



The Chinese Navy

Expanding Capabilities, Evolving Roles



EDITED BY

PHILLIP C. SAUNDERS, CHRISTOPHER YUNG,
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CENTER FOR THE STUDY OF CHINESE MILITARY AFFAIRS
INSTITUTE FOR NATIONAL STRATEGIC STUDIES
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*Edited by Phillip C. Saunders, Christopher D. Yung,
Michael Swaine, and Andrew Nien-Dzu Yang*



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The editors respectfully dedicate this volume to the memory of Ellis Joffe, who attended and contributed to many of the Chinese Council on Advanced Policy Studies/RAND conferences, including the one that formed the basis for this book. His many contributions as a scholar, colleague, mentor, and friend are sorely missed.

Contents

| | |
|---|------|
| List of Illustrations | ix |
| Foreword | xi |
| Acknowledgments..... | xiii |
| Introduction..... | xv |
| <i>Christopher D. Yung and Phillip C. Saunders</i> | |
| Chapter 1 | |
| Rising Powers and Naval Power..... | 1 |
| <i>Peter M. Swartz</i> | |
| Chapter 2 | |
| Recent Developments in Naval and Maritime Modernization in the Asia-Pacific: Implications for Regional Security..... | 23 |
| <i>Richard A. Bitzinger</i> | |
| Chapter 3 | |
| Beyond the Moat: The PLAN's Evolving Interests and Potential Influence..... | 41 |
| <i>M. Taylor Fravel and Alexander Liebman</i> | |
| Chapter 4 | |
| Toward a Maritime Security Strategy: An Analysis of Chinese Views since the Early 1990s | 81 |
| <i>Daniel M. Hartnett and Frederic Vellucci</i> | |
| Chapter 5 | |
| The Evolution of China's Naval Strategy and Capabilities: From "Near Coast" and "Near Seas" to "Far Seas" | 109 |
| <i>Nan Li</i> | |
| Chapter 6 | |
| PLAN Force Structure: Submarines, Ships, and Aircraft | 141 |
| <i>Ronald O'Rourke</i> | |

Chapter 7

Getting Rid of the Rust: Preparing
Chinese Navy Leaders for High-tech War175
Susan M. Puska

Chapter 8

The PLA Navy’s Antiaccess Role in a Taiwan Contingency.....191
Michael McDevitt

Chapter 9

The PLA Navy as an Instrument of Statecraft.....215
Eric A. McVadon

Chapter 10

Informatization and the Chinese People’s Liberation
Army Navy247
Andrew S. Erickson and Michael S. Chase

Conclusion287
Phillip C. Saunders and Christopher D. Yung

Index295

About the Contributors315

Illustrations

| | |
|---|------|
| China and Adjacent Seas | xxii |
| 3-1. The Taiwan Dispute in Core Newspapers (Title Search) | 46 |
| 3-2. Maritime Sovereignty Disputes in <i>PLA Daily</i> (Title Search) | 46 |
| 3-3. Maritime Sovereignty Disputes in <i>Modern Navy</i> (Full-text Search) | 47 |
| 3-4. The Spratlys Dispute in Core Newspapers (Title Search) | 49 |
| 3-5. The Senkaku Dispute in Core Newspapers (Title Search) | 52 |
| 3-6. <i>Modern Navy</i> Coverage of “Maritime Resources” (海上资源) and “Oil Reserve and China” (石油储备·中国) | 55 |
| 3-7. <i>People’s Daily</i> Coverage of “Maritime Resources” (海上资源) and “Oil Reserve and China” (石油储备·中国) | 56 |
| 3-8. <i>Modern Navy</i> and <i>National Defense</i> Coverage of “Maritime Resources” (海上资源) | 56 |
| 3-9. <i>Modern Navy</i> Coverage of “Energy Security” (能源安全) and “Resource Security” (资源安全) (Full-text Search) | 61 |
| 3-10. <i>National Defense</i> Coverage of “Energy Security” (能源安全) and “Resource Security” (资源安全) (Full-text Search) | 61 |
| 3-11. <i>People’s Daily</i> Coverage of “Energy Security” (能源安全) and “Resource Security” (资源安全) (Full-text Search) | 62 |
| 3-12. <i>Modern Navy</i> , <i>National Defense</i> , <i>People’s Daily</i> , and <i>PLA Daily</i> Coverage of “Sea Lanes” (海上通道) | 63 |
| 3-13. <i>Modern Navy</i> , <i>National Defense</i> , <i>People’s Daily</i> , and <i>PLA Daily</i> Coverage of “Sea Lane Security” (航线安全) | 64 |

| | |
|--|-----|
| 3-14. <i>Modern Navy, National Defense, and People's Daily</i> Coverage of "Malacca Strait and Security" (马六甲。安全) (Full-text Search) | 65 |
| 3-15. <i>Modern Navy, PLA Daily, and People's Daily</i> Coverage of "Pirates" (海盗) (Full-text Search) | 66 |
| 3-16. <i>People's Daily and PLA Daily Coverage</i> of "Indian Navy" (印度海军) (Full-text Search) | 68 |
| 3-17. <i>Modern Navy and National Defense Coverage</i> of "Indian Navy" (印度海军) (Full-text Search) | 68 |
| 3-18. <i>Modern Navy Coverage of "Andaman" (安达曼)</i> (Full-text Search) | 71 |
| 4-1. First and Second Island Chains | 88 |
| 4-2. Extent of China's Claimed South China Sea Territory | 89 |
| 5-1. China's "Near Seas" and "Far Seas" | 117 |
| 8-1. Soviet Concept for Sea Denial and Sea Control During the Cold War | 200 |
| 8-2. Chinese Concept for Offshore Defense: "Island Chains" | 201 |
| 9-1. Chinese Use of Force—Examples of Gunboat Diplomacy | 222 |

Tables

| | |
|--|-----|
| 6-1. PLA Navy Submarine Commissionings Actual (1995–2006) and Projected (2007+) | 148 |
| 6-2. New PLA Navy Destroyer Classes | 154 |
| 6-3. New PLA Navy Frigate Classes | 157 |

Foreword

Few issues are as important to U.S. national security analysts as China's military modernization, a process that has benefited directly from the past two decades of dramatic economic expansion. This book addresses the Chinese navy—the People's Liberation Army Navy, or PLAN—the service that has most dramatically benefited from increased defense funding.

This collection of essays surveys and analyzes the most important aspects of China's naval modernization. The book's 10 chapters represent papers delivered at a 2007 conference, but have been updated and, most importantly, framed by expertly written introductory and concluding chapters that bring the book firmly into the century's second decade.

The first substantive chapter is a superb essay by Peter Swartz, one of our most experienced and perspicacious historians of maritime strategy. Swartz sets the tone for this impressive collection by placing China's naval modernization into historical context. Especially relevant is his conclusion that “a rising naval power need not mean rising chances of war,” effectively discrediting the often heard comparison between current China-U.S. naval developments and those of Germany and England in the years preceding World War I.

There are no weak essays in this carefully edited volume. Particularly strong, in addition to that by Swartz, is Susan Puska's chapter on PLAN leadership and personnel development—accomplishments more meaningful than the acquisition of new platforms. Her efforts are supported by the essay by Andrew Erickson and Michael Chase, who place their discussion of “informatization” in a common sense context of the centralization/decentralization of command and control.

The conclusion authored by Phillip Saunders and Christopher Yung is a model of its kind. They update the information provided in their volume's essays and note the problems still lying in the path of China's drive to deploy a 21st century navy—problems too often overlooked by popular commentators. What this volume demonstrates convincingly is that while Beijing is undoubtedly modernizing and expanding its navy, significant problems still confront any Chinese maritime strategist who believes that a new age is dawning in Asian waters.

The PLAN's most significant accomplishment to date has been the continuous deployment of three-ship task groups to the Gulf of Aden for more than two-and-a-half years, but this feat also reveals the PLAN's limited ability to project power away from home waters. No less a personage than China's defense minister, General Chen Bingde, in a speech at National Defense University in Washington, DC, on May 18, 2011, described these deployments

as “greatly stressing” his navy’s capability and implied that they would have to be ended in the near future.

In fact, PLAN composition and capabilities are markedly different from previous major naval construction programs conducted by emerging world powers. China’s new navy relies more on unmanned cruise and ballistic missiles than on manned aircraft, and more on submarines than surface vessels. It also remains entangled in serious service rivalries within a Chinese military still dominated by the army and has no combat, and little operational, experience on the high seas.

Nonetheless, China is deep into the process of creating its strongest navy since that built and commanded by Zheng He, the famous admiral who led seven major expeditions to the far reaches of the Indian Ocean in the early 16th century. Admiral Zheng’s navy accomplished little of lasting importance, however, as domestic political considerations and shifting national security concerns drove Beijing to other priorities. There certainly is no assurance that a similar fate awaits today’s PLAN, but its emergence as a modern navy of note is just that. This book, *The Chinese Navy: Expanding Capabilities, Evolving Roles*, is aptly titled.

Bernard D. Cole
Washington, DC
July 2011

Acknowledgments

This book's chapters are mostly revised versions of papers originally presented at the 2007 conference in Taipei cosponsored by the Chinese Council on Advanced Policy Studies (CAPS), the RAND Corporation, the Carnegie Endowment for International Peace (CEIP), and the Institute for National Strategic Studies (INSS) of the U.S. National Defense University (NDU). The editors thank all those who contributed to making that conference a resounding success. This especially includes the conference paper writers, most of whom are represented in this book, and in a few cases colleagues who presented papers on behalf of writers unable to attend. The editors would particularly like to thank Evan Medeiros (then at RAND, now at the National Security Council) for his contributions in shaping the agenda and helping to recruit paper writers. They also gratefully acknowledge support for the conference from their host institutions and the RAND Corporation.

The conference benefited greatly from the discussions, questions, and comments by conference participants. In particular, the editors would like to thank conference panelists and discussants Jonathan Pollack (then at the Naval War College, now at the Brookings Institution), Ken Allen (then at the Center for Defense Analyses, now at Defense Group Inc.), Arthur Ding (the S. Rajaratnam School of International Studies and CAPS), Craig Koerner (Naval War College), James Fitzsimonds (Naval War College), Alan Vick (RAND), and Bernard Cole (National War College), who all provided insightful commentary and analysis.

Special thanks go to the Chinese Council on Advanced Policy Studies in Taipei, especially Andrew Yang and Yi-Su Yang, for their tremendous work in organizing and hosting the conference.

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The editors are also indebted to Nan Li (Naval War College) for his chapter "The Evolution of China's Naval Strategy and Capabilities: From 'Near Coast' and 'Near Seas' to 'Far Seas'" and to *Asian Security* for granting permission to republish it in this volume.

The editors would also like to thank Don Mosser, Deborah Jefferson, and Michael Kiselycznyk at National Defense University's Institute for National Strategic Studies, who provided administrative support in facilitating the conference and in the publication of this volume.

Introduction

Christopher D. Yung and Phillip C. Saunders

The People's Liberation Army Navy (PLAN) has shifted to the forefront of Chinese military modernization. Aided by increased budgets and improved domestic shipbuilding capabilities, the PLAN is making significant progress in its modernization efforts. This includes unprecedented procurement in recent years of seven classes of modern destroyers and frigates, five classes of submarines (two of which are nuclear powered), and other force enhancements such as three types of capable maritime interdiction aircraft, fast missile boats, and amphibious warfare ships. The PLAN has also been on the cutting edge of military diplomacy and a key player in efforts to accomplish the New Historic Missions proclaimed by Hu Jintao, General Secretary of the Chinese Communist Party (CCP) and Chairman of the Central Military Commission (CMC). The 2008 Gulf of Aden deployment of three PLAN surface combatants followed up by seven similar follow-on missions suggests that the PLA Navy's role in military diplomacy will continue to grow. The Gulf of Aden deployment, the Chinese navy's global circumnavigation in 2002, and the increased frequency of exercises with Southeast Asian, South Asian, and Russian navies highlight the PLAN's increasingly important role as an instrument of People's Republic of China (PRC) national policy.

Given these important trends, the RAND Corporation, the Chinese Council on Advanced Policy Studies (CAPS), the Carnegie Endowment for International Peace (CEIP), and the Institute for National Strategic Studies (INSS) of the U.S. National Defense University chose the Chinese navy as the topic of their 19th annual conference on the People's Liberation Army (PLA). The conference that convened in Taipei in November 2007 brought together many of the top PLA experts along with leading specialists on naval issues to discuss a wide range of topics related to the PLA Navy. This volume collects the best papers presented at the conference, most of which have been updated to reflect post-conference developments.

This book is divided into four thematic sections. The first section (chapters 1 and 2) sets the scene for later chapters via a historical discussion of the experience of other rising major powers in relation to their maritime capabilities and by examining the naval modernization efforts of other Asia-Pacific countries. The second section (chapters 3, 4, and 5) addresses the range of rationales for China's naval modernization that animate Chinese debates. In the next section, chapters 6 and 7 address the specifics of PLA Navy force capabilities.

Finally, chapters 8, 9, and 10 address how the PLA Navy might use its improved naval capabilities. The concluding chapter summarizes the overall findings of the conference and the individual chapters.

Captain (USN, Ret.) Peter Swartz's "Rising Powers and Naval Power" opens the first section. This chapter reviews the history of "previous rising powers" and the rationales for, use of, and effect of their naval development during the modern era. Using this historical framework the chapter draws a set of preliminary observations and conclusions that help address five critical questions concerning rising naval powers: 1) How have previous rising powers viewed and utilized naval power? (as a tool for expanding their wealth, power, and influence); 2) What were the key arguments and objectives that led previous rising powers to invest in naval modernization? (finite domestic resources, other needs, and sustaining national and imperial economies); 3) What were the geopolitical consequences of the decision to invest in naval modernization? (fostering of the expansion of trade and overseas commerce and changes in balance of power); 4) What factors made naval arms races among rising powers and others more or less likely? (wealth of nations, nature of the international political system, public opinion, national enmities, and deliberate government decisions); and 5) How should current Chinese and Indian efforts to build naval capabilities be viewed in light of this historical experience? Swartz notes that "previous rising great powers have generally viewed naval power as an important—indeed, often vital—tool for expanding their wealth, power and influence" and characterizes current Chinese and Indian efforts as "normal" in light of this historical experience. The chapter concludes that although past historical experience of rising naval powers shows "no dearth of conflict and blood," a "rising naval power need not mean rising chances of war." Rather than the traditional "zeal for empire" or a quest for a "place in the sun," there are a number of legitimate traditional and nontraditional security interests that motivate any rising power to deploy naval power commensurate with its rising national status.

The next chapter is Richard Bitzinger's "Recent Developments in Naval and Maritime Modernization in the Asia-Pacific: Implications for Regional Security." This chapter offers an assessment of naval modernization in contemporary East Asia, including Japan, Korea, Australia, India, and Southeast Asia. First, it outlines the drivers and enablers of naval modernization and buildup in the Asia-Pacific region. These include China, regional competition, changing military requirements, rising defense budgets, a buyers' market, and an element of national prestige. Bitzinger describes the trend underway in East Asia today as "modernization plus," which is not quite a "revolution in military affairs" but more than merely replacing and updating existing hardware. In

many cases, nations are developing new capabilities to increase interoperability with U.S. forces, to improve their ability to contribute to coalition operations, or to serve as counter-China capabilities. China is a factor in regional naval modernization (especially in the cases of Japan and possibly India), but is not necessarily the main driver. For many states, other issues such as sovereignty enforcement, economic interests, and local security concerns are more crucial. Bitzinger describes the changes under way in East Asia as promoting “arms competitions, not arms races.”

