time to consider the logistics of such a massive Pacific naval campaign.

The other aspect of the College, besides a top-flight education afforded by a distinguished faculty and unstructured time to think, is original research, which normally goes to the heart of "why" questions. We have that going on here in a variety of areas. We have faculty experts in both the teaching and research ranks, as you can see from the lineup of articles in this issue of the *Naval War College Review*: "Chinese Missile Strategy," "Maritime Information-Sharing Strategy," and work on tactics. There are also studies in progress on small wars, nuclear weapons in North Korea, international law and operations in exclusive economic zones, and a variety of work concerning South Asia, cyber issues, command and control, outer space, and ballistic-missile defense. There is no staff of

“action officers” here, only a dedicated and distinguished faculty doing work that—at least from where I sit—matters. They examine regional issues across the world, working to help fleet commanders, combatant commanders, and CNO to address some current “wicked hard” issues and to anticipate future issues. The other part of this original research is student/faculty research done by the Halsey Groups, which work on operational and regional problems, as well as the Mahan Group, which works deterrence issues.

There is also the College of Operational and Strategic Leadership (COSL), specializing in leadership and officer-development issues and overseeing the Stockdale Group students. Its faculty is currently combing through three years of original research for conclusions we might draw about how to educate and develop our future leaders. COSL recently produced a very interesting ethics conference and is conducting award-winning research on “Capabilities-Based Competencies Assessment,” which could offer new ways to figure out how the Navy should man, train, and equip itself.⁴ It’s an attempt to think in new ways about how to get the right people into the right jobs in an organization as huge as the U.S. Navy. We are working closely with the fleet on that, starting with what type of people is needed in the Maritime Operations Centers. We’re teaming with several organizations and will shortly be asking the numbered-fleet commanders questions about what kinds of folks they want and need to do their work and how the system can respond to the demand. You get the picture.

This research is solid, and some of it is being done only here in Newport, though we often work in close partnership with other parts of the Navy to ensure we’re connected and not off in some “ivory tower”—one of the reasons we had a small team at Carnegie Mellon in early April, for example. We’re simply looking for the best ideas and trying to attract the best talent to come to Newport to help us work on them, whether in uniform or civilian—we just want the best.

The final example is war gaming, which, in the United States, originated in Newport and now comes in a variety of sizes and shapes. A lot of this work feeds into research going on in other places or can spin off into new research efforts. This work merits a slot in a future “President’s Forum.” For example, as this goes to press we are in Colombia for a regional seminar, with officers from a dozen countries, gaming scenarios for maritime domain awareness. So a combination of teaching faculty, research faculty, and students makes up the intellectual capital we’re trying to get to the right places, whether in the Navy bureaus or in the fleet. It’s a pretty interesting institution to be a part of, especially now.

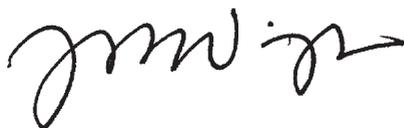
A former President of the College, Admiral Stansfield Turner, once correctly said, “Scholarship for its own sake is of no interest to us.” We are interested in how research can influence policy, influence our decision making, and generally improve how the naval services work to serve the nation. So I see one of my main

duties as helping get the best of our intellectual efforts in front of the right folks and bringing them to bear in the right places in our own institutions, where they can do some good. No one up here in Newport thinks we have all the answers, but it's progress to be asking the right questions and then at least trying to get the results to where they might actually make a difference. We are, after all, engaged in the longest conflict in our history, and we owe CNO, the Navy, and the nation our best efforts—anything less, and we might as well pack up and go home.

There are times I feel a real sense of urgency about getting to the right answers quickly, and that is the nature of things sometimes in our nation's capital, where they must live with the twenty-four-hour news cycle. But the history of the Naval War College is not about quick, snappy answers; it's about doing the work. It's almost a biological process, like not expecting to eat popcorn the day after planting the seeds. War and its prevention are among the most complex activities we human beings take on. Here in Newport we are trying our best to get our thinking as right as we can. It's about gaining insights—sometimes inexact, even vague, and only after painstaking analysis and gaming, followed by synthesis, sometimes over a period of years; getting the Navy leadership to accept or reject the research, after iterative experimentation and testing; writing up the lessons to inform doctrine; and then building on the lessons, year after year.

The composer Benjamin Britten once said, "Composing is like driving down a foggy road toward a house. Slowly you see more details of the house—the color of the slates and bricks, the shape of the windows. The notes are the bricks and the mortar of the house." I think this is a fitting metaphor, one that aptly describes, in part, the nature of our work at the Naval War College. Our record, as a nation, of predicting the future is not great; we are often in the fog, often get things really wrong, and sometimes we miss indicators that are obvious in hindsight.

That doesn't mean we should give up trying to peer into the fog and darkness to see the way ahead—the work is too important—but it does mean that here in Newport, as we enter the second decade of the twenty-first century, we should always be prepared for surprises, that we should be thinking continually about what the people who have to make the tough decisions for the Navy of the future will need to do business.

A handwritten signature in black ink, appearing to read "J. Wiscup". The signature is fluid and cursive, with a long horizontal stroke at the end.

JAMES P. WISECUP

*Rear Admiral, U.S. Navy
President, Naval War College*

NOTES

1. Norman F. Cantor, *Inventing the Middle Ages: The Lives, Works, and Ideas of the Great Medievalists of the Twentieth Century* (New York: William Morrow, 1991).
2. Edward S. Miller, *War Plan Orange: The U.S. Strategy to Defeat Japan, 1897–1945* (Annapolis, Md.: Naval Institute Press, 1991); John T. Kuehn, *Agents of Innovation: The General Board and the Design of the Fleet That Defeated the Japanese Navy* (Annapolis, Md.: Naval Institute Press, 2008).
3. Thomas Wildenberg, *Admiral Joseph Mason Reeves and the Origins of Carrier Airpower* (Washington, D.C.: Brassey's, 2003), p. 118.
4. Richard Suttie, "Linking Education to Capabilities," U.S. Naval Institute *Proceedings* 135 (April 2009), pp. 20–24. For the ethics conference see www.usnwc.edu/Events/Ethics-Conference-2010.aspx.

Caitlyn Antrim is the executive director of the Rule of Law Committee for the Oceans and specializes in the analysis and negotiation of international regimes. She served as a deputy U.S. representative to the Third United Nations Conference on the Law of the Sea and on delegations and secretariats to other international conferences. She holds the professional degree of Engineer and a BS in mechanical engineering from the Massachusetts Institute of Technology. She was a Distinguished Naval Graduate at MIT and served as damage control assistant on the guided-missile destroyer escort USS Schofield (DEG 3).

THE NEXT GEOGRAPHICAL PIVOT

The Russian Arctic in the Twenty-first Century

Caitlyn L. Antrim

In the summer of 2007, when the Russian flag was placed on the ocean floor at the North Pole and the Arctic ice cover receded to the lowest extent ever recorded, the media sought story lines that would grab the public's attention. Titles and headlines such as "Arctic Meltdown," "A New Cold War," and "Arctic Land Grab," focusing on Russian activities in the Arctic, all fed a sense of competition, conflict, and crisis.¹

These story lines were effective because they built upon geopolitical beliefs that have been with us for over a century, from the final years of the Russian Empire through the Soviet era and into the first years of the Russian Federation. For all that time, the core of Western geopolitical thought has held that there is a natural conflict between the landlocked Eurasian heartland and the Western maritime nations. In this analysis, the Arctic has played an essential, yet unrecognized, role as the northern wall in the Western strategy to enclose and contain the world's largest land power. Throughout the twentieth century, scant attention was given by the West to changes in Arctic technology, economics, climate, and law that had been under way since the 1930s. Stories of Russian claims to the Arctic Ocean seabed and control of new sea-lanes, interpreted through the old (and by now, creaky) geopolitics of the early twentieth century, heightened fears of conflict.

The geopolitics of the twenty-first century will be different from the days of empire and conflict of the nineteenth and twentieth. The increased accessibility of the Arctic, with its energy and mineral resources, new fisheries, shortened sea routes, and access to rivers flowing north to the Arctic, is pushing Russia to become a maritime state. As it progresses, Russia will no longer be susceptible

to geographic isolation or encirclement. At the same time, these changes will require Russia to become more closely integrated into global commercial and financial networks, to welcome international business involvement, and to participate in international bodies that harmonize international shipping, safety, security, and environmental regulations.

These changes are already opening the way for a new geostrategy that has its roots in the geopolitical thinking of the twentieth century but addresses the changes that are turning the Arctic from an afterthought to a central front in the new geopolitical view of the world. In this new geostrategy, Russia assumes a role as one of the maritime powers of the “rimland,” and the Russian Arctic becomes a new geographical pivot among the great powers. Decades will pass before Russia can fully make the shift from Eurasian heartland to Arctic coastal state, but it is already integrating policies toward this end into the strategies of its national security council and federal ministries, and it shows every indication of expecting to seize its future seat among the major maritime states of the world.

THE ARCTIC IN TWENTIETH-CENTURY GEOPOLITICS

The twentieth century began with Alfred Thayer Mahan’s geopolitical study *The Problem of Asia*.² In it, Mahan addressed the competition between the land power of the Russian Empire and the colonial and trading nations whose interests lay along the periphery of the Asian continent, from the Near East to China.

Mahan saw Russia as a land power that was limited in its ability to bring its strength to bear through the “debatable lands” that separated Russia from the Western powers in southern Asia, particularly the British Empire and the United States, which could maintain their dominance along the Asian coast by way of maritime trade and sea power. Maintenance of Western dominance in southern Asia depended on Russia’s inability to mount a naval front from the south in addition to its potential land approach from the north. To challenge the West, Russia needed either access to the sea from its own ports or an overland route to other ports, a possibility that gave rise to the “Great Game” of the nineteenth century and the armed and political conflicts in twentieth-century Afghanistan and Iran.

In assessing Russia’s access to the sea, Mahan emphasized the geographical limitations on Russian sea power. From St. Petersburg, Russia had to pass through the Baltic Sea, facing the sea power of the Nordic states in the Gulf of Finland and the Danish straits. From the Crimea on the Black Sea, Russian ships had to pass through the Dardanelles and either the Strait of Gibraltar or the Suez Canal. Ocean access from the Far Eastern port of Vladivostok was possible, but its distance from the economic, political, and military center of Russia and the growing maritime challenge of Japan made that outpost only a limited threat to Western interests in Asia.

Containment of Russia and its Eurasian heartland became the geostrategic theme of the century. Mackinder's vision was refined in the early 1940s by Yale University professor Nicholas Spykman.⁴ Spykman died in 1943, but his ideas of enclosure and containment were to be put into practice in the postwar era in response to Soviet expansion of control over Eastern Europe and the short-lived alliance with communist China.

Spykman, like Mahan and Mackinder before him, did not address Russian access to the Arctic. The significance of this omission is hinted at by the crucial role of the port of Murmansk as the eastern terminus for supplies from the West in World War II, as well as by the establishment of the Soviet navy's Northern Fleet in 1933 and the growing importance of sea routes linking ports along the Eurasian Arctic coast to the Soviet Union.

Even as late as 1997, Zbigniew Brzezinski (who had been President Jimmy Carter's national security adviser), presented a view of an enclosable Russia bounded by Europe in the west, by former Soviet republics to the southwest, and by India, China, and Japan to the south and east.⁵ Although he updated the geopolitical situation to reflect the breakup of the Soviet Union, his geostrategic approach remained one of enclosure and containment, with new relationships being established with the former Soviet republics and client states by the United States and NATO. Once again, the northern enclosure of Russia, the "fourth wall," was assumed but not addressed—and so the twentieth century was closing with the same blind spot that had been introduced a hundred years before.

By the end of the twentieth century, the enclosure and containment of Russia seemed complete, with NATO and the European Union to the west, Western military involvement in Iraq and Afghanistan, and the rise of India and China as substantial powers on land and sea. The strategy of enclosure and containment, which rested on the belief that geography and political power could permanently enclose Russia, appeared to have endured. But change was coming to the Arctic, the frozen north was changing, and the geopolitical wall to the north was beginning to crumble.

RUSSIA AND THE ARCTIC

Most of the attention paid to the benefits of Arctic warming and retreat of the polar ice cover has focused on the economic potential of offshore oil and gas deposits and the savings of time and fuel made possible by new transarctic shipping routes. These benefits are significant, but for Russia there are other interests related to the increased accessibility of the Arctic, including securing a newly opened Arctic frontier and increasing access to the rivers that reach throughout the interior of the country. Russia's perception of its Arctic interests can be grouped into four categories: economics, security, transportation, and development.

Russia's Arctic Seas and Their Economic Importance

Russia's Arctic encompasses the northern seas, islands, continental shelf, and the coast of the Eurasian continent; in addition, it is closely linked to the vast watershed that flows to the sea. The Arctic coast of Russia spans from its border with Norway on the Kola Peninsula eastward to the Bering Strait. Along the coast is a wide continental shelf, running eastward from the Barents Sea in the west to the Kara Sea, the Laptev Sea, the East Siberian Sea, and the Chukchi Sea. Of these seas, only the Barents is largely ice-free throughout the year, a result of the Gulf Stream returning there to the Arctic. The continental shelf extends northward far beyond the two-hundred-nautical-mile exclusive economic zone (EEZ). When free of ice, the coastline along the Arctic extends almost forty thousand kilometers (including the coasts of the northern islands), which must be patrolled and protected. The Russian Arctic coast drains a watershed of thirteen million square kilometers, equal to about three-quarters of the total land area of Russia and an area larger than any country on earth save Russia itself.

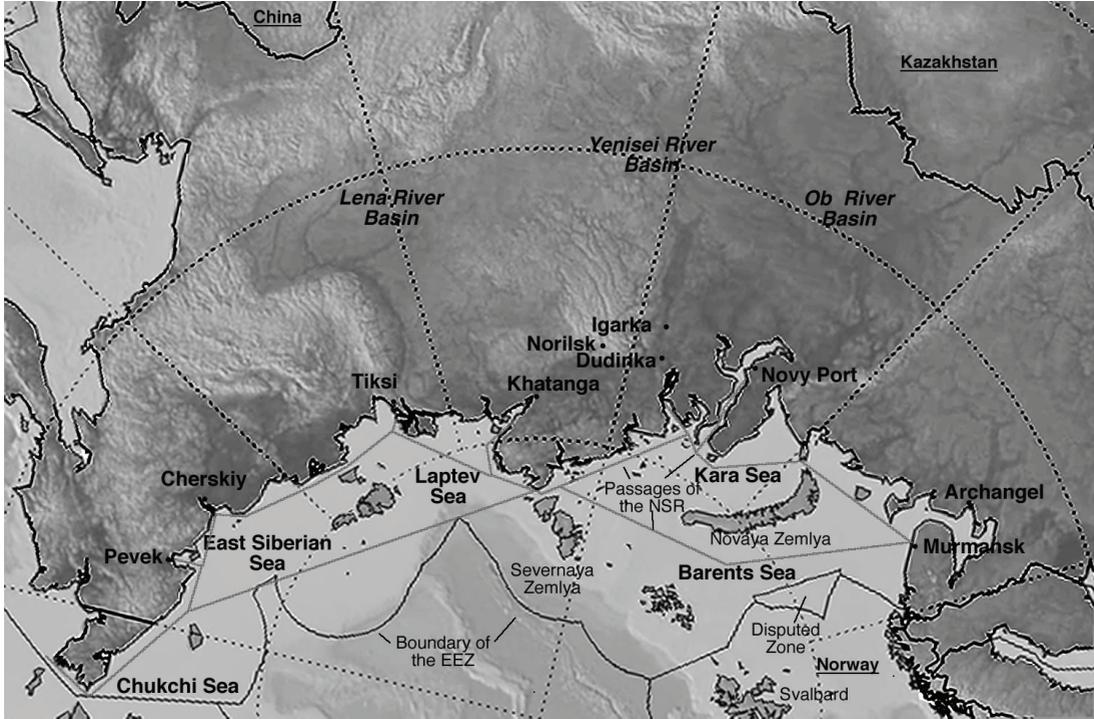
Russia has long been a major producer of oil and gas from land-based resources. Now the resources of the Arctic continental shelf are drawing increasing attention. Deposits in the Barents Sea are already being developed, with other known deposits in both the Barents and the Kara seas being eyed for future exploitation. Still more energy resources are awaiting discovery. In 2008, the U.S. Geological Survey, estimating the as-yet-undiscovered resources of oil and gas in the Arctic, projected over 60 percent of the total resources (equivalent to about 412 billion barrels of oil) to be located in Russian territory, with all but a very small percentage on shore or inside the EEZ.⁶ The area of greatest potential is in the Kara Sea basin, with smaller, yet still respectable, prospects in the Laptev and East Siberian seas.

Security and Naval Operations

Russia's Northern Fleet has been based on the Kola Peninsula, on the southwest shore of the Barents Sea, since 1933. The fleet is now the largest and most powerful component of the Russian navy. From its bases, the fleet's ballistic-missile submarines deploy under the Arctic ice, as will be discussed below. The Northern Fleet is also well situated to deploy year-round to the North and South Atlantic and to escort commercial shipping to or from ports in northwest Russia. While the mobility of the Northern Fleet could be restricted to the Arctic in the case of unrestricted naval warfare, at other times it has the free access to the ocean that was sought by imperial Russia for centuries (see map 2).

If Western geostrategists had a blind spot with regard to the fourth wall of Russia's enclosure, the potential for change was apparent to others even before World War II. In a 1938 article in *Foreign Affairs*, H. P. Smolka offered a prescient

MAP 2



Source: Compiled by author from polar projection and topography in *GeoMapApp*, Marine Geoscience Data System, Lamont-Doherty Earth Observatory, Columbia University, www.goemapapp.org/.

outlook for Russia in the Arctic. He addressed the basing of the Northern Fleet on the Kola Peninsula and examined the role of the newly formed Central Administration of the Northern Sea Route as the development agency for the Russian Arctic coast in Asia, even comparing the Administration to the British East India Company.⁷ In spite of this prominent discussion, no hint of reconsideration of the strategy of enclosure was to appear in the work of the geostrategists who followed Mahan and Mackinder.

Smolka identified the military benefit of the northern development activities by addressing Mahan's points about Russia's lack of access to the high seas. He argued that the fleet based in Murmansk would have access to the open ocean: "Russia would thus be bottled up on three sides: west, south and east. But in the North—and there only—there is an independent, continuous and all-Russian coastline, unassailable by anyone."⁸

Today, Russia's Coastal Border Guard, which has been evolving from the maritime division of the Soviet-era KGB into a modern coast guard with functions comparable to those of similar services in Western states, is responsible for monitoring maritime activities along the coast and in the EEZ and for enforcing

national laws and regulations. It is a small service with assets that include conventional frigates and corvettes assigned to the Pacific and Black Sea fleets, several fisheries and EEZ patrol vessels, and lighter vessels intended for near-coast operations, but only a handful of these are designed for Arctic conditions or ice operations. Russia's ability to patrol and monitor its increasingly accessible Arctic EEZ has not kept pace with the receding summer ice cover.⁹

The Northeast Passage and the Northern Sea Route

The first single-season transit of the Northeast Passage (that is, along the full length of the Arctic coast of Russia) was not completed until 1932, coinciding with the Soviet Union's recognition of the north as a new and critical dimension of its national security. The Central Administration of the Northern Sea Route was created that same year with the mission of developing the resources of the north. Sea routes were charted and icebreakers were built to make it possible to reach ports from the Kara Gate (the passage between the island of Novaya Zemlya and the mainland, separating the seas north of Europe from those of Asia) eastward to the Bering Strait. This section of the Northeast Passage is defined as the "Northern Sea Route" (NSR). Military bases and closed industrial cities, as well as some of the infamous gulags, were established along this northern frontier in the 1930s and 1940s, and air bases and monitoring stations were operated along the Arctic during the Cold War era. Port facilities were maintained near the mouths of the major rivers feeding into the Arctic to support access to the interior. Traffic along the NSR grew slowly but continuously through the rest of the Soviet era.

The economic disruptions accompanying the transition from the Soviet Union to the Russian Federation led to a decade of neglect of the NSR and of the port facilities that had supported it. Cargo along the NSR declined precipitously during the 1990s. In 2000, then-president Vladimir Putin brought renewed attention to the NSR, as part of a national economic strategy that marked the end of the decline and a new vision of the Northern Sea Route as a core component of Russia's economic development strategy.¹⁰

The NSR serves both as a set of regional sea-lanes and as a transarctic passage, with a natural divide at the Taymyr Peninsula, which separates the Kara Sea to the west from the Laptev Sea to the east. This is the northernmost point of Asia and the last point that opens during the summer ice melt. The passage is constrained by the Vilkitski Strait, which separates the mainland from the island of Severnaya Zemlya, where the shallow depth and retention of ice late into the summer limit the transit of ships between east and west. Partial, regional routes continue to operate even when transit along its full length is prevented by the freezing of the straits along the way.

The NSR provides access to such regional ports as Novy Port, near the mouth of the Ob River; Dikson, Dudinka, and Ingarka (towns on the Yenisei that have served as loading points for mineral and timber resources); and Tiksi, at the mouth of the Lena River. These ports also support coastal shipping during the summer season, when ice cover is at its minimum.

Beyond providing a national route connecting northern ports and access to the interior, the NSR is of interest to global shipping firms as an alternative to the longer southern route between the Far East and Europe. The journey from Yokohama to Rotterdam can be reduced by about four thousand miles by way of the NSR. Even with reduced speeds in a northern passage, the shortened distance translates to a quicker transit time and decreased fuel consumption, with substantial financial savings to the shipper. At present, the Arctic shipping season is of unpredictable length, dependent on changing climate patterns and sea and ice conditions that require ships designed specifically for passage through icy waters. The NSR will not appeal to major shipping firms as a regular route until more experience is gained and the route is upgraded with modern aids to navigation, port facilities, and search-and-rescue capabilities. Over time, those developments, with or without further retreat of the polar ice, will make the Northeast Passage more attractive, particularly as the number of ice-capable vessels increases.

The NSR depends on powerful icebreakers to open routes through the ice and to escort shipping even in summertime. Six nuclear icebreakers, four of the heavy *Arktika* class and two of the shallow-draft *Taymyr* class, maintain the NSR, and major Russian commercial enterprises have begun acquiring their own icebreaking cargo ships. In 2009, the fleet operated by Norilsk Nickel MMC, in north-central Siberia, accounted for nearly a million tons of shipping from Dudinka through the Kara Sea and on to the Kola Peninsula. Norilsk's success is leading to the design of similar vessels for unescorted transport of oil and natural gas in the Arctic.¹¹

In theory, the NSR can also serve as a sea corridor by which the Northern Fleet could reach the Pacific Ocean, but such passage remains hazardous, because naval vessels are not designed to ice-class standards. Passage through ice-infested waters, even with icebreaker escorts, is potentially dangerous to the hulls and propulsion systems of warships, whose complex superstructures are also susceptible to icing, to the detriment of stability.¹²

The Arctic Watershed

Russia's Arctic watershed comprises the Eurasian heartland and the northern coastal regions that until recently served as the fourth wall enclosing Russia and limiting its communication and commerce with the rest of the world. The Asian watershed alone, which constitutes what Mackinder defined as the "Pivot Area"

and Spykman called the “Heartland,” accounts for about two-thirds of the land area of Russia.

Russia’s Arctic watershed is richly endowed. The southern part of western Siberia is a highly productive agricultural area. The region is rich in oil and coal, and the Ob and Yenisei provide hydroelectric power. Iron and bauxite provide the raw materials for steel and aluminum production. The central Siberian plateau in the north is home to Norilsk Nickel, the world’s largest producer of nickel and palladium. The Lena provides access to gold and diamond mines. The watershed is also home to the largest forest in the world, stretching across Siberia from the northwest to the southeast.

Vast distances, rugged terrain, and severe climate preclude the construction of highways and railroads in the north, but three major river systems—the Ob, Yenisei, and Lena—reach throughout the watershed, from the Ural Mountains to the west, Mongolia and Kazakhstan in the south, and the mountains bordering the Pacific in the east. The potential of these rivers to support the development of the watershed can be seen in comparison to the importance of the Mississippi River for the United States (see figure 1). At present, this potential has been blocked by the Arctic climate, which opens the rivers in the north for only a couple of months each year.

The climate of the Eurasian coast is one of the most extreme and inhospitable in the world, with winter temperatures reaching minus forty degrees centigrade and ice on the sea as much as two meters thick. The climate takes a severe toll on port facilities, produces extreme fluctuations in river depth and flow during the summer melting season, and requires costly resupply to sustain human habitation during the long and frigid winters. Costs that were borne as security expenses during the Cold War now have to be justified on commercial grounds. As

FIGURE 1
MAJOR RIVERS OF RUSSIA’S ARCTIC WATERSHED

River System	Greatest Length (km)	Basin (sq. km)	Average Discharge (m ³ /sec)
Ob	5,410	2,972,497	12,500
Yenisei	5,539	2,580,000	19,600
Lena	4,472	2,490,000	17,000
Comparison			
Mississippi	6,300	3,225,000	16,200

Source: Russian river data from Global International Waters Assessment, *Russian Arctic, Regional Assessment 1a* (Nairobi, Kenya: United Nations Environmental Programme, 2005).

a result, many old facilities have deteriorated or been abandoned over the past two decades and now need to be rebuilt from scratch. Maintenance of facilities has been complicated by seasonal warming, which causes melting and refreezing of the permafrost that was once, but is no longer, a structurally stable base for construction. Only when commercial traffic provides economic incentives to maintain facilities near or on the Arctic coast do ports (such as Dudinka, which services Norilsk Nickel) manage to operate at their former capacities.

CHANGE IN THE ARCTIC: BREACHING THE FOURTH WALL OF CONTAINMENT

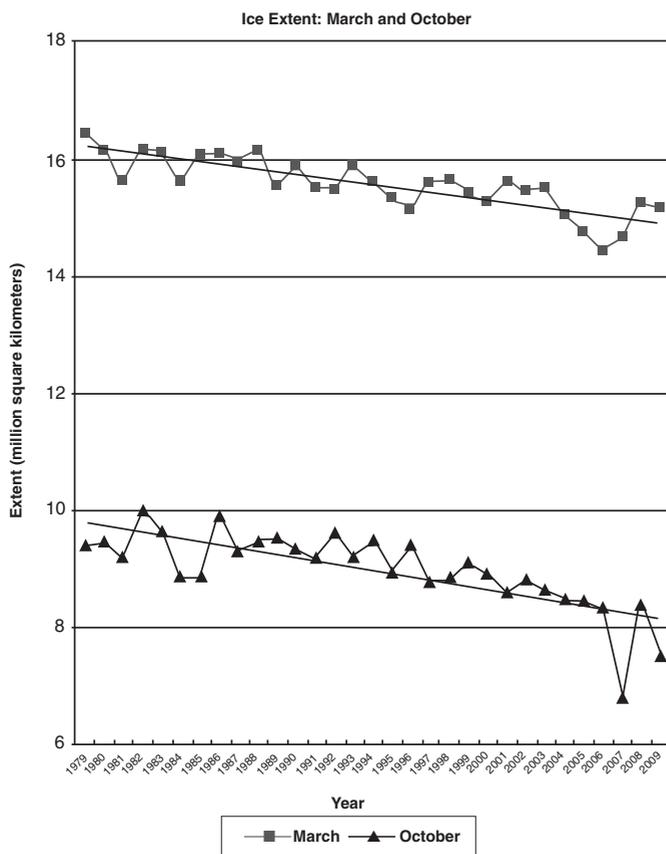
In all of the geostrategic analyses that guided Western strategy in the twentieth century, the Arctic played, as we have seen, a critical but unrecognized role as the fourth wall of the box that enclosed Russia. Western geostrategists from Mahan and Mackinder to Spykman and Brzezinski saw the frozen rivers and seas of the Arctic as completing the containment of Russia. The assumption of an impervious North was reasonable for the analysts of the early twentieth century, who, like Nicholas Spykman, were convinced that “geography is the most fundamental factor in foreign policy because it is the most permanent.”¹³ This maxim, seemingly obvious though it appears, proved incorrect during the first decade of the twenty-first century as changing climatic conditions led to a string of summers that set record lows for ice cover—losses of 30 percent of average ice cover in the late summer and declines in maximum ice cover in winter of more than 10 percent (see figure 2).

Had geostrategists in the middle to late twentieth century examined the evolution of the Arctic in Russia, they would have recognized that the role of the Arctic in completing the enclosure of the heartland rested on four factors: technology, economics, climate, and law. Changes in these factors went unnoticed in the West, even though evidence that they were subject to change began to appear as early as the 1930s.

Arctic Transportation Technology. Russia has fought the barrier of the polar ice for over a century, building an impressive fleet of icebreakers and ice-strengthened vessels. In the four and a half decades between World War II and the breakup of the Soviet Union, traffic along the route rose from less than a half-million tons per year in 1945 to 6.6 million tons in 1989. During that time, the technology of Arctic transportation evolved from simple reinforced bows and strengthened hulls to specialized hull designs and coatings, ballast-shifting capability, nuclear power, pod-mounted directional thrusters, and other remarkable technologies.

Russia’s commitment to the development of ice-covered regions is illustrated by its investment in icebreakers. The current fleet includes six second-generation

FIGURE 2
MAXIMUM AND MINIMUM ICE EXTENT IN THE ARCTIC
1979–2009



Source: National Snow and Ice Data Center, "Archived Data and Images," *Sea Ice Index*, nsidc.org/data/seaice_index/archives/index.html.

nuclear-powered icebreakers, four heavy-duty dual-reactor ships for use along the length of the NSR, and two smaller single-reactor icebreakers capable of clearing routes and escorting ships into ports and rivers. A focus on nuclear icebreakers, however, fails to reflect the full Russian commitment to shipping in the Arctic. Diesel-electric icebreakers that support regional operations and maintain port and river access are being constructed to replace and expand the aging fleet of Soviet-era vessels. The recent introduction of tankers and cargo vessels of the "double acting" type—with azimuthal pod propulsion, cruising bows (for good performance in open water, steaming ahead), and icebreaking hulls aft (for icebreaking, steaming astern)—is helping privatize Arctic routes. Norilsk Nickel's five icebreaking cargo ships run throughout the year. In 2009 they

carried almost a million tons of cargo between Dudinka and Murmansk. The state-owned shipping firm SovComFlot just commissioned its third seventy-thousand-deadweight-ton (dwt) dual-acting tanker for use along the NSR.

Oil and gas technology developed for the Gulf of Mexico and the North Sea is improving access to offshore oil and gas deposits in the Arctic. Advanced offshore techniques, including remote-exploration technology, directional drilling that allows a single well site to reach through the seafloor to tap deposits many kilometers away, and seabed-based production technology, among others, are making development in the Arctic seas more attractive.

New ships and oil and gas technology are only parts of the key to opening the Russian Arctic watershed. Development of ports and river transport systems are necessary to connect to currently isolated regions with the Eurasian heartland. Winter freezing of the northern reaches of rivers will require both new

icebreaking capabilities and improvements to ports and waterways to extend the period during which shipping can reach the sea.

Energy Economics. Economic containment of the Soviet Union began to crumble in the early 1980s, when European nations decided to facilitate the construction of a pipeline to bring natural gas from western Siberia to Western Europe. The pipeline had been opposed by the United States, because it put control over the most strategic of materials, energy, in Soviet hands and because it provided funds and technology to the struggling Soviet economic system. American proponents of using trade as a tool to influence the Soviet Union lost out to European policies that favored East-West trade for mutual benefit.¹⁴ A decade later, with the breakup of the Soviet Union and the rapid privatization of state enterprises, fears of trade and interdependence with Russia declined further. Rising oil and gas prices, the discovery of oil and gas deposits in the Barents Sea, and demonstration of deepwater and cold-weather exploration and exploitation technology made Arctic deposits attractive candidates for development. By the beginning of the twenty-first century, with energy supplies already flowing to Europe, there was little concern about the shift to new Russian sources in the Arctic. Finally, although the Russian Federation still sends mixed messages about foreign investment, particularly in strategic sectors of the economy, opportunities for foreign participation in oil and gas development and transportation now draw Western attention and investment at levels unheard-of only two decades ago.

Changing Climate. Over the last decades of the twentieth century scientists plotted a slow reduction in the extent of ice cover in the Arctic. In the past decade this trend has accelerated. Scientists now are contemplating a continuation of the decline that could lead to a complete seasonal loss of ice cover toward the middle of the century.¹⁵ Arctic winters, however, will continue to be long and harsh, and there is no projection of a complete loss of ice cover in wintertime, though ice then will be of the thinner and less dense first-year variety, and of lesser geographic extent.

RosHydroMet, Russia's hydrometeorological agency, has projected a winter temperature increase of up to four degrees centigrade along Russia's Arctic coast by 2040.¹⁶ Base temperatures near minus forty degrees centigrade, however, mean that the winter ice of the coastal sea and rivers and temperatures will continue to be a challenge. Still, such a change in temperature would be significant, because it would lead to a shorter and less extreme winter in the North, with less time for ice to spread and thicken. Warming in the southern Arctic region of the watershed, estimated at two degrees centigrade, will gradually increase growing periods and lead to the melting of permafrost, slowly moving northward the lands available to human development.

Changes of International Law. Just as Arctic technology, economics, and climate changed over the twentieth century, so did international law as it applies to the Arctic. At the beginning of the twentieth century, when the Arctic was an ice-locked and unexplored realm, there was little need for an international legal regime. In the 1920s, Russia proposed that the coastal states simply divide the northern area into sectors bounded by lines drawn from the North Pole to the coastal borders between states, but this proposal was not accepted by the other Arctic states and eventually was dropped by Russia as well.

It was not until a comprehensive law of the sea was negotiated and implemented in the 1982 United Nations Convention on the Law of the Sea (UNCLOS) that rules applicable to the Arctic were agreed upon. Other laws and agreements, including the 1990 U.S.-USSR Maritime Boundary Agreement, the 1995 Fish Stocks Agreement, and conventions and guidelines of the International Maritime Organization, have further extended the legal regime of the Arctic.¹⁷ The Arctic Council, established in 1996, provides a forum for collaborative study of issues of sustainable development in the Arctic. The Ilulissat Declaration of 2008 commits the five Arctic coastal states (Russia, the United States, Canada, Norway, and Denmark) to resolve issues through diplomatic channels.¹⁸ Additional effort will be needed to resolve disputes over boundaries and access rights between Russia and Norway, but these two nations have far more to gain from one another amicably than they could hope to gain through open conflict. They are currently working to resolve their boundary in the Barents Sea and sovereignty issues around the Svalbard Archipelago.

From the perspective of Russia's interests in the Arctic, the most important aspects of UNCLOS were its creation of the exclusive economic zone, recognition of national jurisdiction over the resources of the continental shelf beyond the EEZ, and establishment of the right of coastal states bordering ice-covered waters to establish and enforce regulations to protect the marine environment within the EEZ. These provisions give Russia jurisdiction over shipping in the NSR, fisheries in the EEZ, and seabed minerals to the outer limit of the continental shelf, all subject to a responsibility to observe the rights of other states as specified in the convention. Under the convention, Russia proposed boundaries of the shelf drawn on the basis of scientific data and a complex formula accounting for distance from shore, depth of seafloor, thickness of sediment, slope of seabed, and the nature of underlying rock. The boundary proposal was submitted in 2001 to the Commission on the Limits of the Continental Shelf, an international commission of experts in marine geology and related fields established by UNCLOS for confirmation of national claims.¹⁹ The Commission returned the proposal to Russia, saying that additional evidence would be needed before

it could rule on the proposal and a new submission is anticipated in the near future.

Under the convention's provisions governing navigation in ice-covered seas, Russia is allowed to establish and enforce regulations applicable to the protection of the Northern Sea Route as long as that route is ice covered for much of the year and the regulations are related to protecting the marine environment, are based on scientific evidence, and do not discriminate on the basis of national origin.²⁰

RUSSIA'S ARCTIC VISION

Russia's leadership has had long involvement in the development of its Arctic, from the establishment of the Northern Sea Route Administration in 1932 to the recent statement of Russia's strategy for the Arctic. In September of 2008, the Security Council of the Russian Federation laid out its vision of Russia's Arctic future, setting out its basic national interests in the Arctic:²¹

- a. Use of the Arctic zone of Russia as a strategic resource base of Russia to tackle socioeconomic development of the country;
- b. Preservation of the Arctic as a zone of peace and cooperation;
- c. Conservation of unique ecosystems of the Arctic;
- d. Use of the Northern Sea Route as a national integrated transport communications line in Arctic Russia.

The document *Foundations of State Policy of the Russian Federation in the Arctic for the Period up to 2020 and Beyond* focuses on priorities for Arctic policy, many of them incorporated into more specific strategies and concepts in other functional areas. From a functional perspective, the key provisions can be grouped into foreign policy, military security, economic development, and transportation and maritime policy.

Foreign Policy. In seeking to establish the Arctic as a “zone of peace and cooperation,” the Russian Arctic policy emphasizes mutually beneficial bilateral and multilateral cooperation among Russia and other Arctic states on the basis of international treaties and agreements to which Russia is a party. Underlying all Russian policies toward the Arctic is support for regional collaboration in the Arctic and commitment to UNCLOS and multilateral organizations and approaches, including the International Maritime Organization, the Arctic Council, and the five Arctic coastal states, who met in Ilulissat, Greenland, in 2008 to issue their declaration on management of the Arctic. The key foreign policy point in the Ilulissat Declaration—that the Arctic coastal states will resolve disputes peacefully in line with the law of the sea—is consistent with the Russian Arctic policy.²²

The Arctic Council consists of the five Arctic coastal states plus Sweden, Finland, and Iceland, as well as the organizations representing indigenous peoples of the Arctic. The council is not a decision-making body; in fact, it has no standing infrastructure or secretariat. It is, however, the principal body in which the regional agenda for environment and development issues in the Arctic is discussed.

Military Security. In military terms, Russia's Arctic policy focuses on the protection of the nation and its borders as they run north into the Arctic Ocean and on achieving a favorable operating regime in the Russian Arctic for the Russian Federation's armed forces and other troops, military formations, and bodies needed in the region, particularly the Federal Security Service's Coastal Border Guard.

The opening of the Arctic brings up four issues of military security: the protection of the ballistic-missile submarine fleet; protection of trade routes along the Arctic and from the Arctic to other parts of the world; defense of coasts, ports, and shipping; and the movement of warships between the Atlantic and Pacific.

The protection of the ballistic-missile submarine fleet, which is part of the traditional naval and strategic security of the region, is not addressed by the Russian Arctic policy. The majority of Russia's strategic missile submarines are based in the Kola Peninsula, from where they can deploy quickly in times of tension to stations under the polar ice cap. The thick and noisy ice pack provides security and eliminates the need to pass through the closely watched Bering Strait and the Greenland–Iceland–United Kingdom gap. Surface ships and the attack and patrol submarines of the Northern Fleet can provide additional security as the strategic submarines cross the relatively shallow continental shelf on the way to deep and ice-covered waters. The Northern Fleet also has the traditional roles of ensuring freedom of navigation for shipping and showing the flag overseas.

Instead, the military-security issue upon which the Russian Arctic policy primarily focuses is the defense and protection of the borders and area of the Russian Arctic zone. The primary border activities are

- Creation of a functioning coast guard in the Arctic from the Federal Security Service and effective interaction with the coast guards of other Arctic coastal states in combating terrorism at sea, preventing smuggling and illegal migration, and protecting biological resources;
- Development of the border infrastructure in the Russian border zone and reequipment of the border guard;
- Implementation of an integrated system for the monitoring of surface activities and oversight of fishing activities in the Russian Arctic.²³

It is in the area of the Coastal Border Guard in which change is most demanding. It has under nine thousand personnel and only some half-dozen 3,710-ton

patrol icebreakers, built almost thirty years ago, of which only two are reported to be in service in the Arctic. While naval vessels may take up some activities of the border patrol, these and a few lightly armed patrol tugs are the only ice-capable armed vessels in either the Coastal Border Guard or the navy. These assets are spread thin: in addition to the Arctic, the Coastal Border Guard patrols the Baltic, Black, and Caspian seas; the Amur and Ussuri rivers; and the coastal Pacific Ocean.²⁴ Nor are ice-capable ships, other than the large icebreakers, available to provide quick search-and-rescue response along the northern shipping lanes. The sudden addition of the newly opened Arctic coast and the vast tract of EEZ and continental-shelf resources in the strenuous Arctic environment is adding a heavy responsibility for managing shipping, enforcing environmental regulation and fisheries policies, and providing search and rescue. It is not clear that the new demands upon the Coastal Border Guard have been fully understood. When they are, the service will need to increase its size and resources quickly to meet the new responsibilities. It will also need to collaborate with the navies and coast guards of other Arctic states in monitoring vessel traffic of commercial, economic, and scientific fleets.

Economic Development. Socioeconomic development is the core element of Russia's Arctic policy. Expanding the resource base of the Arctic zone of Russia would do much to fill the nation's needs for hydrocarbon resources, aquatic biological resources, and other strategic raw materials. It would also provide foreign exchange to accelerate domestic development and growth.

Regional development of the Arctic is also an area of interest. The Ministry for Regional Development has prepared a paper on sustainable development in the Arctic for the Arctic Council and is tasked to prepare for review by Russia's security council a regional development plan for the Arctic lands that addresses, finances, and promotes development of the Arctic region of Russia.²⁵ This plan is also to address revision of the state subsidies for activities that support Arctic development.

Transportation and Maritime Policy. In 1987, General Secretary Mikhail Gorbachev broached the possibility of opening the Northern Sea Route to foreign traffic.²⁶ In 1991, this initiative was implemented by new rules governing the NSR. Finally, in the summer of 2009 the German ships MV *Beluga Fraternity* and MV *Beluga Foresight* became the first foreign vessels to transit the length of the Northern Sea Route. They passed from Ulsan, South Korea, to Rotterdam, with a stop at Novy Port near the mouth of the Ob River to off-load heavy cargo. A revised set of rules is anticipated in the near future to govern such traffic.²⁷

The identification of the Arctic as an area of strategic national interest has been incorporated into other national policies and plans. The *Transportation*

Strategy to 2030 established objectives of strengthening the NSR and the river network that links the route to the interior.²⁸ It sets a specific goal of building three new “linear” icebreakers that will begin, after 2015, to replace the aging *Arktika*-class heavy nuclear icebreakers built in the 1970s and now due for retirement.²⁹ It also calls for building conventionally powered breakers to support regional development, river icebreaking, and port maintenance. *Transportation Strategy to 2030* also anticipates a focus on developing ports and inland waterways along the NSR in the period from 2015 to 2030.