The second section addresses rationales for Chinese naval modernization. M. Taylor Fravel and Alexander Liebman, in “Beyond the Moat: The PLAN’s Evolving Interests and Potential Influence,” analyze how the PLA Navy sees its roles and responsibilities changing as China’s economy and national interests expand. It also assesses the extent to which the PLAN is an influential policy actor as defined by its ability to shape or influence “national policy goals and priorities beyond the arena of naval affairs.” The authors analyze the frequency of articles on key naval topics in the PLA’s leading newspapers and the frequency and content of relevant articles in military publications. The chapter finds evidence of “change and continuity” on both accounts. Traditional and long-standing concerns over Taiwan, territorial sovereignty in the South and East China Seas, and defense of China’s coast remain “crucially important.” However, the PLAN is increasingly “casting itself as the protector of China’s economy” and using this reasoning as a “selling point” to increase the PLAN budget and resources. The PLAN is making four main arguments for an increased role in national security policy: 1) protection of China’s maritime resources; 2) protection of the developed East Coast and its sea lanes; 3) creation of a strong navy to stimulate or generate a stronger economy; and 4) carrying out major peacetime missions and functions. Specific areas where the PLAN may shape the national policy debate include international maritime law (an area where the government has yet to clarify its position), the development of a strong and centralized maritime law enforcement agency similar to the U.S. Coast Guard, and sea lane security.

Daniel Hartnett’s and Frederic Vellucci’s “Toward a Maritime Security Strategy: An Analysis of Chinese Views Since the Early 1990s” also addresses Chinese rationales for naval modernization. The chapter samples articles written by Chinese military and civilian maritime security specialists from the early 1990s to the present to construct an overview of China’s internal debate on maritime strategy concepts. Based on the amount of disagreement in authoritative open source writings, the chapter concludes that although China does not yet have a fully defined maritime strategy, it is in the process of creating one. Many Chinese authors advocating greater emphasis on the maritime

domain invoke the need to develop a concept of “sea consciousness” among the Chinese people. On topics such as “command of the sea,” the amount of debate varied between “differences of opinion” to “hotly contested disagreement.” The chapter identifies several trends likely to emerge in any future Chinese comprehensive maritime strategy. Taiwan is not the sole issue used in justifying PLAN development; maritime rights and economic interests are also very important. As China becomes more dependent on maritime resources, its security strategy will expand further into the maritime arena. The operational range of the PLAN is likely to expand to protect maritime access and security. In any future scenarios other than Taiwan, the PLAN will likely play “a large—but not central—role” in tandem with a maritime police force and various forms of international cooperation.

Although it was not originally part of the conference, the editors have included Professor Nan Li’s chapter as part of this volume because it provides an excellent description of Chinese maritime strategy that illuminates the larger context for Chinese naval modernization and Chinese naval activities. This chapter first shows that China’s naval strategy has undergone two major changes: from “near-coast defense” prior to the mid-1980s to “near-seas active defense” after the mid-1980s, and then to the advancement of a “far-seas operations” strategy. This chapter also argues that changes in naval strategy and capabilities can be explained by a combination of major variables, including the role of naval leadership and personal experience, endorsement of civilian leadership, changing perception of external security environment, availability of funding and technologies, and institutionalization of naval research.

The third section of this volume focuses on the specific capabilities of the PLA Navy. Ronald O’Rourke’s “PLAN Force Structure: Submarines, Ships, and Aircraft” provides a thorough examination of the force structure of the Chinese navy. It includes an analysis of the submarine force, discusses possible Chinese aspirations for an aircraft carrier, and reviews developments in PLAN destroyers, frigates and fast attack craft, amphibious ships and landing craft, and naval aircraft. The ability of the different parts of the PLAN force structure to operate together varies greatly depending on the prospective operations the PLAN would conduct in a potential Taiwan contingency. These different components can also be used in support of China’s broader and longer-term goals, including diplomatic port calls and day-to-day presence and engagement, humanitarian or disaster-relief operations, amphibious operations on disputed maritime territories, escorting merchant shipping, or (in the case of submarines and land-based aircraft) collecting day-to-day surveillance and intelligence information.

Colonel (USA, Ret.) Susan Puska's "Getting Rid of the Rust: Preparing Chinese Navy Leaders for High-tech War" examines the PLAN's attempts to integrate its new advanced equipment with competent and qualified personnel. Framing the question in Chinese terms, Puska asks whether the Chinese navy can acquire and develop personnel and leaders who are both "red" and "expert." Despite understanding the increased importance of "people" to the operation of technologically advanced equipment, the PLAN still struggles over the red versus expert debate. The chapter looks at the major impediments that the PLAN faces in leadership and personnel management and the steps necessary for the PLAN to address these shortfalls. The chapter concludes that the PLAN has taken some steps to address these problems including changes to the quality of personnel accessions, the development of a noncommissioned officer (NCO) corps, and improvements in training. The role of the Party committee, Party corruption, the army's dominance of the navy, and a host of other obstacles still inhibit PLAN attempts at personnel improvements, however. The development of the NCO corps is a work in progress and the PLAN still lacks well-educated personnel at all levels who can take advantage of new high-tech equipment.

The final section addresses how the PLA Navy might use its emerging capabilities. Rear Admiral (USN, Ret.) Michael McDevitt's "The PLA Navy Antiaccess Role in a Taiwan Contingency" analyzes how the PLAN could conduct antiaccess operations during a Taiwan assault scenario. McDevitt first examines the Soviet experience in antiaccess warfare, noting that the PLAN faces the same operational problem that the Soviets faced: defense against attacking carrier forces. The chapter discusses how the PLAN is currently approaching antiaccess operations and how Chinese experts see Chinese antiaccess operations developing in the future. The chapter argues the PLAN is centering antiaccess strategy on open ocean surveillance, land-based aircraft capable of firing cruise missiles, submarines, and the prospect of maneuverable warhead ballistic missiles. The PLAN needs considerable improvement in all these areas to successfully carry out this antiaccess strategy. In particular, the PLAN will have to develop better ocean surveillance to reliably and consistently utilize the antiaccess "weapons triad." McDevitt argues that the United States will continue to develop ways to counter these Chinese capabilities, likely resulting in "an assured access versus antiaccess capabilities competition between the United States and China."

Rear Admiral (USN, Ret.) Eric McVadon's "The PLA Navy as an Instrument of Statecraft" discusses how the PLA Navy is employed as an instrument of statecraft through both the "use" (implying readiness to employ or actually

use weapons) and “nonuse” (existence and imposing presence without overt readiness or threat to use firepower) of naval power. The author explains that the Chinese may view the “development and deployment” of a capable navy but the exercise of “caution and restraint” in its use as best serving China’s interests. Employment of the PLA Navy in a “nonuse of force” role has become an increasingly relevant element of China’s comprehensive national power, fitting well with a general strategy favoring nonmilitary tools to achieve security. The chapter considers three other categories of the PLA Navy’s statecraft roles in recent years. The 2005 deployment of a *Sovremennyy*-led Task Group to the Chunxiao gas field in the East China Sea represents a case of decisive “reversion to gunboat diplomacy” in confronting Japan. The F-8 and EP-3 aircraft collision, *Han* and *Song* submarine encounters, and survey ship intrusions are examples of the PLA Navy’s use as an instrument of statecraft vis-à-vis Japan and the United States. However, this is naval statecraft with Chinese characteristics—sometimes inept and often representative of Beijing’s unique view of maritime affairs. Finally, China also uses the PLA Navy to perform military diplomacy in a conventional manner through port visits around the world, exercises with foreign navies, and senior officer visits. The chapter concludes that despite cases of reckless or irresponsible use of the PLA Navy, there are also “legitimate,” positive roles which the international community can encourage and reinforce. McVadon argues that this creates a realistic prospect of maritime cooperation between the United States and the PRC.

No discussion of PLAN modernization (or PLA modernization in general) would be complete without reference to the issue of “informatization.” Andrew Erickson and Michael Chase of the U.S. Naval War College discuss this subject in the chapter “Informatization and the Chinese People’s Liberation Army Navy.” This chapter explores PLAN efforts at informatization and its implications for command and control and joint operations. The research draws on a variety of Chinese-language publications to survey how the concept of informatization is defined in naval terms and how it relates to current PLAN capabilities in integration of command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR), conducting joint operations, training and education, and the modernization of PLAN command and control. The chapter concludes that implementation of informatization and modernization of Chinese C4ISR have clearly become top priorities for the PLAN. However, there are still many gaps between the theory of informatization and the operational practice and implementation. There appears to be a debate on PLAN “connectivity” theories and between advocates of centralization and decentralization of command and control. Will increased C4ISR capabilities push information to lower levels or will

they further empower the center? The Chinese leadership may hold an overly optimistic expectation that informatization can fully relieve the fog of war and battlefield uncertainty. This new reliance on modern C4ISR capabilities will also leave China more vulnerable to command and control warfare. Finally, the chapter considers if the PLAN has the same metric for integration of C4ISR as the U.S. Navy. The PLAN could approach the concept not from a “one weapon, one target” approach relying on individual operators, but instead by emphasizing a large arsenal of missiles meant to overwhelm the defenses of a targeted naval group without concern for individual accuracy or collateral damage.

Collectively, these chapters provide considerable insight into the drivers of Chinese naval modernization, how this is being reflected in PLAN hardware acquisitions and personnel policies, and how the PLAN may use its new capabilities both in peacetime settings and in event of military crisis or conflict. In most instances, the authors were able to update the papers that they presented at the original conference to reflect new information. However, in a few instances, the authors were unable to update their papers due to time constraints or other unavoidable circumstances. Although the content of those papers remains valid, we should highlight some of the developments that have taken place since the conference in November-December 2007. These include the 2008 Gulf of Aden deployment and the PLAN’s subsequent missions to that area for the purposes of conducting counterpiracy operations; increasingly open discussion by PLA officers about Chinese plans to acquire aircraft carriers; problems in flight testing of the JL-2 submarine-launched ballistic missile that have delayed the operational capability of the *Jin*-class nuclear-powered ballistic missile submarine; and heightened regional tensions over China’s disputed maritime territorial claims in the South China Sea and East China Sea, and within its exclusive economic zone. These developments will be discussed in greater detail in the concluding chapter of this volume.

China and Adjacent Seas



Source: Based on U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2010* (Washington, DC: Office of the Secretary of Defense, 2010), 23.

Chapter 1

Rising Powers and Naval Power

Peter M. Swartz

This chapter will address the following five questions:

- How have previous rising powers viewed and utilized naval power?
- What were the key arguments and objectives that led them to invest in naval modernization?
- What were the geopolitical consequences of that decision?
- What factors made naval arms races more or less likely?
- How should current Chinese and Indian efforts to build naval capabilities be viewed in light of this historical experience?

First, however, it is necessary to review the history of “previous rising powers.” And second, it will be useful to draw some preliminary observations, comparisons, and conclusions from this history before addressing the five questions directly.¹

Previous Rising Powers

The potential list of “previous rising powers” is enormous. At one time or another, dozens of the nation-states and empires that have existed in this world could have been termed “rising.” This is true even when we limit the discussion to the modern era—say, since 1500 or so. Examples might include Sweden, Austria, the Ottoman and Mughal Empires, the Qing Dynasty, post-unification Italy, and Mao Zedong’s China.

For purposes of this study, however, the list has been limited to nine: Portugal, Spain, the Netherlands, France, Britain, Russia, Germany, Japan, and the United States. Two were—and are—small continental countries. Three are medium-sized continental nations. Two are medium-sized island states. Two are vast continent-spanning entities. *All at one time or another burst the confines of their own immediate neighborhoods to expand their influence throughout a significant part of the globe.*² All except the United States can be said to have risen *and fallen* at least once so far in their historical experience. And all have a history that includes friendship as well as enmity toward other powers, great and small.

Portugal

During the late Middle Ages, Portugal managed to expel Arab armies occupying part of its territory and to conclude an alliance with England that would endure for centuries—although not without some notable lapses. During the 15th century, Portugal began to produce highly effective seagoing ships and to study and perfect the art and science of blue-water navigation. Technologically superior at sea to most other nations of the time, Portugal began to expand a vast trading network eastward around Africa to the Far East and westward across the Atlantic via the Atlantic Islands to Brazil. This network became the earliest—and ultimately the longest-lived—of the modern European overseas empires, and was backed for half a millennium by naval power. Portuguese voyages of exploration and discovery led to expeditionary voyages of economic expansion and exploitation. In the 16th century, Portugal set up trading posts throughout the Indian Ocean littoral. Arab and Indian dominance of that sea was smashed by superior Portuguese naval technology, employed in blockades and expeditionary amphibious landings and assaults. Portugal grew rich on transoceanic trade in spices, slaves, and other products.

For over two centuries, Portugal was one of the world's major economic, military, and political powers. Portuguese naval forces predominated in the South Atlantic and Indian Oceans and the China Seas throughout the 16th century, and it was a contemporary Portuguese mariner who first called Taiwan *Ilha Formosa*—"beautiful island" (although Portugal did not colonize Taiwan). Portuguese hegemony in the Indies was, however, contested and then eclipsed by the Dutch during the first half of the 17th century—in part as a result of a 60-year Portuguese union with Spain. The Portuguese were, on the other hand, able to hold their own against the Dutch onslaught in Brazil.

A small country with a population of little more than one million and with little industry, early modern Portugal—despite its commercial successes—became badly overstretched overseas. The country could not effectively defend its posts and possessions against larger, richer, and more developed rivals. Its technological lead was eclipsed by the superior economic, scientific, and engineering resources of other rising European states. The money that Portugal made was spent in large part on policing its empire—often with little success. That empire became greatly reduced, especially in Asia, and during the early 19th century, Brazil—Portugal's largest possession—declared its independence.

Toward the end of the 19th century, however, Portugal carved out a large new overseas empire in western and southern Africa. As an ally of Britain and France during World War I, Portugal increased these African holdings after the war, although by only a slight amount. The inhabitants of Portugal's African territories fought wars for independence in the 1960s and 1970s, until freed

as a consequence of Portugal's democratic revolution in 1974. Macao—one of the last remnants of the old Portuguese Empire—reverted to China in 1999. Today's Portugal is a small, prosperous country of 11 million—albeit with the smallest economy in Western Europe—and still deploys a tiny blue-water naval force, allied with other North Atlantic Treaty Organization (NATO) navies for over 50 years.

Spain

Spanish kingdoms had employed powerful naval forces in their wars to expel the Arabs from Iberia, especially in the Mediterranean. Once the Arabs were completely gone from the peninsula in 1492—and with expeditionary Conquistadors staking out huge empires in the newly discovered Americas and the Philippines—Spanish fleets attempted to dominate not only the Mediterranean but also the Atlantic and Pacific. For 300 years, Spanish naval forces contested those seas with the fleets of Portugal, the Netherlands, Britain, and France, while at the same time supporting major expeditions ashore. During the 16th and part of the 17th centuries (Spain's "Golden Age"), Spain was Europe's leading great power and arguably the modern world's first superpower, with vast wealth derived from colonial possessions and commerce, backed by a large naval force. Spain achieved the world's first global empire, with possessions in Europe, Asia, Africa, the Americas, and Oceania. Spain even united with Portugal and its own huge empire—an arrangement that only lasted, however, from 1580 to 1640.

Spain was able to launch—albeit unsuccessfully—an armada of over 125 warships against England in 1588. (Less well known is the Spanish victory the following year over an "English Armada" sent to attack Spain, Portugal, and the Azores.) The Spanish Empire was supported by a powerful, globally deployed navy, which protected merchant shipping; suppressed piracy; escorted and carried expeditionary troops, merchants, missionaries, and administrators; and fended off attacking naval units from rival nations. Central to Spanish wealth—and protected by its naval power—were immense annual convoys of gold, silver, and other New World commodities back to the mother country.

Unable to keep the Netherlands within its empire, Spain lost its preeminence at sea and status as a great power by the end of the 18th century, having become an enduring ally of France in its struggles with the British. In the early 19th century, its main battle fleet—still the world's third most powerful—was all but destroyed off Trafalgar, alongside that of the French. A few decades later, most of Spain's American colonies won their independence. War with the United States at the end of the century destroyed most of Spain's then-existing residual warships. Neutral during both 20th century world wars, Spain

today is a highly developed country with an economy among the world's 10 largest. A NATO ally for a quarter of a century, Spain has an excellent small blue-water navy, with ships capable of operating as integrated parts of U.S. Navy carrier strike groups.

The Netherlands

During the 16th and early 17th centuries, the Netherlands wrested its independence from Spain and became one of the major seafaring and economic powers of the world. Often allied with England, the Netherlands assisted the English in their defeat of the Spanish Armada. The principal roles of the Netherlands navy became protection of the Dutch homeland from sea-borne attack and protection and expansion of Dutch commercial operations worldwide—first in the North Sea and Baltic, and then farther afield.

The country developed a global trading network of colonies and trading posts, often through seizing Portuguese and Spanish trading posts in Africa, the Indian Ocean, and East Asia. Striving to dominate the international sea-borne spice trade, the Dutch developed a large naval force that broke the back of Portuguese naval and commercial power in the Indian Ocean, employing more effectively the same Western naval technologies and operations (such as blockades and expeditionary amphibious landings) that Portugal had used to such good effect against the Arabs and Indians. The Netherlands even occupied Taiwan for almost 40 years (until expelled by Chinese military and naval expeditionary forces) and seized a Spanish silver fleet. The 17th-century Dutch dominated world trade, especially the traffic in slaves.

Dutch naval forces held sway east of Africa throughout the first half of the 17th century, until contested and then eclipsed by the rising power of its former ally England. During the shifting great power alliances of the 18th and early 19th centuries, the Netherlands found itself sometimes fighting alongside England and sometimes fighting against it, in fleet-on-fleet actions as well as blockades and amphibious landings. By the end of the 18th century, the Netherlands had clearly ceded its preeminent global maritime position to Great Britain. The Napoleonic era saw the Netherlands on the side of the Emperor of the French, with devastating results to its empire and fleet at the hands of the British.

By the mid-19th century, the Netherlands was no longer a great power—except as a colonial power—or a great naval power. The Dutch Empire had been reduced to only a few small possessions in the Americas but also a vast archipelagic territory in the East Indies, requiring the Netherlands to maintain an important second-tier navy, especially for suppressing piracy and guarding against further encroachment on its possessions by the world's

contemporary great powers. The country allied its navy and empire with Britain and the United States during World War II and joined NATO in 1949. The Indies received their independence as Indonesia after World War II, but the Netherlands continued to deploy a competent, medium-sized navy throughout the Cold War. Today, the Netherlands is one of the world's 20 largest economies despite a population of only 16 million, and the Dutch navy remains a small, modern blue-water force.

France

The French monarchy reached its height during the 17th century. With the largest economy and population in Europe, France wielded great influence over European politics and economics. French naval strength was built up considerably, especially by Cardinal Richelieu, and France developed colonies in Africa, Asia, and America. The 17th-century French navy was competent, rich, and strong enough to deploy worldwide and contest command of the seas with the battle fleets of England and the Netherlands, as well as conduct blockades and expeditionary amphibious raids against those nations and their possessions, as well as Spain and Portugal.

The 18th century, however, saw a series of titanic global struggles between France and Great Britain that ended in British world colonial and naval supremacy. The French navy was, however, able to intervene decisively during the American War for Independence to ensure victory for the Americans and the establishment of the United States of America. In the early 19th century, Napoleonic France's fleet was decimated along with that of Spain by Nelson in a fleet-on-fleet action off Trafalgar. France, however, doggedly remained a significant naval power throughout the 19th and 20th centuries, joining Britain in combined naval campaigns during the Crimean War, World War I, parts of World War II, and the Suez crisis in 1956. With its own interwar fleet largely rendered inoperable during World War II, postwar France received significant naval assistance from Britain and the United States, especially the provision of aircraft carriers and naval aircraft.

France today has one of the world's half-dozen largest economies. France's current navy is a robust, medium-sized blue-water force, deployed worldwide and rivaling the Royal Navy as NATO's second most powerful national naval component. French navy ballistic missile submarines (SSBNs) have deployed France's strategic nuclear deterrent since the 1970s.

Britain

Britain's navy descended from that of England, which was already a powerful combat force at sea by the 15th century, thanks in large part to the navalist

policies of King Henry VIII. For the next four centuries, England—later Great Britain—famously spent and fought its way to maritime supremacy over all other possible rivals, including the navies of Portugal and Spain (1585–1660), the Netherlands (1650–1675), France (1689–1815), the nascent United States (1775–1783 and 1812–1815), and Russia (1853–1856). By the beginning of the 18th century, Britain had achieved supremacy over the Portuguese, Spanish, and Dutch navies; by the beginning of the 19th century, it had unequivocally bested the French. Through all these centuries, English—later British—economic, commercial, and financial strength grew until Britain became the world's leading power in those areas. This enabled the country to adequately fund outsized naval fleets, and those same fleets protected the trade and achieved the victories that enabled the British economy to flourish.

England invested heavily in naval technology. For example, its battle fleet was technologically superior to the Spanish Armada in 1588. Britain also developed sophisticated financial techniques that later enabled it to deploy the world's largest navy without bankrupting the country. British fleets mastered the techniques of blockades and expeditionary amphibious landings, as well as fleet-on-fleet actions. Despite its naval superiority, however, Britain often reinforced its maritime superiority by allying with other naval powers, including Portugal, the Netherlands in the early 17th century, Russia during the Napoleonic Wars, and France during the Crimean War.

British naval and expeditionary superiority both allowed and benefited from Britain's colonial empire. British soldiers, traders, missionaries, and administrators came by sea to what became Britain's Mediterranean, Asian, African, American, and Oceanic possessions. In this, they were backed by the Royal Navy. At the same time, that navy built key bases in certain of those possessions to suppress piracy; ensure freedom of commerce throughout the empire; and serve as expeditionary forward bases against rival nations in Canada, Bermuda, the West Indies, the Falklands, Gibraltar, Malta, Cyprus, Egypt, South Africa, Aden, India, Ceylon, Singapore, Hong Kong, and Australia.

By the end of the 19th century, however, Britain was unable to deal singlehandedly with the simultaneous challenges of the new or rebuilt battle fleets of Germany, Japan, and the United States, now arrayed alongside traditional European naval powers France and Russia, and all backed by robust and growing industrial economies. A relatively declining Britain therefore entered into a series of alliances that allowed it to defeat Germany—its greatest rival—by mobilizing all the other great naval and economic powers of the world alongside it, even Japan and the United States.

During the interwar period, Britain struggled to maintain its position as the world's leading naval power, but that position became unequivocally

ceded to the United States by early in that country's participation in World War II. That war saw the Royal Navy fighting again alongside the Americans, as well as the Dutch, the Free French, and others. During the Cold War, Britain was a staunch NATO alliance member, and maintained the world's third most powerful navy. Britain remains one of the world's half-dozen largest economies and deploys a sophisticated, medium-sized navy capable of integrating well into U.S. Navy formations. Royal Navy SSBNs have deployed Britain's strategic nuclear deterrent since the 1960s.

Russia

Russia scarcely had a seacoast, let alone a navy, before the reign of Tsar Peter the Great in the 17th and 18th centuries. But Peter founded and built up fleets for the Black Sea and the Baltic, borrowing technology and advisors from the naval powers of Europe, especially Holland. A succession of subsequent tsars gained extensive seacoasts for Russia along the Baltic, Black, and White Seas and the Pacific Ocean, largely by overland conquest. Successful operationally in the Black Sea against Ottoman fleets, by the mid-18th century Russia ranked as one of the world's great powers. In the 19th century, Russia deployed the world's third strongest navy, using it in the Mediterranean during the initial decades of the century and sending its squadrons at mid-century on visits to the United States.

With most of its Pacific and Baltic fleets destroyed by the Japanese navy in 1905, Tsarist Russia did not deploy significant naval forces in combat during World War I, despite a strong battleship rebuilding program. After the overthrow of the Tsarist regime, Soviet dictator Josef Stalin maintained an underresourced Red Fleet as a defensive arm of the Soviet state prior to World War II, but the fleet did not conduct many significant naval campaigns during that war. Among the most important operations that it did conduct however, were amphibious assaults in Sakhalin and the Kurils, made possible by the transfer to the Soviets of 150 American patrol and landing ships and craft and the training of 12,000 Soviet sailors in American patrol and amphibious tactics, techniques, and procedures. The Soviets likewise learned from operating Lend-Lease and other warships that the United States and Great Britain loaned to them during the war, and later from captured German and Italian ships, equipment, and naval designers.

During the Cold War, the Soviet Union deployed four increasingly powerful fleets around its periphery and planned to use those fleets to protect its strategic SSBN forces, ward off NATO attacks on the homeland from the sea, assist the Red Army, and interdict NATO sea lines of communications. With an economy not particularly dependent on seaborne trade and with no

important overseas allies, the specter of an Allied economic blockade of its coasts gave the Soviets little fear. By the 1980s, the Soviet Union had a global naval presence, powerful anticarrier ships and aircraft, and an enormous and powerful—albeit relatively noisy—submarine force. The Soviets maintained forward stations in all the world's oceans, working out of client states in the Caribbean, Africa, Asia, and the Middle East.

Much of that navy melted away with the collapse of the Soviet Union, although the current Russian navy is showing some signs of revival. Revive it can, since Russia still remains the world's largest country in the area, with vast energy resources; one of the world's dozen largest populations and economies; a considerable industrial, technical, and educational base; and one of the world's two largest nuclear arsenals.

Russia's naval history has been marked by wars at sea with Turkey, France, Britain, Japan, Germany, and other powers, and by amphibious landings on Japanese-held islands. Russia participated in coordinated coalition operations in the Mediterranean in the 19th century (especially at Navarino), as well as in the combined and joint Boxer intervention in China in 1900. During World Wars I and II, Russia (later the Soviet Union) was allied with other maritime powers, but few major coordinated or cooperative naval operations were conducted. During the Cold War, Russia dominated the small navies of other Warsaw Pact members like Poland, East Germany, Romania, and Bulgaria. Russia and its navy may have had the least experience as allies and coalition members of all the countries discussed here.

Germany

Pre-unification German states were not significant naval powers, despite the expanding Prussian Baltic seacoast and great shipping centers like Hamburg and Bremen. By the 1880s, however, a unified German Empire was deploying a significant naval force to provide coastal defense as well as secure trade routes and far distant colonies for the rapidly industrializing and expanding German economy. Then, in the late 1890s, German Emperor Wilhelm II and his government embarked on building a world-class battle fleet that could even challenge the Royal Navy as a "risk fleet." Wilhelmine Germany was the quintessential "rising power," searching for ways in which it could achieve its "place in the sun." One of those ways would be a modern battleship-centered steel navy, supported by a long-range cruiser force with some expeditionary capabilities. Contemporary British, French, Italian, Austrian, and Russian naval technologies all provided early models for the Germans to consider and emulate. Later, German naval technology would develop its own momentum, especially regarding submarine warfare.

Germany entered World War I with the second strongest fleet in the world and squadrons forward deployed all over the world. Most of what remained of that fleet postwar, however, wound up scuttled at Scapa Flow in 1919 while the war's victors were looking the other way. During the war, Germany had been allied with Austria-Hungary, Bulgaria, and Turkey, but their naval cooperation was minimal due to the widely dispersed operating areas of each of their navies.

A small but powerful Nazi German surface fleet was built in the 1930s, but it was all but destroyed by the Royal Navy during World War II, as was a large and dangerous commerce-destroying submarine fleet in both world wars. During World War II, Germany was allied with numerous other naval powers, including not only Japan and Italy, but also Finland, Romania, and Bulgaria. Mutual mistrust, disparate capabilities, and dissimilar and widely separated operational theaters vitiated the effectiveness of Axis naval cooperation, however.

During the Cold War, West Germany became an essential member of the NATO alliance, and East Germany joined the Soviet Union and other Eastern European communist states in the Warsaw Pact. Both East and West Germany built up competent but modest naval forces, and today's reunited Germany—the world's third largest economy³—deploys a competent, medium-sized navy capable of sending units to waters as far afield as the Indian Ocean. German industry still produces some of the very best contemporary warship designs, especially diesel-powered submarines.

Japan

Japan built its first large blue-water warships in the beginning of the 17th century, following contacts with the Portuguese and Dutch. From 1640 on, however, the Japanese adopted a policy of international seclusion, prohibiting the construction of oceangoing vessels. Henceforth, Japan was more known at sea for its pirates than for its naval forces, until the American Commodore Matthew Perry arrived with his squadron in 1853 to open Japanese ports to world trade. In 1855, with Dutch assistance, Japan acquired its first naval steamship, and in 1857, it gained its first screw-driven steam warship. In 1863, Japan completed its first domestically-built steam warship. In 1865, a French naval engineer designed modern Japanese naval arsenals, and in 1867–1868, a British naval mission was sent to Japan to assist in naval development and organize a naval school. By 1867, the Japanese shogun's navy was already the largest indigenous navy in East Asia, although basically a coastal defense force in capabilities and mission. In 1874, however, Japan launched its first joint expeditionary operation—the Taiwan Expedition—to punish tribesmen who had beheaded some Okinawan merchants.

During the last quarter of the 19th century, Japan built a modern navy and defeated in succession over the next two decades the Qing Chinese navy, the Russian navy, and a few scattered German naval forces. Japan also developed significant expeditionary capabilities, following in a long tradition of historic Japanese expeditions to the East Asian mainland, some of which were successful and some not. As a result, Taiwan, Korea, and numerous Pacific islands were added to the Japanese Empire. The Japanese navy was one of many powerful instruments of state created in a very short time by Japan to support its status as a “rising power.” Allied with Britain since 1903, Japan joined the allied powers in World War I, sending destroyers to the Mediterranean as well as seizing German Pacific Ocean and Chinese possessions. By the end of the war, Imperial Japan possessed the world’s third most powerful navy, after Britain and the United States. The Washington Treaty of 1922 ended Japan’s alliance with Britain, but Japan later joined with Nazi Germany and Fascist Italy in the Axis of 1940.

Japan developed powerful carrier striking forces during the interwar years. However, its bid to destroy the U.S. fleet during World War II proved unsuccessful, and the warships of the Imperial Japanese Navy had almost all been destroyed by 1945. It had received little naval support from its German and Italian allies.

Today, however, Japan has been allied with the United States for over half a century, and remains the world’s second largest economy.⁴ Japan deploys arguably the most modern and powerful naval force among East Asian nations, and ranks among the world’s half-dozen or so leading naval powers, as it was a century ago.