Russia’s maritime policy emphasizes increasing capacity to conduct maritime trade. This can be seen in the Arctic in the introduction of sophisticated ice-capable cargo ships and tankers built both in Russia and in foreign shipyards. The dual-acting Norilsk ships are proving their worth in the Kara Sea, while in the summer of 2010 SovComFlot plans to demonstrate the capability of its own dual-acting tankers to move crude oil from the Kara Sea eastward to Japan.³⁰

The relationship between maritime power and economic strength, a staple of American and British global strategies, has been becoming manifest in Russia as well. Reflecting on the increasing globalization and the role of the Russian navy, Fleet Admiral V. I. Kuroyedov, then the service’s commander in chief, wrote in 2005,

We understand very well that the 21st century is a century of the World Ocean, and this country should be ready for this if it is going to participate, on a par with other countries, in the competition for access to their resources and international trade routes. Only a modern, advanced fleet, above all its naval component, can ensure Russia’s full-fledged participation in the sustained use of natural resources of the seas in the interest of advancing the State’s economic development.³¹

AN ARCTIC GEOGRAPHICAL PIVOT: IMPLICATIONS AND OPPORTUNITIES

Mackinder’s original concept of the “geographical pivot” was of the area of Central Asia through which peoples and armies had, for centuries, moved westward to threaten European civilization. Over time, his concept evolved into the proposition that a powerful heartland could threaten Western interests across the southern rim of Asia and up through Central Europe. Concurrently, Mahan saw in southern Asia a potential battleground between the land power of the heartland and the maritime power of the British Empire and the United States over the resources of the coast of Asia.

Now, things have changed. Russia has lost its territories to the south and the independent nations along the southern rim of Asia are able to defend their own interests. Any latent imperial designs on reaching the Indian Ocean or Persian Gulf by force appear forgotten. In the twenty-first century, an accessible Arctic

will lead Russia to turn northward, not just to exploit Arctic resources but to connect its Asian interior to the rest of the world through maritime trade.

The old geostrategy of enclosure and containment of Russia is gone for good. In a new geopolitical vision for the twenty-first century, Russia takes a role not as a renewed heartland but as a maritime state that draws its strength from its Arctic coast and watershed. Even if the Arctic ice melt were to stall, advances in technology for Arctic shipping and resource development, combined with the economic return for development of the energy resources, would ensure that Russia increased its connections and commerce with the rest of the world. By midcentury, the Northern Sea Route is likely to be a regular shipping route, beginning with seasonal service based on ice-class vessels and expanding as climate and ice conditions allow. As the Arctic becomes more accessible, the northern coast of Eurasia may take the place of Mackinder's pivot, as both a route of passage and an area of exploitable resources.

This "geographical pivot" of the twenty-first century will not be without conflict, but with commitment to international law and respect for the rights of the coastal and distant states, the conflicts can be political rather than military. Unlike the "Great Game" of Asian geopolitics of the nineteenth century and the heartland-versus-rimland contest of the twentieth, the groundwork has been laid through the Law of the Sea Convention and the Ilulissat Declaration to assure peaceful development of the Arctic sea routes and recognize coastal-state rights to manage, develop, and protect the living and mineral resources in and under the Arctic coastal seas.

Several sovereignty issues have yet to be resolved: Russia and Norway have complex boundary and resource access issues to resolve, the United States may challenge some of Russia's claims of internal waters along the NSR, and the Commission on the Limits of the Continental Shelf has yet to decide whether to recommend recognition of Russia's expansive claim to much of the seabed on the Asian side of the Arctic. These are legal and diplomatic matters that, while important, do not touch on the security of the state or outweigh the overall benefits of maintaining peace and stability in the Arctic. As such, they are unlikely to lead to more than demonstrations of interest through ship patrols and occasional harassment or detention of accused violators of jurisdiction claimed by Russia.

As a maritime state with interests in sustaining freedom of navigation on a global stage and in maintaining safety and security in its offshore waters, Russia in the twenty-first century will increasingly share interests long held by the United States and other ocean powers. Russia's interests in its Arctic will foster a maritime policy that embraces coastal resource management and freedom of international navigation, though likely with a greater emphasis on offshore

sovereignty and less on distant-water power projection. Strategic security policy will be a continuation of past and current policy, the U.S.-Russian maritime boundary is already resolved de facto (pending official approval of the boundary treaty by the Russian Duma), and current and potential territorial disputes between Russia and U.S. allies Norway, Denmark, and Canada are likely to be resolved through peaceful means. The United States and Russia also have an agreement that maritime-boundary and navigation disputes will be resolved diplomatically rather than by resort to arms.³² The conflicts that do arise will be focused on matters of commercial navigation, boundary delimitation, fisheries management, energy development, environmental protection, and ocean science, all the subjects of international diplomacy and regulatory enforcement rather than warfare.

Russia, with its newly accessible Arctic waters, will need to focus on developing the regulatory and enforcement capabilities to manage activities in an area that more than doubles the area of responsibility of the Coastal Border Guard. Its maritime security interests will focus on security (including customs, smuggling, and terrorism), management and protection of its offshore fishery and mineral resources, and the maintenance and safe operation of the Northern Sea Route, both for its own fleets and for foreign commercial transit.

The West, including the United States, can gain from the evolution of Russia's Arctic from an isolated heartland of limited economic activity—a “black hole,” in the words of Zbigniew Brzezinski—to a maritime region trading in raw materials, agriculture, and industrial goods. The U.S. Arctic Policy, issued as a national security directive in early 2009, explicitly addressed military issues that Russia left out of its Arctic policy framework.³³ But the rest of the Arctic interests of the United States find counterparts in Russia's policy objectives. Strategic defense issues aside, Russia's objective of establishing the Arctic as a “zone of peace and cooperation” is equally applicable to the United States and its allies.

Mutual gain is the goal of U.S. and Russian policy that seeks to “reset” U.S.-Russian relations. Arctic cooperation consistent with the Global Maritime Partnership initiative and capabilities and priorities found in the 2007 “Cooperative Strategy for 21st Century Seapower” can promote the peaceful use of the Arctic while building familiarity among maritime users of the Arctic and demonstrating the potential to cooperate in an area of increasing geopolitical importance.³⁴ The mechanisms toward this goal will be diplomatic engagement, information sharing, business promotion, and cooperation between the Coastal Border Guard and the coast guards and navies of the other Arctic coastal states.

A regional application of the Global Maritime Partnership initiative, extended to include Arctic science, Arctic domain awareness, and ocean resource management, could support beneficial maritime collaborations to enhance the

likelihood that the Arctic geographical pivot will be an area of peaceful collaboration rather than simply a shifting of conflict from the south and west of Eurasia to its north. Elements of such a partnership include

- **Reinforcement of the rule of law:** Russia and the United States need to take the lead in strengthening the rule of law in the Arctic. Russia should finally ratify the maritime boundary agreement with the United States, and the United States should accede to the UN Convention on the Law of the Sea. A firm commitment to a common understanding of the Law of the Sea Convention will help Arctic states to resolve issues among themselves and to implement policies and regulations governing Arctic use that will be accepted by nonarctic states seeking to transit the Arctic, exploit its resources, and conduct marine scientific research.
- **Military cooperation and emergency response:** Regional application of the Global Maritime Partnership initiative can improve the capability of all Arctic states to respond to natural disasters and man-made crises. Increased activity in the Arctic need not require each Arctic state to maintain a full spectrum of ships, aircraft, satellites, and observation stations or emergency supplies. Shared awareness of assets and practice in combined operations would benefit all users of the Arctic in providing combined aid and assistance.
- **Maritime safety and security:** The Arctic states, with Russia and the United States in the lead, should be prepared to provide response to maritime emergencies, from search and rescue to response to major disasters at sea, such as oil spills. Leadership by the Arctic states in the International Maritime Organization can help avoid different, perhaps conflicting, national design specifications and operating regulations for transarctic shipping, and collaboration on regional fisheries management can lead to sustainable fisheries rather than overexploitation.
- **Arctic domain awareness:** Maritime security, resource management, and marine environmental protection will all depend on accurate and up-to-date information regarding human activities and ocean, ice, and climate data. Joint observation, identification, and tracking of ships and aircraft, particularly those of nonarctic states, will be needed to maximize the effectiveness of the limited assets available in the Arctic. While military security will limit access to some information, particularly regarding military submarines, shared knowledge and expertise will be the framework upon which most collaborative work will be undertaken and upon which collective decisions will be made.

- Arctic science: Conduct of Arctic research by all interested parties and sharing of results could be promoted. Successful multilateral polar science programs could be fostered and given access to nonsecurity, noncommercial data from national sources.
- Arctic policy of regional and transiting states: Distant parties have interests and rights in Arctic waters, and indigenous people have their own interests in maintaining and developing their cultures, both through traditional activities and through trade and economic development made possible by a warming Arctic. These parties must be involved in all Arctic management activities that touch their substantive interests, not just in the Arctic Council but in other organizations and agreements that address Arctic issues.

The opening of the Arctic in the twenty-first century will give Russia the opportunity to develop and grow as a maritime power, first in the Arctic and eventually wherever its merchant fleet carries Russian goods and returns with foreign products. This transformation of the threatening “heartland” of Mackinder and Spykman into a member of the maritime powers will require extensive effort to bring the new maritime Russia into the collaborations and partnerships of other oceangoing states. Commitment to the rule of law, shared Arctic domain awareness, joint security and safety operations, and collaboration in developing policies for the future can maintain the Arctic as a region of peace even while the coastal states maintain naval and law enforcement capabilities in the region.

The best course is to address Russia’s evolving maritime role with an Arctic regional maritime partnership based on the model of the Global Maritime Partnership initiative, expanded to address civilian interests in climate, resources, science, and conservation. The American objective should be to work collaboratively to resolve disputes over continental shelf and fishery claims, negotiate a regional high-seas fisheries management plan, develop a regional Arctic maritime transportation plan, and coordinate security and safety policies on the ocean and ice surface and in the air, in line with the U.S. Arctic Policy and the sea services’ “Cooperative Strategy for 21st Century Seapower.”

NOTES

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31. Adm. V. I. Kuroyedov, “War Experience and the Outlook for the Development and Employment of the Navy in Future Wars and Armed Conflicts,” *Military Thought* (1 April 2005).
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34. T. Conway, G. Roughead, and T. W. Allen, “A Cooperative Strategy for 21st Century Seapower,” October 2007, available at www.navy.mil/, repr. *Naval War College Review* 61, no. 1 (Winter 2008), pp. 7–19, available at www.usnwc.edu/press/. Elements of the Cooperative Strategy’s strategic concept include intentions to “foster and sustain cooperative relationships with more international partners” and “prevent or contain local disruptions before they impact the global system.” Capabilities relevant to the implementation of the strategy in the Arctic include maritime security, humanitarian assistance, and disaster response.



CHINESE MISSILE STRATEGY AND THE U.S. NAVAL PRESENCE IN JAPAN

The Operational View from Beijing

Toshi Yoshihara

In recent years, defense analysts in the United States have substantially revised their estimates of China's missile prowess. A decade ago, most observers rated Beijing's ballistic missiles as inaccurate, blunt weapons limited to terrorizing civilian populations. Today, the emerging consensus within the U.S. strategic community is that China's arsenal can inflict lethal harm with precision on a wide range of military targets, including ports and airfields. As a consequence, many observers have jettisoned previously sanguine net assessments that conferred decisive, qualitative advantages to Taiwan in the cross-strait military balance. Indeed, the debates on China's coercive power and Taiwan's apparent inability to resist such pressure have taken on a palpably fatalistic tone.

A 2009 RAND monograph warns that China's large, modern missile and air forces are likely to pose a virtually insurmountable challenge to Taiwanese and American efforts to command the air over the strait and the island. The authors

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of the report believe that massive ballistic-missile salvos launched against Taiwan's air bases would severely hamper Taipei's ability to generate enough fighter sorties to contest air superiority. They state: "As China's ability to deliver accurate fire across the strait grows, it is becoming increasingly difficult and soon may be impossible for the United States and Taiwan to protect the island's military and civilian infrastructures from serious damage."¹ As a result, the authors observe, "China's ability to suppress Taiwan and local U.S. air

bases with ballistic and cruise missiles seriously threatens the defense's ability to maintain control of the air over the strait."² They further assert, "The United States can no longer be confident of winning the battle for the air in the air. This represents a dramatic change from the first five-plus decades of the China-Taiwan confrontation."³

An unclassified Defense Intelligence Agency report assessing the state of Taiwan's air defenses raises similar concerns. The study notes that Taiwanese fighter aircraft would be unable to take to the air in the absence of well-protected airfield runways, suggesting a major vulnerability to the island's airpower. The agency further maintains that Taiwan's capacity to endure missile attacks on runways and to repair them rapidly will determine the integrity of the island's air-defense system.⁴ While the report withholds judgment on whether Taipei can maintain air superiority following Chinese missile strikes in a conflict scenario, a key constituent of the U.S. intelligence community clearly recognizes a growing danger to Taiwan's defense.

China's missiles also threaten Taiwan's ability to defend itself at sea. William Murray contends that China could sink or severely damage many of Taiwan's warships docked at naval piers with salvos of ballistic missiles. He argues that "the Second Artillery's [China's strategic missile command's] expanding inventory of increasingly accurate [short-range ballistic missiles] probably allows Beijing to incapacitate much of Taiwan's navy and to ground or destroy large portions of the air force in a surprise missile assault and follow-on barrages."⁵ These are stark, sobering conclusions.

Equally troubling is growing evidence that China has turned its attention to Japan, home to some of the largest naval and air bases in the world. Beijing has long worried about Tokyo's potential role in a cross-strait conflagration. In particular, Chinese analysts chafe at the apparent American freedom to use the Japanese archipelago as a springboard to intervene in a Taiwan contingency. In the past, China kept silent on what the People's Liberation Army (PLA) would do in response to Japanese logistical support of U.S. military operations. Recent PLA publications, in contrast, suggest that the logic of missile coercion against Taiwan could be readily applied to U.S. forward presence in Japan. The writings convey a high degree of confidence that China's missile forces could compel Tokyo to limit American use of naval bases while selectively destroying key facilities on those bases. These doctrinal developments demand close attention from Washington and Tokyo, lest the transpacific alliance be caught flat-footed in a future crisis with Beijing. This article is a first step toward better understanding how the Chinese evaluate the efficacy of missile coercion against American military targets in Japan.

This article focuses narrowly on Chinese assessments of U.S. naval bases in Japan, excluding the literature on such other key locations as the Kadema and

Misawa air bases. The writings on the American naval presence are abundant and far more extensive than studies on the land and air components of U.S. basing arrangements. The dispatch of two carrier battle groups to Taiwan's vicinity during the 1996 cross-strait crisis stimulated Beijing's reevaluation of its military strategy toward the island. Not surprisingly, the Chinese are obsessed with the U.S. aircraft carrier, including the facilities and bases that support its operations. It is against this rich milieu that this study explores how the Chinese conceive their missile strategy to complicate American use of military bases along the Japanese archipelago.

This article first explores the reasons behind Beijing's interest in regional bases and surveys the Chinese literature on the U.S. naval presence in Japan to illustrate the amount of attention being devoted to the structure of American military power in Asia. Chinese analysts see U.S. dependence on a few locations for power projection as a major vulnerability. Second, it turns to Chinese doctrinal publications, which furnish astonishing details as to how the PLA might employ ballistic missiles to complicate or deny U.S. use of Japanese port facilities. Chinese defense planners place substantial faith in the coercive value of missile tactics. Third, the article assesses China's conventional theater ballistic missiles that would be employed against U.S. regional bases. Fourth, it critiques the Chinese writings, highlighting some faulty assumptions about the anticipated effects of missile coercion. Finally, the study identifies some key operational dilemmas that the U.S.-Japanese alliance would likely encounter in a PLA missile campaign.

EXPLAINING CHINA'S INTEREST IN REGIONAL BASES

Taiwan remains the animating force behind China's strategic calculus with respect to regional bases in Asia. Beijing's inability to respond to the display of U.S. naval power at the height of the 1996 Taiwan Strait crisis proved highly embarrassing. There is evidence that the PLA had difficulty in monitoring the movement of the two carrier battle groups, much less in offering its civilian leaders credible military options in response to the carrier presence. This galling experience steeled Beijing's resolve to preclude U.S. naval deployments near Taiwan in a future crisis. Notably, the Yokosuka-based USS *Independence* (CV 62) was the first carrier to arrive at the scene in March 1996, cementing Chinese expectations that Washington would dispatch a carrier from Japan in a contingency over Taiwan.

Beyond Taiwan, other territorial disputes along China's nautical periphery could involve U.S. naval intervention. A military crisis arising from conflicting Sino-Japanese claims over the Senkaku (Diaoyu) islands northwest of Taiwan could compel an American reaction. While doubts linger in some Japanese policy circles as to whether foreign aggression against the islands would trigger Washington's defense commitments as stipulated by the U.S.-Japanese security treaty,

joint allied exercises and war games since 2006 suggest that the U.S. military is closely watching events in the East China Sea. Farther south, Chinese territorial claims over large swaths of the South China Sea could also be sources of regional tensions. If a local tussle there escalated into a larger conflagration that threatened international shipping, the U.S. Navy might be ordered to maintain freedom of navigation. In both scenarios, the U.S. carrier based in Japan and other strike groups operating near Asian waters would be called upon as first responders.

Concrete territorial disputes that have roiled Asian stability are not the only reasons that American naval power would sortie from regional bases to the detriment of Chinese interests. More abstract and esoteric dynamics may be at work. For example, Chinese leaders fret about the so-called Malacca dilemma. China's heavy dependence on seaborne energy supplies that transit the Malacca Strait has set off Chinese speculation that the United States might seek to blockade that maritime choke point to coerce Beijing.⁶ This insecurity stems less from judgments about the possibility or feasibility of such a naval blockade than from the belief that a great power like China should not entrust its energy security to the fickle goodwill of the United States. If the U.S. Navy were ever called upon to fulfill an undertaking of such magnitude, forward basing in Asia would undoubtedly play a pivotal role in sustaining what could deteriorate into a protracted blockade operation.

Chinese analysts have also expressed a broader dissatisfaction with America's self-appointed role as the guardian of the seas. Sea-power advocates have vigorously pushed for a more expansive view of China's prerogatives along the maritime periphery of the mainland. They bristle at the U.S. Navy's apparent presumption of the right to command any parcel of the ocean on earth, including areas that China considers its own nautical preserves. Some take issue with the 2007 U.S. maritime strategy, a policy document that baldly states, "We will be able to impose local sea control wherever necessary, ideally in concert with friends and allies, but by ourselves if we must."⁷ Lu Rude, a former professor at Dalian Naval Academy, cites this passage as evidence of U.S. "hegemonic thinking." He concludes, "Clearly, what is behind 'cooperation' is America's interests, having 'partners or the participation of allies' likewise serves America's global interests."⁸ Some Chinese, then, object to the very purpose of U.S. sea power in Asia, which relies on a constellation of regional bases for its effects to be felt (see map).

Long-standing regional flash points and domestic expectations of a more assertive China as it goes to sea suggest that Beijing's grudging acceptance of U.S. forward presence could be eroding even more quickly than once thought. Against this backdrop of increasing Chinese ambivalence toward American naval power, U.S. basing arrangements in Japan have come into sharper focus.



CHINESE VIEWS OF U.S. NAVAL BASES IN JAPAN

Some Chinese strategists appraise Washington's military posture in the Asia-Pacific region in stark geopolitical terms. Applying the "defense perimeter of the Pacific" logic elaborated by Secretary of State Dean Acheson in the early Cold War, they see their nation enclosed by concentric, layered "island chains." The United States and its allies, they argue, can encircle China or blockade the Chinese mainland from island strongholds, where powerful naval expeditionary forces are based. Analysts who take such a view conceive of the island chains in various ways.

Yu Yang and Qi Xiaodong, for example, describe U.S. basing architecture in Asia as a "three line configuration [三线配置]." The first line stretches in a sweeping arc from Japan and South Korea to Diego Garcia in the Indian Ocean,

forming a "zone of forward bases[前沿基地带]." This broad notion that the U.S. presence in the western Pacific and the Indian Ocean constitutes a seamless, interlocking set of bases is widely shared in Chinese strategic circles.¹⁰ The second line connects Guam and Australia. The last line of bases runs north from Hawaii through Midway to the Aleutians, terminating at Alaska. While these island chains may bear little resemblance to actual U.S. thinking and planning, that the Chinese pay such attention to the geographic structure of American power in Asia is quite notable. These observers discern a cluster of mutually supporting bases, ports, and access points along these island chains. Among the networks of bases in the western Pacific, those located on the Japanese archipelago—the northern anchor of the first island chain—stand out, for the Chinese. *Modern Navy*, a monthly journal published by the Political Department of the People's Liberation Army

Navy, produced a seven-part series on Japan's Maritime Self-Defense Force in 2004 and 2005. Notably, it devoted an entire article to Japan's main naval bases, including Yokosuka, Sasebo, Kure, and Maizuru.¹¹ The depth of the coverage of these bases is rather remarkable, especially when compared to the sparse reporting on similar topics in the United States and in Japan.

Perhaps no other place captures the Chinese imagination as much as Yokosuka, which analysts portray as the centerpiece of U.S. basing in Asia.¹² One analysis depicts a "Northeast Asian base group [东北亚基地群]" radiating outward from Yokosuka to Sasebo, Pusan, and Chinhae.¹³ Writers provide a wide range of details about the Yokosuka naval base, including its precise location, the surrounding geography, the number of piers (particularly those suitable for aircraft carriers), the types and number of maintenance facilities, and the storage capacity of munitions, fuel, and other supply depots.¹⁴ Wu Jian, for instance, finds the geographic features of Yokosuka comparable to those of Dalian, a major base of the Chinese navy's North Sea Fleet.¹⁵

Beyond physical similarities, Yokosuka evokes unpleasant memories for the Chinese. One commentator recalls the U.S. transfer of 203 mm heavy artillery from Yokosuka to Nationalist forces on Jinmen during the 1958 Taiwan Strait crisis.¹⁶ Tracking more recent events, another observer notes that the *Kitty Hawk* Strike Group's deployments from Yokosuka to waters near Taiwan invariably coincided with the presidential elections on the island, in 2000, 2004, and 2008.¹⁷ As Pei Huai opines, "Yokosuka has all along irritated the nerves of the Chinese people."¹⁸ Moreover, Chinese analysts are keenly aware of Yokosuka's strategic position. As Du Chaoping asserts:

Yokosuka is the U.S. Navy's main strategic point of concentration and deployment in the Far East and is the ideal American stronghold for employing maritime forces in the Western Pacific and the Indian Ocean regions. A carrier deployed there is akin to the sharpest dagger sheathed in the Western Pacific by the U.S. Navy. It can control the East Asian mainland to the west and it can enter the Indian Ocean to the southwest to secure Malacca, Hormuz, and other important thoroughfares.¹⁹

Ma Haiyang concurs:

The Yokosuka base controls the three straits of Soya, Tsugaru, Tsushima and the sea and air transit routes in the Indian Ocean. As the key link in the "island chain," it can support ground operations on the Korean Peninsula and naval operations in the Western Pacific. It can support combat in the Middle East and Persian Gulf regions while monitoring and controlling the wide sea areas of the Indian Ocean. Its strategic position is extremely important.²⁰

It is notable that both Du and Ma conceive of Yokosuka as a central hub that tightly links the Pacific and Indian oceans into an integrated theater of operations.

Intriguingly, some Chinese commentators view Yokosuka as the front line of the U.S.-Japanese defense cooperation on missile defense. They worry that Aegis-equipped destroyers armed with ballistic-missile-defense (BMD) systems based in Yokosuka could erode China's nuclear deterrent. Indeed, analysts see concentrations of sea-based BMD capabilities falling roughly along the three island chains described above. Ren Dexin describes Yokosuka as the first line of defense against ballistic missiles, while Pearl Harbor and San Diego provide additional layers.²¹ Yokosuka is evocatively portrayed as the "forward battlefield position" (前沿阵地), the indispensable vanguard for the sea-based BMD architecture.²² For some Chinese, these concentric rings or picket lines of sea power appear tailored specifically to bring down ballistic missiles fired across the Pacific from locations as diverse as the Korean Peninsula, mainland China, India, or even Iran.²³ Specifically, Aegis ships in Yokosuka, Pearl Harbor, and San Diego would be positioned to shoot down missiles in their boost, midcourse, and terminal phases, respectively.²⁴

Chinese observers pay special attention to Aegis deployments along the first island chain. Some believe that Aegis ships operating in the Yellow, East, and South China seas would be able to monitor the launch of any long-range ballistic missile deployed in China's interior and perhaps to intercept the vehicle in its boost phase. Dai Yanli warns, "Clearly, if Aegis systems are successfully deployed around China's periphery, then there is the possibility that China's ballistic missiles would be destroyed over their launch points."²⁵ Ji Yanli, of the Beijing Aerospace Long March Scientific and Technical Information Institute, concurs: "If such [sea-based BMD] systems begin deployment in areas such as Japan or Taiwan, the effectiveness of China's strategic power and theater ballistic-missile capabilities would weaken tremendously, severely threatening national security."²⁶ Somewhat problematically, the authors seemingly assume that Beijing would risk its strategic forces by deploying them closer to shore, and they forecast a far more capable Aegis fleet than is technically possible in the near term.

The indispensability of the ship-repair and maintenance facilities at Yokosuka emerges as another common theme in the Chinese literature. Analysts in China often note that Yokosuka is the only base west of Hawaii that possesses the wherewithal to handle major carrier repairs. Some have concluded that Yokosuka is irreplaceable as long as alternative sites for a large repair station remain unavailable. Li Daguang, a professor at China's National Defense University and a frequent commentator on naval affairs, casts doubt on Guam as a potential candidate, observing that the island lacks the basic infrastructure and economies of scale to service carriers.²⁷ China's *Jianchuan Zhishi* (Naval and Merchant Ships) published a translated article from a Japanese military journal, *Gunji Kenkyu*

(Japan Military Review), to illustrate the physical limits of Guam as a permanent home port for carriers.²⁸

Chinese analysts also closely examine Sasebo, the second-largest naval base in Japan. Various commentators call attention to its strategic position near key sea-lanes and its proximity to China.²⁹ As Yu Fan notes, “This base is a large-scale naval base closest to our country. Positioned at the intersection of the Yellow Sea, the East China Sea, and the Sea of Japan, it guards the southern mouth of the Korea Strait. This has very important implications for controlling the nexus of the Yellow Sea, the East China Sea, and the Sea of Japan and for blockading the Korea Strait.”³⁰

It is clear, then, that Chinese strategists recognize the importance of U.S. naval bases in Japan for fulfilling a range of regional and extraregional responsibilities. Indeed, some believe that the American strategic position in Asia hinges entirely on ready military access to bases on the Japanese islands. Tian Wu argues that without bases in Japan, U.S. forces would have to fall back to Guam or Hawaii. Tian bluntly asserts:

If the U.S. military was ever forced to withdraw from Okinawa and Japan, then it would be compelled to retreat thousands of kilometers to set up defenses on the second island chain. Not only would it lose tremendous strategic defensive depth, but it would also lose the advantageous conditions for conducting littoral operations along the East Asian mainland while losing an important strategic relay station to support operations in the Indian Ocean and the Middle East through the South China Sea.³¹

This emerging discourse offers several clues about Beijing’s calculus in regard to U.S. naval basing arrangements in Japan. Chinese strategists see these bases as collectively representing both a threat to Chinese interests and a critical vulnerability for the United States. Bases in Japan are the most likely locations from which the United States would sortie sea power in response to a contingency over Taiwan. At the same time, the Chinese are acutely aware of the apparent American dependence on a few bases to project power. Should access to and use of these bases be denied for political or military reasons, they reason, Washington’s regional strategy could quickly unravel. While the commentaries documented above are by no means authoritative in the official sense, they are clearly designed to underscore the strategic value and the precariousness of U.S. forward presence in Japan.

U.S. BASES IN JAPAN AND CHINESE MISSILE STRATEGY

Authoritative PLA documents correlate with this emerging consensus that U.S. bases on the Japanese home islands merit close attention in strategic and operational terms. Indeed, Chinese doctrinal writings clearly indicate that the American

presence in Japan would likely be the subject of attack if the United States were to intervene in a cross-strait conflict. The unprecedented public availability of primary sources in China in recent years has opened a window onto Chinese strategic thought, revealing a genuinely competitive intellectual environment that has substantially advanced Chinese debates on military affairs. This growing literature has also improved the West's understanding of the PLA.

In an effort to maximize this new openness in China, this article draws upon publications closely affiliated with the PLA, including those of the prestigious Academy of Military Science and the National Defense University, that address coercive campaigns against regional bases in Asia.³² Some are widely cited among Western military analysts as authoritative works that reflect current PLA thinking. Some likely enjoy official sanction as doctrinal guidance or educational material for senior military commanders. The authors of the studies are high-ranking PLA officers who are either leading thinkers in strategic affairs and military operations or boast substantial operational and command experience. These works, then, collectively provide a sound starting point for examining how regional bases in Asia might fit into Chinese war planning.

Among this literature, *The Science of Military Strategy* stands out in Western strategic circles as an authoritative PLA publication. The authors, Peng Guangqian and Yao Youzhi, advocate an indirect approach to fighting and prevailing against a superior adversary in “future local wars under high-technology conditions.”³³ To win, the PLA must seek to avoid or bypass the powerful field forces of the enemy while attacking directly the vulnerable rear echelons and command structures that support frontline units. Using the human body as an evocative metaphor for the adversary, Peng and Yao argue, “As compared with dismembering the enemy's body step by step, destroying his brain and central nerve system is more meaningful for speeding up the course of the war.”³⁴ To them, the brain and the central nervous system of a war machine are those principal directing and coordinating elements without which the fighting forces wither or collapse.

The aim, then, is to conduct offensive operations against the primary sources of the enemy's military power, what the authors term the “operational system.” They declare, “After launching the war, we should try our best to fight against the enemy as far away as possible, to lead the war to enemy's operational base, even to his source of war, and to actively strike all the effective strength forming the enemy's war system.”³⁵ In their view, operational systems that manage command and control and logistics (satellites, bases, etc.), are the primary targets; they relegate tactical platforms that deliver firepower (warships, fighters, etc.) to a secondary status. To illustrate the effects of striking the source of the enemy's fighting power, Peng and Yao further argue:

To shake the stability of enemy's war system so as to paralyze his war capabilities has already become the core of the contest between the two sides in the modern high-tech local war. So, more attention should be paid to striking crushing blows against the enemy's structure of the operational system . . . especially those vulnerable points which are not easy to be replaced or revived, so as to make the enemy's operational system seriously unbalanced and lose initiative in uncontrollable disorder.³⁶

The authors are remarkably candid about what constitutes the enemy's operational system. Particularly relevant to this study is their assertion that the supply system emerges as a primary target:

The future operational center of gravity should not be placed on the direct confrontation with the enemy's assault systems. *We should persist in taking the information system and support system as the targets of first choice throughout.* . . . In regard to the supply system, we should try our best to strike the enemy on the ground, cut the material flow of his efficacy sources so as to achieve the effect of taking away the firewood from the caldron.³⁷

Destruction of the supply system in effect asphyxiates the adversary. In order to choke off the enemy's capacity to wage war, Peng and Yao contend, a "large part of the supply systems must be destroyed."³⁸ Their prescriptions for winning local high-tech wars suggest that the horizontal escalation of a conflict to U.S. regional bases in Asia is entirely thinkable. Even more troubling, some Chinese appear to envision the application of substantial firepower to pummel the U.S. forward presence. While *The Science of Military Strategy* should not be treated as official strategic guidance to the PLA, its conceptions of future conflict with a technologically superior adversary provide a useful framework for thinking about what a Chinese missile campaign against regional bases might entail.

There is substantial evidence in Chinese doctrinal writings that PLA defense planners anticipate the possibility of a sizable geographic expansion of the target set, to include U.S. forward presence in East Asia. Although the documents do not explicitly refer to naval bases in Japan, they depict scenarios strongly suggesting that Yokosuka is a primary target. In the hypothetical contingencies posited in these writings, U.S. intervention is a critical premise, if not a given. In particular, Chinese planners expect Washington to order the deployment of carrier strike groups near China's coast, a prospect that deeply vexes Beijing. It is in this context of a highly stressful (though by no means inconceivable) scenario that U.S. military bases come into play in Chinese operational thinking.

For PLA planners, the primary aims are to deter, disrupt, or disable the employment of carriers at the point of origin, namely, the bases from which carriers would sortie. Given the limited capability, range, and survivability of China's air and sea power, most studies foresee the extensive use of long-range conventional

ballistic missiles to achieve key operational objectives against U.S. forward presence. In *Intimidation Warfare*, Zhao Xijun proposes several novel missile tactics that could be employed to deter the use of naval bases in times of crisis or war.³⁹ Zhao proposes demonstration shots into sea areas near the enemy state to compel the opponent to back down. Zhao explains, “Close-in (near border) intimidation strikes involve firing ballistic missiles near enemy vessels or enemy states (or in areas and sea areas of enemy-occupied islands). It is a method designed to induce the enemy to feel that it would suffer an unbearable setback if it stubbornly pursues an objective, and thus abandons certain actions.”⁴⁰

One tactic that Zhao calls a “pincer, close-in intimidation strike” is particularly relevant to missile options against U.S. military bases. Zhao elaborates: “Pincer close-in intimidation strikes entail the firing of ballistic missiles into the sea areas (or land areas) near at least two important targets on enemy-occupied islands (or in enemy states). This enveloping attack, striking the enemy’s head and tail such that the enemy’s attention is pulled in both directions, would generate tremendous psychological shock.”⁴¹ Zhao also proposes an “island over-flight attack” as a variation of the pincer strike. He states:

For high-intensity intimidation against an entrenched enemy on an island, an island over-flight attack employs conventional ballistic missiles with longer range and superior penetration capabilities to pass over the enemy’s important cities and other strategic targets to induce the enemy to sense psychologically that a calamity will descend from the sky. This method could produce unexpected effects.⁴²

While these missile tactics are primarily aimed at coercing Taiwan, they could also, in theory, be applied to any island nation. Reminiscent of the 1996 cross-strait crisis, the PLA could splash single or multiple ballistic missiles into waters near Yokosuka (shot across Honshu Island, over major metropolitan cities) in the hopes that an intimidated leadership in Tokyo would stay out of a contingency over Taiwan, deny American access to military facilities, or restrict U.S. use of naval bases in Japan.

Should deterrence through intimidation fail, the Chinese may seek to complicate U.S. naval operations originating from bases located in the Japanese home islands. *The Science of Second Artillery Campaigns*, the most authoritative work on the PLA’s strategic rocket forces, furnishes astonishingly vivid details on the conditions under which China might seek to conduct conventional missile operations against outside intervention.⁴³ Notably, the document explores “firepower harassment” as a potentially effective tactic to resist external interference. Given its explicit references to the U.S. use of military bases on foreign soil, a passage on harassment strikes is worth quoting in its entirety:

When the powerful enemy uses allied military bases in our periphery and aircraft carriers as aircraft launch platforms to implement various forms of military intervention; and when the powerful enemy's allied military bases around our periphery are beyond our air arm's firing range, and when the carrier battle groups are far away from our shores, thus making it difficult to carry out the overall operational advantages associated with firepower coordination among the armed services and service arms, conventional missiles can be used to implement harassment strikes against the military bases of the enemy's allies around our periphery as well as the carrier battle groups.⁴⁴

In other words, PLA planners intend to assign long-range strike missions to the ballistic missile force if warships, bombers, and submarines prove unable to reach enemy bases. Since U.S. bases in South Korea are well within reach of China's short-range ballistic missiles, shore-based aircraft, surface combatants, and undersea fleet, the "allied military bases" to which the study refers can only be those located in Japan. For the authors, harassment strikes might involve periodic missile launches into "no go" zones erected near the naval bases, in order to "block the points of entry and exit to important enemy ports," or they might entail direct attacks against "key targets within the enemy ports, such as fueling and fuel loading facilities, and logistical supply facilities."⁴⁵ Such operations would be intended to disrupt seriously the resupply and movement of U.S. naval forces.

Beyond selective attacks, some Chinese analysts advocate highly destructive operations against U.S. military bases. In a study on the PLA's blockade operations against Taiwan, Chinese defense planners entertain the possibility of significant vertical and horizontal escalation to defeat U.S. intervention. The authors call for "opportune counterattacks" to defeat a carrier strike group engaged in combat operations against Chinese targets at sea, in the air, or on the mainland coast. In such a scenario, the PLA would do everything it could to successively weaken, isolate, and ultimately sink the carrier. In addition to lethal strikes against aircraft carriers, the authors envision concerted efforts to inflict massive damage on the military bases supporting carrier operations. According to Zhu Aihua and Sun Longhai, "To punish the external enemy and to accommodate world opinion, it is not enough to sink the external enemy's aircraft carrier. . . . It is necessary to destroy the springboard of combat operations, to pulverize the operational bases, to cut off the enemy's retreat . . . in order to render obsolete hegemonism and power politics."⁴⁶

It is clear, then, that Chinese strategists have systematically examined the strategies, doctrines, and operational concepts for dissuading, disrupting, and denying the use of U.S. military bases along China's periphery. These studies suggest that the PLA is prepared to calibrate the scale and magnitude of its military exertions against American forward bases across a spectrum that includes deterrence,

compellence, and high-intensity conflict. It is equally evident that an extension of missile operations to the Japanese homeland is well within the bounds of Chinese planning. Should circumstances warrant, the PLA may not hesitate to escalate a crisis or conflict radically with missile salvos directed at Japan, to demonstrate political resolve, preclude Japanese involvement, or unhinge U.S. intervention.

U.S. BASES IN JAPAN AND CHINESE MISSILES

A decade ago, Western analysts would have been on firm ground in dismissing such Chinese discussions about crippling U.S. regional bases as entirely wishful or even illusory. Indeed, they would have been justified in questioning Beijing's operational capacity to target U.S. bases in Japan even if it had possessed the will to do so. China simply could not have pulled off long-range, nonnuclear strikes beyond Taiwan. However, recent technical developments in the PLA's ballistic-missile forces suggest that China is already in a position to fulfill at least the more limited missions elaborated above. If the pace of Chinese missile acquisitions continues, over the next decade Beijing will likely boast a formidable arsenal to shape events along the entire first island chain.

The Pentagon's latest annual report to Congress on Chinese military power confirms the doctrinal writings surveyed in this study. According to the Department of Defense,

PRC military analysts have also concluded that logistics and mobilization are potential vulnerabilities in modern warfare, given the requirements for precision in coordinating transportation, communications, and logistics networks. To threaten regional bases, logistics, and support infrastructure, China could employ SRBM/MRBMs [short-range and medium-range ballistic missiles], ground-launched LACMs [land-attack cruise missiles], special operations forces, and computer network attack (CNA).⁴⁷

The report identifies the DF-21 medium-range ballistic missile as an operational weapon system that could reach any location along the Japanese archipelago. Concurring, the National Air and Space Intelligence Center states that "China is . . . acquiring new conventionally-armed MRBMs to conduct precision strikes at longer ranges. These systems are likely intended to hold at risk, or strike, logistics nodes and regional military bases including airfields and ports."⁴⁸

The exact size of the DF-21 force is not known in the public realm. The Pentagon estimates that there are sixty to eighty DF-21 missiles and from seventy to ninety associated launchers in the PLA's inventory.⁴⁹ (The document does not distinguish between missiles armed with nuclear and conventional warheads.) The 2007 issue reports forty to fifty missiles and between thirty-four and thirty-eight launchers; the most recent report, therefore, represents a roughly 30 percent increase in two years.⁵⁰ *Ballistic and Cruise Missile Threat* counts conventional

DF-21 launchers as numbering fewer than thirty.⁵¹ The International Institute for Strategic Studies claims that thirty-six nonnuclear DF-21s are deployed, in two brigades.⁵² Interestingly, this figure is a new entry in the 2010 issue of *The Military Balance*; the previous tally lists only the nuclear variant, suggesting a much more rapid expansion of the conventional version than previously thought. Since the missile's debut in the 1980s, the PLA has improved its accuracy, extended its range, and diversified the types of warheads it can carry.⁵³ This emerging arsenal will likely play an important role in holding at risk or attacking U.S. regional bases.⁵⁴

Several intervening factors are likely to influence the future size of the DF-21 inventory. First, China needs to build an arsenal large enough to overwhelm the ballistic-missile defenses fielded by the U.S.-Japanese alliance. As noted above, some Chinese analysts forecast a capable sea-based BMD system that could intercept theater ballistic missiles. Chinese strategists would almost certainly have to take into account some level of attrition arising from successful missile interceptions. Second, some of the more destructive coercive options could trigger U.S. horizontal escalation, including conventional counterforce strikes against Chinese missile brigades on the mainland. Thus, strategists in Beijing must anticipate potentially severe losses should the United States expand its target set. These numerical factors suggest that the Second Artillery Corps will almost certainly need a much larger DF-21 missile force to engage in the types of high-intensity operations outlined in the doctrinal writings.

Observers may object that capabilities do not reflect intent. In other words, missile range, accuracy, payload, and force size by themselves constitute insufficient evidence of exactly what Beijing plans to hit. Some may even find it implausible that China would attack a staunchly anti-nuclear-weapons state bound by a pacifist constitution, even if some of its real estate is occupied by a foreign military power. Nevertheless, the historical pattern of Chinese missile deployments since the Cold War suggests that U.S. bases in Japan have always been primary targets for nuclear strikes. In the 1960s the PLA extended the range of its first operational nuclear-tipped ballistic missile, the DF-2, to ensure that it could reach all American bases in Japan. Beijing deployed the follow-on missile, the DF-3, near the North Korean border to cover targets on the Japanese home islands and Okinawa. If China had always intended to violate its negative security assurances—that is, pledges not to attack nonnuclear third parties—with city-busting warheads, it should not be surprising that Beijing would field conventional missiles for use against Japanese territory. Indeed, the DF-21 may represent a far less “blunt” instrument than its predecessors did and offer a somewhat “surgical” option to Chinese defense planners.⁵⁵

CRITICAL ANALYSIS OF CHINESE MISSILE DOCTRINE

There are compelling reasons for the Chinese to consider vertical and horizontal escalation in coercive campaigns against regional bases in Asia. At the same time, the PLA's missile force appears poised to extend its reach far beyond China's immediate periphery. The alignment of Chinese aspirations and capabilities will complicate crisis management and stability, escalation control, and war termination in the event of conflict. The gaps in Chinese doctrinal writings offer reasons to worry about these complications.

First, Chinese analysts seldom consider the mechanisms or chain of events that link the use of precision fire with the intended operational effects the PLA hopes to achieve. Most discussions assume or assert with certitude that the employment of certain missile tactics would induce a predictable set of American responses. But closer examination suggests that strategists may have underrated the ability of U.S. naval forces to sustain operations under severe duress, thus oversimplifying the action-reaction dynamic. For example, the wholesale destruction of fuel depots and logistical facilities would not likely have a direct or immediate impact on a carrier strike group either en route to or actively operating in a combat zone. The U.S. Navy could surge additional carriers into the theater of operations and rush at-sea-replenishment vessels from Guam, Hawaii, and San Diego to the scene. Such work-arounds would cushion a devastating blow against logistical facilities in Japan, enabling U.S. operations to continue unimpeded. Indeed, many frontline units would not feel the effects of infrastructure damage in Yokosuka or Sasebo for many weeks. In this scenario, China would likely have to settle in for a more protracted struggle. This potential outcome runs directly counter to the PLA's long-standing preference for quick, decisive victories at the operational level of war.

Second, doctrinal publications exhort PLA commanders to maintain an offensive spirit and to seize the initiative in the opening stages of a military campaign. Indeed, Chinese analysts insist that China should make the first move in any conflict. A crushing initial blow would throw the enemy off balance, enabling the PLA to dictate the tempo of the war. As the *Science of Second Artillery Campaigns* asserts,

To "strike the enemy at the first opportunity" mainly refers to the need for the Second Artillery conventional missile force to act before the enemy, take the enemy by surprise, and attack the enemy when it is unprepared during its operational activities. It should be used first during the initial phase or at a certain stage of the campaign. . . . Therefore, in terms of campaign planning, it is necessary to launch attack before the enemy, strike first, and maintain the offensive intensity until the victorious conclusion of the campaign.⁵⁶

More troubling, Chinese strategists foresee the preemptive use of conventional ballistic missiles against the enemy's rear areas:

Using its advantages of concealment and surprise, active and intelligent response, and powerful penetration capability the missile force implements *preemptive strike against the enemy's important in-depth targets*. . . . Therefore, speedily striking the enemy, striving to seize the initiative, and avoiding losses are issues with which the campaign commander must first be concerned. It is necessary to strike the enemy at the first opportunity, *before the enemy has discovered our campaign intentions and actions*, surprise the enemy, act before the enemy, strike rapidly, catch the enemy by surprise.⁵⁷

Given these operational parameters, the Chinese might conduct a bolt-from-the-blue missile strike against vulnerable carriers and warships anchored and at pierside to knock out the U.S. Navy.⁵⁸ An attack on a fleet in port would be akin to strikes against fixed targets. The impact—in terms of vessels sunk or damaged—would be direct, immediate, and relatively easy to measure. The Imperial Japanese Navy's surprise attacks against the Russian fleet at Port Arthur and the U.S. Pacific fleet at Pearl Harbor illustrate the logic of such a bold move.

From a strictly operational perspective, preemption is highly efficacious. At the same time, Chinese planners acknowledge the need to balance tactical advantages against the potential international backlash arising from foreign perceptions that China had launched an unprovoked attack. PLA writings are acutely attuned to such moral and reputational considerations. Yet they offer no concrete guidance as to how to reconcile the emphasis on striking first with the broader strategic factors that would likely hold back policy makers in Beijing, the final arbiters of the weighty decision to order a surprise attack. This tension between operational expediency and political imperatives is left unresolved. A policy/strategy mismatch looms.

It is entirely conceivable that even at the height of a major crisis Chinese decision makers might recoil from the missile options presented to them. They could very well reject preemption out of hand as overly incendiary and politically counterproductive. A precedent in Sino-U.S. Cold War history is illustrative. During the 1958 Taiwan Strait crisis, American civilian leaders rejected the military's planned nuclear riposte to Chinese provocations, on the grounds that massive retaliation was out of proportion to the confrontation at hand. President Dwight Eisenhower firmly declined to consider recommendations by the Pacific Air Force to order tactical nuclear strikes against Chinese troops massed near Xiamen.⁵⁹ Whether PLA commanders are sufficiently attuned to national policy to anticipate similar civilian pushback or to appreciate the political rationales for restraint is unclear.

Third, escalation control will be a severe challenge for Beijing. Chinese writings exhibit an awareness of escalation problems associated with missile coercion.

Analysts worry that misapplication of missile tactics could dramatically reshape the dynamics of the war, provoking greater exertions by the intervening power while widening the conflict, drawing in additional third parties. As Zhao Xijun warns, “In conducting close-in intimidation strikes, one must maintain a certain distance from the enemy’s border (sea area) line and select highly accurate missiles to prevent them from falling into enemy territory (or enemy occupied islands) or directly hitting the enemy’s aircraft carrier owing to imprecision or loss of flight control.”⁶⁰

Zhao acknowledges that accidents or miscalculations that cross the bounds of intimidation could transform the nature of the conflict, to China’s detriment. Suffering direct harm could harden an enemy’s resolve substantially, immunizing him against subsequent attempts at intimidation. Concurring, *The Science of Second Artillery Campaigns* cautions, “Commanders should cautiously make decisions, choose the appropriate opportunities, select high-precision missiles for precision strikes against key targets, and prevent missile firepower from deviating from the targets and giving others the excuse to permit the third country’s participation in the military intervention.”⁶¹ An errant ballistic missile destined for the Yokosuka naval base could very well plummet into densely populated civilian areas surrounding the base or a major city along its flight path. It is conceivable that an aggrieved Japan would punish China by refusing to limit (or even agreeing to expand) U.S. access to military bases on the home islands. Indeed, continued Japanese acquiescence to American use of military facilities might be enough to foil China’s strategy.

But Beijing faces even more daunting challenges than the writings let on. Chinese defense planners seem to assume that the Japanese leadership and the public would make a clear, objective distinction between targeted attacks against strictly military installations and wanton strikes against civilian population centers. Missile launches against Yokosuka would be an act of foreign aggression against the homeland unprecedented since the Second World War. It is hard to imagine the Japanese quibbling about the nature and intent of Chinese missile strikes under such circumstances; the strident Japanese response to North Korea’s Taepodong missile launch over the home islands in 1998 is a case in point. In other words, the escalatory pressures are far stronger than the Chinese writings assume. Intimidation warfare will be neither clean nor straightforward. Indeed, it could unleash the forces of passion intrinsic to any war far beyond China’s control.

More broadly, PLA planners seem excessively confident that certain missile tactics would accurately telegraph Beijing’s intentions. They assume that the precise application of firepower could send clear, discrete signals to the adversary in times of crisis or war. A small dose of well-placed missiles, they seem to believe, might persuade the enemy to back down or to cease and desist. This line of

reasoning in part explains the counterintuitive logic that China could engage in escalation in order to compel its opponent to de-escalate. The logic is as beguiling as it is potentially misleading. Missiles are not finely tuned weapons for those on the receiving end. The adversary may perceive what is intended as a warning shot or demonstration of resolve as a prelude to an all-out attack and then overreact rather than pausing or acting with caution. The result for the Chinese could be unanticipated vertical or horizontal escalation, or both.

Equally worrisome, operational interactions between Chinese and American forces could prove highly escalatory and destabilizing. As Evan Medeiros and co-authors astutely observe, the operational doctrines on both sides share a proclivity for seizing the initiative at the outset of a conflict through surprise, speed, and attacks against enemy rear echelons. Medeiros further argues:

Neither body of doctrine appears to consider how an adversary might react to such operations in a limited war—indeed, each seems to assume that it will suppress enemy escalation by dominating the conflict. Consequently a Sino-American confrontation would entail risks of inadvertent escalation if military forces were permitted to operate in keeping with their doctrinal tenets without regard for escalation thresholds.⁶²

It is clear, then, that an attack against regional bases is neither a trump card nor a substantially risk-free option. If plans go awry, as they always do in war, China could find itself in a protracted conflict against more than one implacable, well resourced enemy as intent as the Chinese upon achieving escalation dominance. Whether Beijing would find the stakes over Taiwan or over another dispute sufficiently high to run such a risk is unclear.

Disturbingly, however, Chinese writings suggest that some segments of the PLA are inclined to accept the repercussions of a coercive campaign against U.S. bases in Japan. What explains this cavalier attitude about escalation? First, these writings may be symptomatic of a broad underdevelopment in coercion and deterrence theory. Chinese strategic theoreticians may still be grappling with the power and options that long-range conventional missiles confer on China. Beijing's analytical efforts to harness new military capabilities hitherto unavailable to it may be analogous to the growing pains that U.S. strategic thought underwent in the early years of the nuclear revolution. Second, the absence of hard-won experience from modern warfare and crisis could account for optimism about escalation control. The Chinese have not fought a war for over thirty years, since the Sino-Vietnamese border conflict. Moreover, China has not yet confronted sobering incidents (comparable to the Cuban missile crisis) against which to reassess and radically revise prevailing assumptions. In short, it is easy to succumb to logical fallacies when operating in a theoretical vacuum.

Alternatively, Chinese overconfidence in managing escalatory pressures could reflect the lessons that defense planners learned from the cross-strait confrontation in 1996. Some analysts in China have unequivocally concluded that the missile tests deterred the island from the road to independence while signaling clear redlines to the United States.⁶³ The notion that a limited number of missile launches could produce far-reaching success in coercive diplomacy is a seductive narrative likely to attract adherents within the Second Artillery Corps. Indeed, such an uncritical story line could reinforce preferences, biases, and faulty assumptions underlying the discourse within the missile community. Troublingly, *The Science of Second Artillery Campaigns* explicitly credits the missile tests in 1995 and 1996 for generating multiple studies that “have filled in a blank in conventional guided missile operation theories of the Second Artillery Corps.”⁶⁴ A sample set comprising one case study is hardly a basis for universally applicable principles of war.

Finally, the writings themselves may be a form of peacetime signaling. The studies clearly communicate to foreign audiences China’s willingness to gamble in a big way in high-stakes disputes. If the doctrinal works convince outside powers that China may just be reckless enough to carry out the implied threats, they will have effectively cast a shadow of deterrence over potential adversaries. Mao Zedong’s cunning efforts to deprecate the power of nuclear weapons—by famously depicting atom bombs as “paper tigers”—in order to signal Chinese resolve are instructive.

Any combination of these reasons should give pause to those inclined to dismiss the strategic significance of the doctrinal writings.

STRATEGIC AND OPERATIONAL IMPLICATIONS FOR THE U.S.-JAPANESE ALLIANCE

Washington and Tokyo will encounter a more complex geometry of deterrence with the emergence of a robust Chinese theater-strike capability. The action-reaction dynamic in the United States–Japan–China triangle will be far less straightforward than that of the alliance’s deterrent posture toward North Korea. The existential threat that U.S. conventional and nuclear superiority poses to Pyongyang is often presumed to be sufficient to deter the North’s adventurism. Such is not the case with China. Boasting an increasingly survivable retaliatory nuclear strike complex, including a growing road-mobile strategic missile force and a nascent undersea deterrent, Beijing may be confident enough to conduct theater-level conventional missile operations under its protective nuclear umbrella. The war scares in the South Asian subcontinent over the past decade suggest that nuclear-armed regional powers, less inhibited by fears of enemy nuclear coercion or punishment, may feel emboldened to escalate a conventional conflict.⁶⁵

Japan and its many lucrative basing targets could well become a conventional, theater-level battlefield trapped between two nuclear-armed powers.

Assuming that vertical escalation toward nuclear use can be contained, the alliance must still consider efforts at denying attempts to punish Japan. Allied missile defenses, as they are currently configured, will have great difficulty coping with theater ballistic missiles like the DF-21. In the context of a cross-strait scenario, retired rear admiral Eric McVadon observes, “Being an MRBM with a much higher reentry velocity than SRBMs, the DF-21C is virtually invulnerable to any missile defenses Taiwan might contemplate.”⁶⁶ While the alliance possesses a far more sophisticated, multilayered missile defense architecture than does Taipei, longer-range missiles pose similar stresses to the defense of Japan. If the missiles were fired from launch sites in northeastern China, allied response times would be very compressed. Inexpensive techniques and countermeasures by the PLA, such as saturation tactics and decoys, could be employed to overwhelm or defeat missile defenses, which are designed for less sophisticated regional threats from North Korea and Iran. If the Second Artillery Corps launched successive missile salvos against the same strategic site, the alliance could quickly exhaust its ammunition, constraining its ability to defend other targets.

Escalation control would also bedevil the alliance. One critical escalation threshold pertains to the initiation of hostilities were China to prepare for or launch its first missile strike. The allies would be very hard-pressed to distinguish confidently conventional missiles from nuclear-tipped missiles. Indeed, finding the missiles at all would be hard enough, since the road-mobile DF-21s would almost certainly disperse to a variety of concealed launch sites to diminish the threat of a disarming preemptive strike by enemy forces. To compound matters, Chinese conventional missiles might share the basing facilities with their nuclear counterparts. Space-based surveillance and reconnaissance would provide at best an incomplete picture of China’s wartime missile posture. In short, no one would know for sure whether a Chinese warhead hurtling toward Yokosuka was a nuclear or a conventional weapon. The fog and friction that accompany any crisis or war would multiply this uncertainty.

Would the alliance be willing to discount the possibility that the launch could be a nuclear strike? Or would it assume the worst? In the event of Chinese conventional bombardment, what would be the appropriate military response from the United States? What might underlie and inform Japanese expectations of the U.S. reaction? Would the alliance be prepared to expand the war to the mainland? Would a besieged Japan demand more punitive strikes against China than the United States would be willing to inflict? Would Tokyo lose confidence in Washington if the latter refrained from what it considered disproportionate escalation?

What would be the consequences of such a breakdown in trust during and after the conflict? These troubling questions make it imperative that Tokyo and Washington clearly recognize the operational temptations to overreact and the political consequences of *underreaction*. Though prudence calls for restraint, the stresses of crisis and war could radically skew rational calculations.

The foregoing analysis demonstrates that theater-level interactions involving conventional missile strikes against regional bases could be highly unstable and prone to miscalculation on all sides. The apparent underdevelopment of Chinese doctrine on missile coercion, littered as it is with questionable assumptions about the adversary, could exacerbate this latent instability. In the meantime, it seems that the U.S.-Japanese alliance has not moved far beyond rudimentary discussions of extended deterrence, a concept that does not fully capture the complexities of the emerging missile threat in Asia.⁶⁷ It thus behooves Washington and Tokyo to anticipate a far more ambiguous and stressful operational environment than has been the case over the past two decades. The alliance must come to grips with the advances in Chinese thinking about coercive campaigns while exploring options for hardening the partnership, both politically and militarily, against Beijing's emerging missile strategy.

NOTES

- The author thanks Kent Calder, Michael Chase, Alexander Cooley, Andrew Erickson, Michael Green, and William Murray for their insights and helpful comments.
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55. The DF-21 is not the only option for the PLA. Other weapons systems, including DH-10 land-attack cruise missiles and air-launched cruise missiles fired from H-6 bombers, could figure prominently in any campaign against American bases in Japan. However, the antiquated H-6 bombers are not particularly survivable against U.S. and Japanese air defenses, while the LACMs are relatively new and untested compared to the DF-21s. Chinese defense planners would need to determine the proper mix of forces needed to fulfill their operational requirements.
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THE ZUMWALT-CLASS DESTROYER

A Technology “Bridge” Shaping the Navy after Next

George V. Galdorisi and Scott C. Truver

The U.S. Navy’s decision to truncate procurement of the original fleet of thirty-two guided-missile destroyers of the *Zumwalt* (DDG 1000) class to just three ships does not diminish the value of the program to the United States as a technology bridge to the “Navy after Next.” Rarely has the Navy had such an

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opportunity to do just what the Chief of Naval Operations (CNO), Admiral Gary Roughead, directed in early 2009: “To take advantage of the technologies, to learn from them” and to prepare the Navy for the uncertain “hybrid warfare” strategic environment of the future.¹ Testing, refining, and retesting these technologies and systems in a major surface warship can accelerate the Navy’s efforts to provide robust, flexible, and agile forces for tomorrow’s roles, missions, and tasks. Indeed, the lead DDG 1000 offers the potential to leverage today’s technology investments so as to help shape the characteristics and capabilities of warships yet to come.

PERSPECTIVE

Ninety years ago, the British military strategist and inventor Major General J. F. C. Fuller understood that “tools, or weapons, if only the right ones can be discovered, form 99 percent of victory. . . . Strategy, command, leadership, courage, discipline, supply, organization and all the moral and physical paraphernalia of war are

nothing to a high superiority of weapons—at most they go to form the one percent which makes the whole possible.”²

Having the “right” tools or weapons, as described by Fuller, is important for the United States and its allies and friends as they confront an ambiguous period of both asymmetrical, low-technology warfare and the possibility of high-technology warfare with China, a rejuvenated Russia, or other developing states. However, the link between the invention of a new technology and its impact on warfare is never a straight line. What *has* proved crucial has been the aggressiveness with which nations develop, test, improve, manufacture, and field these technologies as weapons of war. In *Global Trends 2025*, the National Intelligence Council addressed the importance of shepherding new technologies to the point where they transition to the end users, noting, “The pace of technological innovation will be key. Major technologies historically have had an ‘adoption lag.’”³

As the pace of global technological change has accelerated, the United States has been especially adept at inserting new technology to pace the threat. As Bruce Berkowitz points out in *The New Face of War*, “Recent experience suggests that the right technology, used intelligently, makes sheer numbers irrelevant. The tipping point was the Gulf War in 1991. When the war was over, the United States and its coalition partners had lost just 240 people. Iraq suffered about 10,000 battle deaths, although no one will ever really be sure. The difference was that the Americans could see at night, drive through the featureless desert without getting lost, and put a single smart bomb on target with a 90 percent probability.”⁴

Continuous technological innovation, experimentation, and insertion will have a significant impact on the future of warfare, particularly to address the “unknown unknowns” regarding which future technologies will be needed for America’s military decades hence. For example, the U.S. Joint Forces Command’s *Joint Operating Environment 2008* addressed the issue of technological uncertainty by describing the astounding changes that have taken place in just the last quarter-century alone:

One might also note how much the economic and technological landscapes outside of the military have changed. . . . On the technological side, the Internet existed only in the Department of Defense; its economic and communications possibilities and implications were not apparent. Cellular phones did not exist. Personal computers were beginning to come into widespread use, but the reliability was terrible. Microsoft was just emerging from Bill Gates’ garage, while Google existed only in the wilder writings of science fiction writers. In other words, the revolution in information and communications technologies, taken for granted today, was largely unimaginable in 1983.⁵

The U.S. Navy has a legacy of technology innovation and insertion, embracing both evolutionary and revolutionary changes, tempered by the understanding that a navy's ability to carry out its missions effectively has often depended on who inserts the best technology the fastest and most effectively.⁶ As Rear Admiral Jay Cohen, then Chief of Naval Research, noted in 2004, "The Navy/Marine Corps of today and tomorrow are and will remain critically enabled by the power of science and technology put to work for our Sailors and Marines."⁷

In addition to formal research and development programs and the much less formal experimentation along the waterfront, the Navy has at various times in its history taken good advantage of in-service platforms to insert and develop a "bundle" of technologies—many dependent on each other—to test breakthrough, leading-edge capabilities that have the potential to alter the face of naval warfare. For example, the first U.S. surface-to-air missile ships were the eight-inch-gun cruisers *Boston* and *Canberra*, which were converted for the new mission. Likewise, the submarines *Barbero* and *Tunny* were converted to launch Regulus land-attack missiles, making them (as SSG 317 and SSG 282) the world's first operational missile submarines.

But unlike these examples, in which ships approaching the ends of their service lives have been converted to experiment with new missions, DDG 1000 provides the Navy an opportunity to take emerging technology to sea not in a "test ship" but in a frontline, battle-force, major surface warship.⁸ In that regard, the surface warfare community can build on the U.S. submarine force's experience with the USS *Memphis* (SSN 691). In 1989, *Memphis* was designated an experimental submarine to test a variety of technologies and systems, including advanced hull materials and structures, unmanned underwater vehicles, advanced sonars, and bottom-profiler navigation systems. In 1994 the Navy assigned SSN 691 to Submarine Development Squadron 12. But all the while, *Memphis* remained an operational asset—in May 2006 deploying to support Operation IRAQI FREEDOM—and was included in the active force structure.

Using a new design and not an older ship to "test out" a variety of new technologies provides the Navy opportunity for experimentation on a scale not previously possible. In announcing his decision to truncate the DDG 1000 program at just three ships, CNO chose words that emphasized the importance of this ship as a technology incubator: "That's why I was more interested in truncating than terminating, so we can get a couple of ships out and see what they can do . . . see if the technologies we put on [DDG 1000] are going to pay off for us."⁹

LEVERAGING TECHNOLOGY "BUNDLES"

The "bundle" of technologies embodied in DDG 1000—as well as future technologies that could easily find homes in this ship—represents some of the most

cutting-edge and transformational technologies ever adapted for naval uses: the Integrated Power System (IPS); integrated electric drive; a stealthy tumblehome hull and integrated topside (InTop) superstructure design; the 155 mm Advanced Gun System (AGS); the Mark 57 Peripheral Vertical Launching System (PVLS); the Dual-Band Radar (DBR), which includes an S-band Volume Search Radar (VSR) and X-band AN/SPY-3 Multi-Function Radar (MFR); and a host of other advances related to network-centric warfare, stealth, survivability, and dramatically reduced manning levels.

While some have criticized the Navy for embedding too many technologies into DDG 1000, this perceived “weakness” is actually a strength, one that makes this ship a credible host platform for the technologies that will accelerate the leap to the Navy after Next.¹⁰ As DDG 1000 technologies continue to be tested and matured, the ship should serve as the Navy’s surface platform—remember *Memphis*—to evolve other advanced technologies as well into new warships.

But though the technologies currently embodied in DDG 1000 are on the cutting edge, it is the ship’s potential to host even-farther-future, potentially “game changing,” technologies that makes *Zumwalt* important. The fifteen-thousand-ton ship has a 10 percent growth margin, equating to some 1,500 tons of potential increase that would enable the ship to host new sensors and weapons as technologies evolve.¹¹ Inserting such systems into DDG 1000 throughout the next decades and then improving on them, based on their operational effectiveness and ability to deal with emerging threats, will define what the Navy will look like—and how it can fight—in the future.

For example, as the Office of Naval Research has recognized, “Among the possibilities inherent in all-electric ships are the new weapons that become feasible when virtually unlimited electric power is available on board.”¹² *Zumwalt*’s advanced all-electric propulsion plant, generating seventy-eight megawatts of power, allows such weapons as high-powered lasers and electromagnetic rail guns to be used without significantly impacting the ship’s electronic surveillance and weapons control systems or speed, a critical operational factor, given the high electrical demands of these on-the-horizon weapons.

Such weapons are classified under the general heading of “directed-energy weapons” (DEW), and they include high-energy lasers, radio-frequency weapons (high-power microwaves or ultra-wideband weapons), and electromagnetic rail guns.¹³ They are far from futuristic weapons that may or may not be feasible; the Office of Naval Research is already developing (and working to scale up the power of) free-electron lasers, chemical lasers and their associated beam directors, radio-frequency weapons, and full-scale electromagnetic rail guns capable of launching precision-guided projectiles at hypersonic speeds.¹⁴

Indeed, independent assessments outside government have concluded that solid-state lasers “are capable of making unique and important contributions to U.S. military effectiveness.”¹⁵ The CNO has also directed that his Strategic Studies Group focus its latest deliberations on the impact that hypersonic and directed weapons will generate on the future of naval operations in the 2020–25 time frame, noting that these weapons—both those employed by the U.S. Navy and those of future opponents—have “the potential to profoundly influence future maritime operations.”¹⁶

Modern rail-gun technology has been under development since the early 1980s and is projected to be a reality in the next decade. Ranges greater than two hundred nautical miles are envisioned, using GPS-guided projectiles traveling at six times the speed of sound. The fact that rail guns do not require powders or explosives could free magazine space for strike and other mission areas.¹⁷

The potential impact of the electromagnetic rail gun on the support of forces ashore likewise could be profound. The power supplied by an all-electric ship like DDG 1000 is sufficient to fire up to twelve electromagnetic projectiles per minute. A twenty-pound projectile could reach a target about three hundred miles away in about six minutes. Initially traveling 8,200 feet per second and striking its target at five thousand feet per second, that twenty-pound rail-gun projectile will penetrate tens of feet of reinforced concrete through its kinetic energy alone.

Directed-energy weapons could also become significant in terms of the way the Navy after Next provides ship and task-force self-defense in the contested littoral. A nation seeking to challenge the United States for control of local seas will probably turn to cruise missiles, because these offer a relatively economical method for conducting sophisticated attacks with a reasonable probability of inflicting damage on enemy ships off a coastline. Used to defeat a cruise missile threat, directed-energy weapons could serve both as high-resolution sensors, adding to capabilities provided by other Navy intelligence and surveillance systems, and as weapons, exploiting the advantages provided by a networked force.¹⁸

Directed-energy systems provide several mechanisms for cruise missile engagement and destruction. These weapons give the defender a speed advantage of roughly six orders of magnitude, reducing the “time of flight” required to reach an approaching missile. In the two to five seconds required to deposit laser energy on a target, a Mach 4 missile will travel only about 3.5 nautical miles; laser energy could destroy the attacker sixteen to eighteen nautical miles from the defending platform—more than twice the best distance attained with conventional systems.¹⁹ Embarked on mobile Navy warships, DEW could become

the weapons of choice for defeating cruise missiles launched at naval formations or for shooting down ballistic missiles launched against naval or other forces.

Swarming attack boats pose another significant challenge to naval ships operating in littoral waters. The severe damage inflicted upon the USS *Cole* (DDG 67) by one small, explosive-laden boat remains fresh in the minds of Navy planners. Directed energy offers the potential to disrupt the sensors of an attacking small craft at the maximum line of sight. Even when fast attacking boats are discernible as threats, engaging them in the vicinity of friendly or neutral forces requires more precision than is typically available with explosive ordnance.²⁰ The rapid responsiveness of directed-energy weapons makes them particularly useful against high-speed patrol boats or surface-effect craft, which can effectively outmaneuver conventional gun systems. The physical characteristics of directed-energy systems give the defender greater control over the effects generated than does any conventional weapon.²¹ Directed-energy weapons like the solid-state laser and the high-power microwave are potentially superior to kinetic weapons against swarming small boats—and the people who man them—for a number of reasons, chief among them the ability to use these weapons in a graduated response mode, where these swarming boats can be warded off with a succession of effects, from nonlethal warning “shots” to lethal, accurate fire.

The prospect afforded by directed-energy weapons could represent for the Navy and Marine Corps a potential paradigm shift in how the two services—as well as the joint force—will conduct operations on and from the sea in the twenty-first century. As the only feasible host platform for directed-energy weapons for at least the next decade, DDG 1000 is the ship that will help pull these technologies out of various laboratories and ground test sites and get them deployed to sea, where they could revolutionize warfare at the tactical, operational, and strategic levels.

Hosting these directed-energy technologies on DDG 1000 offers the promise of accelerating the development and refinement of these weapons in the operational environment. So doing will not only identify “the art of the possible” as to what the Navy after Next can look like but also help determine if these technologies can deliver even a portion of their enormous potential. Directed-energy weapons could be most useful in a future missile-defense role. They might be able to target ballistic missiles in all phases of their trajectories—launch, boost phase, and flight—thus helping to restore the odds for the defender. The long range of directed-energy systems and their ability to target the sensitive sensor and guidance systems of ballistic missiles make them particularly useful. If only some of the full range of potential applications of directed-energy systems proves effective, DDG 1000 will still have ably served as the prototype for the high end of any “future surface combatant” family of ships.²²

THE TECHNOLOGY “BRIDGE”

U.S. military forces will have to operate and fight in a strategic environment comprising a wide array of threats across the spectrum of violence, some of which can only be imagined in 2010. Dealing with such a range of threats requires that the United States avoid the technological surprise that will enable an enemy to exploit military weaknesses and deliver an asymmetric blow that will thwart what this nation seeks to achieve at the strategic, operational, or tactical level. A former Vice Chief of Naval Research, Brigadier General Thomas Waldhauser, U.S. Marine Corps, put this imperative in focus: “Given the current national security challenges our nation faces and those we expect to face in the future, we must keep our focus forward and push innovative technological solutions to address those future threats.”²³

But “pushing” those technologies out to the fleet and Fleet Marine Forces is fraught with organizational and systemic challenges. “Transitioning” is an issue of such concern that the Department of Defense asked the National Research Council (NRC) to investigate the issues surrounding technology transition failures and the concomitant impact on the war fighter and to offer recommendations. The NRC provided a robust list of recommendations, but the title of its final report—*Accelerating Technology Transition: Bridging the Valley of Death for Materials and Processes in Defense Systems*—is a telling indicator of how difficult this prospect remains. Significantly, the NRC concluded, “The adoption and acceptance of a new technology likely depends on the real or perceived impact of that technology on high-level military goals.”²⁴

The DDG 1000 program could overcome many of these transition challenges, primarily because the ship represents an ideal platform for hosting still-emerging technologies. For example, insertion of DEW technologies into DDG 1000 to support future war-fighting requirements promises an orderly, evolutionary, block-upgrade process, and it is consistent with the Defense Department’s emphasis on acquisition reform and with the Navy’s desire to exercise more stewardship over its own acquisition programs.

This future has clearly captured the attention of Congress. The fiscal year 2010 National Defense Authorization Act calls for the Navy to develop several plans and road maps, particularly for naval surface fire support—“to address any shortfalls between required naval surface fire support capability and the plan of the Navy to provide that capability”—and a technology road map for future surface combatants and fleet modernization—“a plan to incorporate into surface combatants constructed after 2011, and into fleet modernization programs, the technologies developed for the DDG-1000 and the DDG-51 and CG-47 Aegis ships, including technologies and systems designed to achieve

significant manpower savings.”²⁵ DDG 1000 provides important capabilities for these and other requirements.

When the first DDG 1000 is delivered in 2013, the Navy should already have a well developed technology-insertion and experimentation plan in place, if it is to take advantage of this ship’s tremendous capabilities. In doing so, the Navy will be able to leverage this ship fully and thereby accelerate the transformation of tomorrow’s fleet into the Navy *well after* Next.

NOTES

1. “Momentum for Building DDG-51’s Remains, despite Young’s Objection,” *Inside the Pentagon*, 12 February 2009.
2. Max Boot, *War Made New: Technology, Warfare, and the Course of History 1500 to Today* (New York: Gotham Books, 2006).
3. *Global Trends 2025: A Transformed World* (Washington, D.C.: National Intelligence Council, November 2008), p. viii, available at www.dni.gov/nic/.
4. Bruce Berkowitz, *The New Face of War: How War Will Be Fought in the 21st Century* (New York: Free Press, 2003), pp. 2–3. Berkowitz does not restrict his examples to just one conflict, noting further, “The same thing happened when the United States fought Yugoslavia in 1999 and the Taliban regime in Afghanistan in 2001. Each time experts feared the worst; each time U.S. forces won a lopsided victory.”
5. *Joint Operating Environment 2008: Challenges and Implications for the Future Joint Force* (Suffolk, Va.: U.S. Joint Forces Command, 2008), available at us.jfcom.mil/. This publication, commonly referred to as “The JOE,” serves as the “problem statement” regarding what challenges the U.S. military and its coalition partners will face in the future and informs all subsidiary joint publications, beginning with the *Capstone Concept for Joint Operations*.
6. Boot, *War Made New*, pp. 1–473. Boot does not present technology as the only element determining victory or defeat, giving full acknowledgment to a host of other factors—from geography to demography, to economics, to culture, to leadership. However, he is firm in his contention of technology’s huge impact, noting, “Some analysts may discount the importance of technology in determining the outcome of battles, but there is no denying the central importance of advanced weaponry in the rise of the West. . . . The way to gain military advantage, therefore, is not necessarily to be the first to produce a new tool or weapon. Often it is to figure out better than anyone else how to utilize a widely available tool or weapon.”
7. *Science and Technology for the 21st Century Warfighter* (Washington, D.C.: Office of Naval Research [ONR], 2004).
8. While some have questioned whether DDG 1000 will deploy, the CNO has been unambiguous in stating this ship will be a deployed asset. See, for example, Geoff Fein, “DDG-1000 Will Deploy, CNO Says,” *Defense Daily*, 28 April 2009.
9. *Ibid.*
10. See, for example, Ronald O’Rourke, *Navy DDG-1000 and DDG-51 Destroyer Programs: Background and Issues for Congress*, CRS Report for Congress RL32109 (Washington, D.C.: Congressional Research Service, 23 December 2009), available at www.fas.org/; and U.S. Government Accountability Office, *Defense Acquisitions: Zumwalt-Class Destroyer Program Emblematic of Challenges Facing Navy Shipbuilding*, Statement of Paul Francis, Director Acquisition and Sourcing Management, Testimony before the Subcommittee on Seapower and Expeditionary Forces, Committee on Armed Services, House of Representatives, GAO-08-1061T (Washington, D.C.: 31 July 2008). This GAO report addresses the challenges of embedding so many

technologies in one ship, noting, “Rather than introducing three or four new technologies (as is the case on previous surface combatants), DDG 1000 plans to use a revolutionary hull form and employ 11 cutting-edge technologies, including an array of weapons, highly capable sensors integrated into the sides of a deckhouse made primarily of composite material—not steel, and a power system designed for advanced propulsion as well as high-powered combat systems and ship service loads. This level of sophistication has necessitated a large software development effort—14 million to 16 million lines of code.”

11. O'Rourke, *Navy DDG-1000 and DDG-51 Destroyer Programs*. See also National Defense Business Institute, *The U.S. Navy's Destroyer Acquisition Plan: Examining Options for Acquiring DDG-1000 and DDG-51 Destroyers to Meet Maritime Capability Requirements* (Knoxville: Univ. of Tennessee, 2009). This study noted the large growth potential of DDG 1000.
12. *Science and Technology for the 21st Century Warfighter*, p. 25.
13. George Galdorisi and Lynn Pullen, *Leveraging Directed-Energy Weapons to Accelerate Naval Transformation: Prospects and Issues* (Arlington, Va.: Center for Security Strategies and Operations, December 2004), p. 15.
14. *Science and Technology for the 21st Century Warfighter*, pp. 25–26. See also Galdorisi and Pullen, *Leveraging Directed-Energy Weapons to Accelerate Naval Transformation*; and William McCarthy, *Directed Energy and Fleet Defense: Implications for Naval Warfare* (Maxwell Air Force Base, Ala.: Air War College Press, May 2000). The fact that directed-energy weapons have not been written about extensively in the defense media over the past several years can be traced directly to the uncertainties surrounding DDG 1000 Zumwalt-class program. Without a “host” platform having an integrated power system and integrated electric drive, directed-energy weapons will remain land-bound.
15. Thomas Ehrhard, Andrew Krepinevich, and Barry Watts, “Near-Term Prospects for Battlefield Directed-Energy Weapons,” *CSBA Backgrounder* (January 2009), available at www.CSBAonline.org. The authors note, among other findings, that “lasers have long been considered a technology that could give rise to a new [revolution in military affairs]. As a December 2007 Defense Science Board on directed-energy weapons (DEW) observed, lasers promise to be a transformational ‘game changer’ in military operations. Recent advances in solid-state laser (SSL) technologies suggest, however, that directed-energy weapons in the 100-kilowatt (kW) range with power sources dense enough to provide ‘deep’ magazines could be fielded in the near future. . . . In sum, the technical challenges that have long delayed the fielding of directed-energy weapons for battlefield use finally appear to be giving way to technical and engineering progress.” See also Andrew Krepinevich, Tom Ehrhard, and Barry Watts, “Solid-State Laser Weapon Systems: Bridging the Gap—or a Bridge Too Far?” Center for Strategic & Budgetary Assessments (CSBA) briefing, 20 May 2009. The briefers, all highly respected defense experts who authored the study cited here, conclude that the key impediments to the development of solid-state lasers are not technical but cultural and institutional.
16. Chief of Naval Operations, memorandum for Director, Strategic Studies Group, 23 September 2009.
17. H. G. Ulrich and Mark Edwards, “The Next Revolution at Sea,” U.S. Naval Institute *Proceedings* (October 2003). See also Scott Truver, “Naval Warfare at the Speed of Light,” *Jane's Navy International* (July/August 2003), p. 27.
18. Andrew Koch, “Sea Power 21 to Change Face of US Navy,” *Jane's Defense Weekly*, 19 June 2002.
19. Air Force Scientific Advisory Board, *Directed Energy Volume, New World Vistas: Air and Space Power for the 21st Century* (Washington, D.C.: 18 June 1996), p. 67.
20. *Report of the Defense Science Board Task Force on High Energy Laser Weapon System Applications* (Washington, D.C.: Defense Science Board, Department of Defense, June 2001), p. 86.
21. McCarthy, *Directed Energy and Fleet Defense*, p. 27. See also Claude Berube, “The Post Oceanic Navy, the New Shadow Zones, and the U.S. Navy's Force Structure Challenge,”

- Small Wars Journal*, 16 April 2009, www.smallwarsjournal.com.
22. *Science and Technology for the 21st Century Warfighter*, p. 25. This now-five-year-old ONR report was prescient in recognizing the potential of the DDG 1000 *Zumwalt*-class destroyer as the lead ship for the Navy after Next, noting, “IPS and electric drive will revolutionize surface ship and submarine warfighting capabilities by increasing combat effectiveness and agility while reducing ownership costs, space requirements, vulnerability, and crew size. Indeed, IPS is critical to the future development of the ‘all-electric Navy.’”
 23. *Ibid.*, p. 2.
 24. The National Research Council is a part of the National Academies consortium, comprising the National Academy of Sciences, the National Academy of Engineering, the Institute of Medicine, and the National Research Council. This report, *Accelerating Technology Transition: Bridging the Valley of Death for Materials and Processes in Defense Systems* (Washington, D.C.: National Academies Press, 2004), available at www.nap.edu, notes, “Accelerating the transition of new technologies into defense systems will be crucial to achieving military transformation. . . . Historical precedents for the transition of new technologies into defense systems have been neither fast nor efficient.”
 25. *National Defense Authorization Act for Fiscal Year 2010*, Public Law 111-84, U.S. Statutes at Large 123 (2009): 2190, sec. 125, Procurement Programs for Future Naval Surface Combatants.

THE STRATEGIC IMPLICATIONS OF OBSCURANTS

History and the Future

Thomas J. Culora

Throughout history, smoke has been used in various forms to obscure naval forces at sea. During prominent naval battles in the twentieth century, from Jutland in World War I to the U.S. Navy's clash with imperial Japanese forces off Leyte in 1944, smoke literally contributed to "the fog of war" and added to the complexity and confusion of battle.¹ But is there a role for smoke or other obscurants at sea in the radar-saturated, cyber-linked maritime environment of the twenty-first century? And what, if any, are the strategic implications of obscurants? This article will explore the latter question, leaving the tactical and operational opportunities of "making smoke" for separate inquiry.

The application of obscurants on the modern battlefield has been widely examined by U.S. Army strategists and operators for over a decade and a half;² obscurants are firmly imbedded in U.S. Army doctrine.³ Moreover, the

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effectiveness of obscurants against a panoply of terminal homing systems, from the visual to the millimeter-wave spectrum, is proven. In simple terms, the particles suspended in the medium of smoke can be adjusted in size to absorb and diffuse radar waves emanating from the seeker heads of incoming antiship missiles, thereby denying any homing information to the missile. In the modern naval battle space, where antiship cruise missiles (ASCMs) are a principal threat, adapting obscurant systems and developing tactics and operational schemes for their use

at sea is prudent. Given the stark potential of antiship ballistic missiles (ASBMs), this adaptation may be essential.⁴

The challenge, then, for naval strategists, operators, and acquisition professionals is to “navalize” obscurants for use at sea, either developing new systems or adapting existing ones. One such system that appears primed for adaptation is the U.S. Army’s M56E1 Coyote smoke-generating system. The Coyote spews out large, radar-absorbing, carbon-fiber clouds that can prevent a radar-guided ASCM from detecting its target, thereby neutralizing the missile’s terminal homing capability.⁵ It is an attractive system, since the cost of generating a single obscurant cloud covering several square nautical miles is in the tens of thousands of dollars. Also, depending on environmental conditions present, the Coyote’s cloud can be quite persistent. Effective in virtually the entire spectrum, such millimeter-wave obscurants show great promise in thwarting the terminal radar seekers in many modern ASCMs.

The fundamental assumption underpinning this article is that regardless of which system is acquired, thoughtful obscurant employment will significantly reduce the risk to surface ships from missile strikes. With this in mind, there are four key areas where obscurants have strategic implications: strategic competition, influence and balancing, deterrence, and escalation control.

STRATEGIC COMPETITION

Obscurants represent a relatively low-cost augmentation to current missile defense strategies and have the potential to tip the cost-exchange ratio, which now favors the offense, back to the defense.

Calculating the exact unit cost of offensive and defensive missiles is a challenge due to the multitude of direct and associated costs of bringing a missile system on line. It becomes even more problematic when researching the cost of missile programs in countries with opaque accountability laws and public information standards. But the approximate, relative cost differences between offensive and defensive missiles are sufficiently large enough to give a clear advantage to the offense. For example, a comparison of the Navy’s primary defensive missile, the SM-2, against the service’s own ASCM, the AGM-84 Harpoon, reveals a cost ratio of \$2,560,000 to \$474,000—an advantage to the offense of five to one.⁶ A “shoot doctrine” that takes into account a defensive probability of kill of anything less than one (i.e., $P_k < 1$) requires, at a minimum, two defensive missiles for every one incoming offensive missile, raising the cost ratio to almost eleven to one, with a resultant cost disadvantage to the defense of \$4,600,000 per exchange.

Full comprehension of the “game changing” potential of the Chinese DF-21 ASBM and its impact on operations is slowly emerging among strategists and

planners. Applying this analysis to the emerging threat posed by antiship ballistic missiles yields somewhat different results. While it is problematic to estimate accurately the cost of the DF-21, sources place the unit price, in U.S. currency, between \$5,000,000 and \$10,500,000 per missile.⁷ This seems a reasonable estimate in light of the cost of a similar weapon, the U.S. Pershing II, which adjusted for inflation would be roughly twelve million dollars per missile. In comparison, the ballistic-missile-defense-capable SM-3 costs roughly ten million dollars per missile. At first blush, the nearly equal prices of interceptor (SM-3) and ASBM (DF-21) suggest near parity in cost ratio, but a “shoot two to kill one” doctrine means a differential of nearly ten million dollars per exchange. However, even this is misleading, as the launch platform—essentially a big truck—of the DF-21 is far less expensive than that of the SM-3, a warship. This estimate also ignores the operational and developmental challenges of intercepting an ASBM; nor does it fold in the things like purchasing power disparity, labor costs, and government controls, which all favor China. Nonetheless, this simple cost comparison is striking.