The United States

The United States started off as a country without a navy, although with a considerable industrial base to develop one, if and when it so chose. Threats to its commerce caused it to so choose, however. Throughout the 19th century the United States deployed a respectable medium-sized navy—arguably the fourth strongest in the world, most of the time. It used this navy to fend off successive French, North African, British, and Caribbean pirate attacks on its commerce early in the century, and less successfully against British attacks on its homeland during the War of 1812. Notably, however, the U.S. Navy would never fight Britain or France again (and has never engaged in a shooting war with Russia or the Soviet Union).

Later in the 19th century, the United States used the navy to good effect to support its army in the war with Mexico. During the American Civil War, there were two American navies fighting each other. To counter its weaker

Confederate opponent and to support the army in its campaigns, the Union built up a naval force that by the end of the war was arguably the second most powerful in the world.

Mostly, however, the 19th century U.S. Navy was used in forward station operations to back up its merchants, missionaries, and other nationals all over the world—including in and around China. In these operations, U.S. Navy commanders often entered into local ad hoc coalitions with other naval powers, especially the British.

The United States by the 1880s was a world power by most economic standards. Yet its army was minuscule and its navy ranked no higher than 12th among the world's navies. By the end of the 19th century, however, the United States had joined the other great and medium-sized powers of the world in building up a national battle fleet centered on battleships, and was a major player in the global naval arms race that characterized world relationships in the years before World War I. American navy attachés and engineers were deployed to the great naval centers of Europe to learn and later apply the latest European naval developments.

Certainly a great world power economically and now navally, the United States until World War I, however, had been loath to act as a player in many aspects of the European-centered Great Power System. The United States did, however, spawn Captain Alfred Thayer Mahan, a prodigious writer on naval history and international relations, whose advocacy of large, consolidated battle fleets heavily influenced naval strategic, operational, and tactical theory not only in the United States, but in all other countries of the world with significant naval forces. The United States also began in this period to deploy expeditionary naval forces in the Caribbean and East Asia, including participation in the multinational Boxer expedition to Beijing in 1900, alongside the British, Russians, French, Germans, Japanese, and others.

When the United States finally entered World War I in 1917, however, its naval forces were not deployed in a Mahanian way. Rather, they were divided into numerous separate force packages in the Atlantic and Mediterranean in order to more effectively carry out its principal missions: troop and cargo transport, convoy protection, antisubmarine and antisurface raider warfare, and blockade. American naval officers worked closely for a year and a half with their British counterparts, and learned a great deal about Royal Navy ship and weapons system design and tactics, techniques, and procedures. The United States emerged from that war as the world's number two naval power, and treated both number one (Great Britain) and number three (Japan) as rivals throughout the 1920s.

By the 1930s, however, Japan had emerged as the U.S. Navy's principal potential adversary, and indeed after December 7, 1941, the two countries were at war. Britain, meanwhile, had drawn close to America and the two naval powers prosecuted a coordinated global war at sea against the Axis powers during World War II. To attack Japan—a nation located on the far side of the world's largest ocean and protected by powerful battle fleets and island fortresses—the U.S. Navy built up the largest and most powerful navy the world had yet seen, totally eclipsing the Royal Navy and all other world navies. That navy was organized, trained, and equipped to carry out a wide range of naval missions, including destruction of enemy battle fleets, bombing and landing troops to seize objectives ashore, sinking enemy commerce, protecting allied shipping, and blockade.

Although the U.S. Navy during the Cold War and post-Cold War eras has never been more than a fraction of the size of its World War II ancestor, it has remained the world's dominant naval force since at least 1944, with significant at-sea and expeditionary combat capabilities, as well as an important role as part of the Nation's strategic nuclear deterrent. In 1949, the United States joined NATO, and during the 1950s concluded defense agreements with numerous other nations, especially in East Asia. As the predominant naval power, the United States was the West's naval leader throughout the Cold War, coordinating and cooperating closely with the navies of several former great powers and world naval powers including Portugal, Spain, the Netherlands, France, Britain, Germany, and Japan.

Observations, Comparisons, and Conclusions

Analyzing the historical record above, some salient points can be gleaned:

Rising navies are usually a feature of rising political, military, and economic powers. All of the powers discussed in this paper were bent on becoming powerful global or regional states, and all used naval power as one of the important means to that end. There have been, however, exceptions: 19th century America could have built and deployed far more powerful naval forces than it usually did; arguably the interwar Soviet Union could have done the same. In both instances, the countries focused their impressive economic and technological resources on building up their domestic economies and infrastructure, despite well-known naval requirements. Also, in both instances, the countries *eventually* built up powerful naval forces as well.

When a rising economic and political power decides to build a formidable navy, it usually can do so. That said, naval forces always compete for the resources of rising states with land forces and other appurtenances of power.⁵ Few rising powers can devote the bulk of their available resources to their

navies. Even Portugal and the Netherlands, small nations with small populations, needed significant land forces to conquer and maintain their empires, and even more importantly to guard against more powerful neighbors at home. And the world's most storied naval powers—Great Britain and 20th century Japan and the United States—have had to devote significant treasure to their ground forces and later, to their air forces, in order to rise and to maintain and defend their status as major powers.

A country has to be rich and smart to be a rising naval power. When it stops being either, it falls. That seems to be the lesson one can draw from this history. Fifteenth century Portugal had special maritime technological prowess and extensive recent military experience. It was as wealthy as any other state in that early modern, pre-industrial age. As Portugal's technological lead withered, other richer, more populous states challenged it for naval supremacy. By the 19th century, Portugal was an economically impoverished state, and hardly a naval power at all. The Netherlands, Spain, France, and Britain were all economically vibrant and strong countries during their eras of naval ascendancy, as later were Russia, Germany, Japan, and the United States.

All rising powers with rising navies have eventually collided with other great naval powers in combat—sometimes with other rising powers and sometimes with powers that had achieved supremacy. Portuguese naval power successfully challenged Arab and Indian sea power in the Indian Ocean. Dutch and English sea power eventually eclipsed the Portuguese in the same ocean, but had less success in the South Atlantic. Portugal, Spain, England, the Netherlands, and France all jockeyed for naval advantage across the 17th century. By the 18th century, two great naval powers had emerged—France and England—although Russia was now building battle fleets as well, and the other traditional naval powers still deployed powerful forces on occasion. By the early 19th century, the Royal Navy had vanquished all the others, especially the French and Spanish, and was clearly globally supreme at sea, despite the continued existence of strong French and Russian navies.

At the end of the 19th century, however, the rising national and naval powers of Germany, Japan, and the United States joined and expanded the old naval triumvirate, making British naval supremacy problematic unless Britain could ally itself with one or more other naval powers—which it did against Germany during the two 20th century world wars. Meanwhile, a relatively small and war-exhausted Britain could not contend for global maritime supremacy against its American ally, and so command of the world's oceans passed to the United States Navy, the victor in a largely naval war against Japan. Somewhat later, the Soviet Union—heir to Russia's naval tradition—embarked on a Cold War naval buildup that, while formidable, never led to actual combat. When the

Soviet economy and then the Soviet state failed, the Soviet navy withered, and the U.S. Navy triumphed over its most recent naval rival without having to go to war.

When a rising power builds a strong navy, other strong powers strengthen their own navies. Rising powers and their navies may incur the enmity of other powers, and arms races may ensue. Some of these arms races precede actual wars. Others do not. Naval forces are usually involved in overall international arms races, and are occasionally their centerpieces. The most famous example is the Anglo-German arms race in battleships that occurred just a century ago. At the same time, Japan and the United States were also building up their battle fleets, as were France and many other European and South American countries. (Chinese and Russian battleship fleets had been eliminated from the race over the preceding decade and a half by Japan.) Other examples would include:

- the competition in ships of the line and forward colonial trading posts among Portugal, Spain, France, Britain, and the Netherlands in the 16th and 17th centuries
- the great struggle for world domination between Britain and France in the 18th century
- Britain's maintenance of maritime superiority and France's attempts to challenge it through innovative doctrines such as the *Jeune Ecole* in the 19th century
- the Sino-Japanese naval arms race of the 1880s and 1890s, culminating in the Sino-Japanese War and Japanese control of Taiwan
- the treaty-constrained maintenance and buildup of fleets among the five major world naval powers between 1922 and 1937
- the buildup of nuclear deterrent forces by the Soviet Union and the United States in the 1950s, 1960s, and 1970s, which included significant strategic nuclear submarine forces and submarine-launched ballistic missiles
- the buildup of Soviet general purpose naval forces in the wake of the 1962 Cuban Missile Crisis, and the corresponding U.S. and allied naval responses.

Technological superiority matters in the short run, but in the long run, naval technology flows more or less freely across borders among the world's most powerful nations—both reflecting and fueling naval arms races. Portugal led the world in maritime technology in the 15th century, but had lost its lead

by the 16th. In the 20th century, the introduction of submarines, dreadnought battleships, airships, aircraft carriers, and nuclear-powered warships by one navy all led within a very short time to their widespread emulation elsewhere. Navies are often allied with other navies during specific periods, when it is in the interests of both sides to share tactical and technological secrets. When those alliances dissolve—as was the case, for example, with the Anglo-Japanese alliance of 1903–1922 and the Anglo-American alliance of 1917—the navies involved are free to use the knowledge they had gained for their own purposes, even in planning war on their former allies.

Rising naval powers have always had multiple objectives in the world and faced a variety of threats, perceived and real. Consequently, their navies have had to be capable of a wide variety of missions. Portugal needed naval forces to defeat Arab warships at sea as well as ground expeditionary troops to invest cities and fortresses. Britain needed to guard against rival battle fleets in Europe as well as police its empire worldwide. The Soviet navy had to deploy and protect a strategic deterrent, defend the homeland from seaborne attack, support the Soviet army, cut NATO and Pacific sea lines of communications, and show support for client states around the world. All these various demands require investment in different types of ships and aircraft, different types of officer and enlisted specialists, and different weapons and command, control, communications, computers, and intelligence (C4I) systems, as well as strong general oversight and decisionmaking to maintain the most appropriate balance.

Naval policy and doctrine matter. Even powerful naval nations can build too little of some important ship and weapons system types, and employ the types they do have sub-optimally. Examples include America's over-reliance on inshore gunboats during the War of 1812; Japan's reluctance to use its submarines to attack U.S. military and civilian shipping during World War II; and Soviet navy reliance on noisy and therefore easy-to-interdict submarines during the Cold War.

Operational art and tactics matter. A powerful navy is no guarantee of a rising or great power's success in a particular war or campaign. Poor decisions by naval commanders contributed significantly to the defeats of the Spanish Armada off England in 1588, the Royal Navy off the Virginia Capes in 1781, the French and Spanish off Trafalgar in 1805, the British and French at the Dardanelles during World War I, the U.S. Pacific Fleet at Pearl Harbor during World War II, and the Imperial Japanese Navy at Midway during that same war.

Rising powers and their navies may also earn the respect and friendship of others. The rising power may actively seek allies. At the same time, other powers may well seek cooperation and alliance with the rising power and its navy, with some of those alliances enduring for decades. During the

15th through 18th centuries, alliances among Portugal, Spain, the Netherlands, France, and Britain often shifted, although some alliances among naval powers—like Spain and France in the 18th century—proved long-lasting. Eight naval powers—including Britain, France, Germany, Russia, Japan, and the United States—allied themselves in a temporary coalition in response to the Chinese Boxer rebellion of 1900.

Despite fighting two wars of independence against Britain in the early days of the American republic, by the 20th century the United States Navy was normally an ally of the Royal Navy. Since 1940, the U.S. Navy–Royal Navy relationship has been one of the closest military-to-military relationships among major naval powers of all time. And the seldom-discussed Soviet-American naval alliance of 1945 in the North Pacific facilitated the swift Soviet conquests of the Japanese Empire’s northern islands.

All the formerly rising powers we have chronicled—except the United States—have also later become declining powers. Nevertheless, most remain today among the world’s most powerful nations economically and, to some extent, politically. In short, rising economic powers still stay in the game for the long run.

Most formerly rising powers still deploy very powerful residual navies, in part because they still remain economically powerful and can easily afford to do so.⁶ In short, most traditional naval powers still see themselves continuing to wield naval power in the long run.

Most of these navies of formerly rising powers are in turn still closely allied with the United States Navy and capable of easy integration into its combat formations. Previous enmity, rivalry, and even warfare do not preclude naval cooperation at some later date.

Addressing the Questions

Having first presented some historical data, and then drawn some observations, comparisons, and conclusions from that data, it is now possible to directly address the five questions that are properly the subject of this chapter:

How have previous rising powers viewed and utilized naval power?

Previous rising great powers have generally viewed naval power as an important—indeed, often vital—tool for expanding their wealth, power, and influence. This has also been true of smaller, regional powers (for example, Italy, Austria-Hungary, Sweden, Denmark, Chile, Argentina, Brazil, Greece, Turkey, and South Korea). They have used that naval power to:

- ward off attacks on their homeland by rival powers
- protect their international commercial trade

- establish forward trading posts, colonies, client states, and naval stations ashore
- attack the international commercial trade of their rivals and blockade their ports and coasts
- support the land power of their armies
- contest command of the seas and oceans with rival fleets
- in some modern cases, deploy significant portions of their strategic nuclear deterrent.

What were the key arguments and objectives that led previous rising powers to invest in naval modernization? The arguments and objectives flowed naturally from the way they viewed and used naval power. In all cases, however, the arguments made and objectives cited met with domestic resource limitations and other needs of rising powers, especially the requirements for powerful ground and (later) air forces, and the need to sustain vibrant national and imperial economies.

Developing and maintaining significant naval power has been expensive. Only rich countries have been able to afford it, and only *very* rich countries can maintain navies capable of exerting or contesting world naval supremacy on important oceans and seas. In the 17th century, those countries were Portugal, Spain, France, the Netherlands, and England. By the 18th century, only England and France could make that kind of investment, and by the 19th century only heavily industrializing Britain could do so. Yet by the late 19th century, as the industrial revolution spread well beyond the British Isles, many more countries had the economic wherewithal to contest the seas: Britain and France, but also Russia, Germany, the United States, Japan, and Italy.

In the 20th century, two world wars and a cold war reduced the naval capabilities of Germany, Japan, and Russia, while Britain and France saw their economies—and thus their navies—far outstripped by that of the United States. But even in the contemporary United States, arguments for a strong navy must contend with arguments for a strong army and air force, as well as domestic economic and social demands.

What were the geopolitical consequences of the decision to invest in naval modernization? Geopolitical consequences of decisions to invest in naval modernization have been enormous. Decisions by the European naval powers of the 15th through 19th centuries helped foster huge expansions of their trade and led to the founding of vast overseas commercial and colonial empires. Britain's decisions over time to build up what became easily the world's most powerful navy were major contributors to the creation and extension of the British Empire, the largest empire in area, population, and wealth that the world has yet seen.

German and Japanese decisions to build up strong cruiser navies during the 1870s and 1880s helped enable the former to establish a global network of colonies and the latter to defeat its chief regional rival (Qing China), occupy Taiwan, and begin its imperial march across the Asia-Pacific region. The decisions by these two latter powers to transform their cruiser navies into top-of-the-line battle fleets gave Germany a counterweight to the British Grand Fleet during World War I, and helped enable Japan to defeat the Russian Empire, seize Korea, take over German possessions in the Pacific, and dominate the western Pacific.

Russia's decisions to become a naval power, dating back to the time of Peter the Great, helped attain important ports and seacoasts for that previously almost landlocked country. Recall that, four hundred years ago, St. Petersburg had been Swedish, Novorossiysk was Ottoman, and Vladivostok Manchu. It was Russia's naval power that enabled it to become a Mediterranean political and military player in the early 19th century. And naval power facilitated the mid-20th-century Soviet Union's ability to develop client states in such places as Aden, Somalia, Ethiopia, Angola, Guinea, Libya, Syria, and Cuba.