The strategic challenge, then, is to reverse this disparity and tip the cost back in favor of the defense. The application of obscurants can help with this in two very significant ways. First, developing and deploying a navalized obscurant capability would be—especially if based on the M56E1—inexpensive in comparison to defensive missile systems. The entire mission package for the Coyote costs from \$130,000 to \$150,000 per unit; the expendable obscurant boxes cost about a thousand dollars per thirty-pound box, each capable of generating four minutes of radar-absorbing smoke. Place these mission packages on the Littoral Combat Ship, on an SH-60 helicopter, or even on an unmanned aerial vehicle, and for relatively little money both naval and merchant surface vessels can be obscured from radar-homing ASCMs and ASBMs. Admittedly, for this to work effectively, more testing and experimentation must be done; in any case, obscurants in themselves represent not a panacea but part of a layered passive defense. But in light of the challenging operational issues involved with intercepting ASBMs, obscurants merit increased consideration.

As with any new system, there will be additional costs to ensure that other shipboard and aviation systems will not be adversely impacted by the use of smoke and millimeter-wave fibers. Also, resources would be needed to develop operational and tactical doctrine and procedures to employ this capability effectively. That said, it is hard to imagine that the combined unit cost per obscurant system plus the very low expendable costs of making the smoke, even coupled with any additional developmental and compatibility costs, would approach anything near the two billion dollars spent on the SM-2/SM-6 program.

A rational approach is to couple obscurant systems with current shipboard passive and active defensive capabilities. The blanket coverage afforded by obscurant systems would reduce the burden on defensive missile systems to intercept every incoming missile. This would reduce the cost per kill of incoming offensive missiles to a level that shifts overall costs in favor of the defense. An endogenous strategic effect of this coupling would be an increase in capacity for theater ballistic missile defense, as missiles and their launch tubes that would otherwise be used for ship defense would be freed to intercept ballistic missiles threatening targets ashore. Admittedly, that would not reduce the overall, programwide costs of developing effective theater missile defenses, but it clearly would lessen the cost of protecting the “protectors” in a missile exchange.

Second, employment of a relatively low-cost obscurant system would prompt potential opponents to reexamine and adapt their current missile systems to ensure effectiveness in an obscurant-laden environment, thereby driving up the real unit cost per offensive missile. This too begins to tip the cost differential back in favor of the defense. Moreover, even if the technical and physics challenges of getting infrared and millimeter-wave homing systems to “see through” obscurants are surmounted, it will have taken several years to do so. Potential adversaries would therefore have to reexamine and reengineer current systems and delay the introduction of future systems to ensure their effectiveness to reduce the risk of failure—which in itself would contribute to deterrence in the short run.

It is important to appreciate the strategic disaster that would ensue if even one antiship missile were to make it through. Here the strike of one \$500,000 ASCM or twelve-million-dollar ASBM would result in hundreds of millions of dollars in damage and significant loss of personnel. While a missile strike against a relatively hard target like an aircraft carrier might not sink that ship, the destruction of multimillion-dollar aircraft parked on the flight deck by dispersed munitions would instantaneously and drastically tip the cost-ratio exchange in favor of the offense.⁸

When applying the logic used in both of the cases outlined above, an underlying element should be understood. That is, current antiaccess strategies are based on using relatively low-cost weaponry to counter high-cost expeditionary assets. In this case, obscurants would need to be significantly less expensive to develop and deploy than the missiles they are designed to counter to have any strategic impact. That said, employing an asymmetric obscurant strategy provides a significant amount of “headroom” to develop new, more effective kinetic or other passive systems or to adapt current weapons continuously. Offsetting this concern somewhat is that meeting symmetrically a sizable U.S. naval force would be impractical and costly enough to force nations to adopt an asymmetrical strategy.

Nations may have no other option but to expend resources to ensure this asymmetrical strategy is credible and effective. Thus low-cost obscurant systems that make it more complicated and costly for a potential adversary to operationalize his strategy affect the strategic competition.

In Beijing all of these factors are well understood. The Chinese have based their entire antiaccess strategy on developing systems that are less expensive to produce and operate than the U.S. expeditionary forces they are designed to counter. Moreover, a considerable number of these systems are specifically designed to counter the most potent persistent striking force possessed by the U.S. Navy—the aircraft carrier. The introduction of fully operational obscurant systems, coupled with well-thought-out operational schemes, will start to flip this asymmetry around.

INFLUENCE AND BALANCING

The leitmotif of arms sales is that nations who sell arms gain influence with nations purchasing those weapons. The extent to which this is broadly true is beyond the scope of this article, but it is reasonable to assume that besides the tangible benefit of generating capital, some positive relationship will emerge from the arms transaction and some influence will be garnered. For this argument it is sufficient to note that for a country to gain any influence with another from the sale of arms, two conditions must exist. First, the system or capability being sold must produce some military effect relevant for the receiving country; second, the system must actually work, or be perceived to work, as advertised. Thus it can be anticipated that for any reduction in either the desirability or efficacy of a given system, there would be some reduction in influence.

Granted, countries often provide a number of different weapons systems and capabilities to client states in order to foster influence, and the impact of degradation in the performance of one of them may be limited. But in the case of obscurants, which would render significantly less effective an entire class of antiship weapons, the implications for the delivering state cannot be ignored. This is not just diminishing the role of an ancillary system but muting what is perhaps the most prominent class of modern antiship weapons, the radar-homing missile.

The implication for the United States is that delivering low-cost, low-tech obscurant systems capable of providing significant protection for surface ships may produce some increase in influence for Washington. (The effect would likely be marginal, as obscurants are easily produced indigenously.) More significantly, whether through transfer or internal development, wide distribution of obscurant systems would blunt the potent military capability of any aggressor

country whose advantage rests with its ability to coerce or pressure its neighbors through use of radar-guided missiles aimed at ships at sea.

In 2009 China extended its global influence through a variety of means, including raising its profile in international arms sales.⁹ For example, the Chinese recently delivered a Type 53H3 Sword-class frigate, PNS *Zulfiqar*, to Pakistan, replete with eight C-802/CSS-N-8 antiship cruise missiles. This transfer in itself represents only a marginal operational increase for the Pakistani navy, as the four Type 53H3s involved replace six older, ex-British *Amazon*-class frigates scheduled to leave the fleet in the next decade. However, the arrival of *Zulfiqar* “marks the first time in Pakistan’s history in which it has received a new-build major frontline warship.”¹⁰ An underlying strategic goal here for China is to strengthen its influence with Pakistan to ensure that the relationship of the United States with Islamabad does not go unchecked.

But perhaps as important, this sale affects China’s other strategic rival in the region, India. The Indian Navy must acknowledge the increased capability the arrival of these Type 53H3s and their C-802s represents by obtaining more platforms or more capable systems, thereby exacerbating an already tense regional arms race. Should the DF-21’s constituent technologies migrate to Pakistan or to other countries in the region, that too would exacerbate regional competition. Any country, not only India, that relies on its naval force as an element of its security would be threatened and thus prompted to seek either additional or more capable systems or expand its operational plans to target this potent neutralizer of its surface combatants.

Obscurants have the potential to reduce the strategic impact in both of these cases. The overall strategic and operational value of *Zulfiqar* for Pakistan is lessened, and the potential “game changing” nature of an ASBM is reduced.

There is a latent danger here. Obscurant systems must be effective enough, either alone or in concert with other systems, to neutralize a sufficient number of incoming missiles in the aggregate to make it obvious to a potential opponent that increasing missile stockpiles would not result in a tactical advantage. Marginally effective obscurant systems could have the reverse effect of encouraging an arms race, by prompting opponents to field large numbers of missiles in the hopes of overwhelming defenses—much as is the case now. The whole point of obscurants is that they will defeat nearly all incoming warheads, no matter how many missiles are launched, the “leakers” to be handled with other defensive systems.

With regard to balancing and influence, obscurants can affect the way allies operate with the U.S. fleet and how they configure their forces. An explicit goal of the Navy’s “Cooperative Strategy for 21st Century Seapower” is fostering cooperation with other maritime nations. While the initiative is aimed at the

quodidian task of strengthening maritime security, the ultimate expression of cooperation is a nation's decision to join a coalition. That decision is ultimately a political one, based on an assessment of benefits and risks. Among the considerations is the ability to operate effectively in the anticipated tactical environment without undue exposure to damage or destruction. In a heavily saturated antiship-missile environment, allied ships would be more survivable operating with obscurants, producing a corresponding reduction in risk and of the political pressure that inevitably results when a unit is lost or destroyed. Moreover, the strategic risk to a nation with a relatively small fleet, for which the loss of even one ship can have significant impact, is reduced.

There may be the undesirable second-order effect of making nearly all radar-guided missiles less effective—including rendering U.S. weapons impotent—which raises two salient considerations. First, if employment of obscurants reduces the effectiveness of offensive antiship missiles and influence of countries selling offensive missiles, then the influence gained by the United States through the sale of those missiles would be lessened as well. Second, and more important, the employment of obscurants could substantially affect the current reliance on, and efficacy of, precision radar-guided missiles at sea to a point where a major reformation in the way naval forces are structured and operated would occur. Here the operational and strategic advantage is accrued by those countries agile enough to adapt to the changed environment.

DETERRENCE

A central tenet of international relations theory, as echoed by the Department of Defense, is that “deterrence operations convince adversaries not to take actions that threaten US vital interests by means of decisive influence over their decision-making.”¹¹ Increasing the level of perceived risk increases the ability of one player to deter another. Obscurants can raise the risk an opponent perceives in two principal ways.

First, while obscurants in themselves may not deter, their use injects a high degree of uncertainty and unpredictability that in turn increases risk. Any antiaccess strategy predicated on sea denial through the threat or use of antiship missiles must estimate the numbers of missiles needed and types of targets to be engaged. By making it harder to predict the number of missiles required for a desired effect, obscurant systems will increase the risk for that opponent and, concomitantly, deterrence. Conversely, obscurants that create a tactical situation where an offensive antiship missile strike will nearly always fail produces a near certainty that in itself deters.

Second, obscurant systems and other kinetic or electronic defenses increase the number of missiles needed per target. If this increased expenditure of

missiles significantly draws down an adversary's missile inventory, at some point this reduction will have strategic consequences. In regions where the relative balance of forces between nations is close, adversaries who rapidly deplete their offensive missile inventory and yet fail to achieve the strategic benefits they were seeking will degrade their relative strategic positions, regardless of whether this conflict was with intra- or extraregional opponents.

The uncertainties that obscurants inject into calculations of the chance of success and into the strategic risks of aggressive operations can be significant. And uncertainty can deter. However, there are two instances in which obscurants may have a neutral or negative impact on deterrence. First, as obscurant systems are relatively inexpensive and low-tech, they are likely to proliferate. If both sides employ this capability, obscurants can reduce the effectiveness of all offensive missile systems. In this case, the side that can accrue tactical or operational advantages by other means—for example, through weapons that do not rely on millimeter-wave or infrared homing, or through stealth or maneuverability—will likely be more difficult to deter. Here, the deterrent effect of obscurants is neutral.

However, in an *ad bellum* (approach to war) scenario where one side's operational plan relies heavily on precision antiship missiles launched from transporter-erector-launchers on land, a large first strike without warning would be tempting, as the relative advantages of a land-based antiaccess plan would evaporate once offshore naval forces started using obscurants, resulting in a negative impact on deterrence. However, if obscurants are deployed on warning or used preemptively, as a nonprovocative means of defense, deterrence is in fact increased. This is where escalation control plays a role.

ESCALATION CONTROL

Should deterrence fail, the use of obscurants can contribute to controlling escalation and expanding the strategic options available. This is most evident in the transition from an *ad bellum* to an *in bello* situation. Once an adversary strikes a target, especially a high-value unit such as an aircraft carrier or "big deck" amphibious ship, there is tangible pressure to respond by striking an opponent's countervalue or a counterforce target. While conventional escalation does not neatly conform to the notions of "countervalue" and "counterforce" options as commonly understood in connection with nuclear deterrence, the conventional challenges associated with each of these types of responses are useful to explore.

First, against an adversary who launches missiles from mobile transporter-erector-launchers ashore, the direct counterforce options are limited to strikes on fixed radars and supporting infrastructures—strikes that, these targets being ashore in an opponent's homeland and possibly having multiple uses, would

likely be viewed as significantly escalatory. That is fine if it is the desired effect; however, it becomes problematic when the effect is to respond in kind, without significant escalation. Finding other conventional counterforce options would mean expanding the target set to other military assets, preferably naval targets, such as ships at sea or deployed submarines, or airborne aircraft operating over land or water. If these assets are unlocated or untargetable and the only other counterforce targets are on land, the risk of escalation will increase.

Second, against an adversary who has successfully struck a high-value naval unit, finding an equivalent countervalue target would be a problem. However, there are two options. One would be to strike unrelated military targets that are of equal value in the aggregate. But dispersed naval assets like small boats, submarines, and surface ships would be challenging and time-consuming targets to strike and might not really add up to the value of the high-value unit originally attacked. Most nations view strikes against naval combatants as lower on the escalation ladder than strikes against homeland targets, even though naval vessels are considered sovereign territory. Thus responding to a strike against a naval unit offshore with collectively equivalent countervalue strikes to military targets onshore would likely be perceived as escalation. In the extreme case, where no military target or groups of targets of equal value exist, other national assets would need to be considered, including space-based military or commercial systems or certain military-related civilian facilities. Again, in either case the conflict would escalate.

Consider, then, a case in the transition to war where an adversary launches a first strike using missiles against high-value targets at sea but fails, due in large part to the effective use of obscurants. In this situation, strategic space is created that lessens the need for an in-kind response and expands the range of options. The targeted side can use this opportunity to give an adversary time to reconsider the chances of success, having failed in a first strike. This creates the opportunity for de-escalation.

Once *in bello*, controlling escalation without the use of obscurants becomes particularly challenging, for three reasons. First, countering incoming antiship missiles primarily with defensive missiles and other kinetic systems will eventually deplete the defenders' magazines, encouraging the adversary not to de-escalate but to sustain or even increase its efforts. Second, moving beyond the ranges of shore-launched missiles plays, in effect, into the adversary's antiaccess strategy. While such withdrawal may be viewed as de-escalatory, it is de-escalation through capitulation. Lastly, tactics that target subsystems that support the entire missile "enterprise," such as surrounding and distant infrastructure, command-and-control nodes, or satellites, prior to a missile launch (the so-called left-of-launch options)—are all intrinsically escalatory.

However, when obscurants effectively counter missile strikes by simply denying the incoming weapons' homing ability, causing them to miss, there is less requirement to expend defensive missiles, no need to reposition outside of offensive missile ranges, and reduced justification for escalatory "left of launch" options.

OBSTACLES AND OPPORTUNITIES

A full examination of how to bring obscurants to the fleet is beyond the scope of this article. However, as with any new concept, there would be organizational, cultural, and programmatic obstacles to overcome.

Organizationally, bringing any obscurant system to the fleet through a "program of record" will require intense collaboration across multiple communities and commands as integrating any new concept has always proved to be a challenge. Recently, the Chief of Naval Operations signed an instruction that codifies how the U.S. Navy will generate and develop new concepts. Obscurants appear ripe for examination under the process described in this document.¹² Moreover, the U.S. Army's experience with making obscurants safe for personnel and compatible with other fielded systems represents insights with encouraging potential for adaptation by the Navy.

Culturally, the Navy is oriented toward active defense. This can be seen historically in destroying incoming B5N Kate torpedo planes with F4F-4 Wildcat fighters and shipboard antiaircraft batteries off Midway in 1942, or in the contemporary practice of intercepting incoming ASCMs with the SM-2 and Mark 15 Phalanx Close-In Weapons System in 2010. There have been many passive defense systems—including electronic countermeasures, radar-spoofing chaff, and electronic decoys—but the preference, as measured by program dollars, is overwhelmingly in favor of active defense. There are several good reasons for this preference, not the least of which is the value of a positive kill and the accurate battle-damage assessment that allows.

But perhaps the most significant obstacle is programmatic. In the intense competition for funds, programs live and die by the perceived salience and immediacy of their necessity. At present, in the absence of pressing need for them, there is scant chance that obscurants will receive the attention and funding needed to make them operational. But this may be changing. With the increasing recognition that key elements of conventional naval striking forces may soon be held at greater risk, the recognition that obscurants could reduce this risk may also increase, thereby prompting greater interest in developing a program of record to bring obscurant systems to the fleet.

It is worth noting here that systems fielded to counter new threats are often highly classified, known only to a limited number of planners and operators.

Such systems clearly have their place, but they have no impact on deterrence or influence. To deter, systems must be known, and to influence, they must be transferable. Highly classified systems are neither.

However, even with these obstacles there are opportunities. In the near term, obscurants can serve as a system of “last resort.” With modest compatibility and impact testing and minimal adaptation to the maritime environment, existing obscurants could be used as a balancer to the DF-21 threat. Cloaking major combatants in obscurants at first warning, whatever the impact on other ship and aircraft systems, would be justifiable given the grave strategic consequences of losing a major combatant to an ASBM strike.

As obscurant systems are introduced and tactical procedures and operational doctrines are developed, any potential adversary will have to respond, adjust, and counter them. This represents a clear midterm opportunity, as keeping potential adversaries “off balance” causes them to expend time and resources. A critical element of achieving this “off-balancing” effect would be a thoughtful strategic communication effort to highlight the operational and strategic implications of the obscurant system. Likewise, even committing a reasonable effort to making obscurants operational and openly trumpeting their existence will create uncertainty and induce a recalculation of risk. An example of this is the “buzz” generated by the impending introduction of the DF-21. Though there has been no at-sea, operational demonstration of this missile, so much uncertainty has been created by the Chinese press, with a consequent dialogue by U.S. navalists and arms experts, that concern over the “game changing” nature of this missile is emerging. This public discourse extends even to the official military television channel in China, where a discussion of the DF-21’s predicted lethality includes an animated cartoon of the sinking of an aircraft carrier—complete with a hapless sailor and vexed commanding officer.¹³ This discussion targeted audiences on both sides of the Pacific. Notable is the absence of any portrayal of passive defenses.

Perhaps the greatest opportunity for obscurants is in their long-term effect on the evolving character of naval warfare. In a future operational concept based on the speed, maneuverability, and stealth of small, numerous missile-launching surface platforms, obscurants can add to the difficulty of striking these platforms, contribute to uncertainty on the part of adversaries, and establish a “tipping point” in favor of U.S. forces. Fielding systems and formulating tactical and operational doctrine today can lay the foundation for obscurant use in the future.

While the obstacles are not trivial, the operational and strategic opportunities that obscurants represent merit increased attention and a greater effort to explore all the ways in which they can be brought to the fleet. Obscurants will

have come full circle from October 1944 when a twenty-first-century destroyer captain gives the order to “make smoke.”

NOTES

1. The indomitable Cdr. Ernest Evans famously shouted the command “Make smoke!” as he steered the destroyer USS *Johnston* toward the approaching Imperial Japanese Fleet during the battle of Leyte Gulf. USS *Johnston* (DD557) Action Report, DD557/A 16-3, serial 04, 14 November 1944, Subject: Action Report—Surface Engagement off Samar, P.I., 25 October 1944.
2. For the purposes of this article, the term “obscurants” describes any material that blocks any electromagnetic or visible-spectrum wavelength; “smoke” is meant to describe a medium that suspends obscurant material in the atmosphere.
3. U.S. Army Dept., *Battlefield Obscuration*, Field Manual 3-11.50 (Washington, D.C.: Headquarters, Department of the Army, 31 December 2008).
4. Andrew S. Erickson and David D. Yang, “On the Verge of a Game Changer,” U.S. Naval Institute *Proceedings* (May 2009), pp. 26–32.
5. Using the Army’s Coyote system was proposed and examined by Brett J. Morash, “Naval Obscuration” (research paper, U.S. Naval War College, Warfare Analysis and Research Department, Newport, R.I., 2006). Lieutenant Commander Morash effectively described the applicability and adaptability of the M56E1 system for use in the naval environment.
6. The figure of \$2,560,000 was derived from www.defenseindustrydaily.com/raytheons-standard-missile-naval-defense-family-updated-02919/, taking the total listed production costs from fiscal years 2005–10 (\$915,100,000) and dividing by the total number of missiles produced (357). This is a conservative estimate, as it does not include research, development, testing, and evaluation, costs of which drive the total per-missile cost closer to \$6,000,000.
7. Qiu Zhenwei and Long Haiyan, “A Discussion of China’s Development of an Antiship Ballistic Missile (Combat Scenario),” *Modern Ships*, quoted in “Ballistic Trajectory: China Develops New Anti-ship Missile,” *Jane’s*, www.janes.com/news/security/.
8. For instance, costs for the F-18 range between \$29 and \$57 million per aircraft, depending on variant. From U.S. Navy sources, www.news.navy.mil/.
9. Stephen Blank, “China’s Rising Profile in International Arms Sales,” *China Brief* 9, no. 25 (16 December 2009), pp. 10–12, www.jamestown.org/.
10. Usman Ansari, “First Sword Class Frigate Arrives in Pakistan,” *Defense News* (13 September 2009), available at www.defensenews.com/.
11. U.S. Defense Dept., *Deterrence Operations Joint Operating Concept*, version 2.0 (Washington, D.C.: U.S. Strategic Command, December 2006), p. 3, available at www.dtic.mil/futurejointwarfare/concepts/do_joc_v20.doc.
12. Chief of Naval Operations, “Navy Concept Generation and Concept Development Program,” OPNAVINST 5401.9, Washington, D.C., 24 February 2010.
13. This video can be viewed at www.youtube.com/watch?v=R-nNVvtacXU&feature=related.

Options for the Pakistan Navy

Commander Muhammad Azam Khan, Pakistan Navy (Retired)

We have unresolved issues, a history of conflict and now the Cold Start doctrine. Help us resolve these issues. We want peaceful coexistence with India. India has the capability and intentions can change overnight.

GENERAL ASHFAQ P. KAYANI, THE CHIEF OF ARMY STAFF, PAKISTAN

Around noon on 26 July 2009, Gurushuran Kaur, the wife of the Indian prime minister, broke a single coconut on the hull of a submarine in the fifteen-meter-deep Matsya dry dock at Visakhapatnam (also known as Vizag).¹ The occasion marked the formal launch of India's first indigenously built submarine, a six-thousand-ton nuclear-powered ballistic-missile submarine (SSBN) known as S-2—also as the Advanced Technology Vessel (ATV) and, more commonly, by its future name, *INS Arihant* (destroyer of the enemy).² The launch ended for India a journey stretching over three decades since the inauguration of the ATV program and including an eleven-year construction period.³

The submarine is intended to form a crucial pillar of India's strategic deterrence. Successful trials and integration of S-2's systems will establish the final leg of India's nuclear weapons delivery triad, as articulated in the Indian Maritime

Doctrine and substantiated in the Indian Maritime Military Strategy Doctrine.

The launch is an extraordinary development for the littorals of the Indian Ocean region, including Australia and South Africa, but especially for Pakistan. It is germane to the military nuclearization of the Indian Ocean and noticeably dents the strategic balance; it has the potential to trigger a nuclear arms race.⁴ S-2 will also enhance India's outreach and allow New Delhi a comprehensive domination of the Arabian Sea, the Indian Ocean littoral, and even beyond.⁵

Commander Khan's twenty-three years of commissioned service included thirteen years at sea as a surface warfare officer and several command and staff appointments. He saw action in the first Gulf War, serving with the United Arab Emirates navy. He is a graduate of the Pakistan Naval Academy class of 1973 and of the Pakistan Navy War College and National Defense College, Islamabad. He holds a master's in war studies (maritime). Since his retirement in 1998 he has extensively contributed to Pakistani as well as overseas periodicals and media. He is currently a research fellow at the Pakistan Navy War College.

Costing US\$2.9 billion, the ATV project was a joint effort involving the Indian Navy and several government agencies and private organizations.⁶ India's nuclear submarine is the world's smallest of its type yet will pack a megaton punch. The boat is driven by a single seven-bladed, highly skewed propeller. Special anechoic rubber tiles (to reduce the risk of detection by sonar) coat the steel hull.⁷ A similar technology was previously used in the Russian Kilo-class submarines.⁸ (Russian help in designing the ATV has long been an open secret; there are also reports of Israeli, French, and German imprints on the project.)⁹

But more than design or fabrication of hull, it was the downsizing and mating of the ninety-megawatt (120,000 horsepower) low-enriched-uranium-fueled, pressurized light-water reactor that kept the submarine in the dry dock for more than a decade.¹⁰ The reactor and its containment vessel account for one-tenth (nearly six hundred tons) of the boat's total displacement. The hydrodynamics of a vessel with a tenth of its weight concentrated in one place posed a formidable naval engineering challenge indeed, one that plagued the program.

Before being commissioned as INS *Arihant* in late 2011 or early 2012, S-2—serving as a technology demonstrator, a test for future boats of the class—will have to obtain appropriate certification in three crucial areas: stealth features, adequacy of the reactor design, and missile range. The first key test will involve meticulous calibration of S-2's underwater noise signature, which will determine the degree of its invulnerability to detection and therefore its suitability as a ballistic-missile platform. This process may necessitate extensive trials, adjustments, and design modifications—if not for S-2, certainly for its successors.¹¹ The second vital area requiring attestation will be to determine the reactor's fuel cycle—that is, the frequency of replacement of the fuel rods. Being of a first- or second-generation technology, with a shorter fuel cycle, the S-2 reactor fundamentally affects the boat's performance as an instrument of deterrence.¹² The replacement of fuel rods is an intricate operation requiring a submarine to be taken out of its operational cycle for an extended period. The net result will be that either the submarine's patrol areas will remain restricted (fairly close to base) or its endurance (deployment period) will be curtailed.

The third assessment of S-2 will entail test-firing and validation of missile parameters. The platform is currently configured to carry a Pakistan-specific, two-stage submarine-launched ballistic missile (SLBM), the Sagarika (Oceanic), expected to become operational after 2010.¹³ This nuclear-capable missile, powered by solid propellants, is a light, miniaturized system, about 6.5 meters long and weighing seven tons.¹⁴ S-2 will have to accommodate missiles not only of greater (intercontinental) range but in greater numbers if it is to have a deterrent value against China. That would require further underwater launches and flight trials for the follow-on units of the class.¹⁵

NUCLEAR DOCTRINE AND THE INDIAN NAVY

The Indian Navy began strongly advocating nuclear-related programs at sea in the wake of the 1998 nuclear tests, and for a valid and legitimate reason—the need for an invulnerable nuclear capability to undergird a posture of “no first use.” At a press conference in 2002, the Indian Navy chief held that “any country that espouses a no first use policy (as India does) must have an assured second strike capability. All such countries have a triad of weapons, one of them at sea. It is significant that the Standing Committee on Defence of the twelfth Lok Sabha [lower house of the Indian Parliament] had advised the government ‘to review and accelerate its nuclear policy for fabricating or for acquiring nuclear submarines to add to the (nation’s) deterrent potential.’”¹⁶

When in January 2003 the major elements of India’s official nuclear doctrine were brought into the public domain, the Indian government stressed the building and maintenance of a “credible minimum deterrent,” along with a posture of “no first use.”¹⁷ Nuclear retaliation to a first strike was to be “massive and designed to inflict unacceptable damage.” Significantly, however, the 2003 statement did not reiterate the 1999 draft nuclear doctrine’s aim of building a nuclear triad, although all three armed services were keen to deploy nuclear-capable weapon systems.¹⁸

If the Indian Navy was disappointed at the lack of official sanction for its submarine-based nuclear deterrent, it tried hard not to show it. Still, the ATV project was under way, with funding and guaranteed political support from the government. It could therefore be concluded that this notable doctrinal silence might have been an attempt not to alarm the international community about India’s multidimensional nuclear program.¹⁹

India’s Monroe Doctrine

More than ever, India today demonstrates a striving for regional and global eminence. In elucidating India’s Maritime Military Strategy, the former Indian Navy chief Arun Prakash pleaded with Indians to keep it “‘etched in [their] minds that should a clash of interests arise between India and *any other power, regional or extra-regional* . . . the use of coercive power and even conflict remains a distinct possibility.’ Such ‘Kautilyan’ statements lend credence to [the] notion of a forward-leaning India that increasingly inclines to hard power solutions to regional challenges.”²⁰

In their nation’s novel bid for sea power, Indians look for inspiration to the Monroe Doctrine, the nineteenth-century U.S. policy declaration that the New World was off-limits to new European territorial acquisitions or any reintroduction of the European political system.²¹ An identical philosophy for India was first proclaimed by Prime Minister Jawahar Lal Nehru in a speech in 1961

justifying the use of force to evict Portugal from Goa: “Any attempt by a foreign power to interfere in any way with India is a thing that India cannot tolerate, and that, subject to her strength, she will oppose. That is the broad doctrine I lay down.”²² Nehru’s statement was in fact a veiled warning to all external powers against any action anywhere in the region that New Delhi might perceive as imperiling the Indian political system. His injunction against outside interference laid the intellectual groundwork for a policy of regional primacy, without meddling by or influence of external powers. Though at the time it was impossible for India to confront the imperial powers militarily, each succeeding generation in India has interpreted and applied this foundational principle, according to its own appraisal of the country’s surroundings, interests, and power.

While the success or otherwise of India’s Monroe Doctrine can be debated, it has remained an “article of faith for many in the Indian strategic community” and now seems to have entered the Indian foreign-policy lexicon.²³ The Monroe Doctrine itself being an intensely maritime concept (the influential nineteenth-century sea-power theorist Alfred Thayer Mahan was an outspoken disciple), India has made huge strides in expanding its sea power in recent times. In the process, New Delhi has largely shed its continental way of thinking and reoriented itself to look beyond the nation’s shores.²⁴ Thus today, in the words of President A. P. J. Abdul Kalam, “The economic growth of this region depends on the heavy transportation in the Indian Ocean particularly the Malacca strait. Navy has an increasing role to provide necessary support for carrying out these operations.”²⁵

Advancing the Monroe Doctrine

Regional prominence requires India to develop a robust and self-sustaining domestic military industrial and technological complex, one that removes dependence on overseas sources. Such an infrastructure must be fully able to sustain the fleet twenty-four hours a day, seven days a week, and 365 days a year. In that direction, India’s strategic partnership with Washington, including the civilian nuclear deal, is likely to be of great assistance over time. In the short term, however, and taking advantage of the presence of the U.S. Navy, which effectively reduces its own burden, the Indian Navy projects a fleet comprising three carrier battle groups.²⁶ As Admiral Madhvendra Singh, chief of staff of the Indian Navy, declared on 14 October 2003, “Fulfilling India’s dream to have a full-fledged blue-water Navy would need at least three aircraft carriers, 20 more frigates, 20 more destroyers with helicopters, and large numbers of missile corvettes and antisubmarine warfare corvettes.”²⁷ These battle groups could be organized into a single fleet, depending on New Delhi’s tolerance for risk and the Indian Navy’s ability to keep the fleet in a high operational state.²⁸ Six new and

a few older-vintage destroyers, twelve new and a few old frigates, corvettes, patrol craft, and five new tank landing ships (LSTs) are likely to feature in such an order of battle.

All the new Indian Navy warships, including its projected carriers, will be much more formidable than their predecessors.²⁹ The Indian Defence Ministry has furthermore recently approved three billion dollars to strengthen the navy's littoral war-fighting capabilities.³⁰ The move represents a push for a larger presence in the Indian Ocean but may also be a response to a more active Chinese presence there.

In the long term, a self-sufficient Indian Navy ably backed by a domestic defense industrial complex may feature six to nine carrier task forces and more than a dozen nuclear submarines. In the meantime, the Indian Navy is likely to continue expanding its undersea nuclear deterrent, manifest in fleet ballistic-missile submarines, with nuclear-powered attack submarines (SSNs), though able to operate throughout the Indian Ocean basin and beyond, taking lower priority.³¹

IN PERSPECTIVE: PAKISTAN'S NUCLEAR POLICY

Henry Kissinger argues, "The persistence of unresolved regional conflicts makes nuclear weapons a powerful lure in many parts of the world—to intimidate neighbors and to serve as a deterrent to great powers who might otherwise intervene in a regional conflict."³² Unlike India—whose nuclear program is widely believed to be status driven—Pakistan's nuclear policy is entirely security driven, and it is India-centric. The national discourse on the direction, aims, and objectives of nuclear policy are, however, veiled and mainly confined to official circles. Accordingly, public debate is very generic, in contrast to India's voluminous material in print on the subject.³³ The decision not to enunciate publicly a comprehensive nuclear doctrine reflects in part the fact that Pakistan sees no political or status utility in nuclear capability, but rather a purely defensive, security related purpose.

"Pakistan's threat perceptions stem primarily from India, at the levels of all-out conventional war, limited war, and low intensity conflict. Within the nuclear framework, Pakistan seeks to establish deterrence against all-out conventional war."³⁴ In other words, Pakistan's nuclear deterrence is directed against not only a possible Indian nuclear attack but a conventional one as well.³⁵ Among key characteristics of Pakistan's nuclear policy are maintenance of a minimum level of nuclear deterrence, retention of a first-use option, and reliance on ground and air delivery (aircraft and missiles).³⁶ Sea-based delivery means are appreciably missing.

Like NATO, Pakistan continues to keep its options open on “no first use,” but has declared willingness to use nuclear weapons as a weapon of last resort. “No first use” declarations have never been the basis of determining the true posture of any nuclear-weapon state. If they were, New Delhi would have accepted the position of China on this issue as well as the latter’s assurances of nonuse of nuclear weapons against non-nuclear-weapon states.³⁷

In late 2001, Pakistan declared four broad conditions under which Islamabad might resort to use of nuclear weapons, as described by Lieutenant General Kidwai of the Strategic Plan Division (the secretariat of the National Command Authority):³⁸ a “space threshold,” should New Delhi attack Pakistan and conquer a large part of its territory; a “military threshold,” if India destroyed a large part of Pakistan’s land or air forces; an “economic threshold,” were India to pursue the economic strangulation of Pakistan; and finally, should India push Pakistan into “political destabilization or [create] a large scale internal subversion.”³⁹

The Pakistan Navy and Pakistan’s Nuclear Program

The May 1998 tit-for-tat nuclear tests by Pakistan in the Ras-Koh mountain range in the Chagai district of Balochistan restored the strategic balance in South Asia.⁴⁰ The period that followed saw the quarrelsome neighbors expand their respective arsenals, improve their command and control infrastructures, and strive for better CEP (circular error probability), greater mobility and faster reaction time for missiles, and higher yield as well as better yield-to-weight ratios for the warheads.⁴¹

Significantly, no efforts to develop a sea-based nuclear capability and thus expand the survivability of nuclear forces have ever surfaced in Pakistan’s policy making. The principal reason for this is perhaps historical “baggage”—a fixation on Afghanistan, in search of strategic depth as against a geographically larger India. But 9/11 was a rude awakening that such a policy was not only unsound but no longer tenable. By then precious time (1998–2001) that could have gone toward developing undersea deterrence had been lost.

The “military threshold” postulation in Pakistan’s declared nuclear philosophy surmises the destruction of a large portion of Pakistan’s “land and air components” as an inducement to go nuclear. The destruction of a major component of naval forces, however, remains unstipulated. Three deductions could be reached: that the navy continues in its usual low priority in the overall national security calculus, that the possibility of international reaction has precluded a clear articulation of the naval component, and that the naval case is included in the threshold of “economic strangulation.”

But the term “economic strangulation” is broad and can be interpreted in various ways. Pakistan being an agrarian economy, a prolonged disruption or

drastic reduction in the flow of cross-border rivers by India could impinge on crop yield, triggering widespread unrest, destabilization, and a possible confrontation.⁴² But a far more perilous scenario, one that could cause economic strangulation more quickly, resides at sea.

The Pakistan Navy: A Sentinel of Energy and Economic Security?

Pakistan's commerce, like India's, is intrinsically seaborne. More than 95 percent of Pakistan's trade by volume, 88 percent by value, is transported by sea.⁴³ Three sea lines of communication support Pakistan's maritime trade, viz., from the Far East, the Red Sea, and the Persian Gulf. These arteries carry both imports and exports. The imports include edible oil, tea, sugar, wheat, and other value-added foodstuffs. During the last fiscal year (FY), \$3,662,000,000 was spent on food imports alone.⁴⁴ Much of Pakistan's oil also comes over the sea. The Gulf, through which the country's annual oil imports are shipped, constitutes the nation's energy lifeline. With a 5 percent annual growth rate, Pakistan's oil imports are likely to reach 22.2 million tons during FY 2010–11.⁴⁵

During FY 2008–2009, the ports of Karachi and Qasim collectively handled imports of 24.4 million tons of dry cargo and 20.9 million tons of liquid-bulk cargo, totaling some 45.3 million tons. The sum of exports at these ports during the same period was 18.3 million tons. In addition, the ports handled 1.9 million TEUs' worth of containerized cargo.⁴⁶ All in all, Pakistan's critical overall dependence on sea-based imports is a good deal greater than India's. India's superiority over Pakistan being most pronounced in the maritime field, a blockade of Karachi could seriously imperil the country's economy and the war-fighting potential in two or three weeks.⁴⁷ Given all this and the role the Pakistan Navy is expected to play, it is not difficult to deduce where one must expect Pakistan's economic and energy security sensitivities—nay, economic threshold—to dwell.⁴⁸

THE THRESHOLD AND CREDIBILITY ISSUES

According to Indian analysts, of the four threats that Pakistan has identified as capable of invoking nuclear response, only two—territorial loss and military destruction—have credibility. To them, it is difficult to make nuclear escalation credible against the other two (economic strangulation and national destabilization). Consequently, they maintain, India might now focus on the latter two and opt for controlled military pressure across the Kashmir Line of Control.⁴⁹ The thinking of Indian leadership also reflects a presumption that should there be an escalation in tension between India and Pakistan, New Delhi would have the unconstrained support of the international community.

These postulations are deeply flawed. Tension related to water resources is already heating up; Pakistan has complained that India is holding back the waters

of rivers flowing from Indian-administered Kashmir. Left unresolved, in due course the issue will be clubbed together with the Kashmir dispute.⁵⁰ Any reduced water flow would then be perceived as a ploy to put additional pressure on Pakistan; the response would be equally unmeasured and misdirected.⁵¹ Likewise, tampering with Pakistan's sea-lanes could work safely only to an extent. Any large-scale internal unrest on account of food shortages or effective cessation of commercial activity due to blockage of fuel supplies through Karachi would most certainly engender a response beyond a certain point. Once public pressure mounted, Pakistan's chief security stakeholders would be bound to react. In a state of panic or nervousness, a freakish response could not be ruled out.

A destabilized state in Pakistan's main urban centers would be a godsend for the lethal cocktail of militant groups hoping to reenact "26/11" (as the 26–29 November 2008 terrorist attack in Mumbai is known). The existing imbroglio in Karachi is an apt example. Perennially simmering with ethnic and sectarian violence, the metropolis now hosts one of the world's largest Pashtun concentrations. Scores of Taliban and al-Qa'ida insurgents fleeing Malakand, South Waziristan, and now Helmand have found sanctuary there.⁵² The recent arrests in Karachi of some top leaders of Afghan Taliban and al-Qa'ida (including those of Mullah Baradar and Ameer Muawiya by Pakistani and American intelligence forces) are demonstrations of this fact.⁵³

The 26/11 attack lifted off from the shores of Karachi. Its alleged perpetrator, Lashkar-e-Taiba (LeT), is now a formidable terror enterprise, endeavoring to compete with al-Qa'ida. It has relations with factions of the Taliban and several other *jihadi* outfits.⁵⁴ The organization is also believed to have developed the capacity to launch sea-based operations. According to reports the founding leader of LeT, Hafiz M. Saeed, wanted by India for involvement in the Mumbai attacks, has suddenly resumed his activities, mouthing venomous anti-India slogans and promising to liberate Kashmir.⁵⁵ Also, with tens of thousands of fishing boats, small craft, and other unregulated commercial traffic plying continuously along the coasts of Sindh, Makran, Gujrat, and Maharashtra, coastal security in the area is deeply exposed, despite efforts on both sides since 2008.⁵⁶ Making the most of volatility and coastal vulnerabilities, Karachi-based insurgents could orchestrate a new terror assault on India, to provoke a reprisal.⁵⁷

That the international community will always back New Delhi against Pakistan is, however, a misplaced notion. India may well take a leaf from the recent NATO Military Committee meeting in Brussels, where Pakistan not only scored a military/diplomatic triumph but effectively truncated India's strategic gains in Afghanistan.⁵⁸

IS COERCION WORN OUT?

Since the overt exhibitions of their nuclear potentials in 1998, Pakistan and India have returned from the brink on three occasions. The years since then have also been studded with diplomatic standoffs. The Kargil conflict in 1999 remained a local affair, with the two armies and air forces battling it out on and over the frozen peaks. The Indian Navy too played a role as an instrument of coercion. In June 1999, its Western Fleet was reinforced with elements from the Eastern Fleet, prompting Pakistan Navy to go on full alert. A beefed-up Indian Navy force later conducted exercises in the northern Arabian Sea. Also—the lone Indian carrier, INS *Viraat*, being in refit—trials of the use of a containership deck as a platform for Sea Harrier aircraft were carried out in Goa. The aims of these exercises were to demonstrate the buildup of the Indian Navy's strength to the Pakistan Navy and to display its assets and readiness for all-out conflict. Between 21 and 29 June 1999 the Indian Navy deployed missile ships and corvettes in a forward posture. Expecting economic blockade, the Pakistan Navy escorted national oil tankers and commenced surveillance sorties along the coast.⁵⁹ International pressure and a 4 July accord in Washington finally constrained Pakistan to withdraw to its original position.⁶⁰

In December 2001 an attack on the parliament in New Delhi induced India to amass four-fifths of its armed forces along the borders with Pakistan. Islamabad reacted in kind.⁶¹ The two sides remained “eyeball to eyeball” for almost ten months before India decided to stand down.

In the aftermath of the 26/11 Mumbai attacks, the Indian leadership was seen spitting fire, threatening Pakistan with a punitive action. News of possible surgical strikes by the Indian Air Force deep inside Pakistan, against the major urban center of Lahore and nearby Muridke, site of the headquarters of LeT, was rife. The incident also brought to a halt the peace process that had begun in June 1997. The tense period saw Indian generals enunciating provocative new military doctrines and its army conducting “Cold Start” exercises on the borders. Yet all this failed to draw the intended concessions from Pakistan.⁶² India may have received a nudge from Washington, but by now, after fourteen long months, the prolonged face-to-face was having a telling impact on both sides. Coercion had run out of steam, reached a tipping point. New Delhi indicated willingness to resume parleys.⁶³

It is clear that repeated application of coercion is rendering the instrument ineffective. Both sides maintain their critical territorial-cum-ideological standpoints, stemming mainly from the Kashmir issue. Pakistan is not going to allow its own subjugation, and the Pakistan Army is not going to yield to Indian demands on issues that it deems central to the nation's ideology.⁶⁴ For its part, and

for reasons of politics and regional clout, India must point to Kashmir unrest as externally abetted and all terror attacks as radiating from Pakistan. The persistence of the respective stances of each side is further reinforced by the fact that the risks and consequences of nuclear escalation have not yet sunk into the collective minds of the two societies; nuclear devastation still remains largely an abstract concept. As a result there is no effort to deal with the issue of nuclear-war risk, independent of the Kashmir issue.⁶⁵ There was no comparably dangerous territorial stake for the nuclear adversaries of the Cold War.

THE OPTIONS

Pakistan's security situation is precarious, and the future is not bright. On one hand, the differences between Washington and Islamabad that lately irked and angered the latter now seem to be thawing.⁶⁶ But on the other, New Delhi's strategic interests being "exactly aligned" with those of Washington, India is getting extensive mileage out of Pakistan's current predicament.⁶⁷ Despite the recent diplomatic successes, then, Pakistan's choices, if it is to address strategic asymmetry and ensure the survivability of its nuclear forces, are contracting rapidly.

Pakistan's existing means of delivering nuclear strikes are susceptible to air and missile attacks. The Indian air defense system—potentially including the Prithvi Air Defence capability and the upcoming U.S.-Israeli-Russian Ballistic Missile Shield—reduces the possibility of penetration by either missiles or fighters.⁶⁸ The option of missiles with multiple warheads also is open to debate. For now, the dispersal of the nuclear arsenal poses a question mark. The cutting-edge technologies in the Indian inventory—surveillance means like IRS satellites and the MiG-25, the day/night-capable Israeli surveillance satellite RISAT, along with platforms like the Phalcon AWACS, Su-30 aircraft, etc.—put its value in question.

Nonetheless, the recent parleys in the Conference on Disarmament in Geneva on a Fissile Material Cutoff Treaty (FMCT) threaten to freeze the imbalance in the stocks of these materials of Pakistan and India to the distinct advantage of the latter. New Delhi gains from the Indo-U.S. nuclear deal and a consequent Nuclear Suppliers Group waiver that has allowed India to conclude agreements with countries Russia, France, and more recently the United Kingdom to supply it with nuclear fuel.⁶⁹ Pakistan's resource imbalance, geographic disproportion (differences in landmass), and now the launch of S-2 provide India a convincing capacity to strike all over Pakistan from the deep south while ensuring the survivability of its own forces.⁷⁰ In the absence of Pakistani potential to deliver a nuclear riposte, an economic threshold would certainly be reached in days if Pakistan's sea-lanes, particularly from the Persian Gulf, were to be obstructed.

Second Strike on board Conventional Submarines: The Agosta 90B

In October 2008, the chief of staff of the Pakistan Navy claimed that his service was capable of deploying strategic weapons at sea.⁷¹ The details as to how strategic or nuclear weapons would be deployed and whether Pakistan had developed a capability to launch missiles from submarines were not disclosed. But it is widely speculated that work on arming the Pakistan Navy's conventional submarines with nuclear-tipped missiles has been going on now for quite some time. A sea version of the Babur cruise missile is thought to have been developed by the country's strategic organizations. If that is true, Pakistan would not be the first country to arm conventionally powered submarines with such a capability. Israel's 1,900-ton *Dolphin*-class, German-origin submarines are believed to be part of the country's second-strike capability. They provide Tel Aviv the crucial third pillar of nuclear defense complementing the country's much vaunted land and air ramparts.⁷²

Pakistan Navy's Agosta 90B, or *Khalid*-class, attack submarines (SSKs) carry crews of highly skilled and professionally trained officers and men. The submarines, designed by DCN (now DCNS) of France, are a version of the Agosta series, with improved performance, a new combat system, and AIP (air-independent propulsion) for better submerged endurance. A higher level of automation has reduced the crew from fifty-four to thirty-six. Other improvements include a new battery, for increased range; a deeper diving capability of 320 meters, resulting from the use of new materials, including HLES 80 steel; and a reduced acoustic signature, through the installation of new suspension and isolation systems.⁷³

Three Agosta 90Bs were ordered by Pakistan in 1994. The first, *Khalid* (1999), was constructed in France; the second, *Saad* (2003), was assembled at the Naval Dockyard (Karachi); and the third, *Hamza* (2008), was constructed and assembled in Karachi. These submarines are equipped with diesel-electric propulsion and the MESMA (Module d'Énergie Sous-Marin Autonome) AIP system.⁷⁴ The diesel-electric plant consists of two SEMT-Pielstick 16 PA4 V185 VG diesels, providing 3,600 horsepower, and a 2,200-kilowatt electric motor driving a single propeller.

Pakistan is the only country bordering the Indian Ocean to have acquired AIP submarines. The two-hundred-kilowatt MESMA liquid-oxygen system increases significantly the submerged endurance of the submarine at four knots.⁷⁵ It consists essentially of a turbine receiving high-pressure steam generated by a boiler that uses hot gases from the combustion of a gaseous mixture of ethanol and liquid oxygen.⁷⁶ The AIP suite causes an 8.6-meter extension of the original 67.6-meter hull, increasing the boat's submerged displacement from 1,760 tons to 1,980.⁷⁷

The Agosta 90B is equipped with a fully integrated SUBTICS combat system. SUBTICS processes signals from submarine sensors and determines the tactical situation by track association, fusion, synthesis, and management, as well as trajectory plotting. This track management allows appreciation of the surface picture by the commander and consequent handling of weapons-related command and control functions.

The Agosta 90B submarine has four bow-mounted 1Q63 A Mod 2 torpedo tubes, 533 mm in diameter, and carries a mixed load of sixteen torpedoes and missiles. The boat can also fire tube-launched SM39 Exocet subsurface-to-surface missiles, capable of hitting targets out to twenty-seven nautical miles (fifty kilometers) away. The sea-skimming missile has inertial guidance and active radar homing and travels at 0.9 Mach.⁷⁸ Target range and bearing data are downloaded into the Exocet's computer via SUBTICS. The boat can also launch the DM2A4 wire-guided, active/passive, wake-homing torpedo, adding a new dimension to its firepower. Targets up to forty-five kilometers away can now be engaged.

In the short term (within five years), Pakistan Navy *Khalid*-class submarines with their cutting-edge technology could be armed to carry nuclear-tipped cruise missiles. Several formidable challenges would, however, have to be overcome. Missile installation and subsequent integration with the onboard combat system, as well as with the nuclear command-and-control infrastructure (C4I network), could be daunting tasks.⁷⁹ The combat system, meant for conventional weapons, may require major changes to accommodate nonconventional weapons. During operational deployments a Pakistan Navy submarine carrying nuclear weapons would be under the operational control not of Commander Pakistan Fleet, as in existing practice, but of the National Command Authority.

Perhaps a greater challenge would be ensuring foolproof communications between the submerged submarine and the shore-based command. An electromagnetic pulse following a nuclear burst would disrupt the earth's electromagnetic spectrum, resulting in a partial or complete breakdown of communications, including shore-submarine. The problem is compounded by the absence of domestic communications satellites. A very-low-frequency (VLF) communications system can provide an answer, to some extent.⁸⁰ A sustained program of tests and trials would be needed to develop a robust communication system that can sustain such a contingency.

The submarine's crew, obviously specially selected, would also require extensive training in handling all kinds of unforeseen events, developing standard operating procedures and planning ways to minimize uncertainty on board in the absence of communications.⁸¹ Test firings of missiles will be required to ensure crew confidence as well as weapon-systems credibility.

Numerous issues of a technical as well as an operational nature will thus have to be addressed at each tier to integrate the vessel fully into national strategic forces. Close cooperation and coordination between the Development and Employment Control committees under the National Command Authority and strategic organizations like the Kahuta Research Laboratories, the National Engineering and Scientific Commission, the Space and Upper Atmosphere Research Organization, the Pakistan Atomic Energy Commission, the Maritime Technology Complex, and the National Development Complex will also be essential at every step. These organizations will have to rise above intra-establishment rivalries and jealousies that could get in way of smooth and timely achievement of milestones.

A word of caution may be in order here. The Pakistan Navy once enjoyed a sharp edge over the Indian Navy's conventional submarines, like the Soviet-designed Foxtrot-class boats, which were noisier than the French submarines operated by Pakistan. But the Indian Navy has not only been catching up but is now on the verge of surpassing Pakistani submarines. Its French *Scorpène*s are supposedly a generation ahead of the Agosta 90B.⁸² On a positive note, however, the recent introduction of advance platforms like the SAAB Erieye airborne early warning and control system and Il-78 refuelers by Pakistan Air Force, besides bolstering Pakistan's strategic capability both on land and at sea, will significantly strengthen the nation's air defenses.⁸³

Employing the P-3C

The P-3C Orion long-range maritime-patrol aircraft (LRMP) has a proven maritime surveillance and reconnaissance record that dates back to the Cold War. Several old and new versions of the aircraft continue to serve in more than eighteen countries, including the United States. It is a turboprop, multidimensional aircraft commonly known to the naval community as an "airborne destroyer."

The Pakistan Navy first acquired P-3Cs in 1991. The present inventory is suitably modernized and equipped with cutting-edge sensors and weapons to track, identify, and hunt surface and subsurface targets. The aircraft can carry a mixed payload of eight Harpoon missiles and six torpedoes, besides mines and bombs. It has endurance in excess of eighteen hours and can operate as low as three hundred feet, making its detection quite difficult.

In the recent past, the Pakistan Navy brokered a fresh deal with the United States for eight refurbished P-3Cs. In addition to improved sensors, a digital tracking system, electro-optical and infrared sensors, a chaff dispenser, an electronic support measures (ESM) suite, and sonobuoy detection system, the new batch of P-3Cs is to be fitted with inverse synthetic-aperture radar (ISAR). ISAR is a state-of-the-art radar that provides a dual advantage. First, it eases the

identification problem by displaying a target's silhouette, a physical image, which improves the overall effectiveness of tracking and attacking. The other advantage is variable power output, which makes ISAR difficult to identify via ESM.

Following the Mumbai terror attacks, the Indian Navy too concluded a deal with the United States for eight of a new type of LRMP—the Multi-Mission Maritime Aircraft (MMA, or P-8 Poseidon, the successor to the P-3C). The Indian Navy is currently operating older-generation LRMPs, Russian Il-38s and Tu-142s. The jet-driven Poseidon will be suitably converted for anti-surface-vessel and antisubmarine roles. The prototype is, however, not likely to roll out before 2012, after which its true capabilities would be known.

The P-3C is a mainstay of the Pakistan Navy's offensive arm. With its advanced weapon and sensor outfit, it gives the Pakistan Navy a clear qualitative edge over the Indian Navy's LRMP capability—at least for now. Thanks to its load-carrying capacity, altitude advantage, and other aerodynamic characteristics, the P-3C could be armed with land-attack missiles or strategic weapons. This modification, however, would require specialized equipment—currently a grey area in the Pakistan Navy. A suitably equipped P-3C could serve as a powerful backup to an undersea second strike on board Agosta 90Bs. A well-thought-out employment strategy could render the P-3C a potent constituent of the nuclear triad.

The Medium and Long Terms (beyond Five Years)

The absence of any opposition by the United States or the rest of the international community to the prolonged and sustained Russian assistance to India in the development of a sea-based nuclear deterrent potential was conspicuous. That is not all; the now-shaping Indo-U.S. nuclear deal has never caused any uproar in the West or among the Nuclear Suppliers Group. Besides raising concerns on proliferation, the deal significantly undercuts the efficacy of the Nuclear Non-Proliferation Treaty.⁸⁴ This provides Pakistan enough justification either to *lease* nuclear submarines or eventually development its own, or both.⁸⁵ It is not a question of matching nuclear weapon for nuclear weapon but about preserving stability and ensuring the survivability of nuclear forces. The national maritime objectives and tasks assigned to the Pakistan Navy may not warrant a nuclear submarine in its inventory, but maintenance of deterrence, particularly in the evolving geopolitics of the Indian Ocean region, certainly does merit consideration of it.

In China, the People's Liberation Army Navy (PLAN) is currently involved in one of the world's most ambitious submarine expansion and construction programs. It includes acquisition of conventional submarines, like the Russian Kilo

(SS), and the construction of the Jin-class (Type 094) SSBN and the Shang-class (Type 093) SSN. These submarines are expected to be much more modern and capable than China's aging older-generation boats.⁸⁶

In 1983 the PLAN built an eight-thousand-ton Xia-class SSBN, reportedly armed with twelve JL-1 missiles with a range of a thousand miles. The submarine twice test-fired its missiles but never ventured beyond China's regional waters. The new Type 094 Jin, which will replace the single Xia, will carry between ten and twelve JL-2 SLBMs.⁸⁷ However, the PLAN has major handicaps in its limited capacity to communicate with submarines at sea or expose these platforms on strategic patrols.⁸⁸

The once slowly expanding military ties between Beijing and Islamabad have now matured into a strategic partnership, as is evident from local production of the JF-17 Thunder multirole fighter, the Al-Khalid tank, and F-22P frigates. This partnership is further evidenced by the PLAN's regular participation in the large multinational AMAN series of exercises hosted by the Pakistan Navy. Pakistan's strategic community and Beijing could plan the training and subsequent lease of a nuclear-powered submarine. The PLAN's Xia submarine could be an appropriate start. A pool of selected Pakistan Navy officers could be trained to operate an SSBN, with theoretical/academic work ashore followed by operational training at sea and finally a strategic deployment. Though such a plan seems ambitious and the PLA Navy's SSBNs rarely prowl far, this remains a viable choice that would serve the two countries well strategically.⁸⁹

Deterrence is not a passive concept; it must be stepped up in proportion to an adversary's increases in arsenal or delivery means. For reasons all too well known, Pakistan's principal security perceptions will remain India-centric. To keep deterrence credible, the indispensability of continuously bolstering Pakistan's nuclear assets, including delivery means, cannot be overstressed. The international community would react sharply were Pakistan to field a sea-based nuclear deterrent, given the country's security situation and fears of radicalization (real or imaginary) in Western minds.⁹⁰ Timing, therefore, is crucial. Pakistan is currently too dependent on the American and multilateral financial institutions for keeping its economy afloat, and that situation is not likely to alter for the next few years. But if the issue is not addressed, Pakistan's hard-earned nuclear stability may erode beyond recovery.

The role of armed forces was once to win a war if diplomacy had failed; in the nuclear age their role is to prevent warfare from breaking out.⁹¹ Despite being on the wrong side of history, Pakistan has no option but to take some hard decisions.

NOTES

- The views expressed are those of the author and not of the Pakistan Navy or Pakistan Navy War College, Lahore.
- For the Indian “Cold Start” doctrine, see Walter C. Ladwig III, “A Cold Start for Hot Wars? The Indian Army’s New Limited War Doctrine,” *International Security* 32, no. 3 (Winter 2007/08), pp. 158–90. In the epigraph, General Kayani is explaining why he is India-centric, at the Annual NATO Military Committee meeting, Brussels, in February 2010.
 - “PM Launches INS Arihant in Visakhapatnam,” *Times of India*, 26 July 2009; “Deep Impact,” *India Today*, 3 August 2009, p. 48; and *Jane’s Defence Weekly*, 5 August 2009, p. 6. The correct current designation of the Indian Navy Advanced Technology Vessel is S-2, according to a former Indian Navy chief. The vessel will become INS *Arihant* only upon commissioning, in due course. See Admiral Arun Prakash (Ret.), “A Step before the Leap: Putting India’s ATV Project in Perspective,” *Force* (September 2009), available at www.maritimeindia.org/.
 - “India Finally Launches ATV,” *Jane’s Defence Weekly*, 5 August 2009, p. 6.
 - See “India N-sub to Trigger Arms Race,” *The Nation*, 28 July 2009, available at www.nation.com.pk/.
 - “Second Strike Challenges,” *Daily Times*, 11 September 2009, available at www.dailytimes.com.pk.
 - A billion dollars were spent in 2005 alone. See Eric Margolis, “India Rules the Waves,” U.S. Naval Institute *Proceedings* (March 2005), p. 66.
 - “SSK Kilo Class Attack Submarine, Russia,” Naval-technology.com.
 - See “The Secret Undersea Weapon,” *India Today*, 28 January 2008, p. 52.
 - “India’s Nuclear Sub,” *The Nation*, 28 March 2007, available at www.nation.com.pk/.
 - The compact light-water reactor has been variously mentioned in documents as being of 80, 83, 85, and 90 MW capacity.
 - Work on two more *Arihant*-class SSBNs is already under way. See also Prakash, “A Step before the Leap.”
 - The U.S. Navy has twenty-five different types of submarine reactors and is running the ninth generation since the first was developed and put in use in 1954 on board USS *Nautilus*. See *ibid.*
 - U.S. Air Force, *Ballistic and Cruise Missile Threat* (Wright-Patterson Air Force Base, Ohio: National Air and Space Intelligence Center, April 2009), p. 23.
 - “Sagarika Missile Test Fired Successfully,” *Hindu*, 27 February 2008.
 - Capable of carrying twelve tube-launched ballistic missiles, S-2 is planned to be initially armed with 700 km Sagarika (K-15) ballistic missiles, which can carry a payload of 500 kg. The follow-on versions of the submarine are expected to carry the 3,500 km K-X intermediate-range ballistic missile (IRBM), with multiple warheads. The ultimate goal is to arm these submarines with the three-stage, 5,000 km Agni III SL (the submarine-launched version of the Agni III IRBM).
 - Arpit Rajain, *Nuclear Deterrence in Southern Asia, China, India and Pakistan* (New Delhi: Sage, 2005), pp. 243–44.
 - The 4 January 2003 press release was titled “Cabinet Committee on Security’s Review of the Operationalization of India’s Nuclear Doctrine.”
 - Rahul Roy-Chaudhury, “India’s Nuclear Doctrine: A Critical Analysis,” *Strategic Analysis* 33, no. 3 (May 2009), p. 409.
 - Rahul Roy-Chaudhury, “India and Pakistan, Nuclear-Related Programs and Aspirations at Sea,” in *South Asia’s Nuclear Security Dilemma: India, Pakistan, and China*, ed. Lowell Dittmer (New Delhi: Pentagon, 2005), p. 82.
 - Quoted and glossed in James R. Holmes, Andrew C. Winner, and Toshi Yoshihara, *Indian Naval Strategy in the Twenty-first Century* (New York: Routledge, 2009), p. 36 [emphasis supplied by Holmes, Winner, and Yoshihara]. Kautilya, a court adviser around 300 BC, is famous today as the author of what

- some consider an ultra-Machiavellian work of political science, *Arthashastra* (see, among others, *Pakistan Defence*, www.defence.pk/forums/). In the statecraft and formulation of foreign policy, Indian strategists now lean heavily on Kautilyan philosophy.
21. In December 1823, spurred by a dispute over Russian territorial claims in the Pacific Northwest, President James Monroe informed Congress “that the American continents, by the free and independent condition which they have assumed and maintain, are henceforth not to be considered as a subject for future colonization by any European powers” (text available at www.ushistory.org/)—that is, were off-limits not only to Russia but to all imperial powers. Monroe further declared that the United States would “consider any attempt on [any European government’s] part to extend [its] system to any portion of this hemisphere, as dangerous to our peace and safety.” In the late 1800s, the economic and military power of the United States enabled it to enforce this “Monroe Doctrine.” The doctrine’s greatest extension came with Theodore Roosevelt’s 1904 Corollary, which inverted the original meaning of the doctrine and came to justify unilateral American intervention in Latin America. To this day, the U.S. Navy continues to serve as the implementing instrument of this policy overseas.
 22. See James R. Holmes and Toshi Yoshihara, “India’s ‘Monroe Doctrine’ and Asia’s Maritime Future,” *Strategic Analysis* 32, no. 6 (November 2008), p. 998.
 23. *Ibid.*, p. 1000.
 24. See Vice Admiral P. S. Das, “Coastal and Maritime Security: Two Sides of the Same Coin,” *Indian Defence Review* 24, no. 1 (January–March 2009), p. 127.
 25. See “Address by the President, Naval Fleet Review, Visakhapatnam, 12 February 2006,” *Indian Defence Review* 21, no. 1 (January–March 2006), p. 8.
 26. “Power Struggle,” *Jane’s Defence Weekly*, 23 December 2009, p. 22.
 27. Quoted in Stephen J. Blank, *Natural Allies? Regional Security in Asia and Prospects for Indo-American Strategic Cooperation* (Carlisle Barracks, Pa.: Strategic Studies Institute, September 2005), p. 23, available at www.carlisle.army.mil/ssi.
 28. See also Holmes and Yoshihara, “India’s ‘Monroe Doctrine’ and Asia’s Maritime Future,” p. 1003.
 29. For instance, the Type 15A frigates now nearing completion at Mumbai (Mazagon Dockyard) are expected to be equipped with sixteen vertical-launch Brahmos cruise missiles. In addition, some warships are also due to be equipped with the U.S.-supplied Aegis radar system. As a powerful platform for force projection, the forthcoming Indian Navy carriers—INS *Vikramaditya* (ex-*Admiral Gorshkov*) and the indigenous carrier designated the “Air Defence Ship” (ADS)—will carry on their decks an array of sixteen to eighteen MiG-29Ks, six to eight Ka-31 antisubmarine and airborne-early-warning helicopters, and a number of antisurface helicopters. This will allow the Indian Navy to maintain a strong presence along both the eastern and western coasts. See Donald L. Berlin, “India in the Indian Ocean,” *Naval War College Review* 59, no. 2 (Spring 2006), pp. 79–80.
 30. “Experts: India Must Counter China in Littorals,” *Defense News*, 12 January 2009, p. 14, available at www.defensenews.com.
 31. See Holmes and Yoshihara, “India’s ‘Monroe Doctrine’ and Asia’s Maritime Future,” pp. 1003–1005.
 32. Henry A. Kissinger, “Our Nuclear Nightmare,” *Newsweek*, 16 February 2009, p. 30.
 33. See Naeem Salik, *The Genesis of South Asian Nuclear Deterrence: Pakistan’s Perspective* (Karachi: Oxford Univ. Press, 2009), p. 230.
 34. Shireen M. Mazari, “Understanding Pakistan’s Nuclear Doctrine,” *Strategic Studies* 24, no. 3 (Autumn 2004), p. 5.
 35. Ken Berry, *The Security of Pakistan’s Nuclear Facilities* (Barton, ACT, Australia: International Commission on Nuclear Non-proliferation and Disarmament, August 2009), p. 12.
 36. See also Zafar Nawaz Jaspal, “Assessment of Indian and Pakistani Nuclear Doctrines,” in *Arms Race and Nuclear Developments in South Asia*, ed. Pervaiz Iqbal Cheema and Imtiaz H. Bokhari (Islamabad: Islamabad Policy Research Institute, 2004), p. 88.

37. See Mazari, "Understanding Pakistan's Nuclear Doctrine," p. 8.
38. Jaspal, "Assessment of Indian and Pakistani Nuclear Doctrines," p. 87.
39. "Economic Threat May Push Pakistan to Go Nuclear," *Asia Times Online*, 6 February 2002, www.atimes.com/ind-pak.
40. See also Salik, *Genesis of South Asian Nuclear Deterrence*, p. 143.
41. Verghese Koithara, *Coercion and Risk-Taking in Nuclear South Asia*, CISAC Working Paper (Stanford, Calif.: Center for International Security and Cooperation, March 2003), p. 6. CEP: "An indicator of the delivery accuracy of a weapon system, used as a factor in determining probable damage to a target. It is the radius of a circle within which half of a missile's projectiles are expected to fall." U.S. Defense Dept., *DOD Dictionary of Military Terms*, www.dtic.mil/doctrine/dod_dictionary/, s.v. "CEP."
42. "Drastic Decline in Chenab Water Flows," *Dawn*, 21 January 2010; "Pak-India Water Talks Remain Inconclusive," *Dawn*, 31 March 2010; "Water Dispute and War Risk," *Dawn Economic and Business Review*, 18–24 January 2010; all available at www.dawn.com.
43. The Pakistan National Shipping Corporation's limited number of national-flag carriers transport 45 percent of the country's liquid, and 5 percent of its dry, cargo. Rear Admiral Mohammad Shafi, "Formulation of Maritime Strategy" (talk delivered at Pakistan Navy War College, 25 September 2006).
44. "Agriculture Productivity and Food Security," *The News*, 1 February 2010, www.thenews.com.pk.
45. According to the Ministry of Petroleum and Natural Resources (*Ministry of Petroleum and Natural Resources*, www.mpnr.gov.pk/). Some 16.5 million tons of crude oil and petroleum products were imported in FY 2007–2008, at a cost of \$7.4 billion. See *Dawn Economic and Business Review*, 1–7 March 2010, www.dawn.com, and *Daily Times*, 12 February 2009, available at www.dailytimes.com.pk.
46. "Cargo Handling at KPT&PQA" data obtained from KPT. The TEU (twenty-foot equivalent unit) is a standard measurement of volume in container shipping. One TEU refers to a container twenty feet long, eight feet wide, and 8.6 feet high. The majority of containers are either twenty or forty feet long; a forty-foot container is two TEUs.
47. See also Koithara, *Coercion and Risk-Taking in Nuclear South Asia*, p. 10.
48. See also "Limited War in Nuclear Overhang," *Dawn*, 5 February 2010, www.dawn.com.
49. See Koithara, *Coercion and Risk-Taking in Nuclear South Asia*, p. 26.
50. India maintains that it is not holding back the water, that the reduced flow is a result of climate-based water scarcity. However, as an upper riparian state India is obliged under international law to take measures to minimize water scarcity. Experts maintain that nonresolution of the problem will aggravate tension between the two bellicose neighbors, as it will be conflated with the Kashmir dispute. See "Water War with India," *Dawn*, 20 February 2010, www.dawn.com.
51. *Ibid.*
52. Successive operations by the Pakistan Army—first in Malakand, Rah-i-Rast, later in South Waziristan, Rah-i-Nijat, and now in Operation MOSHTARAK, in neighboring Afghanistan—compelled the militants to seek refuge in Pakistan's southern port city of Karachi, which has a population of roughly twenty million.
53. "On an Upward Curve," *The News*, 22 February 2010, www.thenews.com.pk; "Secret Joint Raid Captures Taliban's Top Commander," *New York Times*, 16 February 2010.
54. The U.S. State Department coordinator for counterterrorism, Daniel Benjamin, recently stated that LeT could become a threat to the West like al-Qa'ida; it has the size and global reach of Hezbollah. *The Nation*, 21 January 2010, www.nation.com.pk; *Dawn*, 21 January 2010, www.dawn.com.
55. "Back in Action," *The News*, 14 February 2010, www.thenews.com.pk. See also Daniel Markey, *Terrorism and Indo-Pakistani Escalation*, CFR Memo 6 (New York: Council on Foreign Relations, January 2010), p. 1.
56. Das, "Coastal and Maritime Security," p. 121.
57. See "The Secretary of Defense Robert Gates Visit to New Delhi, and Islamabad, 20 and 22 January 2010," *Siasat Daily*, 20 January 2010,

- www.siasat.com, and *Dawn*, 22 January 2010, www.dawn.com.
58. "General in the Hood," *Times of India*, 22 March 2010; "Endgame Afghanistan: Implications for Pakistan," *The News*, 28 March 2010, www.thenews.com.pk.
 59. Y. M. Bammi, *Kargil 1999: The Impregnable Conquered* (Dehra Dun, India: Natraj, 2002), pp. 436–39.
 60. Bill Clinton, *My Life* (New York: Knopf, 2004), p. 865.
 61. India launched Operation PARAKRAM, the largest military exercise ever carried out by any Asian country. Its prime objective is still unclear but appears to have been to prepare the Indian Army for any future nuclear conflict with Pakistan.
 62. The Indian Chief of Army Staff, Gen. Deepak Kapoor, spoke of the possibility of "a limited war in a nuclear overhang"; General Kayani responded that the "Pakistan Army is fully alert and alive to the full spectrum of threat, which continued to exist in conventional and unconventional domains. As a responsible nuclear capable state, Pakistan Army would contribute to strategic stability and strategic restraint as per the stated policy of the government. But at the same time, it [the military] will continue to maintain the necessary wherewithal to deter and if required, defeat aggressive design, in any form or shape such as a firmed up proactive strategy or a Cold Start doctrine." As reported in *The News*, 2 January 2010, www.thenews.com.pk, and *Dawn*, 2 January 2010, www.dawn.com. For the statement of General Kapoor, *Dawn*, 25 November 2009, www.dawn.com, and The Current Affairs.com, 24 November 2009. Also Maleeha Lodhi, "Limits of Coercive Diplomacy," *The News*, 9 February 2010, www.thenews.com.pk. See also Markey, *Terrorism and Indo-Pakistani Escalation*, p. 2.
 63. In the last week of January 2010 the Indian foreign secretary, Nirupama Rao, called her Pakistani counterpart, inviting him to Delhi for talks.
 64. See Markey, *Terrorism and Indo-Pakistani Escalation*, pp. 2–3.
 65. See also Koithara, *Coercion and Risk-Taking in Nuclear South Asia*, p. 25. For an examination of the likely consequences, see Paul D. Taylor, "India and Pakistan: Thinking about the Unthinkable," *Naval War College Review* 54, no. 3 (Summer 2001), pp. 40–51.
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 72. "Israel Makes Nuclear Waves with Submarine Missile Test," *Sunday Times* (London), 18 June 2000.
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 75. "Pakistan Commissions AIP-Equipped Agosta," *Jane's Defence Weekly*, 8 October 2008, p. 31.
 76. "SSK Agosta 90B Class Attack Submarine, France."
 77. "Pakistan Commissions AIP-Equipped Agosta," p. 31.
 78. Jyotirmoy Banerjee, "Readying the Indian Navy for the Twenty-first Century," *Asian Affairs* 26, no. 1 (January–March 2004), p. 9.
 79. Integration will be required unless the missile is a "stand-alone system," complete in itself, like the Harpoon. C4I: command, control,

- communications, computers, and intelligence.
80. In VLF communications, a submarine tows a long reception antenna, to which a huge shore-based antenna transmits messages. Such an antenna is vulnerable to air strikes. Currently no such arrangement exists in the Pakistan Navy.
 81. The elite crew on board Israeli submarine *Dolphin* is specially selected. Nicknamed "Force 700" for the average 700 points (equivalent to an IQ of 130–40) its crew members score in psychological tests devised by the Israelis, the vessel carries five officers, also specially selected, responsible solely for the missile warheads. "Israel Makes Nuclear Waves with Submarine Missile Test."
 82. Banerjee, "Readying the Indian Navy for the Twenty-first Century," p. 9.
 83. *The Nation*, 30 December 2009, available at www.nation.com.pk.
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PROSPECTS FOR INDIAN AND PAKISTANI ARMS CONTROL AND CONFIDENCE-BUILDING MEASURES

Feroz Hassan Khan

The regional dynamic in South Asia is both extravagant and complicated. For centuries various empires have risen, thrived, and fallen, as numerous wars and clashes for control over resources spread across the geography. South Asian history writ large has seen hypothetical borders redrawn several times, leaving in question the viability of state control and perpetuating ethnic tensions. Though the great partition of India in 1947 ought to have politically resolved communal disharmony, the haste of British withdrawal created a geopolitical quagmire that has resulted in an “enduring rivalry” between the nations of India and Pakistan, one that has lasted for more than sixty years.¹

The contemporary security climate in the region has exacerbated this historical precedent of protracted conflict, which has in turn nurtured an environment

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that remains resistant to the building of trust and confidence. Since their demonstrations of nuclear capabilities, both India and Pakistan have increased the risk of war, with cross-border arms buildups and failure to sustain a peace dialogue. Moreover, the regional security environment breeds broader strategic anxieties in both India and Pakistan, which makes the likelihood of conventional war between the two nuclear-armed neighbors higher than it is anywhere else in the world.

Thus the ensuing regional culture leans more toward military competition than to strategic restraint

and conflict resolution (the *logical* course for strategic stability). Clearly, to consider the prospects of arms control and confidence-building measures (CBMs) in the midst of this climate is problematic in itself, but the various grievances become even more convoluted when strategic imbalances are further influenced by the singular perceptions of the predominating powers in the region.

In the face of these geopolitical calamities, this article examines the realistic prospects of sustainable arms control and CBMs in South Asia over the next decade. The first section examines the strategic anxieties of India and Pakistan, respectively; the second section reviews the treaties and CBMs that have been attempted in the past (some of them still applicable today), drawing out a trend of crisis and bilateral missteps. Later sections analyze the Strategic Restraint Regime (SRR) proposed in 1998, as well as the Lahore Memorandum of Understanding (MOU) of 1999, and how such measures can be more effective in the future. Finally, the article presents three possible trajectories that the region might take and suggests new ways forward that could create an environment amenable to pragmatic CBMs and limited arms-control measures.

STRATEGIC ANXIETIES

As previously suggested, the dynamics associated with the endemic rivalry between India and Pakistan must be viewed through the broader lens of regional politics and security. This becomes more apparent when considering India's perception of Chinese strategic objectives in South Asia. If any realistic CBMs are to be proposed for the future, such perceptions must be factored into the overall security equation.

India's Strategic Anxieties

In general, India believes that China is encircling the country, by establishing special partnerships with many of India's smaller neighbors. Specifically, India is irked by the evolving relationship between China and Pakistan, a relationship that India believes has the singular purpose of thwarting its own natural rise as an aspiring global power.

One of the more onerous issues is a perception that has come to be known as the "string of pearls."² To provide a frame of reference, Pakistan's Makran Coast has strategic importance, in that it offers Pakistan options to counter India's projection of power in the Indian Ocean. Pakistan has already shown signs that it is moving to develop broader air and naval capabilities. The buildup of the Gwadar commercial port along this coast—assisted by China—exacerbates India's anxieties and provides Pakistan with broader strategic utility. For the Chinese, it provides a potential access to energy pipelines that would "unlock trade

routes to the market and energy supplies of Central Asia,” with less risk than at present.³

This is important because India is geographically restricted in its access to both the east and west, due to the physical presence of Bangladesh and Pakistan, and in the north by the Himalayas. In this regard, India’s access to Southwest Asia runs into a geopolitical barrier, because of its rivalry with Pakistan. Similarly, India suffers constraints with respect to East Asia imposed by Bangladesh and Burma, which physically block India’s access to those markets. With China entering the scene with a growing presence along the Makran Coast, the situation from India’s perspective becomes even more tenuous. This strategic handicap, taken as a whole, forces India to rely on its maritime capabilities in order to maintain trade routes and logistics between its continental shores and the rest of the world.

As a part of this expanded naval presence, India has launched ballistic-missile submarines and produced other naval capabilities that can act as an extended security arm for its various trade routes, as well as a third strike capability (that is, in addition to its land-based and air assets). India’s growing presence in the maritime environment, in conjunction with its overall strategic rise, makes its smaller neighbors nervous. This strategic apprehension creates a ripple effect across the region whereby the smaller countries move closer to external alliances in order to balance India’s rising power.

Additionally, India believes, China is propping up Pakistan’s nuclear and military capabilities in areas where Western technologies are not meeting the need. In particular, India is under the impression that Pakistan is taking advantage of America’s involvement in Afghanistan, which places it in a unique position to acquire strategic capabilities and political remuneration.

Whatever its concerns, however, India’s strategic calculus of structural and conventional force advantages over Pakistan was neutralized (to an extent) when Pakistan demonstrated its nuclear capability in 1998. Many Indian strategists believe that this nuclear hedge enables Pakistan to conduct asymmetric warfare against India, without fear of reprisal. This perception reinforces India’s belief that as long as Pakistan can keep India engaged inwardly through insurgencies and build its own strategic alliances with the United States and China, India’s rise to power will be curtailed.

Pakistan’s Strategic Anxieties

Generally speaking, Pakistan’s strategic anxieties in the region are a mirror reflection of those of India, vis-à-vis the other half of the “enduring rivalry.” For

Pakistan, however, the objective is threefold but simple: national survival, relevance as an actor in the region, and refusal to be marginalized by India.

Pakistan wields vast manpower, with a population of 170 million; possesses strong strategic assets, in the shape of nuclear weapons and natural resources; fields a conventional army of a half-million; and is a proactive player in the Muslim world. The latter point not only connects Pakistan with the Muslim community in a bilateral sense but also helps in bridging the gaps between Islamic countries and China and with the United States. Despite the credit it has received for such macro-level factors, its intense rivalry and competition with India over the past sixty years have made Pakistan India-phobic and paranoid about a variety of issues.

Much as India worries over the geographic firewall that restricts its land accessibility to the east and west, so does Pakistan interpret Indian foreign-policy maneuvers as aimed at geopolitically encircling Pakistan itself. As India increases its influence and presence in Afghanistan with a slew of consulates, Pakistan considers these developments hostile to its interests. India has also established a strategically located air base in Tajikistan (Ayni Air Base in Dushanbe), which also adds to these suspicions. Further, India's investment in the Iranian port of Chabahar—fifty miles west of Gwadar Port—and construction of roads through Zahedan into Afghanistan add additional tension in an area that is essential for the transportation of goods and energy to a host of countries. All these moves are seen as encircling Pakistan.

There are also operational issues that hinder Pakistan's strategic balance on its eastern and western borders. India's strategic orientation remains toward Pakistan, where the bulk of its armed forces are deployed. As a result, Indian and Pakistani troops remain deployed—"eyeball to eyeball"—along the Line of Control (LoC) in Kashmir; this has been the case since 1948. On its opposite border along the frontier territory with Afghanistan, Pakistan's anxieties are manifest in the complex internal strife and multiple insurgencies and instabilities. In sum, Pakistan must balance dealing with India, multiple insurgencies, and retaining interests in Afghanistan.

The ultimate nightmare for Pakistan would be to live between two hostile neighbors, India in the east and Afghanistan in the west. Pakistan believes that unless issues are resolved with India, it will have no choice but to seek arrangements with an ethnically diverse and friendly government in Kabul—a government that would not do the bidding of powers hostile to Pakistan or further destabilize already troubled border areas. On the contrary, if Afghanistan becomes a strategic instrument of Indian geopolitical outmaneuvering, that, added to the ongoing problems in Jammu and Kashmir, would produce a perpetual state of tension and crises among the three countries.

Overarching these regional issues is Pakistan's fear that its long-term ally the United States may eventually turn against it, under Indian influence. The U.S.-Indian nuclear deal reached in 2005 exacerbated these anxieties, viewed as it is by Pakistan as skewing the balance even more greatly in favor of the already powerful India.⁴ In fact, since 9/11, there has been a slow erosion of overall international sympathy with Pakistan's grievances, especially with regard to Jammu and Kashmir, the socioeconomic costs of three decades of Afghan wars, and daily episodes of terrorism within Pakistan.

The prospects of such growing political and economic disparities with respect to India, coupled with these mounting internal problems (especially persistent terrorism, ranging from Quetta to Swat), will continue to endanger Pakistan's aggregate national power. Consistent pressure from India, instability in Afghanistan, and a fragile domestic structure are likely to render Pakistan as a state significantly weak and unstable. Its aforementioned strengths could very well become vulnerabilities, stirring broad, international upheaval. These circumstances make Pakistanis all the keener to obtain a strategic peace with India, one that allows them the space and time to recover from these challenges.

BREAKING THE GRIDLOCK

Given these strategic anxieties, it is no wonder that both India and Pakistan succumb to gridlock rather than seeking a path of reconciliation and confidence building. Further, because of blatantly conflicting objectives between the two countries—one global, the other regional—security competition and asymmetry of interests continue to grow between the two. Despite negativity and pessimism, however, there is in fact potential for both new confidence building and arms-control measures. A brief overview of CBMs from 1947 to date will illustrate the nature of the problem; a conceptual consideration of past initiatives is especially necessary in that they have been directly connected to crisis and mired in ulterior motives. The lessons of these unsuccessful attempts can strengthen efforts to frame such policies in the future.

Major Agreements and Treaties, 1947–2004

Every major treaty or CBM between these countries has its origin in crisis resolution. Historically, Pakistan preferred outside mediation in disputes with India; as a smaller and weaker party with a strong sense that morality was on its side, it was convinced that it could win justice through international organizations like the United Nations or alliances with major powers. That proved to be a fallacy. Instead, during the Cold War Pakistan became a geopolitical pawn between the superpowers. Rather than strengthening itself by alliance and international assertions of its relevancy as against its archrival India, it found itself in strategic

competition with India in frameworks where trajectories favored India and alliances did not mitigate its own security concerns. This became a fundamental reason for Pakistan to seek a nuclear weapons program.

India, for its part, has always despised outside intervention in its subcontinental affairs and sought to address all problems on a bilateral basis—because of an asymmetry of power tipped in its favor. In general, bilateralism has suited India for strategic reasons and conforms to its traditional nonaligned stance of keeping the superpowers away from the region. Nevertheless, despite this insistence, not a single problem has been resolved on a bilateral basis. Moreover, since 9/11 Pakistan has come under scrutiny from the international community in regard to its use of asymmetric force to settle the dispute over Jammu and Kashmir. In that context, outside intervention does not necessarily favor Pakistan but could strengthen India's position. That aside, however, treaties and agreements brokered by outside intervention have had a generally good record of implementation on the parts of both India and Pakistan.

The first agreement after the 1947–48 war over Kashmir, through bilateral talks between India and Pakistan, came about as an extension of a UN Security Council resolution. Under the 1948 resolution the 1949 Karachi Agreement was constituted. This initial agreement should have served as a framework for other measures since then.⁵ To date, the Karachi Agreement has been the guideline for the conduct of troops deployed along the LoC in Kashmir, monitored by UN observers. Both India and Pakistan have deployed forces along the LoC adhering (by and large) to the parameters set by the UN-approved agreement.

The next major agreement, the 1960 Indus Waters Treaty, was also a response to crisis and was brokered by a third party, in this case the World Bank. This agreement, over water distribution, had its origin in the Kashmir crisis. While an “out of the box” interim solution from former president Pervez Musharraf to the Kashmir dispute went nowhere, negotiations continued to drag on behind the scenes. At the same time, India began constructing new dams in Kashmir, diverting water resources authorized for Pakistan; this was in clear violation of the Indus Waters Treaty. (Kashmir is not just an ideological and territorial dispute but a water-resource issue as well.) Though both India and Pakistan have developed reasonable complaints about it, the basic tenets of the treaty have functioned despite many wars and military crises. Yet if India's strategy to use dam construction and water diversion as leverage against Pakistan persists, it could well lead to the eventual collapse of the Indus Waters Treaty altogether.