For the United States, investing in naval power in much of the 19th century mostly enabled the new republic to protect its then-vast global commerce. It also, however, proved useful in helping the U.S. Army wrest large western territories from Mexico, and essential—again alongside the Army—in ensuring that the country stayed together, through its operations during the American Civil War. It was newly minted American naval power at the end of the 19th century that enabled the seizures of Caribbean and Pacific islands from Spain and of a canal zone in Panama from Colombia, and assured American domination of Caribbean and Central American island nations and a certain American influence in China.

During World War II, the American investment in naval power was a major contributor to the geopolitical reordering of East Asia and the Pacific, as well as helping enable the securing of Western Europe from totalitarian rule, both actual and potential. The U.S. Navy during the Cold War became an essential component of the geopolitical balances in northern and southern Europe, the Middle East, the Caribbean, and East Asia. Today it remains vital to the geopolitical balance in Northeast Asia and the Middle East, and very important elsewhere. Were the U.S. Seventh Fleet to decamp from its Japanese bases, pull back to the United States, and then dissolve, it would be a destabilizing event on the scale of a successful domestic revolution in one or more Northeast Asian countries.

Not all the geopolitical consequences of the rise of past naval powers have worked themselves out. Some of the world's areas of tension today have

their origins in the rise of bygone rising naval powers. Examples include East Timor, the southern Philippines, the southern Kuriles, Gibraltar, Cyprus, the Falkland Islands, and the current status of Taiwan.

What factors made naval arms races among rising powers and others more or less likely? The wealth of nations, the nature of the international political system, public opinion, national enmities, and deliberate government decisions have been the key factors behind naval arms races. The navies themselves are not necessarily culpable. All navies pressure their governments for more resources, but it is the government, not the navy, that ultimately provides them. U.S. naval officers throughout the 19th century argued vociferously that the United States should take its place as a great power and deploy a much more powerful navy. Washington seldom listened, however, except during the American Civil War. It was not until the country was more than a century old that the United States entered into the international naval competition in a big way. Nineteenth century French naval officers likewise tried to get successive French governments to open the financial spigots more and enable them to more effectively challenge Britain at sea, with only occasionally successful results.

On the other hand, 16th and 17th century English and Dutch governments made deliberate and calculated decisions to build up their naval forces so as to challenge Portuguese and Spanish treasure ship convoys at sea and rich colonial possessions ashore. Turn-of-the-last-century Germany and Japan likewise sought deliberately to build up their naval forces, despite the potential for triggering arms races, believing—erroneously as it turned out—that the game was worth the candle. The cases of Imperial Germany and Japan are instructive too, in that in these examples, the navies themselves became powerful players in domestic politics in their own right—positions seldom afforded their counterparts in other countries, especially the United States, France, and Russia.

Also, the turn of the last century saw the spread of a widespread belief among elites and publics—stoked by the writings and speeches of Mahan and others—that battleship numerology was an appropriate yardstick of national power. Likewise, during the Cold War, numerous pro-U.S. Navy Congressmen craved and wielded statistics-laden charts showing “them” overtaking “us” in arguing for increased U.S. Navy appropriations.

How should current Chinese and Indian efforts to build naval capabilities be viewed in light of this historical experience? In a word, as “normal.” Rising world economic and political powers have usually also been rising world naval powers. China and India cannot be expected to be exceptions. A glance at a current listing of the top 10 countries in the world in terms of gross domestic product yields one naval superpower (the United States),

seven medium naval powers (Japan, Germany, China, Britain, France, Italy, and Spain), and two formerly mid-level naval powers who have recently made national decisions to forgo extensive naval forces (Canada and Brazil). Numbers 11 through 20 include six medium naval powers (Russia, South Korea, India, Australia, the Netherlands, and Turkey).

The history shows, however, no dearth of conflict and blood. Countries with significant naval power can always be tempted to use it. Yet history also shows that rising naval power need not mean rising chances of war. The United States began its rise to naval preeminence a little over a hundred years ago. Yet that vast naval power of the United States has never been used in combat against its most powerful contemporary naval rivals—Britain and the Soviet Union—despite serious rivalry with the former in the 1920s, and 45 or so years of Cold War with the latter. In fact, enormous confluences of political and economic interests by both the United Kingdom and the United States have led those countries to what is perhaps the closest and strongest naval alliance of all time. Likewise, war among those countries' navies and the powerful Japanese, French, Spanish, and Italian fleets of today is equally unthinkable.

But then, if war among like powers may be unthinkable, why should these successful and rising powers deploy naval power at all? There are several good reasons, in fact:

- to protect the national homeland
- to assist friendly nations
- to protect economic resources and commerce
- to suppress piracy, terrorism, and the illegal trafficking in people, drugs, and weapons of mass destruction
- to provide humanitarian assistance and disaster relief
- to reassure their domestic populations that they are capable of dealing with all these contingencies.

It is these reasons—rather than a zeal for empire, the desire to seize foreign territory, or quests for “a place in the sun”—that one can only hope will motivate the rising powers of China and India as well.

Notes

¹For broader and deeper treatment of the issues discussed in this chapter, see Jan Glete, *Navies and Nations: Warships, Navies and State Building in Europe and America, 1500–1860*, 2 vols. (Stockholm: Almqvist & Wiksell International, 1993); Colin S. Gray, *The Leverage of Sea Power: The Strategic Advantage of Navies at War* (New York: The Free Press, 1992); Colin S. Gray and Roger W. Barnett, eds., *Seapower and Strategy* (Annapolis, MD: Naval Institute Press, 1989); Paul M. Kennedy, *The Rise and Fall of British Naval Mastery* (New York: Charles Scribner's Sons, 1976); Paul Kennedy, *The Rise and Fall of the Great Powers: Economic Change and Military Conflict from 1500 to 2000* (New York: Random House, 1987); John J. Mearsheimer, *The Tragedy of Great Power Politics* (New York and London: W.W. Norton & Company, 2001); George Modelski and William R. Thompson, *Seapower in Global Politics, 1494–1993* (Seattle: University of Washington Press, 1988); E.B. Potter, ed., *Sea Power: A Naval History*, 2^d ed. (Annapolis, MD: Naval Institute Press, 1981); Clark G. Reynolds, *Command of the Sea: The History and Strategy of Maritime Empires* (New York: William Morrow & Company, Inc., 1974); and Lawrence Sondhaus, *Naval Warfare, 1815–1914* (London and New York: Routledge, 2001).

²Ottoman Turkey and post-unification Italy both were, for a time, rising European and Middle Eastern powers. Both deployed significant naval forces. But neither deployed those forces often outside the Mediterranean and adjacent small seas, and neither exerted significant influence far beyond their immediate geographic locales. Leaving them out of this discussion may make it somewhat less complete, but their omission probably does not greatly affect the observations, comparisons, and conclusions of this chapter; also, leaving them out helps make its substance more manageable and keeps it within its mandated length limits. Rises and falls of Chinese naval power are the subject of numerous other contributions to the present effort, and therefore need not be covered here.

³Editors' note: At the time that this paper was presented, Germany enjoyed this ranking. The German economy is now ranked as the sixth largest economy measured in gross domestic product (purchasing power parity). See *Central Intelligence Agency (CIA) World Factbook, 2010*, available at <<https://www.cia.gov/library/publications/the-world-factbook/geos/xx.html>>.

⁴Editors' note: At the time this paper was presented in 2007, the Japanese economy was considered the second largest economy. Since that time Japan's economy ranking has dropped to the third largest economy measured by gross domestic product (purchasing power parity). China's economy is now considered the second largest economy. See *CIA World Factbook, 2010*.

⁵Regarding the requirements of nations for land as well as sea power in the period 1500 to 1800, see Dennis Showalter, "European Power Projection," *MHQ: The Quarterly Journal of Military History* 20 (Winter 2008), 46–55.

⁶Note that this is also true of Turkey and Italy, other former rising powers with strong naval traditions.

Chapter 2

Recent Developments in Naval and Maritime Modernization in the Asia-Pacific: Implications for Regional Security

Richard A. Bitzinger

Over the past 15 years or so, the navies of the Asia-Pacific region have experienced an extraordinary bout of modernization and growth. This buildup has in most cases been quantitative, but, more important perhaps, regional maritime forces from Japan to Southeast Asia to India have expanded qualitatively as well. Local navies have greatly improved their capabilities for projecting force and firepower. In particular, navies that used to be mainly “brown-water” forces operating close to shore—and therefore equipped mainly with coastal patrol vessels and smaller surface combatants—have added larger warships, submarines, and maritime patrol aircraft that in turn have extended their theoretical ranges of operation in neighboring seas and oceans. Those more traditional seafaring countries—Australia and Japan in particular—have increased their ocean-going capacities and their capabilities for amphibious assault, power-projection, and open-ocean operations. Finally, aspiring great powers like China and India—which traditionally emphasized land power over other forces—have come to appreciate the value of large navies with large surface ships, sophisticated submarines, organic air support, and even aircraft carriers. In sum, few regions in the world have gone through so much naval expansion and development in the past decade and a half.

This paper seeks to address three basic issues surrounding the naval buildup in the Asia-Pacific. First, what is driving this naval expansion; in particular, how much of this is a reaction to the recent growth in Chinese maritime power, and how much have other factors influenced the buildup? Second, what specific types of maritime weapons platforms and systems are individual Asia-Pacific nations adding to their navies, and how do they affect national capabilities for projecting maritime power? Finally, what might be the possible end results of such a buildup for regional security and stability; in particular, what are the worrisome and also the potentially benevolent effects of such naval modernization?

What Is Driving the Naval Buildup in the Asia-Pacific?

First of all, what is driving this relatively recent buildup of maritime combat capabilities in the Asia-Pacific region? Several factors appear to be at work. Certainly, an expanding and increasingly assertive Chinese naval force is at least partly responsible. The People's Liberation Army Navy (PLAN), for example, has greatly increased its procurement of large surface combatants and submarines over the past decade. The PLAN has acquired 12 *Kilo*-class submarines and four *Sovremenny*-class destroyers (armed with supersonic SS-N-22 antiship cruise missiles) from Russia, as well as a navalized version of the Russian Su-30 fighter-bomber. Just as important, there was a significant expansion in Chinese naval shipbuilding beginning around the turn of the century. Between 2000 and 2008, China constructed six destroyers of three different types, 16 *Song*-class and four *Yuan*-class diesel-electric submarines, and at least two Type-093 *Shang*-class nuclear-powered attack submarines.¹ In addition, China is building a new class of nuclear-powered ballistic missile submarines (the Type-094 *Jin*-class SSBN), two of which have been delivered so far to the PLAN. Finally, China has built 12 new frigates—including one class that features a stealthy design—as well as a new-generation catamaran-hull missile fast attack craft (of which several dozens may be built).²

Additionally, the PLAN is starting to expand its capabilities for power projection and expeditionary warfare. China has recently launched the Type-071, a 20,000-ton LPD (landing platform dock) amphibious warfare ship, equipped with two helicopters and two air-cushioned landing craft (LCAC), and capable of carrying up to 800 troops; up to eight Type-071s could eventually be built, and this vessel could be complemented by a new larger LHD-type (landing helicopter dock) amphibious assault ship.³ In addition, rumors persist that the PLAN will add at least one aircraft carrier to its fleet by 2015–2020.⁴ Finally, the PLA is building up—both quantitatively and qualitatively—its arsenal of conventional missile systems, including reportedly developing a medium-range missile with an antiship capability, most likely for use against large warships such as aircraft carriers.⁵

The recent Asian-Pacific naval expansion is also taking place partly to compensate for a perceived reduction in U.S. military interest and presence in the region. Washington's preoccupation with fighting the war on terror, and its extensive ongoing involvement in Iraq and Afghanistan, have diverted not only attention but also America's military capacity away from the Asia-Pacific. The U.S. Army, for example, plans to pull 12,500 troops out of South Korea, while the U.S. Marines will withdraw 8,000 Marines of the III Marine Expeditionary Force from Okinawa to Guam by 2014. Accordingly, the U.S. military will consolidate and rationalize the deployment of its forces in the Asia-Pacific

region. Moreover, U.S. troops stationed overseas are to be restructured and reorganized to operate less as static defenses operating in a relatively small sphere of interest—such as defending South Korea or Japan. Rather, they will be reoriented as forwardly deployed and operationally flexible forces capable of dealing with both global as well as regional contingencies; they will be more mobile, more expeditionary, and more rapidly deployable.⁶

Consequently, countries in the region have to anticipate the necessity of becoming more self-reliant in the face of a declining U.S. military presence in the Asia-Pacific and growing concerns about the long-term reliability of America as a strategic partner. At the same time, as U.S. armed forces become more globally expeditionary, the more they will likely attempt to pull their allies along with them. Future U.S. missions will likely involve *more* and *closer* cooperation, not less, with Asian-Pacific allies and friendly states, particularly when it comes to combating terrorism, countering weapons of mass destruction (WMD) proliferation, engaging in peacekeeping and stabilization operations, and deterring or contending with more traditional threats. Interoperability, therefore, will be a much higher priority for the U.S. military in the future, meaning that future allied forces will have to develop their own capacities for force projection, expeditionary and amphibious operations, lethality and precision strike, long-range surveillance and reconnaissance, and integrated command and control.

Finally, beyond concerns over a rising “China threat” or a waning U.S. military presence in the region, more localized security and military concerns are also compelling many countries in the Asia-Pacific to beef up their maritime combat capabilities. In particular, many states in the region have longstanding and ongoing territorial disputes with each other that, while waged ostensibly over relative flyspecks of land, have taken on heightened significance for reasons of history, economics, or power politics. These conflicts have in turn stimulated the expansion of naval power as a means of demonstrating resolve and even capability to press forward with these claims. So, for example, we see South Korea and Japan contesting sovereignty over the Liancourt Islets (known as Dokdo to the Koreans, Takeshima to the Japanese); Singapore and Malaysia each laying claim to an outcropping of rocks called Pedra Branca or Pulau Batu Puteh; and Indonesia and Malaysia clashing militarily over the Ambalat sea block. And, of course, several nations—including Brunei, China, Malaysia, the Philippines, Taiwan, and Vietnam—have conflicting claims over the Paracel and Spratly island chains. In some cases, these islets barely break the ocean’s surface, but they are adjacent both to major sea lines of communications (SLOCs) and to potentially lucrative maritime natural resources (fisheries, oil and gas deposits). Many of these

countries have attempted to enforce their claims by establishing garrisons and other structures on the islands, and by acquiring the means to patrol these areas.

One should also not discount such factors as prestige and arms competitions in driving the recent expansion in maritime military power in the region. South Korea and India, for example, are both keen to make clear their determination to become regional great powers through their buildup of national military power, and this includes the creation of blue-water, oceangoing navies. Japan, too, in its efforts to become a “normal” country, has sought to modify its post–World War II self-restrictions on national defense in order to allow it to play a more active, global role militarily. Moreover, tit-for-tat, non-aggressive arms competitions⁷ between neighboring powers (such as Malaysia buying Su–30 Flankers following Singapore’s decision to purchase the F–16) have also played a role in at least some arms procurement decisionmaking.