The Tashkent Agreement of 1966 was brokered by the Soviets after the 1965 war between India and Pakistan, with the indirect support of the United States. Once again, it came about as a result of crisis and war. Though the Tashkent Agreement provided no framework for resolution of the disputes between India

and Pakistan—at least for the following twenty-five years—it put the dispute over Jammu and Kashmir on the back burner.

After the ensuing Indo-Pakistani War of 1971, however, the approach to dialogue changed. With India's primacy established, no further agreement was implemented on a third-party basis. Subsequent agreements would be conducted bilaterally, or with mere pressure from, rather than direct involvement of, the international community. Three major agreements can be attributed to Indian and Pakistani bilateral relations. Again, each of these agreements had crisis as a backdrop:

- The Simla Agreement of 1972, directly in response to the 1971 war
- The Lahore Agreement of 1999, in reaction to the crisis spawned from the 1998 nuclear tests and the ongoing Kashmir crisis
- The 2004 Islamabad Accord, resulting from 9/11 and the 2001–2002 military crisis and Kashmir issues.

All the bilateral agreements had an effective framework to resolve conflict but no effective longevity. One after another they were violated by one side or the other, each time resulting in deep military crises. For example, in the mid-1980s, India was undergoing a Sikh crisis in Punjab when the Indian Army assaulted the Sikh holy shrine in Amritsar (Operation BLUESTAR), exacerbating the Sikh insurgency. Simultaneously, in a planned military operation, India decided to occupy the Siachin Glacier (Operation MEGHDOOT) in the disputed northern area of Kashmir. This event once again brought Jammu and Kashmir to the forefront of the India-Pakistan dispute. Two years later, the Indian Army chief, General Krishnaswamy Sundarji, planned a major military exercise code-named BRASSTACKS, incorporating a secret plan for a preventive war to neutralize Pakistan's nuclear program.⁶ These two crises occurred at a time when Pakistan was deeply involved in an asymmetric war (with the support of the United States) against the Soviet Union.

The next crisis, in 1990, resulted from a Kashmir uprising that escalated to such a point that India and Pakistan were once again at the brink of war. This crisis was particularly significant in that both India and Pakistan had covert nuclear weapons capabilities, which was known to both sides. This factor prompted the United States to intervene in such crises from then onward.

The history of trust-damaging episodes in the midst of such crisis has had far more weight than has the record of keeping faith in treaties. Again, while India has been able to project its position to a global audience, Pakistan has typically had a smaller, regional venue. All of these elements help explain the rise and failure of various agreements, treaties, and accords. Yet another lens with regard to

progress on the diplomatic front is the introduction of strategic confidence-building measures.

Strategic CBMs

The notion of “strategic CBMs” implies that nuclear and conventional-force CBMs are in a symbiotic relationship. One of the foremost issues regarding CBMs between India and Pakistan is of a conceptual nature. The premise behind *strategic* CBMs is that nuclear measures on their own are meaningless if conventional force restraints are not applied. There are four distinct areas where India and Pakistan differ in terms of structuring and harnessing CBMs, where arms control becomes problematic.

First, India finds abhorrent anything that binds it to regional limits. From the outset India has taken global disarmament as the necessary context to project its own position on disarmament with regard to nuclear weapons. Pakistan, in contrast, insists that everything is regional and India-specific. India does not want to be tied down to Pakistan alone but recognizes problems with other countries (specifically China) that must also be considered; it wants only nuclear military CBMs, to keep its conventional-force supremacy intact. Meanwhile, Pakistan’s insistence on regional nuclear CBMs is a result of Western pressure to forgo its nuclear ambitions; its nuclear program was nurtured under obstacles, sanctions, and other reprisals imposed by the nonproliferation regime. Moreover, these sanctions have affected Pakistan negatively, whereas India has sustained them with little or no effect.

Second, India considers any CBM that inhibits its use of force within the region as contradicting its force posture; this is Pakistan’s fundamental problem. Third, India insists that nuclear CBMs begin with a declared doctrine; Pakistan simply believes that real doctrines are classified, that declared doctrines are simply “verbal posturing” meant for diplomatic consumption only.⁷

Last, India believes that its declared second-strike doctrine and civilian supremacy over the armed forces sufficiently explain its articulation of command and control over nuclear weapons. For Pakistan, clear delineation of command channels and explicit assignment of decision-making bodies are necessary for a system responsible for managing nuclear weapons in peace, crisis, and war. This emphasis on command and control reflects Pakistan’s own checkered history of civil-military relations.

With all this as background, Pakistan began to make regional proposals beginning with India’s first nuclear test, in 1974. It made seven regionally based proposals, each automatically rejected by India.⁸ This allowed Pakistan to show—that is, to show the region—that India did not want to cooperate, thus placing the burden of defending its position on India. Pakistan knew that the

proposals were not realistic, and the international community did as well (though not all were disingenuous, and there might have been a different outcome had world powers not dismissed them). Pakistan also used these regional proposals to create the diplomatic space for the development of its own nuclear program, while simultaneously shifting the responsibility for proliferation to the bigger power.

New military and nuclear CBMs, similar to the treaties previously discussed, came in the wake of nuclear developments and military crises. Most of them were, once again, bilateral. For example, the prohibition in 1988 against attacking nuclear installations and facilities was a response to information, which was widely analyzed, showing that India would attack Pakistani nuclear installations; precedent was also established by Siachin and the bombing of Iraqi nuclear facilities.

India and Pakistan once again adopted bilateral agreements following the major crisis in the 1980s, when political leadership under Zia-ul-Haq and subsequent civilian leaders, like Benazir Bhutto and Nawaz Sharif, created initiatives with India's Rajiv Gandhi and other congressional leaders. Additional agreements would follow.

Notification of military exercises and airspace violations actually arose from BRASSTACKS and other, minor incidents in which the Indian Army contemplated making war on Pakistan. The agreement would oblige each side to provide advance notification of military exercises.

Another example is the bilateral, joint declaration in 1992 of the complete prohibition of chemical weapons, a result of allegations by both sides that the other was building a chemical weapons program. This joint agreement was also a way to deflect pressure from the international community, which was then negotiating the Chemical Weapons Convention (CWC), which was eventually signed in 1993. When India declared possession of chemical weapons as required by the CWC, however, Pakistan protested, alleging violation of the bilateral, joint declaration against chemical weapons.

Last is the hotlines agreement between the directors-general of military operations (DGMOs), foreign secretaries, and maritime security agencies. It came about as an agreed mechanism by which military and diplomats could communicate in order to prevent emergence of a crisis and manage escalation. Though this is a reasonable purpose and a practical means of communication, it has not been used in such a manner; instead, the hotlines have typically been used for deception, at worst, and postcrisis management, at best. There are plenty of examples of such misuse of this otherwise productive tool: hotlines were useful after the Kargil crisis, but not during it;⁹ hotlines between the DGMOs did not work when the 1999 Indian plane hijacking crisis was at its peak; the foreign

secretaries line did not prevent the Mumbai 2008 attack from derailing the entire peace process; and the maritime security hotline has not prevented the daily seizure of fishermen by each side but has been used only after the fact when the governments decide to return them.

All of these agreements reflect thoughtful ideas but incredibly poor implementation. Neither side has built upon such measures; instead, each has used them as means to counteract the other.

The Lahore MOU and the Strategic Restraint Regime

The Lahore MOU is, in contrast, by far the most significant agreement between India and Pakistan, one that has not just created a framework for new arms control and CBMs but offers the prospect of conflict resolution as well.

The Lahore MOU came about at the famous summit between the prime ministers of India and Pakistan in February 1999. The agreement was a result of an intense eight-month process, beginning after the nuclear test in May 1998, in which American diplomats led by Deputy Secretary of State Strobe Talbot were actively involved. UN Security Council Resolution 1172, of June 1998, condemned both India and Pakistan, placing stringent conditions on both countries and addressing the issue of Jammu and Kashmir.

In fact, many ideas flowed between Indian and Pakistani diplomats during this period.¹⁰ India and Pakistan decided to “triangulate” their bilateral dialogues, making the United States a third party. Theoretically, this was a good way forward, with each side speaking separately to the United States; however, suspicion ensued. Another entanglement was that the United States approached the issue based on its experience in Europe; that did not necessarily conform to the strategic realities of South Asia. For example, most CBMs and agreements of the Cold War had been fashioned for a bipolar world, but the Lahore agreements happened after the East-West conflict had ended.

Despite these incongruities, “strategic restraint” became the term du jour. The American expert team presented Pakistan a paper called “Minimum Deterrence Posture,” offering such recommendations as geographical separation of major components of nuclear arsenals and their delivery means; segregation of delivery systems from warhead locations; declaration of nonnuclear delivery systems, with their specific locations (e.g., which squadrons of aircraft, at given locations, would be nuclear or nonnuclear); establishment of finite ceilings for fissile-material production and monitoring of nuclear testing; and last, limitation of production and ballistic flight tests. All this was meant to produce what was referred to as a “strategic pause.”

These proposals were alien to South Asian security experts. Again, they had been derived from Cold War concepts that were not applicable to the regional

security environment. India and Pakistan, obviously, did not accept them; however, the Pakistan side did recognize these concepts in principle, with a promise to reconsider those proposals it presumed to be within its security interests. Subsequently, Pakistan transformed these U.S. proposals into its own, regionally based concept, the SRR.¹¹ The SRR was conceptually based upon the principle of nuclear restraint, with conventional force restraint as well—hence, it was a strategic CBM. It was simply not practical for a small country like Pakistan to “segregate” delivery systems, as suggested by the United States. That was unacceptable, because it undercut the necessary ambiguity of Pakistan’s strategic deterrence, while allowing India to wage conventional war against it. Finally, Pakistan and India were not subscribers to the Comprehensive Nuclear Test Ban Treaty (CTBT), though they were in essential agreement with the United States that they should not conduct more tests.

What Pakistan proposed was a comprehensive conventional-force restraint agreement. This proposal had three major elements: identification of the offensive forces of each country, with their locations and postures; designation of geographical border areas as Low Force Zones (LFZs), from which offensive forces would be kept away; and a long-term mutually balanced force reduction, as conflict resolution and peace prevailed in the region. The Pakistani side produced several alternative proposals and designated each side’s offensive forces. Identifying forces that are dangerous to each other would allow measures to separate them geographically in order to prevent tension and armed conflict.

The LFZs would be the hallmark of this intended policy. The border areas and the towns close by would be defensive only, the sizes of forces in their garrisons to be agreed upon by both sides. In the event of changes, each side would notify the other. The proposed eventual force reduction would be “mutually balanced” because India has a much larger military structure; conventional force reductions would be *proportional*, involving equal ratios.

On the question of “nonmating” nuclear weapons from their delivery systems, Pakistan acknowledged this to be an existential issue of nuclear posture. Pakistan was amenable to formalizing regional nondeployment of nuclear weapons in conjunction with conflict resolution and conventional force restraints. The SRR also proposed mutual missile restraints, including range and payload ceilings, flight-testing notification, and prohibition of destabilizing modernization, such as missile defense or submarine-launched ballistic missiles.

However, the United States accepted India’s position in not agreeing to these terms. This derailed the whole process. The dialogue lost its energy, as the United States began to mirror India’s position, and Pakistan lost interest. Pakistan’s

fundamental problem was India's conventional threat, which remained unaddressed in every proposal by the United States. Any CBMs not related to conventional force would be irrelevant. The failure of SSR to be accepted in South Asia set the tone of U.S. policy toward the region, and a new strategic competition between India and Pakistan began. American ignorance of the SSR was a historic failure; a general peace and stability framework could have been produced, as against a trajectory of competition and conflict.

Nevertheless, the Lahore MOU framework had come about as a result of political will from the leadership in both India and Pakistan. The bureaucrats were pressured to reach an agreement within a span of ten days—and they did. This not only illustrates that there is no dearth of ideas as far as CBMs are concerned but emphasizes the importance of political will. The Lahore MOU still stands as the best way to pick up the threads of a peace and security architecture for South Asia.

BAD, UGLY, AND GOOD: TRAJECTORIES IN THE REGION

India and Pakistan could take any of three possible trajectories in the second decade of the twenty-first century, given their current courses. The stability of the region would depend on the dynamics generated by the scenario that emerges—ideally, one that promotes peace and security through strategic CBMs.

Bad. This scenario already exists: today the region as a whole stands in a “bad” position. The choice is to go down either a path that leads to a *good* scenario or one that plummets the situation into a multitude of *ugly* developments.

The status quo between India and Pakistan is fraught with tension, where trust has been lost (as has been shown throughout this article). No third-party influence can change this inertia. The only positive influence is the United States; however, even under its nudging, India and Pakistan continue to only “talk the talk,” not “walk the walk.” In each failed dialogue process the stronger side learns the weaker side's negotiating positions and finds vulnerabilities that it can exploit when tension and crises return. Therefore, whenever Pakistan has tried to concede points in the past, India, instead of converting the development into a sincere, honest proposal, has come back with an alternative proposition that it knows full well would be unacceptable for Pakistan.

The result is a gradual arms race that continues to push the region closer to conventional force deployments. India continues to apply coercive diplomatic pressure and suggestive doctrines like Cold Start, with threats implicit in public statements by civilian and military leaders alike.¹² In fact, Indian Army chief Deepak Kapur recently stated publicly that India could deal with Pakistan within the first ninety-six hours of engagement and then immediately turn to

China.¹³ This is a merely one example of the aggressive posturing by the Indian military in recent years. Because Pakistani forces are deployed on multiple fronts, where potential political crises exist, the likelihood is that Pakistan will push toward strategic weapons deployment or shift to an ambiguous nuclear deployment—in two or three years, if trends persist.

Every major power is working with India on nuclear agreements, making India the only country in the world that is a nonmember of the nuclear Non-Proliferation Treaty (NPT) but is at the same time recognized as a *de facto* nuclear-weapons state. This appeasing of a state that has challenged the nonproliferation regime and is not subject to the NPT is creating in Pakistan a sense of Western duplicity and discrimination. These issues, coupled with the U.S. agenda to jump-start the global arms-control process (CTBT, etc.), will force Pakistan into a position where it no longer has any incentive to cooperate.

Ugly. If this *bad* trend continues, an even direr scenario will ensue. Increasing tension between India and China, as well as India and Pakistan, will develop. This will lead to a heightened security environment in the region, leading military forces to be on the alert, if not fully deployed on the borders. Warfare could easily become a self-fulfilling prophecy.

Technological innovation would be focused on the acquisition or deployment of missile defenses, with the transfer of such technologies as the Israeli Arrow antiballistic missile. China may not deploy its strategic arsenal, but Pakistan cannot be expected to remain nondeployed if it does. In response, India would deploy a strategic arsenal made more robust by nuclear submarines, or a mix of strategic weapons. If a situation of this sort happens, the possibility of hot pursuit across the LoC by Indian ground or special forces, cross-border attacks by the Indian Air Force, or Indian naval coercive deployment in the Arabian Sea to exploit Pakistan's vulnerabilities cannot be ruled out.

Alternatively, the Cold Start deployment organization—involving “integrated battle groups”—could be implemented. This would be a clear fortification of the border and a flagrant attempt to escalate. In response, Pakistan would break loose from all arms-control discussions. This could lead to a general meltdown of the regional situation, with the United States no longer in a position to intervene positively.

Good. The “ugly” scenario can be prevented if the current trajectories are reversed through cautious influence by the powers to end the India-Pakistan deadlock. If the dialogue process does lead in a positive direction and in a meaningful way, there can certainly be a “good” option, with a potential for strategic CBMs.

India must make a conscientious policy shift toward Pakistan, recognizing the two positive trends that have recently emerged: first, the success of democratic political processes, and second, the focus of the Pakistani military on opposing violent extremism. India must reach out through the dialogue process to strengthen and support these trends. India should also revise its current security doctrine of coercion (Cold Start), exploitation (e.g., backing away from a perceived negative role in Afghanistan), and aggressive diplomatic isolation of Pakistan, which is in vogue at the time of this writing.

The best course for India is to pick up the threads of the Lahore MOU and Islamabad Accord. If India takes up the Lahore framework and gives fair consideration to the SSR (through the lens of strategic CBMs) that Pakistan offered, progress can be made.

By way of easing the relationship and initiating people-to-people contact, four separate endeavors should be agreed upon between India and Pakistan:

- Promote religious tourism. Sikhs, Hindus, Muslims, and members of other religious sects should be afforded an opportunity to visit shrines in India, as well as in Pakistan.
- Increase cultural tourism and sports exchanges. India has used sports as a cultural and political tool in the past in ways ranging from threatening not to send cricket teams for competition to openly supporting Hindu extremists threatening Pakistani players and cultural performances. Such acts should cease and be replaced with more positive exchanges.
- Ease trade relations. There are concerns on both sides, but there can be some linkages.
- Cooperate on the Indus Waters Treaty. For the first time, there is a sense that India is using its position to bolster the water rights of Pakistan at its own expense, by erecting dams, etc. If the Indians move in a direction that embraces cooperation on such important strategic issues, the prospects of CBMs can sow seed in this fertile soil.

A WAY FORWARD

In the next three to five years, there are four key areas in which prospects exist for confidence-building measures, even rudimentary arms control—all of which can be attributed to the tragic Mumbai incident in 2008. They are mentioned here only briefly; further analysis and elaboration can be the subject of a later discussion. Yet it is important to provide an overview of such potential measures in proposing a new way forward.

First and most immediate is a CBM by which India and Pakistan revive the Joint Anti-Terrorism Mechanism that was agreed in 2006, as a follow-on to the 2004 Islamabad Accord. This mechanism failed as a result of the Mumbai incident. It is important that both countries draw lessons from the failure and improve the mechanism so as to prevent the derailment of relations as a result of a terror attack. It is unlikely that terrorism in the region will disappear anytime soon, and it is important to not allow terrorists to hold two nuclear-armed states hostage.

Next, India and Pakistan should establish a national risk reduction center. Communications were deadlocked at both political and military levels after the horrific Mumbai event. This indicated the fragility of relations between the two countries. An institutional mechanism for communication about and resolution of such risks—over a spectrum from a Mumbai-type terror incident up to a nuclear-related accident—is now essential.

The third CBM is maritime in nature. The Mumbai incident involved maritime transit, which is all the more reason for developing maritime CBMs between the two countries. India and Pakistan can, under the spirit of the Lahore MOU, begin an incidents-at-sea agreement, delineate maritime boundaries to prevent incursions by fishermen, and develop maritime cooperation in other areas, like piracy. The maritime hotline should be put to better use than it is at present, as to prevent another Mumbai-related event or abduction of innocent fishermen.

Finally, though it may appear premature, India and Pakistan must conduct a sober analysis of their ballistic-missile inventories. As widely reported and understood, their shortest-range ballistic missiles—the Prithvi-I in the case of India, the HATF-I for Pakistan—have little strategic utility and pose technical problems. It may be wise for India and Pakistan to eliminate these two capabilities as a first step. This would be symbolic, not impacting military stature or capabilities for various contingencies. In the long term, however, there may be a realization that the next category of ballistic missiles, Prithvi-II and HATF-II, may also be of less military utility. (The technical and strategic aspects are left for further analysis at a later time.)

Nonetheless, if the current deadlock over dialogue changes into a sustained peace process, it puts the region on the “good” path. India and Pakistan can then commence meaningful confidence-building measures, for which there are clauses existing within the Lahore MOU that can be resurrected. Examples would be bilateral consultations on security, disarmament, and nonproliferation issues; a review of the existing communications links; and periodic assessments of the implementation of existing CBMs. The Lahore MOU also promised that

agreements would be negotiated at a technical-expert level. In general, it would be wise of India and Pakistan to begin a program of arms control and CBMs in the next decade, under the rubric of the Lahore MOU.

The first decade of the twenty-first century has been plagued with tensions in South Asia, from the war on terror in response to 9/11 to the lasting rivalry between India and Pakistan. This decade has shown that India and Pakistan remain on the path of competition and nonresolution, a path steeped in historical precedent. The next decade should reverse this trend and shift from competition to a cooperative security framework, one in which resolution of new security threats and nontraditional security issues—water, energy, food security, and cross-border terrorism—take precedence over old military disputes. India and Pakistan share a history of competition and failure to follow through in the resolution of disputes. Matters will worsen in the next decade—unless the countries take advantage of positive elements that exist and adopt forward-looking, cooperative-security outlooks.

NOTES

- Views expressed herein are solely the author's personal views and do not represent either the Pakistani government, or the U.S. Department of Defense. The author is grateful to Nick M. Masellis—NSA research associate, MS in defense analysis—for his research assistance.
1. The term “enduring rivalry” is borrowed from T. V. Paul, ed., *The India-Pakistan Conflict: An Enduring Rivalry* (New York: Cambridge Univ. Press, 2005). Paul defines an “enduring rivalry” as a conflict between two or more states, lasting more than two decades, with several militarized interstate disputes punctuating the relationship in between, and characterized by a persistent, fundamental, and long-term incompatibility of goals.
 2. Christopher J. Pehrson, *String of Pearls: Meeting the Challenge of China's Rising Power across the Asia Littoral*, Carlisle Papers in Security Strategy (Carlisle Barracks, Pa.: Strategic Studies Institute, July 2006), available at www.strategicstudiesinstitute.army.mil/.
 3. Robert Kaplan, “Pakistan's Fatal Shore,” *Atlantic* (May 2009).
 4. A bilateral accord, jointly declared on 18 July 2005 by President George W. Bush and Prime Minister Manmohan Singh and signed in October 2008, by which India would separate its military and civilian nuclear facilities and subject the latter to International Atomic Energy Agency (IAEA) safeguards, and the United States would work toward full civilian nuclear cooperation with India. See “Backgrounder: The U.S.-India Nuclear Deal,” *Council on Foreign Relations*, www.cfr.org/publication/9663/.
 5. The actual dates of the resolutions were 13 April 1948 and 5 January 1949. See Sumit Ganguly, *Conflict Unending: India-Pakistan Tension since 1947* (New York: Columbia Univ. Press, 2001), pp. 20–22.
 6. Scott D. Sagan and Kenneth N. Waltz, *The Spread of Nuclear Weapons: A Debate Renewed* (New York: W. W. Norton, 2003), pp. 92–95.
 7. See George H. Quester, *Nuclear Pakistan and Nuclear India: Stable Deterrent or Proliferation Challenge?* (Carlisle Barracks, Pa.: Strategic Studies Institute, 1992), p. 12.
 8. The regional proposals are as follows: the South Asian Nuclear-Weapon-Free Zone,

- November 1974; Joint Renunciation of Acquisition or the Manufacture of Nuclear Weapons, 1978; mutual inspections of nuclear facilities, 1979; simultaneous acceptance of IAEA “full scope safeguards,” 1979; simultaneous accession to the NPT, 1979; bilateral nuclear test-ban treaty, 1987; multilateral conferences on nonproliferation in South Asia in 1987 and 1991.
9. For this May–July 1999 conflict along the LoC, see “Kargil Conflict 1999,” GlobalSecurity.org.
 10. The author was involved as part of the expert-level dialogue with both the United States and India. UN Security Council Resolution 1172 (1998) is available at www.un.org/.
 11. The author was personally responsible for the preparation of the paper that developed this concept. The paper was presented to the U.S. team on 15 September 1998 in New York. See Feroz H. Khan, “Reducing the Risk of Nuclear War in South Asia,” in *Pakistan’s Nuclear Future: Reining in the Risk*, ed. Henry Sokolski (Carlisle Barracks, Pa.: Strategic Studies Institute, 2009), pp. 70–71.
 12. For the Indian “Cold Start” doctrine, see Walter C. Ladwig III, “A Cold Start for Hot Wars? The Indian Army’s New Limited War Doctrine,” *International Security* 32, no. 3 (Winter 2007/08), pp. 158–90.
 13. Deepak Kapur, quoted in Nirupama Subramanian, “General Kapoor’s Remarks Generate Heat in Pakistan,” *Hindu*, 5 January 2010, available at www.thehindu.com/.

NAVAL VESSEL TRAFFIC SERVICES

Enhancing the Safety of Merchant Shipping in Maritime Security Operations

Lieutenant Dr. Ir. F. J. Sluiman and Commander Ph. H. de Koning, Royal Netherlands Navy Reserve

Vessel traffic services (VTSs) ensure the safe and efficient handling of traffic on busy waterways like the English Channel and the approaches to New York. This technique, wherein electronic sensors and communication systems are used to manage traffic actively, can also be used in maritime security operations (MSOs) to enhance safety in areas with risks related to asymmetric threats.¹ Nowadays a limited form of VTS is deployed for MSO situated in international waters. These services, provided by naval cooperation and guidance for shipping (NCAGS) organizations, are focused on building maritime domain awareness (MDA) and providing naval-related safety information to merchant shipping. Structuring and monitoring of vessel traffic, unfortunately, is supported only poorly, or not at all, by NCAGS.² This is a serious omission, as structuring and monitoring vessel traffic make earlier detection of dangerous situations possible, render ships harder to attack, and minimize possible cascading effects to

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ship traffic from harassment or attack. Moreover, compared to alternatives such as escorts and convoys, there would be less delay to shipping, while the need for military assets may be reduced through improved efficiency.

This idea has led the authors to develop a new concept, which is termed "Naval VTS." This approach combines a voluntary VTS monitoring system with a traffic organization and information service aimed at

providing military commanders responsible for MSOs a level of vessel safety that makes security tasks easier to plan and perform. Navigational risks and risks related to asymmetric threats cannot always be separated, which means that Naval VTS may have to deal with both risks and that it requires flexibility in how it is established.

As proof of concept, three detailed examples will illustrate how Naval VTS would enhance the safety of merchant shipping and contribute to a more efficient use of military assets. The development of the International Recognized Transit Corridor (IRTC) in the Gulf of Aden is extensively discussed in one of the examples, as it clearly shows the progress in MSO toward the organization of maritime traffic, an important part of Naval VTS. Following the examples, the main findings are discussed and recommendations for further research are presented.

VESSEL TRAFFIC SERVICES AND MARITIME SAFETY OPERATIONS

Merchant shipping today carries an estimated 80 percent of world trade on a fixed number of maritime routes, the sea lines of communication (SLOCs).³ Areas of heightened shipping density on these SLOCs—like the straits of Babel-Mandeb, Hormuz, and Gibraltar—form choke points. Merchant ships passing these choke points are vulnerable to collision, piracy, and terrorism.

Collisions between ships could practically close a busy choke point like the Strait of Malacca. Such an accident would necessitate rerouting a significant number of merchant ships through the Lombok or Sunda straits. Rerouting causes delays and raises freight rates. This could affect many countries, as the Strait of Malacca, for instance, is the main SLOC between East Asia and the West.⁴ A traffic separation scheme and a mandatory reporting service (called STRAITREP) were implemented in 1981 and 1998, respectively, to enhance the safety of navigation in the Strait of Malacca, but the ever increasing volume of maritime traffic remains a source of concern.⁵

Piracy in the Gulf of Aden has led to higher insurance premiums, crew costs, and security costs for ships sailing through this approach to the Strait of Babel-Mandeb. The heightened piracy risk has even caused shipping companies to reroute ships around the Cape of Good Hope, despite the distance and expense.⁶ Though it occurs on the main SLOC between Asia, Europe, and the east coast of the United States, piracy in the Gulf of Aden did not cause much stir until the roll-on/roll-off ship *Faina*, carrying thirty-three T-72 tanks and other heavy weaponry, was hijacked there. After this incident, which followed a sharp increase in piracy activity, NATO, the European Union (EU), Russia, India, Japan, Korea, Malaysia, and others intensified their naval presence in the region.

In June 2009, an IRTC and a Maritime Security Patrol Area (MSPA) were established by the Combined Maritime Forces in the Gulf of Aden in support of United Nations Security Council resolutions 1814 (2008), 1816 (2008), 1838 (2008), and 1846 (2008).⁷ The IRTC enables naval forces to concentrate their resources, while the MSPA is overlaid on the IRTC to coordinate and deconflict the efforts of task forces. EU Naval Force ATALANTA encourages merchant vessels to pass through the IRTC in groups, based on their transit speed. These group transits should enhance mutual protection and optimize the deployment of military assets even further. Unfortunately, however, attacks continue, even on ships in group transits through the IRTC.⁸

Terrorist attacks on the USS *Cole* (DDG 67) in October 2000 and the French oil tanker *Limburg* two years later raised the insurance premiums on ships bound for Yemen.⁹ The threat of terrorism also caused international concern over the security of choke points, where ships present easy targets and the consequences could be enormous.¹⁰ Concerned about the possibility of the Strait of Gibraltar becoming a site for terrorist attacks, NATO in March 2003 started escort operations there to ensure the safe transit of nonmilitary ships from alliance member states requesting protection.¹¹ These escort operations were part of the maritime antiterrorism operation ACTIVE ENDEAVOUR, which covers the Mediterranean. A total of 488 ships took advantage of the NATO escorts before reduced threat levels made it possible to suspend them on May 2004. ACTIVE ENDEAVOUR produced insurance rate reductions of approximately 20 percent for commercial shipping transiting the Mediterranean.¹²

Given the vulnerability of merchant shipping in choke points, it is remarkable that VTS is not already included in maritime security operations. VTS traffic organization techniques were used to establish the IRTC in the Gulf of Aden, but in general it has not been given proper thought in connection with MSO. That is a pity, as merchant ships have significantly changed over the past decades; today, the variations in size, speed, and maneuverability are enormous. This diversity within dense traffic flows, in the face of asymmetric threats, demands active traffic management to reduce risks.

In particular, the absence of VTS activities in MSOs causes the following problems in choke points with asymmetric threats and large volumes of traffic:

- Vessel traffic in choke points with no existing VTS center is not organized. The navigational risks inherent to merchant-ship traffic in a confined and congested environment may become unnecessarily high.
- The throughput of merchant ships through a choke point is not optimized. Fast vessels may be exposed to danger longer than necessary.

- Factors affecting the safety of vessels with regard to cascading effects in the event of harassment or attack of other ships are not managed.

It is to overcome these problems that the Naval VTS concept is proposed. Like any vessel traffic service, Naval VTS is a traffic-monitoring system designed to provide support to mariners in busy waterways where risks are deemed greatest. Its main focus, however, would be on the risks related to asymmetric threats.

THE CONCEPT OF NAVAL VTS

As noted above, Naval VTS is a voluntary vessel traffic service designed to enhance the safety of vessel traffic through confined and busy areas at increased risk, of either a general or specific nature (other than war). It comprises a traffic organization service and an information service.¹³ It is not, however, envisioned as providing navigational assistance, because of potential liability issues and the fact that the infrastructure that would be required in the Naval VTS area for such a service may be absent or damaged (either by lack of maintenance or by the actions of violent nonstate actors).¹⁴

The main purposes of Naval VTS are

- To minimize the risk from harassment or attack on merchant ships
- To minimize the cascading effects on ship traffic from harassment or attack
- To optimize the throughput of merchant ships transiting choke points
- To deconflict merchant-ship movements with military operations
- To enhance vessel safety with regard to the risk inherent to traffic in a confined and congested environment.

Secondarily, in meeting these purposes the concept has the potential to stabilize insurance costs and improve the effectiveness of naval patrols and escorts.

All vessels navigating through a Naval VTS area would be encouraged to participate. Participation would be beneficial to vessels, as it would enhance their safety, and it is beneficial to the Naval VTS organization, as it would contribute to the compilation of the traffic picture. Decisions concerning ships' actual navigation and maneuvering remain with their masters. Naval VTS guidance would never relieve them from their responsibility to exercise good seamanship and comply with the Collision Regulations.¹⁵ To minimize the liability element of Naval VTS, each message directed to a vessel would have to state clearly whether it concerned a question, item of information, advice, or a warning and would use International Maritime Organization (IMO) "standard marine communication phrases" where practicable.¹⁶ Nonparticipating vessels would be briefed on dangers that existed and would be monitored.

A Naval VTS organization in a maritime security operation would consist of a commander and one or more units. These units would be teams of military VTS operators, with specialized equipment, possibly cooperating with existing vessel-traffic centers. These units could be ashore or afloat (embarked on either naval or civilian vessels), located at the discretion of the Naval VTS commander. Units would have areas of responsibility, subareas of the Naval VTS area, which are slightly overlapping for contact pass-off and redundancy. All units would have to be equipped with Automatic Identification System (AIS) equipment—receiver, radar, and communications—connected to automated systems to store, update, modify, retrieve, and display collected traffic-picture data. Such equipment, which must be compatible between units and the commander, would give each unit full information about each participating vessel and its intentions. The number of units and level of service provided would depend on the local situation and threat level, and could be adjusted as a situation developed.

Cooperation can be a force multiplier for Naval VTS. Cooperation between the navies participating in MSO could increase the assets and personnel available for Naval VTS. Additionally, cooperation with existing VTS would be particularly valuable when their service areas overlap with that of Naval VTS; use of their surveillance and communication facilities could decrease the assets required to establish Naval VTS. Cooperation with the maritime industry, finally, would make it possible to obtain quickly and cost-effectively all information necessary to maximize maritime domain awareness—such as vessel movements in ports, vessel conditions, hydrographic conditions, and the operational status of aids to navigation.

Commanders of maritime security operations would have authority to activate Naval VTS in their areas. Naval VTS could fit into the normal course of MSO, as participation would be voluntary for all ships and shipmasters would remain responsible for the crews, safe navigation, and handling of their ships. The Naval VTS command-and-control structure and its place within the overall command structure would vary according to the objectives of the operation and the forces participating. Naval VTS commanders, however, would always be responsible for the activities of their organizations.

ESTABLISHING NAVAL VTS

Implementation of this concept requires a Naval VTS area, traffic organization, Naval VTS units, and communication and emergency procedures. Assembly areas might have to be designated as well.

The *Naval VTS area* is a zone within an area where naval forces are operating in which naval vessel traffic services are to be provided. It must be large enough

to cover the waters in which there is an actual threat to shipping, but not so large as to become unmanageable. Factors affecting the size of the area are geographic configuration, the asymmetric attacks expected, and the density and diversity of traffic. The size of a Naval VTS area would be adjustable and could be altered as the situation develops.

To prevent dangerous traffic situations and to provide for the efficient movement of vessels, traffic in the Naval VTS area must be organized. *Traffic organization* can be achieved by a combination of traffic organization and management techniques, including:¹⁷

- *Geographical division*—to separate traffic streams. This is achieved by using existing “traffic separation schemes,” when available and clear of risks. Otherwise, traffic streams can be separated by recommending distinct, noncrossing routes for ships going in opposite directions. Slow and fast traffic moving in the same direction can be separated this way too, so as to minimize transit time.
- *Time separation*—to give a vessel exclusive use of a certain area, or a restricted passage, for a given time. Time slots would be allocated to vessels as part of their sailing plans. Time separation requires advance planning, if the use of (possibly crowded) assembly areas is to be avoided.
- *Distance separation*—to minimize the cascading effects of harassment or attack. Minimum differences between vessels transiting the Naval VTS area would be specified (after consultation with experts) for each type of ship, and cargo carried. The separation distances maintained would be monitored by the Naval VTS.

When overtaking and passing within lanes is not possible, distance separation requires planning so that fast vessels are not exposed to danger longer than necessary due to slower vessels in front of them. When there are no overtaking restrictions, passing distances may be recommended as well.

In deciding the number and location of the *Naval VTS units* to which ships will be requested to report, the size, traffic density, and the geographical configuration of the Naval VTS area must be considered. The key technical factor is the relationship of the radar and communication ranges of the units to the surveillance and communication requirements of the area. A good match is needed, as the quality of accident prevention depends on the units’ capability to detect developing situations and their ability to give timely warnings.

Communication procedures are needed for prearrival information, entry of vessels into the Naval VTS area, transit, and departure. Depending on the local situation, other communication arrangements, such as for vessels in berths and

at anchor, may be needed as well.¹⁸ These procedures should stipulate what communications are required and which frequencies should be monitored.

Emergency procedures are needed to deal with incidents that may result from the risks present in the Naval VTS area. These procedures may include alerting the Maritime Rescue Co-ordination Center, promulgating information on the incident to vessels in the Naval VTS area, and restricting traffic. Multiple communications frequencies would be advisable: one for emergencies, a second for standard position checks, and a third on which transiting vessels report suspicious activity. How to deal with high-threat situations with low response times would require advance consideration. In addition, the advantages and disadvantages of having merchant ships restrict or cease transmissions of signals like AIS should be weighed.

Assembly areas may be designated in the Naval VTS area for emergencies, cross-traffic, convoy operations, and so on. When feasible, assembly areas should be situated where the likelihood of asymmetric attacks is remote and disruption of traffic flow is minimal. Assembly areas would have to be large enough to hold all ships expected. Finally, to gain the cooperation of the merchant shipping industry, the coordinates of the Naval VTS area, the services it would provide, and its reporting procedures would be promulgated using the World-Wide Navigational Warning Service. The wording of this notice would require careful thought, so as not to raise concern needlessly in the shipping industry.

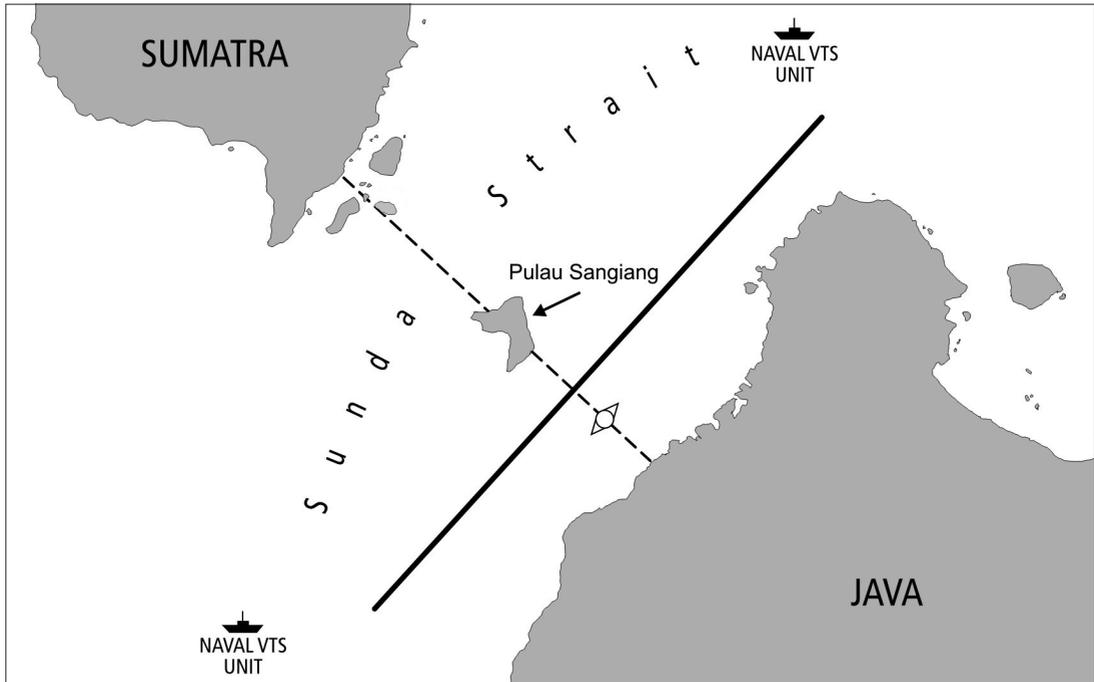
HOW NAVAL VTS MIGHT BE USED

Naval VTS offers military commanders responsible for conducting MSOs a broad palette of options to enhance the safety of merchant shipping and improve the effectiveness of military activities. The following examples illustrate how this palette can be used.

Example 1: Terrorism in the Sunda Strait

Consider the following scenario: terrorists block the narrow Strait of Malacca by sinking a very large crude carrier by causing a deliberate collision with a hijacked 25,000-deadweight-ton (dwt.), kerosene-laden product tanker. The collision and the following inferno raise international concern and cause shipping companies to divert their ships through the Lombok and Sunda straits. In the expectation of other terrorist attacks on shipping in the Indonesian archipelago, a multinational maritime force is deployed to conduct MSO in the Java Sea. The Sunda Strait, being the shortest diversion for ships up to 100,000 dwt., becomes heavily used, and fears grow that a similar terrorist attack might occur there (see map 1).¹⁹

MAP 1
THE SUNDA STRAIT



In response, Naval VTS is activated in the Sunda Strait. The site where most congestion is expected and that is most vulnerable to deliberate collisions is the passage between Sumatra and Java, where the small island of Pulau Sangiang lies; this zone needs radar surveillance and must be included in the Naval VTS area. There are no existing VTS centers in the Sunda Strait, and according to the en route sailing directions for Borneo, Java, Sulawesi, and Nusa Tenggara, there is only one track through the risk area.²⁰ To reduce liability and gain the cooperation of the merchant shipping industry, this track is endorsed. This decision excludes the use of geographic-division traffic-organization techniques.

The deliberate ramming in the Malacca Strait had been possible because of the poor maneuvering qualities of the victim, a large tanker. Naval VTS can apply time-separation techniques to enhance the safety of such ships in the Sunda Strait—for example, giving all tankers over 60,000 dwt. going in the same direction the exclusive use of the risk area for a certain time. This prevents the dangerous situations with more maneuverable vessels (like the hijacked product tanker) and minimizes the time the larger participating tankers are exposed. Terrorists, however, can be expected to adapt their modus operandi as their targets become harder to attack. In anticipation of such changes, Naval VTS can apply distance separation, further contributing to the prevention of dangerous

maritime situations and minimizing cascading effects to ship traffic in case of attack.

The risk area stretches approximately twenty-two nautical miles. Radar surveillance of this area is achieved by two Naval VTS units afloat, embarked on chartered civilian ships, one in the north and one in the south (see map 1). Vessels are requested to report to and maintain very-high-frequency (VHF) radio watch with the nearer of these units thirty minutes prior to entering the risk area. The areas of responsibility of these two units overlap along a line drawn from Java to Sumatra, over Pulau Sangiang. At this point participating vessels shift their reports and VHF watch to the other unit.

As some ninety ships a day are expected to be diverted through the Sunda Strait, time separation could cause severe congestion in the approaches; in addition, assembly areas cannot be used, due to the threat of deliberate collisions. Therefore, advance planning of vessel movements is imposed. To obtain the necessary data, the Naval VTS organization—that is, the Naval VTS commander—requests vessels to send prearrival reports confirming their participation, as soon as practicable. Position updates are also requested, at prescribed times and locations. The Naval VTS commander intends, if traffic flow without congestion cannot be achieved by planning, to give priority to ships in the northern approaches, as maneuvering space there is restricted by islands, reefs, rocks, oil fields, and shallows exposed at low tide.

Naval VTS activated in the Sunda Strait in this scenario enhances the safety of merchant shipping without drawing upon military assets. Participation is seen as a matter of common sense and, having been properly announced, is recommended by the various maritime-industry bodies. No liability is assumed, as Naval VTS participation is voluntary and participation does not compromise the responsibility or authority of masters for the safe navigation and handling of their ships.

Example 2: Piracy in the Gulf of Aden

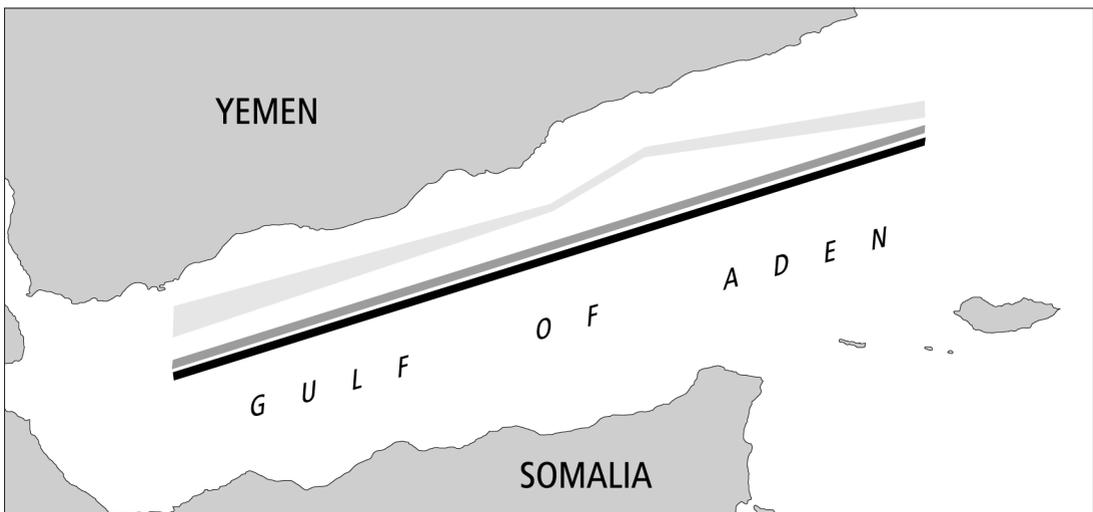
On 22 August 2008, to discourage piracy attacks on commercial vessels in the Gulf of Aden, an International Recognized Transit Corridor (IRTC) was established. This corridor (depicted on map 2) originally ran through the northern part of the gulf, as far from the Somali coast as possible.²¹ That route enabled naval forces to concentrate their resources but had three flaws: it allowed the pirates to use the Yemeni coast in their operations; it crossed fishing areas, where pirate skiffs and fishing boats are hard to tell apart; and it did nothing to prevent collisions between eastbound and westbound traffic. To overcome these problems the IRTC was moved south, and traffic streams were separated. A revised IRTC came into effect on 1 February 2009, consisting of two lanes (eastbound

and westbound) separated by a buffer zone.²² This corridor, which is generally (but not entirely) clear from known fishing areas, separates traffic but is not a formal traffic-separation scheme, where vessels would have to comply with Rule 10 of the Collision Regulations. (Rule 10 makes special provisions for vessels transiting, operating in, and crossing such schemes.) The geographic shape of the revised IRTC is shown in map 2, indicating the eastbound and westbound lanes. Neither the original nor the revised IRTC is marked or defined by visual navigational aids.

Aside from the traffic organization imposed by the IRTC, a voluntary reporting scheme has been established for commercial vessels transiting the Gulf of Aden.²³ Owners, operators, and managers of vessels planning to transit or enter it are requested to register the details and intended movements of their vessels on the Maritime Security Centre Horn of Africa website.²⁴ This registration, which should be completed as soon as possible, allows vessels to be signed up for group transits through the IRTC. In addition, masters of vessels transiting or entering the region are requested to send position updates to both the UK Maritime Trade Operations office in Dubai and the U.S. Maritime Liaison Office in Bahrain. These updates and reports are beneficial to vessels as they will receive guidance, recommended routing, and updated threat assessments, and they are beneficial as well to the Combined Maritime Forces.

Naval VTS is designed for confined areas, where direct interaction with vessels is possible. That is not the case in the Gulf of Aden, which is too large for the surveillance and communication requirements of Naval VTS to be met

MAP 2
THE GULF OF ADEN



cost-effectively. Even here, however, activation of Naval VTS offers options to enhance the safety of merchant shipping and improve the effectiveness of military activities. In particular, it can improve information services and collect the identifications and intentions of vessels in fishing areas crossed by the revised IRTC. This would allow early detection of dangerous situations and therefore timely warnings. Active traffic management in such fishing areas can be achieved by a limited number of Naval VTS units. These units may be deployed on chartered civil ships carrying armed security detachments for protection.

Alternatively, Naval VTS could improve the traffic organization service. Somali pirates typically lie in wait along shipping lanes for targets of opportunity.²⁵ Therefore, while the IRTC enables naval forces to concentrate their resources, it also assists pirates in finding their targets.²⁶ To overcome this undesirable side effect, Naval VTS could establish two or three corridors through the Gulf of Aden, together with a corridor-rotation scheme. The coordinates of these corridors (which should include separate eastbound and westbound transit lanes to prevent collisions) could be promulgated via the World-Wide Navigational Warning Service, but the corridor-rotation scheme would be known to the naval forces only. On entering the Gulf of Aden, participating vessels would receive electronically a sailing plan from a Naval VTS unit ashore. This plan would include the corridor through which individual ships are advised to conduct their transits and the recommendation to switch the AIS off and maintain radio silence so as to deny pirates information as to which corridor is being used. Assuming sufficient distance between the corridors and an appropriate rotation scheme, naval forces would be able to concentrate their resources on the one corridor currently in use, while pirates would have to spread their efforts over them all. This traffic organization would be likely to reduce the number of attacks. Moreover, more predictable attack patterns could arise from corridor rotation, leading to earlier detection and military intervention.

Example 3: A Terrorist Threat in the Strait of Gibraltar

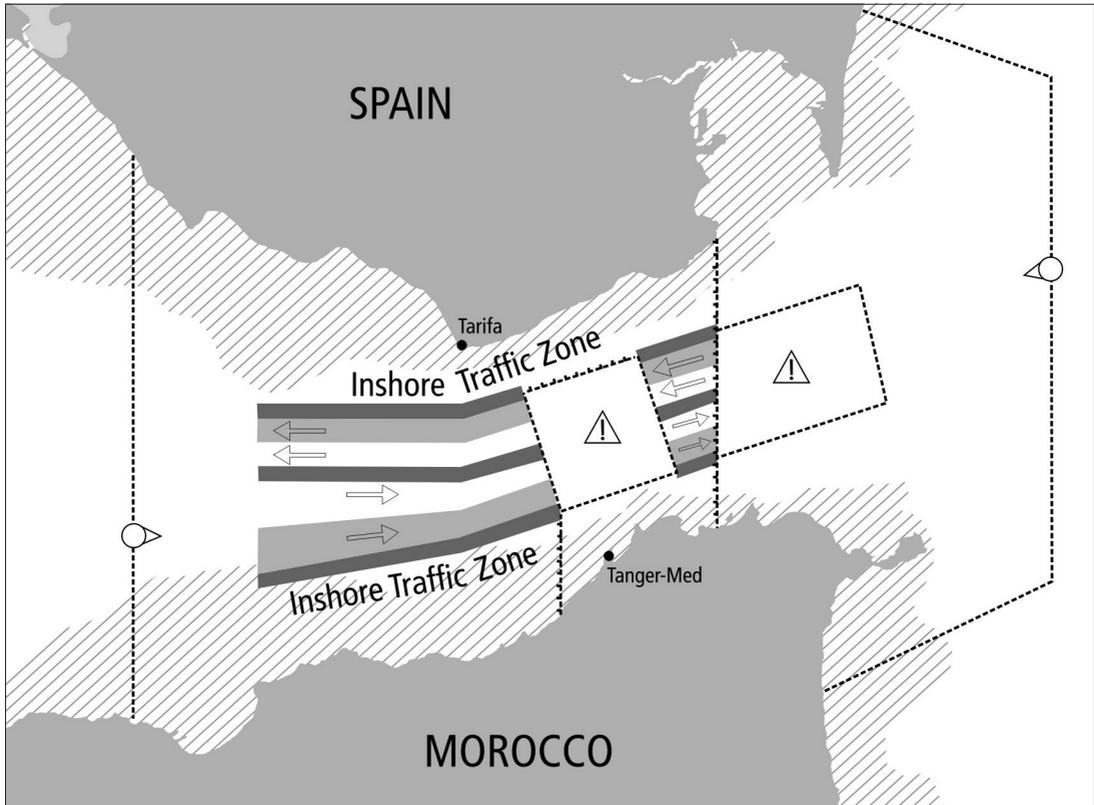
Consider a further scenario: a terrorist threat against merchant shipping transiting the Strait of Gibraltar in both directions. Intelligence reports are warning that terrorists might use explosive-laden dinghies to commit suicide attacks off Morocco and Spain. The NATO-led antiterrorism operation ACTIVE ENDEAVOUR has been tasked to provide an appropriate response.

Activation of Naval VTS in the Strait of Gibraltar is that response, an especially appropriate one since a high throughput of merchant ships is to be maintained. As suicide attacks are likely to occur close to the coast, the safety of the vessel traffic through the traffic-separation scheme in the Strait of Gibraltar and the precautionary areas on the eastern side and off the Moroccan cargo port of

Tanger-Med needs to be enhanced. (The port of Tanger-Med is about twenty-five miles from Tangier and has been operational since 2007.) This area of higher risk, which must be included in the Naval VTS area, is under the radar surveillance of Tarifa VTS in Spain, a mandatory VTS whose cooperation is sought for the present contingency.

Because a dinghy has more time to approach a slow-moving ship than a fast-moving one, slow-moving ships are more vulnerable to suicide attacks. Hence, Naval VTS divides each lane of the traffic separation scheme into an outside lane (depicted in map 3) for vessels operating at speeds above sixteen knots and an inside lane for slower vessels. This traffic organization is beneficial to slow-moving vessels, as it minimizes the window of opportunity of the terrorists, who have to cross the outside lane first before a slow-moving vessel can be approached. It is also beneficial to fast-moving ships, which do not have to reduce speed for, or overtake and pass, slower vessels, lessening their exposure to danger. To minimize delays in the precautionary areas, where cross-traffic must be expected, Naval VTS also uses distance separation. This provides cross-traffic

MAP 3
THE STRAIT OF GIBRALTAR



more opportunities to cross safely the traffic flow between the Mediterranean and the Atlantic Ocean, and it gives vessels more space for evasive maneuvering in case of attack. The border between the inside and outside lanes is not marked or defined by navigational aids.

Radar surveillance is achieved with one Naval VTS unit. Depending on the level of cooperation, there are two options to locate that unit. One is to station it on a ship in the vicinity of the precaution area off Tanger-Med; the other option is to deploy it at Tarifa VTS. Vessels are requested to send electronic prearrival reports to the Naval VTS organization confirming their participation, well before entering the Naval VTS area, to allow timely data processing and planning. In addition, vessels are requested to report to the Naval VTS unit and maintain a VHF watch with it. This is to be done at the reporting points shown on map 3 and when leaving ports or anchorages in the Naval VTS area. It allows the military VTS operators to interact directly with the participating vessels, which is of vital importance in this potentially dangerous situation.

In this way Naval VTS is able to enhance the safety of merchant ships transiting the Strait of Gibraltar without seriously reducing its throughput. This implementation of Naval VTS in the Strait of Gibraltar requires very few naval assets, if any. Participation by merchant vessels is voluntary and may be declined at any time.

CLOSING THE RESOURCE GAP

The foregoing introduction to, and outline for implementation of, the Naval VTS concept clearly illustrates how, by structuring and monitoring vessel traffic, it could enhance the safety of merchant shipping and improve the effectiveness of military activity. To minimize liability, participation in Naval VTS would have to be voluntary. This has the disadvantage that not all vessels in the Naval VTS area might cooperate, which could cause irregularities in traffic flow. These irregularities, however, would affect safety only minimally—sound traffic organization and direct interaction with participating vessels in critical zones should provide enough robustness.

Naval VTS could play an important role in the international MDA security effort.²⁷ MDA strengthens the ability of nations to conduct search and rescue and to disrupt crimes at sea by collecting data on shared networks. Unfortunately, this sharing of maritime domain awareness has its risks.²⁸ Coastal states with excessive maritime claims, as well as violent nonstate actors, may be able to access and misuse MDA data. Moreover, economic interests may be affected when commercially sensitive information is compromised (such as the positions of oil tankers, in the context of spot-market energy prices). Hence military commanders responsible for conducting maritime security operations must carefully

weigh the positive and negative aspects of Naval VTS involvement. Vessels may not want to participate in Naval VTS when the commercial sensitivity of the information supplied by the merchant shipping community is not respected and protected.

All the same, through close liaison with intelligence Naval VTS could make a significant contribution to the detection, identification, classification, and monitoring of possible threats. Additional staffing would be needed to cope with these intelligence tasks, as the main responsibility of the Naval VTS operators themselves would be to interact with ships and respond to traffic situations developing. Additional sensors may be needed as well, as AIS and radar alone cannot, for instance, detect small, fast attack craft in an accurate and timely way. Such additional sensors can be obtained through cooperation efforts. A final caveat is that all attention should not be focused on vessels that are not participating in Naval VTS—the threat could be the vessel that is *more* compliant than others.

Aside from maritime security operations, Naval VTS could be activated for any situation in which vessel traffic needs to be managed quickly, such as in disaster areas. In such a context, the use of AIS virtual aids to navigation would be recommended.

Naval VTS has the potential to close the significant gap between the resources required for MSO and the resources available to violent nonstate actors. As such it merits further investigation and elaboration. Naval VTS tactics, techniques, and procedures would need to be developed into guidance and doctrine for Naval VTS support in maritime security operations. In addition, simulations, training, and exercises will be needed to improve procedures and gain experience and insight in the possibilities and limitations of Naval VTS.

NOTES

1. Maritime security operations are military operations other than war conducted to ensure freedom of navigation, the flow of commerce, and the protection of the ocean.
2. NCAGS procedures support real-time monitoring and interaction of vessel traffic poorly, and traffic organization not at all. See also North Atlantic Treaty Organization [NATO], *The Naval Co-operation and Guidance for Shipping Manual (NCAGS)*, ATP-2(B) (unclassified).
3. United Nations, *Review of Maritime Transport 2008* (New York: United Nations Conference of Trade and Development [UNCTAD], 2008).
4. Mokhzani Zubir, *The Strategic Value of the Strait of Malacca* (Kuala Lumpur: Maritime Institute of Malaysia, 2004); U.S. Energy Dept., *World Oil Transit Chokepoints* (Washington, D.C.: Energy Information Administration, January 2008).
5. Marcus Hand, "Malaysia Calls for Limits on Strait Traffic," *Lloyd's List*, 22 October 2008, www.lloydslist.com.
6. The hijacking of the very large crude carrier *Sirius Star* on 15 November 2008 showed that even on the longer route around the Cape of Good Hope, pirate attacks cannot be avoided.

7. Jim Wilson, "Warships for Piracy Patrol," *Safety at Sea International* 42, no. 476 (October 2008).
8. The bulk carrier *Victoria* was hijacked 5 May 2009 in the Gulf of Aden at lat. 13° 22' N, long. 049° 23' E. It was sailing in the IRTC and was picked out of a group transit within only a few minutes. The helicopter from the closest warship (some ninety nautical miles away) was too late to prevent the hijacking.
9. Ali M. Koknar, "Terror on the High Seas," *Security Management* 48, no. 6 (June 2004), p. 75.
10. U.S. Energy Dept., *World Oil Transit Chokepoints*; Jean-Paul Rodrigue, "Straits, Passages and Chokepoints: A Maritime Geostrategy of Petroleum Distribution," *Cahiers de Géographie du Québec* 48, no. 135 (December 2004).
11. "NATO to Escort Shipping in Straits of Gibraltar," NATO Press Release, 4 February 2003.
12. Gen. James L. Jones, press conference at SHAPE following the Allied Command Europe Commanders Conference, 18 June 2003.
13. VTS services are defined in *Guidelines for Vessel Traffic Services*, IMO Resolution A.857(20), adopted 27 November 1997.
14. A navigational assistance service assists the decision-making process on board.
15. See International Maritime Organization, *Convention on the International Regulations for Preventing Collisions at Sea, 1972* (COLREGs), adopted 20 October 1972, entered into force 15 July 1977.
16. *Standard Marine Communication Phrases* (SMCP), IMO Resolution A.918(22), adopted 29 November 2001.
17. International Association of Marine Aids to Navigation and Lighthouse Authorities [IALA], *IALA VTS Manual* (St.-Germain-en-Laye, Fr.: 2002), p. 35.
18. Ships at anchor are very vulnerable to asymmetric attacks, but anchoring cannot always be avoided at ports in the Naval VTS area with limited quay capacities. The security of anchorage areas in the Naval VTS area therefore deserves attention.
19. The figure of 100,000 dwt. is taken from *Sailing Directions (Enroute): Borneo, Jawa, Sulawesi, and Nusa Tenggara*, Publication 163 (Bethesda, Md.: National Geospatial-Intelligence Agency, 2007), p. 97.
20. *Ibid.*, pp. 97–98. There is also an archipelagic sea lane (ASL) through the Naval VTS area. The axis line of the ASL, however, does not indicate the deepest water or any recommended route or track.
21. Maritime Administration, "Gulf of Aden Suggested Waypoints for Transit," MARAD Advisory 2008-05, U.S. Transportation Dept.
22. Maritime Administration, "Indian Ocean: Gulf of Aden: Piracy Countermeasures," MARAD Advisory 2009-04, U.S. Transportation Dept.
23. Hydrographic Department, "Navarea IX (Persian Gulf, Red Sea, NW Arabian Sea) Navigational Warning 092/2009," Pakistan Navy.
24. The Maritime Security Centre Horn of Africa website (www.mschoa.org) consists of a public-access area and a registered-users area. The former offers press releases and general information on Operation ATALANTA. The latter, which can be accessed only after registration and verification, contains more sensitive content, like alerts and transit guidance.
25. *Sailing Directions (Planning Guide): South Atlantic Ocean and Indian Ocean*, Publication 160 (Bethesda, Md.: National Geospatial-Intelligence Agency, 2008), p. 294.
26. This idea is supported by map 1 in UN Institute for Training and Research, *Analysis of Somali Pirate Activity in 2009* (New York: Operational Satellite Applications Programme, 23 April 2009).
27. U.S. Navy Dept., *Navy Maritime Domain Awareness Concept* (Washington, D.C.: Chief of Naval Operations, May 2007), available at www.navy.mil/.
28. James Kraska, "The Dark Side of Maritime Awareness," U.S. Naval Institute *Proceedings* 135, no. 12 (December 2009); James Kraska and Brian Wilson, "Off Course: The Dark Side of Tracking All Shipping—Pirates Can Do It Too," *Armed Forces Journal* (November 2009).

MARITIME INFORMATION-SHARING STRATEGY

A Realistic Approach for the American Continent and the Caribbean

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Information sharing is a fundamental requirement for meeting most of the current challenges of international maritime security. During the gathering of naval and maritime authorities at the nineteenth International Sea Power Symposium, held during October 2009 at the U.S. Naval War College, this topic captured the attention of most of the international representatives. It has become obvious that, together with globalization, the multiple threats and challenges of the maritime environment have assumed a transnational nature and require a coordinated effort to address them. It is difficult to argue against the ideas that these problems cannot be faced by any single state and

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that multinational collaboration is mandatory if adequate maritime domain awareness (MDA) is to be achieved. The U.S. "Cooperative Strategy for 21st Century Seapower" recognizes these facts and consequently is "rapidly gaining worldwide currency."¹ The American continent and Caribbean region do not seem to be an exception.

In this context the notion of a regional maritime partnership in the American continent and Caribbean demands effective information-sharing capabilities in order to become a reality. The objective of this article is to demonstrate that such an idea, although reasonable, seems to be too ambitious to implement in the regional context. Some of the potential partners

have differing or conflicting interests, in addition to the traditional challenges that any complex network faces. First, the article describes the concepts related to information sharing and discusses how the need is reflected in various levels of doctrine of the United States, the main actor and promoter of this initiative. Second, it demonstrates through the use of strategic concepts how difficult the varying goals and conflicting interests involved make the notion of implementing a strategic partnership in the American continent and Caribbean—so much so that the future existence of a robust information-sharing network at sea may be a utopian dream. Finally, before stating conclusions, the article presents pragmatic criteria for prioritizing regional countries' efforts in fulfilling the gaps in information-sharing capabilities.

PARTNERSHIP AND INFORMATION SHARING

The idea of global maritime partnerships has captured the attention of most nations that depend heavily on the sea for survival. Some have strongly supported it, but others have been skeptical about the real intentions of the United States.

The Need for Information Sharing

In Latin America and the Caribbean, distrust can be explained by historical reasons, the belief that the “new strategy may be seen as a contemporary revision of Mahan’s theory of naval power and a new form of American imperialism.”² It could also be argued, however, that the United States has no other viable option than to look for equal partnerships in Latin America—that if there was an era of U.S. hegemony in this part of the world, “that era is over.”³ In any case, it is difficult to argue that the current threats and challenges of the region (such as drugs, trafficking in weapons and humans, organized crime, illegal fishing, and natural disasters) are not transnational or that they do not require the coordinated effort of nations. Besides, there is a clear possibility that terrorists will use the sea to achieve their goals, with possibly devastating consequences. The threats were present before, but some of them became more evident after September 11, 2001. Given that traumatic event, the only reasonable response of states is to get involved, at least in some degree, in multilateral cooperation, in order to be considered part of the solution and not of the problem.

The strategic goal of this partnership is to maintain the safety and security of the world’s oceans for the use of every nation.⁴ One of the core elements of doing so is effective maritime domain awareness. Obviously, information sharing among countries is a basic requirement if MDA that can benefit those countries is to be developed. This article will use the U.S. Department of Defense definition of “information sharing”: “Making information available to participants (people, processes, or systems). IS [Information sharing] includes the cultural,

managerial, and technical behaviors by which one participant leverages information held or created by another participant.”⁵

This definition establishes a very ambitious framework, but several efforts in the Latin American region can be categorized as valuable information-sharing initiatives. Some of them started long before 9/11. For instance, in 1983 the Operative Network for Regional Co-operation among Maritime Authorities of the Americas (ROCRAM) was created. This organization is composed of Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Mexico, Panamá, Paraguay, Perú, Uruguay, Venezuela, and Cuba. One of its main objectives is “promoting the cooperation among the regional maritime authorities through the exchange of information and documentation.”⁶ It is notable that even Cuba—recognizing that it too shares the regional challenges in the maritime domain—is part of this organization.

In another context, the Caribbean nations and the United States signed on 22 March 2006 an Initiative to Combat Illicit Trafficking in Small Arms and Light Weapons, to address one of the main issues in that area. Again, one of the core objectives was to improve the sharing of information, specifically on entities and individuals involved in illicit trafficking and the maritime route that many of them use.⁷ Also, since 2007 the U.S. Southern Command (USSOUTHCOM) has conducted a multiyear program in the Caribbean, ENDURING FRIENDSHIP, to lay the groundwork for a regional security network of maritime patrols by providing seven nations with improved communications systems and high-speed interceptors.⁸

Since 2007, Chile has been hosting annual Western Hemisphere Maritime Domain Awareness Workshops. These events are organized by the Office of Naval Research Global Americas (ONRG Americas) and USSOUTHCOM, in conjunction with the director general of the Chilean Maritime Territory and Merchant Marine, in order to “facilitate a regional dialogue among Western Hemisphere nations to improve maritime information sharing.”⁹ Finally, a concrete example of cooperation in information sharing promoted by the United States is the Virtual Regional Maritime Traffic Center–Americas (VRMTC–Americas), which is an interagency and multinational demonstration project that proposes to leverage and integrate existing regional efforts that contribute to developing MDA.¹⁰

All these initiatives, as well as several others, aim in the right direction, but they have not yet generated regional capabilities effective enough to meet the threats that are being faced. Certainly, these threats often demand urgent reaction. At sea, the main tools are ships and aircraft, often of different nationalities—operating in conjunction, contributing their respective capabilities,

coordinating their decisions and actions, avoiding mutual interferences, and achieving efficient employment of resources. A network-centric-warfare capability, where every participant is included in a net of information, would be well suited to such an operational framework. Some argue, however, that those who fail to join the network would not be able to contribute effectively and would be relegated to the sidelines, left the most menial tasks and encouraged to stay out of the way or simply stay home.¹¹ The most developed nations should logically assume leading roles in solving this technological barrier in the regional context. Improvisation is not an option; permanent doctrines and plans are called for, which reflect this desire for integration and teamwork. If that is not the case, information-sharing initiatives will be fragile and easily lost among the priorities of every nation.

Information Sharing and Effects on Doctrine and Planning

The United States, the main promoter of information sharing, has recognized the importance of doctrine and planning tools to establishing effective partnerships with other states. Many documents, at different decision-making levels, have been issued.

At the presidential level, *Homeland Security Presidential Directive 13*, of 21 December 2004, recognizes that the “security of the maritime domain is a global issue.”¹² Additionally it indicates that integration of U.S. allies and international and private-sector partners must be enhanced in order to protect the nation’s interests in the maritime domain.¹³ The *National Strategy for Maritime Security* (September 2005), goes farther, stating that “full and complete national and international coordination, cooperation, and intelligence and information sharing among public and private entities are required to protect and secure the maritime domain.”¹⁴ In May 2007, the Department of Defense (DoD) published the *Department of Defense Information Sharing Strategy*. This document indicates that “trusted information *must* be made visible, accessible, and understandable to any authorized user in the Defense Department or to external partners except where limited by law or policy.”¹⁵ It also lays down that the mind-set must change from information “ownership” to “stewardship.”¹⁶

A DoD instruction of 2004 establishes procedures for implementing multinational information-sharing networks and directs combatant commanders to use the MNIS (multinational information sharing) CENTRIXS* network standard for networks that exchange classified DoD information, up to the Secret level, with foreign nations.¹⁷ Finally, the *United States Southern Command Strategy 2018*, in the context of securing the United States from threats, expands MNIS programs.¹⁸ These documents were not generated in a perfect logical sequence.

* Combined Enterprise Regional Information Exchange System.

However, they clearly evidence a will to share information through all government decision-making levels and also with international partners.

Nevertheless, the fact that the United States or any other country wants to create a partnership for global and regional cooperation does not necessarily mean that other nations will respond with an urgency fitting the challenges to be faced. Understanding the fundamentals of constructing partnerships is useful for creating realistic expectations.

GOALS, INTERESTS, AND TOOLS: FOUNDATIONS FOR INFORMATION SHARING

Thucydides wrote that nations get involved in wars because of honor, interest, or fear.¹⁹ This ancient principle applies today for many regional countries in the sense that support for the maritime partnership promoted by the U.S. maritime strategy and for the international effort involved can be seen as a problem of honor and prestige.

Creating a Realistic Partnership

It is certainly reasonable that if a nation wants to be recognized as a constructive member of the international community, as being part of the solution of common maritime challenges, it ought to be involved to some degree in such initiatives. It would be the right thing to do, an option that is not difficult to defend, especially after 9/11. This explains the participation of 104 nations in the recent International Sea Power Symposium, the most ever. However, it should be clear that recognition and support of this idea does not necessarily imply real or important commitment; it is a long step to involvement of naval assets, personnel, materiel, and especially funding. In the American continent and Caribbean not every country has the capabilities required to make this step and, even more important, not every country necessarily feels that it is a real priority to do so. The idea that more powerful and developed countries must assume bigger responsibilities, in every sense, makes sense for many regional actors. However, the same stakeholders sometimes feel discriminated against and relegated to secondary roles, and they regularly demand greater influence in regional decisions. Any effort to establish a partnership in the American continent and Caribbean has to deal with this fact.

Second, participating in this idea of partnership is a matter of interest and common goals. It is difficult to deny that such problems as drug or human trafficking, illegal immigration, or terrorism must be faced by every country in the region, because the majority of them could be affected by the consequences of these threats. However, these common goals do not override the strongly held interests of individual nations, and this truth affects one of the foundations of

every possible partnership—the creation of trust. The American continent countries bring different and usually conflicting visions to bear upon specific issues.

Brazil, for instance, which is considered a key ally for the United States in certain economic areas, such as the ethanol industry, is also a clear exemplar of international cooperation in terms of information sharing in maritime security. The Brazilian maritime-domain-awareness system (SISTRAM) was recently integrated with one of the emblematic efforts in Europe, the Virtual Regional Maritime Traffic Center (VRMTC). In the global arena, Brazil is also considered a rising power, one that in recent years has shown a marked independence in international relations. In that field, however, some of its goals are in clear conflict with those of the United States. It is likely, for example, that the way Brazil is conducting its relationship with Iran does not meet the expectations of Washington. Whereas President Barack Obama's administration has firmly criticized Iran's nuclear program and its standing conflict with the International Atomic Energy Agency, the government of Brazil has "reiterated [its] support for Iran's right to develop its nuclear technology for use in energy production."²⁰ In the Honduran political crisis during 2009, Brazil declared that it would not recognize the election held in November 2009, but the United States did so, as the only viable exit to the impasse.²¹ Such decisions by Brazil and the United States are controversial for some states, but they reflect the political and strategic goals of these countries and should be fully respected. Similar examples of conflicts of goals among important countries in the region could be offered: Venezuela and Colombia, Chile and Perú, Brazil and Argentina, and some members of the Caribbean Community and Common Market (CARICOM). But even respecting sovereign decisions does not prevent distrust among countries. Hesitation by countries to share information is understandable.

Therefore, it must be asked, how much information, and of what quality, would the countries of the American continent and Caribbean agree to share, bilaterally or multilaterally? Also, assuming a good level of partnership were obtained, how long would it last? Are these conflicts of goals and interests severe enough to break the trust among nations, the basic foundation of a partnership? How much risk are the countries willing to assume? Each country is a different case, and relations among nations are dynamic. Continual analysis is necessary if realistic expectations for sharing information among countries and navies are to be established.

Finally, though commitment in a regional partnership or alliance is a natural reaction to fear, as understood by Thucydides, not every country is affected to the same degree by fear regarding security issues in the maritime domain. For instance, not every country considers itself a potential target of terrorism, as the

United States may be. Terrorists can choose targets anywhere in the region, but the likelihood of being attacked or affected is greater for some countries than others. In the same way, gang problems are much more evident and grave in Central America than in the Southern Cone, and the effects of drug trafficking and related violence are much more apparent to Mexico and Colombia than they are to Ecuador or Uruguay. Consequently, it only makes sense that the commitment to a partnership of certain countries is less intense than that of others, with respect to different threats. Clausewitz recognized this problem: “One country may support another’s cause, but will never take it as seriously as it takes its own.”²²

Once the countries have understood why they should share information and of what quantity and quality, the next important question is *how* they should share it. In this region the disparity in available means for sharing information is evident and hard to solve. This is especially true at sea. However this fact does not necessarily mean that an adequate level of interoperability cannot be achieved.

Information Sharing at Sea: Leveraging the Technical Problem

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.”²³ This is the same end state that was imagined by Admiral Mullen when, as Chief of Naval Operations, he suggested a “thousand-ship navy” that would integrate the capabilities of the maritime services to create a fully interoperable force.²⁴ If every nation of the American continent and Caribbean accepted and became part of this initiative, the next main challenge would probably be technical. Regional navies have disparate capabilities, with major differences in terms of C4ISR.* Even the longest-standing U.S. allies 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. Most American continent and Caribbean countries are still focusing on becoming more integrated within their own armed forces or services. Many have second-hand equipment, which they transform or adapt on very limited budgets. As a consequence, an effective and common real-time tactical or operational picture is not available in most combined operations of regional navies. Few of these navies have access to such systems as Link 11, and the majority have only limited Internet protocol bandwidth capabilities, which would make possible e-mail, chat, FTP file sharing, and video teleconferencing. Considering that collaboration among the United States and its close European allies increasingly relies on such assets, the more extensive the interoperability among those allies gets,

* Command, control, communications, computers, intelligence, surveillance, and reconnaissance.

the deeper the gulf separating the United States from its American continent and Caribbean partners becomes.²⁵

But does this technological barrier imply that effective interoperability and information sharing are unachievable in the region? Certainly that is not the case. There have been combined naval operations among American countries for a long time, even without the U.S. Navy, and some of them have focused on maritime security issues. The INTEGRACION exercises between Chile and Argentina and FRATERNO between Brazil and Argentina represent very important attempts to achieve interoperability in key areas. Experience shows that when Latin American countries need to share maritime information urgently, they always find ways. Even that requires detailed advance planning, but when that is done the information is shared by alternative methods quickly enough, even if not in “real time,” according to U.S. standards.

Among countries in the American continent and Caribbean region, information-sharing efforts are stimulated in situations where response is not “optional.” Maritime emergencies and environmental disasters fit that category, and in issues of that sort the lack of real-time networks has not been an impossible obstacle. Of course, better capabilities and tools are desirable; even without them, however, even if this objective is not quickly met, Latin American countries will be able to interoperate and exchange information to the degree they have been used to, at least among themselves. Meanwhile, until technological gaps are solved, if that ever happens, any country that becomes technologically advanced in information-sharing tools compared with potential regional partners should keep up its capabilities and training in current, less complex and sophisticated methods, and the employment of currently available regional tools must be optimized. This will allow the best possible interoperability with less-equipped partners that want to be involved in cooperative efforts, are the source of information, or are in the best position to respond.

However, asymmetries in capabilities create other problems. One of those is that before giving access to its own information, every country has the right to know how it will be protected by its partners. If legitimate questions to this end are not precisely answered, a natural reaction will be overclassification.

Information Disclosure and Overclassification

Any regional partnership or cooperative effort among nations has to deal with the fact that releasability policies are oriented to information security, not efficiency. Information disclosure is typically a tedious and complicated procedure;²⁶ this is especially the case if some members of a potential partnership are unable to demonstrate adequate ability to protect information released by others. There are also barriers created by internal commercial interests or by the

lack of trust among partners.²⁷ In the American continent and Caribbean area, several countries have failed to establish cooperation, for political or historical reasons. In many of these countries, overclassification could be seen as a cultural issue. Certainly, it is difficult to release what has always been treated as secret information, even when that categorization no longer reflects relations between two nations.

The obstacles generated by these problems are not easy to solve but need to be addressed among countries and also among stakeholders within every nation. With regard to internal obstacles, the United States has assumed this challenge and has implemented several initiatives that are good examples for regional partners. One of them is the Maritime Domain Awareness Data Sharing Community of Interest, developed in 2007. Mainly focused on technical solutions for sharing information among departments of the U.S. federal government, it also addresses “cultural” barriers between these entities and offers valuable guidance for developing agreements.²⁸

Additionally, the Defense Department has established the Information Sharing Implementation Plan. One of its purposes is to remove barriers created by improper classification.²⁹ In the case of the United States the main trigger of the initiative was the multilateral conviction that information sharing and collaboration are essential to mitigating the effects of catastrophic events, a conviction born of DoD’s difficulties in responding to Hurricane Katrina and 9/11. These reasons should be enough for the Latin American countries and the Caribbean as well. The search for mutual arrangements, either multilateral or bilateral, that break down barriers and overcome distrust could be considered a sign of regional maturity, responsibility, and commitment.

Certainly, developing tools for information sharing is a much faster process in a group of countries with a long history of commitment to common goals. Predictably, the United States has established its best partnerships with groups of countries that have unconditionally supported its policies and campaigns through its history. Latin America and the Caribbean do not seem to be in this group.

Are Latin American and Caribbean States in the Club?

It could be argued that the U.S. government is doing its best to develop satisfactory information sharing with its regional partners. For example, the U.S. Defense Information Systems Agency (DISA) has established and funded a multinational information-sharing program that establishes CENTRIXS, Griffin, and CFBLnet as the main capabilities and services for information sharing among coalition partners and “communities of interest.”³⁰ Subsequently USSOUTHCOM has stated that it will expand such MNIS initiatives as

Participating Sharing Networks and CENTRIXS to facilitate information sharing and the development of information-sharing agreements utilizing technology in place.³¹ Such efforts suggest that regional criticism may be unfair.

However, several U.S. initiatives during recent years to explore new concepts and capabilities for multinational and interagency operations have excluded regional partners. One of these is the Multinational Experimentation series, led by U.S. Joint Forces Command (USJFCOM). These experiments have regularly involved many allied countries of Europe and Asia but unfortunately none in Latin America or the Caribbean region. Additionally, since 2002 the Technical Cooperation Program (involving Australia, Canada, New Zealand, the United Kingdom, and the United States) 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 “so the nations can coevolve their systems in a way that will enable them to seamlessly network at sea.”³² In contrast, most (though not all) Latin American and Caribbean nations cannot yet make an effort like this. For that very reason, these nations should tenaciously strive to become involved in initiatives like the MSG, at least as observers. This would open a flow of information about new trends, tools, and technology to Latin American and Caribbean partners that want to participate or to assume a higher level of commitment in future regional or global initiatives.

A country that desires to be part of an initiative on information sharing should be rewarded for that attitude, as an example and incentive for other potential partners. This has been done before. For instance, during RIMPAC 2004, a special version of CENTRIXS was created, known as CENTRIXS-R. This system was developed specifically for this exercise to increase information-sharing capability for countries without access to the regular version (Chile and South Korea). For Chile, the result was an unprecedented success in interoperability in the exercise and, of course, increased desire within the Chilean Navy to be part of the “information-sharing club.”³³ It also set the standard for the Chilean Navy in future multinational operations. Certainly, a country that once tastes the advantages of the technology will make every effort to keep doing so. There is much more room for advancement in this area, and regionally there are very important gaps to fill. It will take a long time, and priorities should be established.

FILLING THE GAPS: CRITERIA FOR PRIORITIZING

There is much to do in increasing the quality of the information-sharing partnership in the American continent and Caribbean. In fact, the needs exceed the available resources. No miraculous results in regional initiatives should be expected. Even the members of this regional partnership with strong commitments to

advancing integration and overcoming distrust and political constraints are obliged to prioritize efforts and resources. The following basic criteria are suggested as part of the decision-making process of any particular country.

Level of Risk (Urgency). What potential partners are directly involved? If a country is the source, victim, or potential protagonist of a maritime security threat or challenge, it belongs to the “risk group” for that challenge or threat. For instance, Chile and Argentina see a real and urgent challenge in the South Pacific and South Atlantic and the Antarctic continent. Because of physical proximity, the Chilean and Argentine navies will regularly be the first to provide assets in case of a maritime emergency in that area, and accordingly they have formed a mutual commitment to the problem. This commitment was tested in the summer of 2007, when the MV *Explorer* sank in the Antarctic, forcing the rescue of 150 passengers and crew members. Ergo, Chile and Argentina belong to the same risk group for maritime emergencies in the South Pacific/South Atlantic/Antarctic area; they will necessarily be protagonists in these situations. Because there is a high likelihood that this sort of disaster will occur, effective and permanent information-sharing systems between Chile and Argentina make a lot of sense.

In counterdrug operations and counterterrorism, there are countries on the American continent that have an urgent need to cooperate, especially those that are on possible transit routes or are targets. In the face of such a grave vulnerability, efforts toward better information sharing must be persistent, even if the countries do not have strong political ties. Political concessions and a certain degree of tolerance must be accepted if the security of one’s country is threatened. Achieving an information-sharing partnership is a long-term effort that cannot depend on the government or administration that rules a particular country. This is especially so in the American continent and Caribbean.

A possible criterion for resource allocation could be the *expected value* of the threat in terms of the number of casualties. This implies assessment of the probability that the threat will become a fact, multiplied by its possible consequences measured as the number of casualties. Resources should be allocated to the threat with the highest expected value.

Likelihood of Success in an Agreement. Among the states that a country lists in its risk group, it should approach first those for which the efforts for obtaining agreements have a greater likelihood of immediate success. Let us suppose that country A has already identified countries B and C as in its risk group. If A has previously signed agreements with B but has political differences with C, it should give priority to B, where it is more likely to obtain a new agreement for improving information-sharing capabilities. That does not mean country A should stop attempting to integrate with C.

Bilateral versus Multilateral Agreements. Let us suppose that several countries have been categorized as in one's own risk group and a substantial likelihood of reaching successful agreements with them individually exists. Even then, negotiating a multilateral agreement may still be very difficult. In the American continent and Caribbean, although most agree that the maritime security goals and threats are broadly shared among countries, they do not appear to find that reason enough to achieve multilateral consensus agreements in information sharing, as it is for other issues. Interests, assets, conflicts, and ideologies are still difficult to overcome, and these factors are present in many multilateral organizations in the American continent and Caribbean. Some of these entities are severely criticized for lack of effectiveness in dealing with sensitive security issues. For instance, in 2009 the countries of the Union of South American Nations (UNASUR) could not reach multilateral consensus on a response to the new U.S. agreement with Colombia on military bases. The discussion inside that organization was highly politicized, and the agreement still divides opinion in the region.

Consequently with the three suggested criteria, information-sharing initiatives in the American continent and Caribbean should be promoted by first building potential blocs of countries that belong to the same risk groups. That would lead to planning and developing capabilities within groups of countries that need to work together. Then, inside each risk group, the agreements with higher likelihoods of success should be sought, ideally among sub-blocs of countries. If multilateral agreements inside sub-blocs involve assuming unreasonable risk, bilateral agreements should be sought without delay.

THE PRICE OF SECURITY

Information sharing is a key to increasing the likelihood of success against the challenges and threats facing the American continent and the Caribbean. However, achieving an adequate degree of multilateral cooperation will be a long-term effort. Distrust, technological gaps among nations, reluctance to disclose information, and overclassification are only some of the barriers to be overcome.

Despite important efforts that have been made to achieve a better level of information sharing and interoperability among regional nations, the resources available are not adequate for some of the most ambitious goals. It will probably be very difficult to achieve practical networking capabilities in the short term, especially at sea. A degree of realism is required to avoid frustration among regional partners, especially the less capable and developed. Constructive and

committed attitudes on the part of these nations should be always rewarded by the countries that lead the information-sharing effort.

Every regional partnership will have to deal with the fact that countries usually behave according to motivations of honor, interest, and fear. These factors affect countries in different ways. Considering the diversity of political and strategic goals, ideologies, and interests in the Americas and the Caribbean, it is very unlikely that a satisfactory information-sharing agreement that involves every country in the region will be achieved in the short term. Efforts and resources should be prioritized in order to advance in the direction desired and as threats evolve.

Despite the obstacles, no country should be completely left out of information-sharing efforts, because that nation could become the Achilles' heel of the region in terms of maritime security. Therefore, political differences should be seen as obstacles to be overcome, and divergent interests and concessions should be tolerated. That is part of the price that will have to be paid to defeat threats and guarantee the security of our nations.