Finally, rising defense budgets, although more of an enabler than a driver, have certainly underwritten Asian-Pacific naval expansion of the past decade. The PLA has long been the beneficiary of a long-term expansion in defense spending. Between 1997 and 2005, Beijing increased defense spending by double-digit doses *every year*: 13.7 percent per annum in *real* (after inflation) terms, according to China’s own statistics.⁸ China’s official 2008 budget of US\$78 billion, for example, constituted a 7.5 percent rise over the previous year. Consequently, Chinese military expenditures have more than *quintupled* in real terms since 1997, thus permitting Beijing to invest considerable additional monies in its military modernization efforts. China now outspends Japan, France, and the United Kingdom on national defense, and likely Russia as well.

Other Asian-Pacific nations have followed suit, with India increasing its military expenditures by two-thirds between 1998 and 2008⁹; by 2010, Indian military expenditures totaled approximately \$32 billion. Australia has increased defense spending by 46 percent over the same period, while South Korea has increased by 48 percent.¹⁰ Of the larger countries in the region, only Japan has had a relatively stagnant defense budget, a product of its unofficial policy of pegging military expenditures to 1 percent of gross domestic product (GDP). In Southeast Asia, meanwhile, Malaysia’s military budget more than doubled in real terms between 2000 and 2008, while Indonesian military spending has increased 72 percent over the same period, Thailand 43 percent, and Singapore 26 percent.¹¹

Recent Developments in Asian-Pacific Navies

This section addresses recent developments in the expansion of maritime combat capabilities in the leading Asian-Pacific nations, including Australia, Japan, South Korea, India, and the larger countries of Southeast Asia.

Australia

As Australia shifts the focus in its security strategy away from a static, continental defense in favor of expeditionary operations both in the “immediate neighborhood” (e.g., East Timor) and farther afield (e.g., Afghanistan and Iraq), concepts of mobility, flexibility, precision strike, jointness, and networking have found particular favor in the Australian Department of Defence. Overall, the Australian Defence Force (ADF) wants to be capable of making a significant contribution to coalition and allied operations, while at the same time maintaining an independent operational capability. Overall, the ADF must be more (and more quickly) deployable, more sustainable over long periods and across long distances, and capable of engaging in both low-level and high-intensity high-tech wars.

As a practical result, the ADF is currently seeking to improve its capabilities in five key areas: amphibious and expeditionary capacity; precision strike; intelligence-gathering, surveillance, and reconnaissance; interservice and interallied jointness; and logistical support. One priority, for example, is acquiring the ability to move and sustain a force of 3,000 soldiers. Consequently, the Royal Australian Navy (RAN) plans to acquire two new 28,000-ton *Canberra*-class amphibious power projection (LHD-type) ships, at a cost of A\$3 billion, each capable of transporting 1,000 troops and 150 vehicles, and carrying both landing craft and a mix of transport and battlefield support helicopters. The first *Canberra*-class ship is due to enter service around 2013.¹² Although the *Canberra*-class is *not* intended to serve as a platform for fixed-wing aircraft, it is at least conceivable that short takeoff and vertical landing (STOVL) aircraft, such as the F-35 Joint Strike Fighter (JSF), could be deployed on such a vessel. The Royal Australian Air Force is actually buying the JSF (although the conventional, not the STOVL, version), and the original Spanish design included a ski jump for fixed-wing aircraft.¹³

Additionally, Australia is building three air warfare destroyers (AWD), known as the *Hobart*-class, based on the Spanish F100 frigate and built in Australia under license at the ASC Shipyards in Adelaide. This program will cost A\$8 billion and the ships are scheduled to enter service between 2013 and 2017. These ships, which will be outfitted with the U.S. Aegis combat system and the SM-2 Standard surface-to-air missile, are intended to provide protection to new amphibious, sealift, and support ships from aircraft and antiship cruise missiles.¹⁴ In addition, the new AWDs would likely be upgradeable to an SMD (Seabased Midcourse Defense) standard, as their Aegis combat systems are likely to incorporate a modular, open architecture, while at the same time space and weight considerations for accepting the SM-3 ballistic missile interceptor are being factored into the ship's design and construction.¹⁵ It is worth noting

that in March 2004 the U.S. and Royal Australian navies signed a Statement of Principles to expand cooperation on naval surface warfare, one element of which could be improved Australian access to state-of-the-art U.S. technology regarding naval air-defense systems for its AWD program.

Finally, although they have been in service for more than a decade, Australia's sizable submarine force—the six-boat *Collins*-class fleet—is worth noting. Despite its considerable teething problems—the program was late, over budget, and plagued with mechanical and other problems (such as a combat system that never worked properly and had to be eventually replaced)—the *Collins*-class submarine is by now a reasonably effective underwater weapon and will probably remain in service until around 2025–2030.

Japan

Current Japanese naval expansion coincides with a period of significant evolution in Japan's postwar security policy. Under former Prime Minister Koizumi and subsequent Liberal Democratic Party (LDP) prime ministers, Japan tried to pursue a foreign and defense policy more befitting a “normal” nation and to allow the country's military to play a larger and more active role. This included legitimizing the role of the Self-Defense Force (SDF) as a military force, and permitting these forces to be used in international contingency operations. At the same time, Japan's security interests have expanded far beyond Northeast Asia and its once-vaunted 1,000-mile defensive perimeter. Now, the SDF has to contend with possible contingency operations much farther afield, for example, in contributing to international military stabilization operations (such as in Iraq), or in patrolling sea lines of communications in the Straits of Malacca (to safeguard access to energy supplies).¹⁶

As a consequence, Japan's Maritime Self-Defense Force (MSDF) has greatly increased its expeditionary capabilities, firepower, and C4ISR (command, control, communications, computers, intelligence, surveillance, and reconnaissance) capabilities. The MSDF is now larger than the British Royal Navy and comprises 44 destroyers, nine frigates, and 15 submarines. In particular, the MSDF has expanded its capacities for power projection through the acquisition of high-speed sealift ships (for logistics and transport) and three large amphibious warships of the *Osumi* class. The 13,000-ton *Osumi* can carry 330 troops and up to 10 tanks, and is outfitted with four helicopters and two LCAC hovercraft transports. Ostensibly designated as an LST (tank landing ship), the *Osumi*-class vessel is of a size and design (including a large open deck for helicopters) more resembling an LPD.

Additionally, the MSDF is currently acquiring four *Hyuga*-class “helicopter destroyers” (DDH). At 13,500 tons and with an open-deck design and

below-deck hangars, the *Hyuga* DDH resembles a small aircraft carrier, similar to the Royal Navy's *Invincible*-class carriers, which operate the Harrier. However, the *Hyuga* DDH is intended only for helicopters, and it lacks a "ski jump" deck for fixed-wing aircraft (although this could be retrofitted at a later date).

Japan is currently building a new class of diesel-electric submarines (the *Soryu*) equipped with the Stirling engine for air-independent propulsion (AIP). At least four boats in this class are under construction and five more are planned, to be built at a rate of approximately one submarine a year. In addition, Tokyo is developing a new indigenous maritime patrol aircraft, the P-X, to replace P-3C Orions currently in-service with the SDF. The P-X will expand the MSDF's surveillance capabilities as far out as the South China Sea.¹⁷

Of particular note, Japan is using its maritime forces as a key platform for constructing a national missile defense system. The centerpiece of this system involves upgrading MSDF destroyers equipped with the U.S.-developed Aegis air defense system to the Sea-based Midcourse Defense (SMD) mode. The SMD missile defense system entails improvements to the current Aegis SPY-1 multifunction phased-array radar and fire-control system to increase the range and altitude of its search, detection, track, engagement, and control functions, in order to handle exo-atmospheric antimissile engagements. This program also entails the codevelopment (with the United States) of a new interceptor missile, the Standard SM-3 Block IA missile, which includes a third-stage for extended range and a Lightweight Exo-Atmospheric Projectile (LEAP) kinetic warhead for terminal homing and intercept. Japan and the United States successfully tested the SMD missile defense system off the coast of Hawaii in June 2006, and Japan performed a solo test of a missile intercept with the SM-3 in late 2007.¹⁸

Japan will incorporate the SMD system into four current and two planned Aegis-equipped air-defense destroyers, and should be fully deployed by 2011. Until then, the U.S. Navy will provide limited missile defense coverage of Japan utilizing its own Aegis-class SMD destroyers based in the Sea of Japan.

Despite building up its power-projection capabilities, the MSDF is still essentially a defensively oriented force, and one that is mostly "channeled through the U.S.-Japan alliance."¹⁹ In terms of roles and missions, therefore, it is likely that U.S. forces will continue to act as the "spear," while the SDF—and particularly the MSDF—will continue to act as the "shield," that is, operating mainly in a defensive stance, in terms of both posture and capabilities.²⁰ However, even this traditional defensive-defense posture could change, if the security situation in the Asia-Pacific worsens or if Japan feels that it must take on more responsibility for its defense. Important markers of such a sea change

in Japan's defense posture would be the acquisition of offensive maritime weapons, such as Tomahawk land attack cruise missiles.

South Korea

Whereas Japan endeavors to expand its power-projection capabilities (particularly its maritime capabilities) mainly through coalition-based activities and interoperability with U.S. military forces, the Republic of Korea (ROK) is currently pursuing a defense policy of "cooperative self-reliant defense" in order to revisit and "rebalance" the U.S.-South Korean alliance.²¹ Consequently, Seoul is pursuing military acquisition programs intended to increase the capacities of the ROK armed forces to act more independently of the U.S. military and in support of a more nationalistic, self-reliant, and self-assertive foreign and defense policy.

One critical reason for this new approach to security is the declining and redefined role of U.S. troops on the Korean Peninsula. U.S. Forces Korea (USFK) plans to remove 12,500 troops permanently from South Korea over the next several years. Additionally, the remaining 25,000 U.S. soldiers are to be redeployed from 43 bases scattered around the country to 16 bases mainly concentrated in two areas south of the Han River; in particular, the U.S. military—including the USFK Command headquarters, United Nations (UN) Command, and Combined Forces Command—will vacate the Yongsan Garrison in downtown Seoul. More importantly, U.S. forces in Korea will, under the rubric of "strategic flexibility," be reoriented toward more multifunctional, expeditionary missions and therefore will use the ROK more as a base for regional contingencies beyond the peninsula. To underscore this new strategic flexibility and regional focus, the United States will transfer its 8th Army headquarters from Seoul to Hawaii.

U.S. force realignments on the peninsula—and especially the reorientation of USFK toward more extrapeninsular operations—have provided the ROK with both the need and the justification to expand its self-defense capabilities. Consequently, Seoul has undertaken a major, multiyear recapitalization of its armed forces in order to bolster its independent defense capability. With regard to the ROK Navy (ROKN), this entails the development of a blue-water maritime capability. For example, the ROKN is in the process of accepting into service two new amphibious assault (LPD-type) vessels of the *Dokdo*-class. The *Dokdo* displaces 14,000 tons and is capable of carrying 700 troops, 10 tanks, 15 helicopters, and two air-cushioned landing craft.²² The first ship was commissioned in 2007, and the ROKN may eventually deploy up to four *Dokdos*.

The *Dokdo* is intended to serve as a multifunctional vessel—in particular, serving as a fleet command ship. Consequently, it has been outfitted with a digital C4ISR combat system which can manage, control, and coordinate support vessels, aircraft, and weapons systems on a real-time basis. Additionally, its size (larger in length and beam than many current vertical short takeoff and landing aircraft carriers) and open flight deck make it conceivable that the design could be modified so as to permit the deployment of fixed-wing fighters such as the Harrier.

In addition, the ROK Navy has greatly expanded its oceangoing fleet. Under its KDX (Korean Destroyer Experimental) program, Seoul is currently engaged in a three-phased effort to move from a coastal defense-oriented ROKN to a blue-water navy. The first vessels in this program, the KDX-I, were small (3,900-ton) vessels intended mainly as “proof-of-concept” ships and only three were built, in the late 1990s. These ships were followed by the KDX-II class, which displace around 5,000 tons and are equipped with the Standard SM-2 Block IIIA surface-to-air missile (for countering air-breathing threats), Harpoon antiship cruise missiles (ASCM), and the indigenously developed *Hyunmoo* IIIC land-attack cruise missile (LACM) similar to the U.S. Tomahawk. These weapons are all deployed in vertical-launch systems (VLS). Six KDX-II destroyers were delivered to the ROKN between 2002 and 2006. While these ships were indigenously designed and constructed, most of their subsystems—the VLS, radar, electronic warfare suites, combat management systems, etc.—were imported from the United States and Europe.

Currently, the ROKN is acquiring the much larger (7,700 ton) KDX-III destroyer, also known as the *King Sejong the Great*-class. The KDX-III is outfitted with the U.S.-supplied Aegis air-defense radar and fire-control system, and utilizes the Standard SM-2 Block IIIB air-defense missile. Other armaments include the *Hyunmoo* IIIC LACM and either the Harpoon or the indigenous *Hae Sung* (Sea Star) ASCM. All in all, the KDX-III packs considerable firepower, as it has 128 VLS cells, compared to 64 for the KDX-II. The ROKN is currently building three KDX-III destroyers, with an option on three more.

The ROKN is also increasing its submarine fleet. During the 1990s, it acquired nine German-designed Type-209 diesel-electric submarines, designated the KSS-1 *Changbogo*-class, which were subsequently built in South Korea under license. These are now being gradually replaced by the KSS-II Type-214 *Chungji*-class, also originally designed and developed in Germany. The Type-214 is equipped with fuel cells for AIP, permitting it to remain submerged for up to 3 weeks. South Korea has already procured three Type-214 submarines (again, built under license), and it holds options on six more.²³ However, South

Korea may instead attempt to design and build its own class of submarine.²⁴ Ultimately, the ROKN will operate a fleet of up to 18 submarines by 2020–2025.

What is particularly interesting about ROK naval developments is that they are not necessarily tied to peninsular security concerns. In fact, building up its blue-water maritime capabilities appears to be as much directed against Japan as against North Korea or a notional Chinese threat. It is worth noting, for example, that the *Dokdo* LPD is named after the group of islands (called Takashima by the Japanese) claimed by both South Korea and Japan.

India

India, as an aspiring great power, has over the past decade put considerable resources in building up its military capabilities. This is evident in its nascent nuclear weapons program (including land- and sea-based missile delivery systems) and its continuing interest in how the country might be able to harness its growing expertise in information technologies (IT) in order to pursue an IT-led revolution in military affairs.²⁵ Accordingly, while the country's military remains an Army-heavy force oriented toward a ground war with Pakistan, it increasingly stresses long-range surveillance and intelligence, force projection, and expeditionary warfare.²⁶ These taskings particularly favor the Indian navy (IN), which in turn is increasingly becoming the Indian military's "high-tech" arrow in its quiver of resources.²⁷

The Indian navy has a specific responsibility for a "constabulary role" in the Indian Ocean. This includes the protection of SLOCs (90 percent of the country's trade, particularly oil and gas, transits through the Indian Ocean), sovereignty enforcement, and sea area denial to adversaries.²⁸ Consequently, the IN has put considerable effort into building up and maintaining its blue-water oceangoing capabilities.

India, for example, is one of the few countries in the world—and certainly the only one in the Asia-Pacific so far—to operate large-sized aircraft carriers. The IN had for many decades operated at least two carriers—until recently, ex-Royal Navy ships (including one dating from World War II)—flying Harrier STOVL aircraft from their flight decks. Currently, India is in the process of acquiring two new carriers—one a former Soviet navy vessel, and the other an ambitious project to design and build an indigenous carrier.²⁹

The Soviet-based carrier is the former 45,000-ton *Admiral Gorshkov*, a *Kiev*-class carrier (operating the Yak-38M, a STOVL aircraft similar to the Harrier) that was laid down in 1978 and commissioned into the Soviet navy in 1987. After the collapse of the Soviet Union and the downsizing of the Russian military, the *Gorshkov* was decommissioned in 1996. After several years of negotiations, the Indians finally acquired the *Gorshkov*

in 2004. Under this agreement, Russia is providing the carrier for free, and India is paying the Russians US\$974 million to refit the vessel—including adding a ski jump to the bow—so as to be capable of flying navalized MiG-29 fighters off its deck in a STOBAR (short take-off but assisted recovery) configuration.³⁰ In addition, India will pay another US\$700 million for the aircraft and weapons systems, including twelve single-seat MiG-29K “Fulcrum-D” fighter jets, four dual-seat MiG-29KUB trainer aircraft, and six “Helix” helicopters.³¹

The carrier, renamed the INS *Vikramaditya*, was supposed to have been delivered to the IN sometime around mid-2008, but refitting the vessel has turned out to be much more challenging than originally envisioned, resulting in considerable cost overruns and delays (Moscow has asked for an additional US\$1.2 billion to finish the upgrade). Consequently, the *Vikramaditya* is unlikely to enter service before 2013.³²

India’s shipbuilding industry has also been tasked with constructing the Indigenous Aircraft Carrier (IAC), formerly known as the Air Defense Ship (ADS). The IAC, designated the INS *Vikrant*, is a 37,500-ton vessel, also utilizing a STOBAR arrangement, and capable of operating either the MiG-29K or a navalized version of India’s indigenous Tejas Light Combat Aircraft (LCA). Construction began in 2005 and the IAC was supposed to enter service by 2012, but production setbacks have delayed this until 2015 at the earliest.³³ Consequently, the Indian navy will have to keep its 50-year-old INS *Viraat* (ex-HMS *Hermes*, operating the Harrier) in service for several more years.³⁴

The IN is also in the process of substantially upgrading and expanding its submarine force, which currently consists of 16 diesel-electric boats (mostly Russian *Kilo*-class and German Type-209 submarines). After protracted negotiations, India has finally signed an agreement to acquire six Franco-Spanish *Scorpène*-class submarines, which will be constructed under license at India’s Mazagon Docks shipyard; six additional subs may be subsequently ordered.³⁵ In addition, the country is keen to develop a nuclear submarine fleet, both hunter-attack (SSN) and ballistic missile-carrying (SSBN) types. India has been working on its nuclear-powered Advanced Technology Vessel (ATV) program since the early 1970s, and it launched its first ATV in 2009. Its first priority is an SSBN, and the IN hopes to deploy a fleet of at least three boats by 2015, armed with an indigenously developed submarine-launched ballistic missile (SLBM).³⁶

Finally, the Indian navy is also procuring additional destroyers and frigates, and for the first time is buying eight P-3C long-range maritime patrol aircraft from the United States.³⁷

Southeast Asian Countries

As with the rest of the Asia-Pacific, the countries of Southeast Asia have put considerable effort into building up their naval forces over the past decade or so. Naval developments in this area are propelled by a variety of national and regional concerns, including territorial disputes (such as conflicting claims over the Spratly Islands) and lingering regional suspicions, protection of large exclusive economic zones (EEZs), sovereignty enforcement in various SLOCs around Southeast Asia (such as the Malacca or Lombok straits), and, of course, growing concern over China's "creeping assertiveness" in the South China Sea.³⁸ In many ways, these countries' naval modernization efforts, while on a much smaller scale than the larger countries in the region, are all the more impressive, since they expanded or are expanding their capabilities from a much lower starting point.

The Republic of Singapore Navy (RSN), for example, has grown substantially over the past decade. The RSN has either acquired or is in the process of acquiring several new types of maritime systems for force projection, increased mobility, and expanded firepower. In particular, it is currently acquiring six *Formidable*-class frigates, which are based on the French-designed *Lafayette*-class "stealth" frigates. These frigates will mainly be used to patrol sea lines of communications around Singapore and will be armed with Harpoon ASCM and the French Aster-15 air defense missile, which is capable of providing antiballistic missile defense. Just as important, the *Formidable*-class frigate will be equipped with state-of-the-art sensors and combat management and communications systems, and thus will constitute a "key node" in Singapore's 3G capability program and consequently "push the *regional* envelope of naval capabilities . . . in their undoubted networking capabilities."³⁹

Besides these new frigates, the RSN has also bought four used A12-class submarines from Sweden, and more recently two more ex-Swedish submarines (the A17 class) outfitted with the Stirling AIP system. It also operates two indigenously designed and constructed *Endurance*-class landing ships, each capable of carrying 350 troops, 18 tanks, four helicopters, and four landing craft.

The naval branch of the Indonesian armed forces (TNI) is dedicated to building a "green-water" capacity by 2020, and it is consequently consolidating the size of its naval task force by phasing out its obsolete ships (i.e., the large fleet of East German frigates and corvettes acquired in the early 1990s) and replacing them with newer and more capable vessels. For example, Jakarta is currently acquiring four new *Sigma*-class corvettes from the Netherlands, four Korean-built platform LPD amphibious support ships, and Chinese C-802 ASCMs. Older ships are being converted into patrol boats, forward operating bases in the eastern part of the archipelago are being established, and the

TNI Marine Forces are being expanded and strengthened. In addition, the TNI Navy operates a sizable fleet of maritime patrol aircraft (two CN-235MPAs and 25 ex-Australian Defence Force N-22 Nomad Searchmasters), and is currently acquiring 17 additional patrol aircraft of various types.⁴⁰

Malaysia is in the midst of a multiyear program to expand and modernize its armed forces. Kuala Lumpur, under its current VMAF21 (Versatile Malaysian Armed Forces of the 21st Century) program, is in the process of transforming its forces according to principles of joint-service operations, force projection, and new combat capabilities. This means expanding firepower, adding new revolution in military affairs (RMA)-related capacities for information gathering and processing, extending the operational range of its air force, and building blue-water naval capability.⁴¹ This program, therefore, includes the purchase of new fighter jets, advanced trainer aircraft, airborne early warning (AEW) aircraft, long-range transport aircraft, submarines, and patrol corvettes.

In 2005, Malaysia established a national coast guard (the Malaysian Maritime Enforcement Agency or MMEA) to patrol the country's 12-nautical-mile territorial waters. Eventually, it will be responsible for providing maritime security through the country's 200-nautical-mile exclusive economic zone, leaving the Royal Malaysian Navy (RMN) free for force projection and warfighting in the open ocean.⁴² The MMEA currently operates 72 vessels, including 15 ex-RMN patrol boats.

Kuala Lumpur is in the process of procuring two Franco-Spanish *Scorpène*-class submarines for the RMN. In fact, for several years, it has been training future submariners overseas in the absence of hardware so that the proper expertise could be developed prior to acquisition. Other RMN acquisitions include six German-designed MEKO A100 offshore patrol vessels and two British-built *Lekiu*-class frigates.

Despite being more of a land power, Thailand has considerable maritime interests, including the protection of offshore oil and gas reserves, counterterrorism, counterpiracy, and combating illegal trafficking in its territorial waters.⁴³ The Royal Thai Navy (RTN), therefore, has considerable responsibility in providing littoral, EEZ, and blue-water maritime security. More recently, the RTN has acquired or is in the process of acquiring two new frigates from the United Kingdom and missile-carrying offshore patrol vessels from the PRC, as well as helicopters and refurbished maritime patrol aircraft. The RTN has expressed interest in acquiring submarines, but current budget constraints have made this unlikely for the near future.⁴⁴

It is worth noting that the RTN operates the only aircraft carrier in the region—the 10,000-ton, Spanish-built *Chakri Nareubet*, which is outfitted with used (ex-Spanish) AV-8A Harrier jump jets and S-70B Seahawk helicopters.

The carrier is intended for air defense and antisubmarine warfare during wartime and disaster relief during peacetime. Since the *Chakri Nareubet* was delivered to the RTN in the late 1990s, however, it has spent most of its time in port due to its high operating costs, although it was employed during the 2004 tsunami relief.

Vietnam has obvious interests in protecting its maritime EEZ resources and in deterring further Chinese expansion in the disputed Spratly Islands chain. After years of neglect, the country is beginning to rearm itself and as a result has begun to increase defense spending and procurement.⁴⁵ The Vietnamese navy has done particularly well out of this increased emphasis on self-reliant defense and has greatly enhanced its capabilities in recent years. The navy is currently acquiring three new corvettes, outfitted with German engines and British and American radars, as well as up to a dozen *Svetlyak*-class fast-attack craft patrol vessels and various second-hand surface combatants from South Korea and Poland. Of particular note, in late 2009 Hanoi announced that it would buy six *Kilo*-class diesel-electric submarines from Russia, at a cost of \$2 billion.⁴⁶ It also signed a major arms deal with Poland in 2005 for 10 maritime patrol M-28 aircraft and 40 surplus Su-22M aircraft, some of which may have a maritime strike role. Finally, Vietnam is building up to 40 new indigenous 400-ton offshore patrol vessels and six 150-ton coastal patrol boats.⁴⁷

Conclusions: Toward a "Post-Modern" Navy?

The expansion of regional maritime combat capabilities has many implications for militaries in the Asia-Pacific. At the very least, these new types of armaments promise to significantly upgrade and modernize the potential for warfighting in the region. The addition of modern submarines and surface combatants, amphibious assault ships, and long-range maritime patrol aircraft has extended these countries' navies' theoretical range of action and empowered them with new capabilities for force projection and sustained expeditionary operations. Additionally, the acquisition of modern antiship, antiair, and even land-attack missiles has greatly increased the lethality, versatility, and flexibility of their maritime forces. Beyond simply modernizing their navies, however, the Asian-Pacific militaries are *overall* acquiring greater lethality and accuracy at greater ranges, improved battlefield knowledge and command and control, and increased operational maneuver and speed. Standoff precision-guided weapons, such as cruise and ballistic missiles and terminal-homing (such as global positioning system or electro-optical) guided munitions, have greatly increased combat firepower and effectiveness. Additionally, through the increased use of stealth and active defenses (such as missile defense and longer range air-to-air missiles), local militaries are significantly adding to their survivability and

operational capabilities. Advanced reconnaissance and surveillance platforms have considerably expanded their capacities to look out over the horizon and in all three dimensions. Consequently, conflict in the region, should it occur, would likely be more “high-tech”: faster, more long-distance and yet more precise, and perhaps more devastating in its effect.

Additionally, some Asia-Pacific militaries—particularly China and Singapore—are acquiring the types of military equipment that, taken together, increasingly provide them with the kernel of what is required to fundamentally transform their militaries.⁴⁸ In particular, those systems related to precision strike, stealth, and above all C4ISR and networking comprise some of the key hardware ingredients essential to implementing a modern revolution in military affairs. These emerging capabilities, in turn, have the potential to significantly affect strategy and operations on tomorrow’s battlefield and hence to alter the determinants of critical capabilities in modern warfare.

But what do these new capabilities imply for security in the Asia-Pacific? Do they contribute to regional stability, by increasing the deterrent and defensive capabilities of states? Or do they exacerbate regional tensions, as tit-for-tat arms acquisitions may often have the unintended consequence of fostering mutually reinforcing insecurities and suspicions (i.e., the “security dilemma”)? Certainly, many countries may—justifiably—wish to strengthen their defenses to counter a militarily rising and increasingly assertive China. At the same time, many countries in the Asia-Pacific are acquiring modern naval combat capabilities as much in reaction to each other’s procurement activities, leading to arms competitions (South Korea vs. Japan, Malaysia vs. Singapore)—or for “sovereignty enforcement” issues (such as protection of EEZs or defending territorial claims over disputed territories) that are hardly conducive to regional stability.

Still, expanding regional maritime combat capabilities may ultimately offer benefits to regional security and stability in ways that until recently were almost inconceivable. For example, as regional maritime forces become more proficient in such areas as sustained expeditionary operations and force projection, it could have a positive effect in terms of disaster relief, peacekeeping, antipiracy and counterproliferation patrols, and security and stabilization operations. In addition, as regional navies acquire common weapons systems and (in particular) common systems for surveillance, target acquisition, and command and control—such as the Aegis air defense system—it could greatly enhance interoperability and combat coordination among the various navies. This would be particularly desirable for coalition operations. Additionally, it could probably be particularly attractive from the standpoint of the U.S. Navy, in that it could perhaps expand and “internationalize” its Cooperative Engagement Capability (CEC) by drawing allies and friendly countries into a

networked and interoperable military environment. The U.S. Navy and Japan's MSDF already plan to coordinate SMD-equipped destroyer patrols in the Sea of Japan for missile defense; this mission could conceivably be expanded to include other countries (particularly those already outfitted with the Aegis system) in some kind of pan-Asian missile shield.⁴⁹

If recent trends and developments in naval modernization in the Asia-Pacific are able to play out in a way that enables greater cooperation and collaboration among maritime forces, we could be witnessing the emergence of a new paradigm in naval development, one that Geoffrey Till terms the "post-modern Navy."⁵⁰ According to Till, concepts of the post-modern navy derive "from more positive attitudes towards globalization," with "relatively more focus on the international system, and the nation's place within that system."⁵¹ Consequently, post-modern navies are less focused on "the exclusive defense of national interests and sovereignty"⁵² and instead seek to control the seas for the benefit of all law-abiding users as part of maintaining "good order at sea" and in the interest of protecting the "global commons." Additionally, sea-based expeditionary operations—which, Till argues, are part and parcel of "the post-Cold War . . . concept of liberal interventionism"⁵³—are focused less on what navies can do "at sea," than "what they can do *from* it," in order to maintain global stability and security ("good order *from* the sea").⁵⁴

Perhaps the best example of this effort to create a post-modern "global Navy" can be found in former U.S. Chief of Naval Operations Admiral Mike Mullen's 2005 proposal for a network-enabled, joint, interoperable, and expeditionary-oriented "Thousand-Ship Navy." In proposing this concept, he challenged naval leaders to:

Imagine [a] fleet operating with the navies and naval infantries of a host of other nations, again, fully netted and interoperable. They could be anywhere the national and international political leadership wanted them to be . . . ready to go at a moment's notice—and they could contribute in all manner of ways. Not just as a force to wage war, but a force to wage peace as well. A force for good.⁵⁵

It is, of course, way too early to speak of a genuine post-modern global navy, but the ongoing and substantial naval expansion in the Asia-Pacific region raises reasonable questions as to what effect this buildup might have on regional security and stability. Naval modernization need not in itself constitute a dangerous state of affairs. Technology is neutral—how it is used determines its benevolence or ill will. But it is not too early to start considering the impact and implications of the expansion of maritime combat capabilities in the Asia-Pacific.

Notes

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Chapter 3

Beyond the Moat: The PLAN's Evolving Interests and Potential Influence

M. Taylor Fravel and Alexander Liebman

As China's economy grows and national interests expand, how do the People's Liberation Army (PLA) in general, and the PLA Navy (PLAN) in particular, see their roles and responsibilities changing? In addition, how might the PLAN exert influence in debates over national policy? In this paper, we find evidence of both change and continuity in the PLAN's sense of its missions at sea and areas in the future where it may shape Chinese policies beyond the domain of naval affairs, such as the interpretation of international maritime law. On the one hand, longstanding interests such as the prevention by force of Taiwan's *de jure* independence, the defense of China's eastern coast, and the preservation of China's claims to sovereignty over islands in the South China and East China Seas, remain crucially important. However, we also show that issues related to China's economy, namely, maintaining the conditions for continued growth and protecting China's links to the international economy, are growing in salience. Increasingly, the PLAN is casting itself as the protector of China's economy, and using that as a selling point for increasing the navy's budget.