The United States has a key role in leading the regional effort for information sharing. Most Latin American and Caribbean nations realize that they have to cooperate more than ever in order to achieve their goals and guarantee the security of their peoples. However, this cooperation and effort must be persistent and based on facts, not just words or documents, if they are to be credible. Trust is very difficult to develop, and it is very easy to destroy.

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REVIEW ESSAY

“SIR QUINLAN: NUCLEAR ZEALOT FOR MODERATION”

Henry Sokolski

Quinlan, Michael. *Thinking about Nuclear Weapons: Principles, Problems, Prospects*. New York: Oxford Univ. Press, 2009. 184pp. \$49.95

Potentially limitless in its military destructiveness and boundless in its ability to provide carbon-free power, nuclear energy all but begs viewing through the conjectural political lenses of infinity and zero. As a result, much of what passes for sound policy and insight regarding its management is not just reckless and self-defeating but technically impracticable.

Henry D. Sokolski is the executive director of the Nonproliferation Policy Education Center, a Washington-based nonprofit organization founded in 1994, and teaches graduate courses on proliferation issues at the Institute of World Politics. He was appointed by Congress to the Commission on the Prevention of Weapons of Mass Destruction Proliferation and Terrorism, which finished its work in February of 2010, and has served in prominent positions in the Office of the Secretary of Defense, as a consultant on proliferation issues to the intelligence community's National Intelligence Council, and on the Deutch Proliferation Commission. He has authored and edited a number of works on proliferation-related issues, including Best of Intentions: America's Campaign against Strategic Weapons Proliferation (Praeger, 2001); Nuclear Heuristics: Selected Writings of Albert and Roberta Wohlstetter (Strategic Studies Institute, 2009); and Getting MAD: Nuclear Mutual Assured Destruction, Its Origins and Practice (Strategic Studies Institute, 2004).

Sir Michael Quinlan (1930–2009), with whom I had the good fortune to work, understood this. An intelligent, modest, and religiously curious man, Quinlan helped shape much of the British nuclear weapons policy. His public service spanned nearly four decades, including work as private secretary to the British chief of air staff, as director of defense policy in the British Ministry of Defence, as UK NATO defense counselor, and as permanent undersecretary of state at the ministries of Employment and Defence.

What is most refreshing about Quinlan's insights, reflected in this work, is how consistently he avoids the most current popular extremes. For example, those opposed to nuclear weapons imagine how much better the world would be without them and theorize about the challenges of maintaining a utopian state of

zero nuclear weapons. For those who back the bomb, it comprises just the opposite. They will argue that large deployments and testing have been useful historically and that to continue such practices could make us safer today.

Of course, neither state—nuclear zero nor a return to nuclear plenty—is the world in which we live, and yet most nuclear-policy experts relish supporting one or the other vision. Quinlan on the other hand, never seemed entirely comfortable in either camp.

In this book Quinlan deflates the merits of such arms control fads as declarations of no first use of nuclear weapons, the Comprehensive Test Ban Treaty, pushing nuclear weapons force dealing beyond current levels, nuclear weapon-free zones in Southwest Asia and the Far East, U.S.-Russian nuclear reductions that focus on strategic systems but fail to include Moscow's massive numbers of tactical nuclear weapons, going to very low numbers of nuclear weapons (much less going to zero), and demanding entirely nondiscriminatory nuclear-nonproliferation schemes.

However, after warning against such "righteous abolitionist" bromides, Quinlan is just as critical of "dismissive realists." Rightly or wrongly, governments, he notes, have repeatedly promised to disarm as part of their commitments to the Nuclear Nonproliferation Treaty (NPT) bargain. Not pursuing these promises in some sensible fashion now, he concludes, risks increasing the most serious nuclear danger of proliferation.

This gives rise to what Quinlan describes as his "practical agenda": follow-on agreements that reduce nuclear strategic warheads to roughly twelve hundred warheads per side, agreements to make NATO and Russian tactical nuclear deployment numbers much more transparent, reductions in the Russian numbers in exchange for the withdrawal of U.S. nuclear deployments on European soil, increased U.S. reliance on advanced nonnuclear systems, research and development in nuclear weapons-related verification, and maintenance of existing nuclear testing and production moratoriums.

All of these ideas seem plausible. Whether their pursuit will produce the kind of international cooperation needed to prevent further nuclear proliferation is less clear. As Sir Michael notes, a key failing of the Nuclear Nonproliferation Treaty is the limited capability of international nuclear inspections to detect illicit weapons activities. Another is the absence of satisfactory arrangements to reconcile what states believe to be their "inalienable right to peaceful nuclear energy" with the NPT imperative to avoid the "risks of facilitating clandestine and threshold weapons capabilities." As a result, even if Quinlan's "practical agenda" is implemented, it is doubtful that this along with his other modest proposals to increase the intrusiveness of international nuclear inspections would come anywhere close to resolving the dilemma.

This shortcoming is fundamental. It should also be excused. Quinlan was trying to write a brief book (of 180 pages) that would cover the key aspects of nuclear-weapons security policy. This unavoidably dragged him into such fields as nuclear power, international nuclear inspections, and energy policy, with which he was far less familiar than with nuclear weapons policy writ large. To address properly the profound dilemma that Quinlan recognized in the NPT would require far more detail regarding the history, law, and economics associated with civilian nuclear energy, on the challenges it faces besting nonnuclear energy, and on the difficulty of asserting real control over its spread than he had either the time or space to devote.

Similarly, his critique of ballistic missile defenses belies a limited and, arguably, dated focus on the use of such defenses solely against nuclear-armed ballistic missiles. This may be the right way to view them in the context of Central Europe today. But the latest trend for the most advanced armed and innovative states (e.g., the United States, Israel, Japan, and China) is toward deploying highly accurate, smart, conventionally armed ballistic missiles and unmanned drones (some of which are totally unarmed, with reconnaissance or jamming payloads), as part of an effort to produce strategic results without having to resort to nuclear war. Against this airborne tide, more rather than less missile defense (both ballistic and cruise) would seem not just likely but useful and prudent.

These qualifications, however, should be seen for what they are—quibbles. Certainly, had Sir Michael lived, he would have relished further refining his own analysis. As it is, almost all of what there is in *Thinking about Nuclear Weapons* deserves careful consideration, if only to avoid the dangerous extremes that the current debate over nuclear weapons continues to generate.

BOOK REVIEWS

THE PURSUIT OF MARITIME TRANSFORMATION

Erickson, Andrew S., Lyle J. Goldstein, and Carnes Lord, eds. *China Goes to Sea: Maritime Transformation in Comparative Historical Perspective*. Annapolis, Md.: Naval Institute Press, 2009. 544pp. \$49.95

The third book in the Naval Institute Press's Studies in Chinese Maritime Development series is a collection of essays and case studies that is important not only for those working in naval studies and for sinologists, but also for scholars concerned with the idea of strategic culture and its application.

Following an introduction by Erickson and Goldstein, the book is organized into four parts: the premodern era (Persia, Sparta, Rome, and the Ottoman Empire); the modern era (France, Russia, imperial Germany, and Soviet Russia); Chinese maritime transformations (Ming and Qing dynasties, the Cold War); and China in comparative perspective, with essays on contemporary Chinese shipbuilding prowess, China's navy today as it looks toward blue water, and the Chinese study of the rise of great powers.

The contributors are such renowned scholars as Barry Strauss, Arthur Eckstein, James Pritchard, Holger Herwig, and Bruce Elleman. As stated in the book's introduction, a close reading of the case studies reveals distinct differences between China and other

powers that have pursued maritime transformation. Erickson and Goldstein note that Beijing has an impressive commercial maritime dynamism and is uncovering a robust historical maritime tradition. China understands that stable relationships with its continental neighbors are a prerequisite for the growth of maritime power. The issue of Taiwan and the strategic significance of China's maritime trade routes mean there is no real comparison with the Kremlin's pursuit of naval power.

The concluding chapter, by Carnes Lord on China and maritime transformation, is a key element in this meta-narrative of naval history—an approach that is valuable as a complement to the customary focus on the leading naval power but not as a substitute for it. Lord depicts a genuine maritime transformation, and the case studies provide a valuable historical perspective, although the chapter's connection to part 4 is limited.

The most useful chapters are those on China, because they contribute to the historical memory of Chinese policy makers. Elleman notes the extent to

which defeat helped lead China to modernize its navy; defeat in both opium wars forced China to bring new ideas to the forefront. Bernard Cole's assessment of the Cold War reveals a Chinese naval service viewed by its military and civilian masters as an organization whose primary mission was to support army forces. Defensive concerns gained priority, and a new engagement with naval power had to await the end of the Cold War.

Current Chinese developments underline the folly of the Western military posture, with its planning largely focused on Afghanistan and Iran. There is a serious risk that crucial long-term capability will be sacrificed to the exigencies of campaigning in Afghanistan. While the development of Chinese capability has led to responses by such regional powers as Japan, Taiwan, Australia, Malaysia, Singapore, and South Korea, there has not been a sufficient move from awareness to action on the part of other powers. The Chinese naval challenge is apparent as an aspect of an increasingly far-flung Chinese defense system that has serious implications for Western interests in the Middle East and South Asia—implications that are not addressed by counter-insurgency capability.

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Hasik, James. *Arms and Innovation: Entrepreneurship and Alliances in the Twenty-First-Century Defense Industry*. Chicago: Univ. of Chicago Press, 2008. 224pp. \$35

For decades, analysts have understood the nonmarket conditions of defense development and procurement. First, government-as-buyer and ultimate legal authority are atypical market constraints and, second, military weapons systems often have no commercial equivalents and may also have several unique component or material requirements—for example a one-off electronic component architecture.

The recent trend of fewer systems required, or at least procured, in the roughly synchronous post-Cold War and precision-munitions eras has more often than not exaggerated the already anomalous defense-systems market. The Department of Defense (DoD) generally buys or intends to buy smaller numbers of more capable and complicated ships, manned aircraft, tanks, munitions, etc., than it has in the past. Advancing technological sophistication and relatively smaller unit buys, in turn, pressure defense-systems suppliers' business models, alliances and acquisitions, systems integration competencies, and subassembly, component, and material supply chains.

James Hasik is a defense industry analyst and former naval officer with degrees in history, physics, and business. His first book (coauthored with Michael Rip in 2002) was a well received, comprehensive examination of GPS and its implications in modern warfare. With this book, Hasik continues his insightful analysis of the DoD toolbox via a set of six case studies covering disparate defense-system development projects woven into a succinct but overarching analysis of the current international arms industry. The cases examined are air, land, sea, and space

systems, each a precision-guided weapon project and a mission-planning system.

The book's foremost merit is its sober analysis, grounded in business economics. Each case covers technological, economic, and operational trade-offs and frames each project within a relevant and timely international business context. For example, Hasik's space-system case emphasizes the competencies and alliances of the few firms competing in the satellite business. He explores the credible competition for the Space-Based Infrared System Low (SBIRS Low) satellite contract by the five-hundred-employee Spectrum Astro Corporation against the established and significantly larger firm TRW Inc. Hasik's land-vehicle case demonstrates how the DoD benefited from decades of prior research and development in South Africa on blast-resistant vehicle design, greatly accelerating the Army's and Marine Corps's adaptations for our current wars. As a bonus, Hasik adroitly presents the academically rigorous clearly, and for a reader accustomed to plowing through the arcane prose of technical reports and academic papers, this is no small gift.

The Department of Defense is constantly looking for innovative technologies through its service labs and several science and technology development programs. The enduring challenge is in managing the underlying risk and in the integration into a complex system-of-systems life cycle amid competing priorities, operational commitments, and assessments of the future strategic environment. Although this book could be more comprehensive, it need not be. Through his case-study selection and opening and closing synthesizing

chapters, Hasik provides a cogent and instructive assessment of innovative technology development and procurement approaches across defense system sectors. *Arms and Innovation* suggests opportunities for more nimble defense systems innovation in the future, opportunities that do not require comprehensive acquisition reforms or reiterations of revolutions in military affairs.

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Yoo, John. *Crisis and Command: A History of Executive Power from George Washington to George W. Bush*. New York: Kaplan, 2009. 524pp. \$29.95

John Yoo's most recent book is far more than a defense of the George W. Bush administration, which he served, as some of his many critics may find it. In fact, *Crisis and Command* is a carefully documented study of the exercise of presidential power from George Washington to President Obama. This is the last book in a trilogy by Yoo, the first two being *The Powers of War and Peace* (2005), which explains the founders' original understanding of the foreign-affairs power within the Constitution, and *War by Other Means* (2006), which discusses the law and logic behind the Bush administration's counterterrorism policies. This study extends well beyond the Bush administration, focusing mainly on Presidents Washington, Jefferson, Jackson, Lincoln, and Franklin Roosevelt. In each of these respected leaders Yoo finds bold presidents who changed the existing political order and transformed it into

their own. They found distinction by leading the nation through crises, carefully shaping the direction of national security policy and recasting the boundaries of presidential authority. Through careful historical analysis, Yoo reminds us that the relationship between presidential greatness and the exercise of executive power is an inextricable link that has always taken advantage of the vague contours of Article II of the Constitution, which addresses executive authority. In his historical analysis, Yoo carefully traces the founders' work at the Constitutional Convention to accommodate the executive's energy and decisiveness within a workable constitutional framework.

In quelling the Whiskey Rebellion and addressing the Indian uprisings of 1789–90, the first U.S. president believed that Congress having created a military, he had the authority to decide when and how to use it. In the latter case, Washington sought no authority from Congress when he directed an attack on the Wabash and Illinois Indians 150 miles within their territory. Similarly, in the *Prize Cases*, President Lincoln concluded, and the Supreme Court agreed, that after hostile acts are directed against this nation the president is bound to accept the challenge without waiting for any legislative authority. President Roosevelt went even farther prior to the Second World War by taking action to assist Britain through the Lend-Lease program and to isolate Japan from critical resources without congressional approval or consultation, actions that clearly provoked Japan and drew the United States ever closer to war.

A later section in the book reflects the application of this lengthy historical analysis to the current administration and to the response of the Bush administration to 9/11. Yoo points out that President Bush looked to former presidents for support of his actions. He states succinctly that “Congress simply does not have the ability to make effective, long-term national security decisions because of the difficulty in organizing 535 legislators and the political incentives that drive them toward short-term, risk-averse thinking.”

In his closing thoughts, Yoo reflects on President Obama's early determination to close the detention facility at Guantanamo, to terminate the CIA's special authority to question terrorists, and to suspend military commissions in the middle of the trials of al-Qa'ida leaders for war crimes. Describing the new president's law enforcement approach to terrorist violence, he asks whether this approach, although popular with his liberal supporters, can be successful. He suggests that the new president may be learning to “draw on the mainspring of Presidential power as deeply as his greatest predecessors.”

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Cloud, David, and Greg Jaffe. *The Fourth Star: Four Generals and the Epic Struggle for the Future of the United States Army*. New York: Crown, 2009. 330pp. \$28

Journalists David Cloud and Greg Jaffe have attempted to provide a narrative of the U.S. Army from the end of the Vietnam War through the present wars

in Iraq and Afghanistan by tracing the careers of four Army general officers. Using biographic sketches of Generals John Abizaid, George Casey, Peter Chiarelli, and David Petraeus, *The Fourth Star* seeks to show how the Army has changed doctrinally and developed its leaders. Cloud and Jaffe deliver a story that is engaging, although short on analysis, explaining how as an institution the Army adapted post-Vietnam. As a result of their approach, the story of the “epic struggle” for the Army’s future between fighting counterinsurgencies and conventional battles is anecdotal at best. The scholarly opinions that have shaped the debate over the future Army doctrine are missing.

Cloud and Jaffe argue that the Department of Social Sciences (“Sosh”) at West Point was instrumental in shaping the strategic thinking of these Army leaders as well as of the Army as an institution. The book attributes the unconventional thinking of Petraeus and Chiarelli to their experiences as Sosh instructors. Cloud and Jaffe explain how Petraeus collaborated with Andrew Krepinevich (author of *The Army and Vietnam*, 1988), to place the blame for the service’s failures in Vietnam directly on the Army. Throughout the text, the authors are careful to note Sosh alumni who serve with or under these generals. Yet the emphasis on the role of the Sosh faculty in this story is somewhat misleading—especially since both current and former Sosh faculty are the main sources for much of the narrative. One could have easily looked to West Point’s Department of History to find similar connections and influence. The roles of Dr. Fred Kagan and Brigadier General H. R. McMaster in shaping the “surge”

strategy of 2007 and 2008 represent an example.

However, Cloud and Jaffe do succeed in chronicling four generals whose careers began at the end of Vietnam and have culminated in the present. Petraeus is portrayed as the overly competitive Francophile infantryman, Abizaid as the international soldier-student of Arab culture, Casey as the hard-charging armor officer, and Chiarelli as the career tanker of Cold War Europe. While Reagan’s military readied itself for tank battles with the Soviet Union, these officers were going to graduate school and thinking seriously about the next war. In the post-Cold War years, all four men gained promising reputations during crises in Kurdish Iraq, Haiti, and Bosnia.

The chapters on Iraq are the most interesting. Abizaid, as commander of U.S. Central Command, seems to understand the challenges of a post-Saddam Iraq but is powerless to stop the rush toward de-Baathification. Petraeus, for his part, appears as the imperious commander, acting as a statesman and commander in creating a post-Saddam government in Mosul. Conversely, Casey seems overwhelmed, coming to terms with his errant assumption about defeating the insurgency through elections and politics by the end of 2006. By the end of the book, Abizaid and Casey have become the older, ineffectual model of the post-Vietnam Army, while Chiarelli and Petraeus are the newer, progressive model—the Army that emphasizes protecting the people over protecting the force.

The Fourth Star offers additional understanding to events already described by fellow journalists Bob Woodward, Tom Ricks, and Linda Robinson. However,

the book about this epic struggle for the future of the Army doctrine is still yet to be written.

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Miller, Aaron David. *The Much Too Promised Land: America's Elusive Search for Arab-Israeli Peace*. New York: Bantam, 2008. 407pp. \$26

This interesting book aims at unraveling a significant mystery that has lain at the heart of international diplomacy for more than a generation: Why and how has America failed to bring lasting peace to the Middle East? Specifically, why, despite so much expended American money and political effort, does peace between the Jordan River valley and the Mediterranean look as far off today as in the last forty years? Answers to this question have never been lacking, yet few authors have tried to tackle it comprehensively and fairly.

There are few individuals better placed to answer this question than Aaron David Miller, a scholar-diplomat who was an eyewitness to much of the drama he recounts, having served as an adviser on the Middle East to six U.S. secretaries of state. Miller's prose is accessible and more, as he draws the reader into behind-the-scenes vignettes that make the most of a topic that is potentially mind-numbing, given its complexities and nuances. The author is refreshingly open about his biases as an American Jew whose emotions about the plight of the Palestinians are sincere, as are his not-infrequent frustrations with the Israelis. His notion that both Israelis and Palestinians are caught in a macabre

diplomatic dance that occasionally delves into comedies of the absurd would merit a smile, were it not for the countless lives—and, as Miller demonstrates, diplomatic careers—that have been wrecked while the band plays on.

Miller's vivid, usually empathetic descriptions of the cast of characters alone are worth the price of admission. This is diplomatic history at its most accessible and enjoyable. Miller's lively work is thoroughly researched, including interviews with almost all the dramatis personae, so this is much more than a you-are-there account. The author's analysis of the problems that he, like so many others, failed to unravel fully is candid and detailed, and it will be a reference source for future generations of scholars.

Moreover, *The Much Too Promised Land* deserves high praise for finding paths through all the major minefields, not least the vexing issue of the Israeli lobby, the alleged den of limitless Jewish money and aggressively neocon influence on U.S. foreign and defense policy. While not all readers will accept Miller's answers, the fair-minded will appreciate the care and tact with which he addresses them. In this sense, this work is a polite refutation of such recent academic writings as those of Professors John Mearsheimer and Stephen Walt, who have perhaps indulged in an overdrawn analysis of Israeli influence in Washington, D.C.

In his conclusion, Miller offers some thoughtful guideposts to thinking about this never-ending problem and what it means for regional and international security. Considering that the Arab-Israeli dispute looks as intractable as ever (and that the Jewish state is facing

demographic crises that threaten to overwhelm it by the end of this century, if not before) the author's counsel, including a plea for humility, is refreshing and much needed. His concluding thought about America's role in the peace process, that "although we remain vital to peacemaking, we can't drive the train as much as I once believed," is a fitting one and captures the essence of the author—a thoughtful observer, seasoned analyst, veteran diplomatist, readable scholar, and all-around mensch.

JOHN R. SCHINDLER
Naval War College



Law, Randall D. *Terrorism: A History*. Cambridge, U.K.: Polity, 2009. 342pp. \$24.95

Rarely is a book written to fulfill the author's own need for a scholarly work on a topic that he teaches at university. So when Associate Professor Randall Law determined that he must write a book on the history of terrorism, he sought to satisfy a need not only for himself but for other professors and researchers who deal with the subject. According to Law, "When I started teaching a course on the subject shortly after September 11, 2001, I could not find a book for my students that told this story in a clear chronological fashion, that provided sufficient analytical framework, that made use of the most recent scholarly work, and that was comprehensive but succinct." Law's book does exactly what he intended.

Dr. Law, a historian, immediately wrestles with his own working definition of terrorism with two core assertions. The first is that individuals or groups act through rational and conscious

decision making within political and cultural contexts. Therefore, according to Law, terrorism is not "a kind of madness." His second states that terrorism is a communicative act intended to influence the behavior of the audience. Consequently, the author emphasizes a correlation between terrorism and the media throughout the book.

An astute reader might ask on what basis the author chose certain groups and historical events. Actually, Law selected three viewpoints that would give the reader a broad understanding of the complexity of the subject. The first is what he calls the "terrorist toolbox," a set of tactics, behaviors, and methods normally associated with terrorism. The second is that terrorism is "violent theater" that leverages symbols and provocatively violent acts. The third viewpoint is that terrorism has become a cultural construct, while the word itself connotes illegitimacy or is used as a label to vilify enemies.

Although concise and of a nice, workable size for classroom use, the volume treats terrorism with a stunningly all-encompassing approach. Its sixteen chapters truly span the historical, cultural, and political underpinnings of terrorism.

As one who teaches graduate courses on terrorism to federal, state, local, and tribal law-enforcement professionals, as well as military leaders, I found this book to be a welcome addition to the multitude of scholarly materials on terrorism. Randall Law has written the quintessential work on the subject, one that is provocative and educational, and will stimulate a necessary dialogue for future decision makers.

JEFFREY H. NORWITZ
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McCarthy, Andrew C. *Willful Blindness: A Memoir of the Jihad*. New York: Encounter Books, 2008. 250pp. \$25.95

For anyone who has followed, however peripherally, the disposition of those who have come to be called “detainees” of the wars in Iraq and Afghanistan, Andrew McCarthy’s *Willful Blindness* is a mandatory read. McCarthy was the prosecuting U.S. attorney in the case of the “Blind Sheikh,” Omar Abdel Rahman, for the 1993 bombing of the World Trade Center. The book chronicles McCarthy’s prosecutorial clean sweep in that case, in which ten defendants were convicted and the remaining two pleaded guilty. McCarthy details with great insight and clarity the conspiracy to bomb the World Trade Center and the tortuous road of the prosecutorial effort after the attack —tortuous because the available law enforcement and prosecutorial tools were either antiquated or inadequate to cope with the enormity and complexity of the perpetrators’ efforts.

The United States has been grappling for years with how to treat and process those who have been captured and held during the wars in Afghanistan and Iraq. Protocols of neither intelligence, justice, nor the treatment of prisoners have proved adequate to deal sensibly and reliably with a diffuse yet tight-knit group of adversaries.

The book begins with the chapter “Imagine the Liability!” referring to a concern of the FBI that an informant placed in the inner circle of the conspirators might materially contribute to the success of the operation. Indeed, the

informant in this case worked his way into the conspiracy only because of his bomb-making skills. His FBI handlers envisioned a very difficult legal battle if, despite the warning provided by their informant, the plot nevertheless succeeded. As a result, the informant was extracted and hidden before the actual target or timing of the effort had been discovered. Through the efforts of their informant, the FBI knew that something was afoot, but they did not know precisely when or where, having exfiltrated their undercover source before he could gain access to that critical information.

Although this work reads much like a novel, it offers clear examples of how laws and procedures established for a very different context can have severe and unanticipated side effects.

As a single example of many mentioned in the book, the process of discovery during the preparation for trial can cause to be divulged important information that should be protected. As is routine in such matters, in the course of the pretrial workup a list of unindicted coconspirators is developed. On such a list, in 1994, was the name Osama Bin Laden. Appropriately, under U.S. law, the list was made available to defense attorneys for the accused; it was subsequently leaked to Bin Laden, who was in Kenya at the time. As McCarthy writes, “Think, though, how valuable [the fact] that [he was on the list] would be for bin Laden to know. If you are he, you say: ‘Maybe the government has an informant in my inner circle. Maybe I should use a different phone. Maybe I should stop having meetings in my usual places because they might be bugged.’”

Finally, this book is helpful for connecting the dots after the fact, for reconsidering how such adversaries think and plan. For example, McCarthy points to statements made three weeks prior to the actual attack of the USS *Cole* in October 2000 by Sheikh Omar's son, and also to the writings of Nidal Ayyad, one of those convicted in 1995 of the first attack on the World Trade Center: "We promise you that next time it will be very precise and the World Trade Center will continue to be one [of] our targets."

ROGER W. BARNETT, PROFESSOR EMERITUS
Naval War College



Casey, Steven. *Selling the Korean War: Propaganda, Politics, and Public Opinion, 1950–1953*. New York: Oxford Univ. Press, 2008. 476pp. \$55

The far left and the far right have something in common, especially when their enemies hold the White House. They each tend to think that the president can get away with anything, because he controls the media and the media controls the public, especially when it comes to issues of war. Professor Steven Casey of the London School of Economics actually *knows* something about this topic, usually the realm of strong opinions based on strong prejudice. In 2000 Casey wrote perhaps the most perceptive study ever published on presidential policy and public opinion during World War II. His *Cautious Crusade: Franklin D. Roosevelt, American Public Opinion, and the War against Nazi Germany* (2001) demonstrated that FDR late in the war could not lead the public to change its opinion that the Nazi Party, not the German people, was

the primary culprit of German aggression. The president did not make this distinction, but the country focused blame on Hitler and his inner circle, whom the Allies would remove from power. They would not sanction the plan of Secretary of the Treasury Henry Morgenthau to dismantle German industry or to smash the German nation into a bunch of separate principalities. Why punish the people for the sins of their deposed government?

Casey takes on President Harry S. Truman under different, later circumstances. Truman wanted to "de-escalate," so to speak, public opinion lest it lead to World War III versus China and the Soviet Union. The president, in this effort, refused to call the Korean conflict a "war," as opposed to "a police action," his fateful phrase first uttered at a press conference on 29 June 1950. This signal to the American people did not work out as the White House planned, as Korea quickly turned out to be a war by everyone's definition—except that of executive branch officials, who inadvertently freed the administration's opponents from pressure to mute their criticism, which is what the minority usually does during a war lest it flirt with disloyalty. "The administration's subdued public posture," says Casey, "often afforded the Republican opposition the perfect *opportunity* to take the offensive." Indeed, the public seemed mystified about government policy, as one State Department official pointed out: "Those who approved our resistance [to the communist invasion] in Korea now find the present situation completely confusing and baffling."

A student of the Korean War can now understand why the administration had such difficulty containing Douglas

MacArthur before firing him on 11 April 1951. Could the White House come up with a line to rival the general's riveting message: "There is no substitute for victory"? Perhaps, but it could not deliver one, since its credibility was largely shot by mid-1951, when Truman registered 23 percent public approval, the lowest in the history of the Gallup Poll. In a battle of sound bites, General Omar Bradley, chairman of the Joint Chiefs of Staff, had to rescue administration policy by testifying that MacArthur's proposal to attack China "was the wrong war, at the wrong place, against the wrong enemy."

One hears that Casey's next book will be about the U.S. Army and correspondents in World Wars I and II. This reader would have preferred that he pushed on into the next war—doing presidents, policy, the media, and public opinion during Vietnam. For those of us particularly interested in those topics, Casey would thus produce a trilogy on wartime policy worthy of the three volumes on military operations produced by Douglas Southall Freeman (*Lee's Lieutenants*, on the U.S. Civil War) and Rick Atkinson (*The Liberation Trilogy* on the U.S. Army in the European theater in World War II). Yes, Steven Casey is that good.

MICHAEL PEARLMAN
Lawrence, Kansas



Hendrix, Henry J. *Theodore Roosevelt's Naval Diplomacy: The U.S. Navy and the Birth of the American Century*. Annapolis, Md.: Naval Institute Press, 2009. 288pp. \$34.95

Commander Henry J. Hendrix has written a neat monograph based on his

doctoral work. He makes two related arguments: first, that one cannot understand the diplomatic style of President Theodore Roosevelt without first understanding his attitude toward the efficacy and use of naval power; and second, that the existing literature has not adequately integrated naval and military historical methods of analysis with existing diplomatic historical approaches. Consequently, previous interpretations of Roosevelt's foreign policy decisions, as they relate to incidents that involved the use of naval power, are incomplete, precisely because they do not fuse the diplomatic and political with the naval—especially the perspective reflected by the navalist attitudes of Theodore Roosevelt.

As for structure, the book begins with the now-common device of the narrative vignette—in this case the "sailing of the Great White Fleet," as a means of establishing the ambience of the moment of the great president and his great fleet. With the reader now interested in "the rest of the story," Hendrix proceeds in a workmanlike and professional manner, establishing in the first chapter the basis for the beginning of the "beautiful relationship" between TR and the object of his affection and desire, the U.S. Navy. Included here is the story of Roosevelt's famous action as Assistant Secretary of the Navy regarding the deployment of Admiral George Dewey's Far East Squadron to Manila Bay. This episode may be regarded as typical of Roosevelt's activist attitudes and actions regarding the Navy.

The remaining chapters focus topically. The closing chapter on the Great White Fleet is the only one that deals directly with the linkage of the U.S. Navy to an "American Century." The odd man out

is the chapter on technology, although it is a welcome discussion, given both TR's fascination with new technology and the inherently high-tech nature of navies in general. Additionally, this chapter provides ammunition for a much larger argument about modern Americans and their fascination with technology.

However, the bulk of the book deals with the diplomatic-naval arguments mentioned. Hendrix makes an excellent case for his thesis that previous historians have paid too little attention to the intersection of naval and diplomatic trends of analysis. He employs a multidisciplinary approach that examines naval signals, logbooks, war plans, and other archival Department of the Navy records to render less opaque some of TR's diplomatic actions and motivations.

Although this work is not a biography, it adds value to existing ones, especially Edmund Morris's *Theodore Rex*, which focuses exclusively on his presidency. Theodore Roosevelt had many different personae, and it has not escaped historians that he was not only a historian but also a naval historian, par excellence. Neither has it escaped them that, along with A. T. Mahan and Stephen Luce, he is the father of the modern U.S. Navy. However, Hendrix makes a strong argument that TR's naval persona was critical to understanding his use of power, especially in foreign relations.

The book's minor weakness is its narrow, monographic scope. The chapters proceed in a generally chronological manner but maintain no extended narrative thread—the unifier, instead, is the topical theme. Hendrix may have missed an opportunity to make a larger

statement about the relationship of the man to the institution and its importance to the United States under the entire Roosevelt “dynasty.” There is much peripheral evidence here about the institutional and organizational aspects of the Navy that made this reviewer long for more discussion. TR's presidency was a time of profound change in the military establishment of the United States, a period that involved the Root reforms of the Army and the establishment of the General Board of the Navy, as a sort of proto-naval general staff. TR's role in these critical early years of the General Board would have been worth exploring.

These are minor quibbles in an otherwise fine book that adds substantially to the understanding of an important aspect of the rise of the United States to great-power status and influence during Theodore Roosevelt's presidency. I recommend this book for a broad audience, especially those interested in the development and execution of American foreign policy in the early twentieth century.

JOHN T. KUEHN
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Brooks, Max. *World War Z: An Oral History of the Zombie War*. New York: Crown, 2006. 352pp. \$14.95

“A breath of fresh air stormed into the Naval War College over the rotting flesh of the undead,” reads the first book-club selection of the President of the Naval War College. Without vilifying another country or radicalizing any group, *World War Z's* zombie

pandemic and ensuing global chaos are the vehicle transporting the reader straight into the potential realities of what can happen when the functionality and safety of our cultural norms, personal values, societal ethics, and governmental structures are stressed, overwhelmed, and broken.

A quick title scan of current military and national security professional reading lists suggests that there is something different about the selection; most are exclusively works of nonfiction, and none of them have the word “zombie” in their titles. However, one does not have to be a zombie fan to enjoy this book. Another consideration is that if any book passes the zealous scrutiny of a cultlike following of “zombie-ophiles” and the similarly exacting standards of the President of the Naval War College, this should spark your curiosity—if not an automatic “add” click for your personal military and national security reading list.

World War Z is a work of apocalyptic fiction set in modern times and told in a journalistic style. Man is the main character; the zombie simply provides the literary mechanism facilitating a journey into “total war.” The book opens and reads like, and brings about imagery combining, George Romero’s 1968 classic *Night of the Living Dead*, Quentin Tarantino’s often eclectic and avant-garde directing style, and Tom Clancy and Clive Cussler’s flair for globe-trotting storytelling. Attention to historical detail, geopolitical issues, and nuances of social and applied sciences makes it intriguing for most nonfiction and historical-fiction purists. Three years of research and the confirmation

of all facts and assertions by a professional “fact-checker” enable readers to focus and to immerse themselves into the horrifying musings of what can happen when mankind faces annihilation.

The narrative travels beyond the brink of extinction and continues on a journey of choice, response, societal resilience, and recovery. These choices and actions allow one to go beyond contemplation and explore the potential preventive measures and solutions needed not only to survive but to win.

Are there any negatives about *World War Z*? There are, and readers can find their own likes and dislikes. One notable point is the physiological and biological improbabilities associated with the ability of zombies to exist and survive, but as with all science fiction, some bending of reality is to be expected. On occasion political biases creep into the writing where perhaps more neutral or nuanced references would have been more effective and less distracting. Those comments aside, *World War Z* is a great read.

The most telling local review of the book, here at the Naval War College, is the number of students and faculty who, as parents, have said they were going to share the book and read it again with their children as part of developing their understanding about the world, and people’s responsibilities to themselves and one another. Applying this metric, *World War Z* is a worthy choice for any reader, be they practitioners of national security or not.

LT. COL. JAYME SUTTON, U.S. ARMY
Naval War College

IN MY VIEW

SUPERCARRIERS FOR SMART SUPERPOWER DIPLOMACY

Sir:

The focus of the *Naval War College Review* Winter 2010 issue on the maritime strategic perspective in the Pacific elicits fresh contemplation on the role of the U.S. Navy's aircraft carriers as global American representatives and thus as effective and necessary tools of foreign policy and diplomacy in the new era of unconstrained, and literally "asymmetric," confrontations of nations and factions. Professors Li and Weuve ("China's Aircraft Carrier Ambitions: An Update") present a perceptive discourse on how the fast-growing Chinese economy could substantiate Hu Jintao's "emerging interests" in "some new level of power-projection capabilities" despite the lagging (carrier aviation) technology base of the People's Liberation Army Navy. Methodical analysis of the "implications" of China's carrier "acquisition" for the strategic concerns of the United States and western Pacific nations surrounding China remains understandably speculative. That may be due in part to China's characteristically enigmatic nature, its calculated cycles of silence and cacophonous rhetoric. China, taking its time in its military power buildup, cleverly holds the rest of the world in suspense as to its strategic intentions.

Clearly, the twenty-first-century world and its expanse of oceans have become "contested commons," in the phrase of Under Secretary of Defense (Policy) Michèle Flournoy in the U.S. Naval Institute *Proceedings* of July 2009. But there will probably be no more major sea battles the likes of Midway. Navigating the contested commons will call for a real-time and astutely adaptive foreign policy. So why a big carrier force of the U.S. Navy? The answer is "smart power."

American defense and geopolitical experts have called for "smart power," defined as the sum of the nation's "soft power" (a concept of Harvard's Joseph Nye, referring to nonmilitary international reach) and the classic military capability now called "kinetic power." The "speak softly and carry a big stick" dictum may be

restated as “speak wisely, including judiciously saying nothing, but carry—and indeed be visibly ready to use—a big stick.” And that “big stick” would be the “supercarriers” of the U.S. Navy. By far the most effective symbol and instrument of the kinetic power of the nation, the aircraft carrier is the thirty-knot-plus moving air base. The U.S. Navy’s carrier fleet is “super” in a literal sense, with its nuclear power, displacements now reaching 100,000 tons, deployed air-wing complement of over seventy-five aircraft (and unmanned aerial vehicles), and catapult-assisted takeoff but arrested recovery (CATOBAR) design (classified as the “most capable but also the most expensive” by Li and Weuve). The most advanced steam catapult design is about to be replaced by a precision electromagnetic catapult in the *Gerald R. Ford* (CVN 78) class, now under construction.

The U.S. Navy, with ten-plus supercarriers still listed in the just-published Department of Defense QDR (Quadrennial Defense Review), stands uncontested above all major naval powers of the world, none of which nonetheless would be caught without an aircraft carrier in its fleet—one or a few. Those self-respecting naval-air powers are Australia, Brazil, Britain, France, India, and Russia, with China obviously in an effort to join the status.

The carriers effectuate the doctrines of continuous forward presence and on-demand power projection, both in peacetime and conflict. With carriers, the Navy thus provides *strategic deterrence* to prevent wars; *global vigilance* over potential third-world and insurgency surprises; *expedient reprisal and quelling* of hostile foreign actions; flexible and adaptive airpower, ballistic weapons, and amphibious land war *support for the Air Force, Army, and Marines* in war, not to mention the on-the-spot *mercy and peacekeeping missions* in regional interne-cine battles and natural disasters, as just experienced in the Haiti earthquake. This advocacy for the carrier’s “big stick” does not negate the contributions of Army and Marine land forces and strategic and tactical Air Force constituencies to the nation’s kinetic power. But these components do not replicate the carrier force’s visible peacetime forward-presence underscoring of diplomacy.

The best-won war is a war prevented from occurring. And the supercarriers of the smart superpower may be the answer for keeping the balance of peace in the future world.

THOMAS S. MOMIYAMA

U.S. Senior Executive Service (Retired), former director of the Naval Air Systems Command’s Aircraft Science & Technology Programs, graduate of the Naval War College and Harvard’s Kennedy School of Government

REFLECTIONS ON READING

Professor John E. Jackson is the Naval War College's manager for the Navy Professional Reading Program.

On the Navy Professional Reading Program (NPRP) website, www.navyreading.navy.mil, you will find a complete list of the sixty titles in the primary library, as well as a brief synopsis of each book. The program includes works by some of the most celebrated authors in the world, as well as excellent books by less-well-known writers. Among the authors of note are these.

Stephen Ambrose was largely unknown outside of academic circles until 1994, when he published *D-Day: June 6, 1944—The Climactic Battle of World War II* on the occasion of the fiftieth anniversary of the invasion. In addition to his highly regarded books on World War II, Ambrose has written on many other aspects of American history, including multivolume biographies of Dwight D. Eisenhower and Richard Nixon. He also founded the Eisenhower Center and was president of the National D-Day Museum, in New Orleans, until his death in October 2002.

James Bradley is the fourth child of Iwo Jima flag-raiser John “Doc” Bradley. Bradley has had significant experience writing and producing corporate films and corporate meetings; he has traveled the world, living and working in more than forty countries for nearly a decade. His book *Flags of Our Fathers*, about the battle for Iwo Jima, spent forty-six weeks on the *New York Times* best-seller list and was made into a film directed by Clint Eastwood.

Winston Churchill, the former British prime minister, was a prolific author whose highly acclaimed six-volume history of the First World War (*The World Crisis*) was published in 1923–31. His six-volume work *The Second World War* was published from 1948 to 1953. He received the Nobel Prize in Literature in 1953 for his lifetime body of work. The NPRP includes his *The Second World War*, volume 1, *The Gathering Storm*, a unique first-person account of the

actions leading from the end of the First World War until May 1940, the end of what he called the “Twilight War.” All six volumes are masterful expositions.

Thomas L. Friedman is a widely respected author and journalist and a three-time Pulitzer Prize winner. He has traveled extensively reporting on the Middle East, U.S. domestic politics and foreign policy, international economics, and the worldwide impact of terrorism. He is the only author to have two books in the NPRP. *From Beirut to Jerusalem* won both the National Book Award and the Overseas Press Club Award in 1989 and was on the *New York Times* best-seller list for nearly twelve months. *The World Is Flat* earned the *Financial Times* and Goldman Sachs Business Book of the Year Award, and Friedman was named one of America’s Best Leaders by *U.S. News & World Report*.

Malcolm Gladwell has been a staff writer with *The New Yorker* since 1996. In 2005 he was named one of *Time* magazine’s “100 Most Influential People.” He is the author of four books, including *The Tipping Point: How Little Things Can Make a Big Difference* (2000) and *Blink: The Power of Thinking without Thinking* (2005), both of which were number-one *New York Times* best sellers. From 1987 to 1996, he was a business and science reporter with the *Washington Post*.

Robert Heinlein, known as the “dean of modern science fiction,” graduated from the U.S. Naval Academy in Annapolis in 1929 and served on the revolutionary new aircraft carrier USS *Lexington* (CV 2) in 1931. His commanding officer was Ernest J. King, who was later to serve as the Chief of Naval Operations during the Second World War. Heinlein published over three dozen novels and scores of short stories. His *Starship Troopers* won the Hugo Award in 1959; it has been praised for capturing the feel of military service and the ordeal of young people moving from recruits to battle-hardened soldiers.

David McCullough won the Pulitzer Prize on two occasions and the National Book Award twice. In December 2006 he received the Presidential Medal of Freedom, the nation’s highest civilian award. His book *1776* was a *New York Times* national best seller in both hardcover and paperback; it has been called “brilliant . . . powerful,” and “a classic.” He is a frequent contributor to and narrator of historical television and film projects.

Herman Wouk, who studied at Columbia University, wrote radio scripts and served in the U.S. Navy in the South Pacific in World War II. He drew on his combat experience for his classic war novel *The Caine Mutiny*, which won a Pulitzer Prize and became a successful play and film. Other books include *The Winds of War* (1971) and *War and Remembrance* (1975).

All of these authors, in their own particular ways, paint a picture of the world in which they lived or the world as it might have been or may someday become. You are encouraged to go with them on their literary journeys. You will be well rewarded for your investment!

JOHN E. JACKSON