New understandings of China's national interests are reflected in changing definitions of *haiyang quanyi* (海洋权益), commonly abbreviated to *haiquan*, (海权), or China's "maritime rights and interests." This term has been in use since at least the 1980s, and while there is no consensus on its precise meaning, there is no question that its scope has dramatically expanded. In a 2000 issue of *Modern Navy*, staff writer Niu Baocheng (牛宝成) laid out three conceptions of *haiquan*, arguing that "as human society develops, and especially as our understanding of the oceans increases, the meaning and implications of *haiquan* are also continuously changing."¹ In the past, Niu argues, China has held a narrow view of *haiquan*, including only the protection of the coast and coastal waters, China's contiguous zone, and exclusive economic zone (EEZ). Today, China holds a broader definition of *haiquan* that includes the ability to travel through international waters and the capability to develop resources at sea. Eventually, Niu argues, China must move toward what he calls "military maritime rights and interests" (*junshi haiquan*, 军事海权), referring to the ability of military

Authors' Note: The research for this paper was completed in 2007 and does not use more recent materials.

vessels to move freely through the oceans and protect sea lines of communication (SLOCs) in the event of war, as well as the ability to prevent the enemy from having similar freedom. While Niu's argument should not be taken to represent the official view of the PLAN, his article does make explicit what is implicit in much writing in military journals and newspapers: that China's interests are expanding and the PLAN must prepare to protect these interests.

... Two If by Sea

While the PLAN's concept of *haiquan* has grown to include economic interests, the concept of *haifang* (海防), or "maritime defense," is also evolving. For at least 20 years, naval authors have routinely noted that since 1840, the main threats to China's security have come from the ocean.² For this reason PLAN authors have long tried to change the "emphasize land, ignore the sea" (*zhonglu qinghai*, 重陆轻海) thinking within the military. Starting in the mid 1990s, however, naval authors have gone further. It is not enough just to emphasize naval defense, they argue; instead, the conception of what maritime defense means should be expanded. China must stop seeing its oceans merely as a "moat" (*huchenghe*, 护城河) that protects China's landmass, and instead realize that the oceans themselves hold vital interests that must be defended. These interests include 300 million square kilometers of "blue territory" (*lanse guotu*, 蓝色国土)—China's claimed area of maritime sovereignty), three main groups of disputed islands and reefs, an exclusive economic zone rich in natural resources, and shipping lanes which supply China with energy and resources and connect it to the international economy.

Overall, we find a growing emphasis in naval sources casting the PLAN as the protector of China's economy. In many cases this is directly connected to naval appeals for more military resources, and even to arguments that the proportion of the military budget spent on the navy should be increased. While the prevention of Taiwan's independence remains a mainstay in PLAN arguments for funding, newer and subtler arguments are being made that portray spending on the navy as a sound investment in China's economy. Specifically, the PLAN is trying to shape policy debates over offshore islands, the interpretation of maritime law, energy security, and how to secure sea lanes.

This paper explores these changing conceptions of the PLAN's role and its potential influence by adopting an "inside-out" approach. We first consider those areas which China considers its own territory—Taiwan and the disputed islands in the South and East China Seas. Second, we examine evolving views of China's EEZ and potential exploitation of its natural resources. Finally, we move farthest away from China's coast and look at attitudes

toward protecting shipping lanes, the “Malacca Dilemma,” and the security of China’s energy imports from the Middle East. Our primary goal is to lay out the PLAN/PLA viewpoint on each issue, and to illuminate the military’s point of view in comparison to civilian views on the same topic to determine how the PLAN might be a factor in national policymaking. Second, where possible, we have also looked for evidence of differences in position between the PLAN and the PLA, although this is substantially more challenging.

Research Design

The purpose of this paper is to assess the extent to which the PLAN is an *influential actor*, which is defined as possessing an ability to shape or influence national policy goals and priorities beyond the arena of naval affairs. This is a daunting analytical task, given the paucity of reliable data and the general secrecy that surrounds national security decisionmaking in China. Often, only the outcome of the policymaking process can be observed; thus we focus on how the PLAN articulates its interests in areas where it might readily influence national policy and examine how the PLAN’s articulation of its interests in these areas has changed over time. Space-permitting, we then compare PLAN or PLA sources on maritime affairs to relevant civilian sources to identify similarities or differences in conceptions of China’s national interest in the same issue.

Recent PLAN and PLA writings on “maritime defense” (*haifang*) and “maritime rights and interests” (*haiyang quanyi* or *haiquan*) outline a set of national policy issues where the PLAN influence might be most easily observed. These issues are as follows: sovereignty disputes over offshore islands as well as Taiwan; the assertion and defense of maritime rights under international law, especially rights to offshore resources within China’s EEZ; and the security of sea lanes and freedom of navigation on the high seas. The PLAN has a clear organizational interest in promoting these issues, as each has an unambiguous role for the navy and can be framed as a rationale for increased budgetary resources and operational missions beyond coastal defense (*jin’an fangyu*). While these rationales are important, the PLAN’s potential for influence over national policy can be inferred in several ways. First, PLAN or other PLA sources may place a different emphasis than government sources on the same issue, which would suggest policies that the PLAN might seek to shape or alter. Second, in their writings, PLAN or PLA officers may advocate for specific changes in national policy, which might suggest one fault line in internal debate over a given issue and highlight an area where the PLAN could exert influence.

In this paper, we use several methods to tackle these issues. First, we compare the frequency of articles on key topics in the PLA’s leading newspaper,

the *PLA Daily* (*Jiefangjun Bao*), and the Chinese Communist Party's (CCP's) main newspaper, the *People's Daily* (*Renmin Ribao*). Depending on the specific topic, we count either the number of articles with the keyword in the title or the number of articles in which the keyword appears in the full text of the article. As the *PLA Daily* electronic archive is available from 1987 to 2005, almost two decades of newspaper articles can be examined. Although the *People's Daily* is a CCP newspaper and not a government source, the close links between the party and the government suggest that it is a useful proxy for civilian viewpoints. By comparing the frequency of issues discussed in these two sources, we can draw a rough baseline for potential differences between the military and the civilian government. As the *PLA Daily* is the PLA's newspaper, the results must be interpreted as reflecting the naval or maritime issues deemed important or newsworthy by the PLA as a whole, not just the PLAN. Nevertheless, if the number of articles on a given maritime issue is increasing in one paper and decreasing in the other, one could reasonably infer a change in the importance of the issue for the military or the government. Even if the yearly frequency is roughly the same, the magnitude of articles in each paper may also reveal information about the relative importance of different issues for the PLAN and the government.

Second, we examine both the frequency and content of relevant articles in military publications, especially journals and magazines. The most important magazines for this study are *Modern Navy* (*Dangdai Haijun*) and *National Defense* (*Guofang*). *Modern Navy* is especially important, as it is published by the PLAN's party committee (*dangwei*) and can be used to "take the temperature" of China's navy and its corporate interests. One limitation of these sources, however, is that many articles are penned by cadre in the Political Warfare Department, not by military or naval strategists. In addition, the authoritativeness of magazine articles can be questioned when the author's institution or military rank is not listed. We also consult other military sources on naval issues, including, for example, the relevant sections of the last two editions of *Zhanyi Xue* (*The Science of Campaigns*) as well as articles in *Zhongguo Junshi Kexue* (*China Military Science*).

Maritime Sovereignty Disputes: Taiwan, the South China Sea, and the East China Sea

Almost all analyses of maritime security published by PLAN or PLA sources stress the prominence of sovereignty disputes over contested offshore islands, especially given the resolution of the majority of China's territorial disputes on its land border. As a result, if the PLAN exerts influence over

national policy, it perhaps should be most easily observed in discussion of disputes over offshore islands. In addition to sovereignty, the islands are seen as key to the assertion of maritime rights under the United Nations Convention on the Law of the Sea (UNCLOS) as well as important for the security of adjacent SLOCs. Thus, analysis of how the PLA and PLAN portray China's interests in these disputes cannot be separated from the following two sections of this paper.

The analysis of PLAN and other PLA writings on maritime sovereignty disputes highlights several trends. First, the dispute over Taiwan receives more attention than China's other offshore island disputes. Moreover, attention to the Taiwan dispute in PLA sources has increased markedly since 2000. Second, although China's other maritime sovereignty disputes are portrayed as "more prominent" than before, discussion of these disputes appears not to be increasing and by some measures actually declining. Third, interestingly, the PLA has focused more attention on those disputes where China maintains a strong position in relative terms, publishing significantly more articles on the Spratlys (where it occupies seven reefs) compared to the Senkakus (where it holds none of the features that it claims). Fourth, the content of PLA and PLAN writings on these disputes focuses on maintaining and consolidating claims as well as providing a rationale for "maritime defense construction" (*haifang jianshe*). Little evidence exists to suggest an active effort to shape policy in the offshore island disputes, though continued affirmation of China's sovereignty claims suggests that the PLA would oppose substantial compromises in any future negotiations with the other claimants.

Taiwan

A brief analysis of PLAN and PLA discussions of Taiwan provides a useful context for assessing the relative importance of China's maritime sovereignty disputes. A search of articles in the *PLA Daily* and the *People's Daily* that contain "tai" (台) in the title and "taidu" (Taiwan independence, 台独) in the full-text reveals several trends.³ As shown in figure 3-1, the frequency of articles on the Taiwan dispute in both newspapers has increased steadily since 1987. In particular, the number of articles reached an inflection point in 2000, the year when Chen Shui-bian was elected president of Taiwan. Likewise, as shown in figure 3-2, Taiwan receives substantially more coverage in the *PLA Daily* than do other territorial disputes with a maritime component. Finally, as shown in figure 3-3, the number of articles in *Modern Navy* that contain "Taiwan" in the full text reflects a steady increase in coverage, while reporting on China's other maritime territorial disputes has not increased.

Figure 3–1. The Taiwan Dispute in Core Newspapers (Title Search)

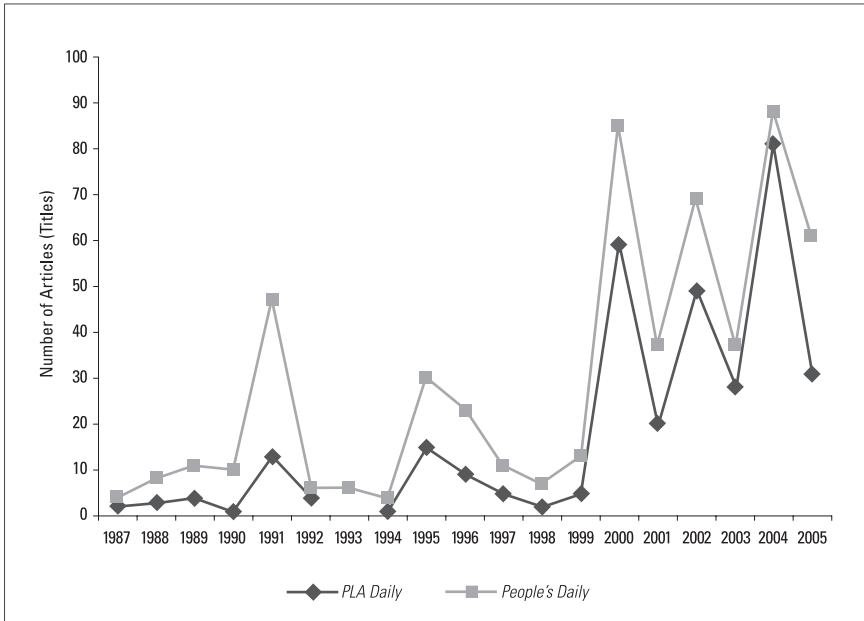
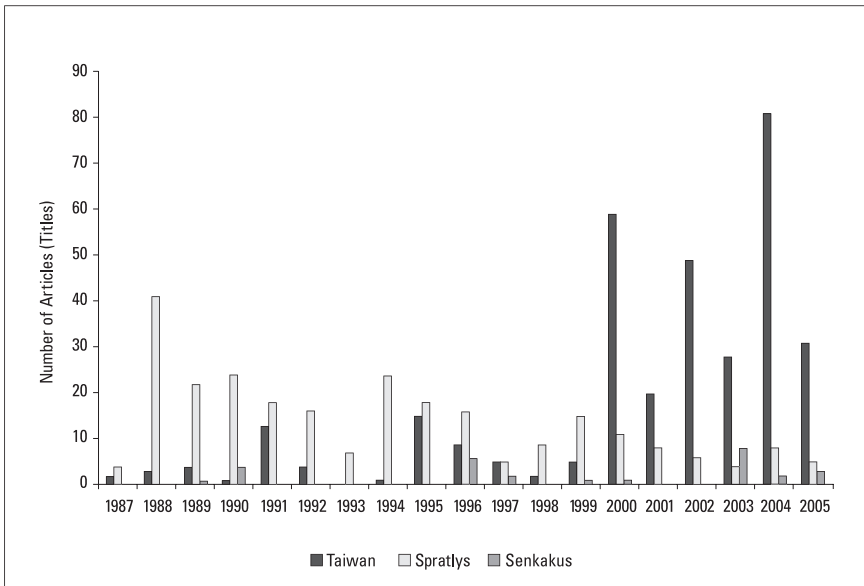
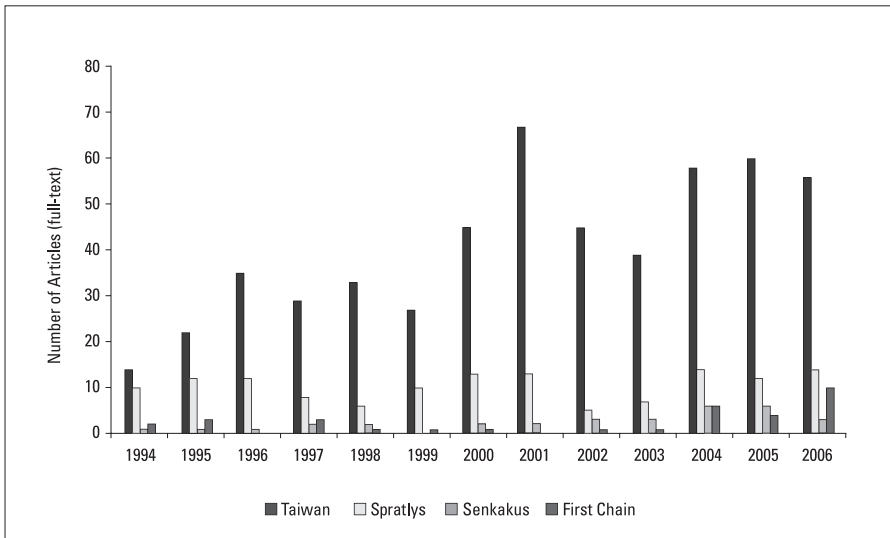


Figure 3–2. Maritime Sovereignty Disputes in *PLA Daily* (Title Search)



Note: The Taiwan search used “tai” in the title and “tai-du” in the full text.

Figure 3–3. Maritime Sovereignty Disputes in *Modern Navy* (Full-text Search)

These results, of course, are not surprising. Taiwan is a key issue for China's military and provides a clear rationale for force modernization, including naval modernization. Given the sheer volume of Taiwan-related articles in military sources, PLAN or PLA influence—or potential influence—over China's Taiwan policy is difficult to determine. Nevertheless, for our purposes, two trends should be noted. First, in absolute terms, the *People's Daily* has published more articles on Taiwan in the search described above than the *PLA Daily*. Moreover, the *PLA Daily* appears to publish little original content on Taiwan, as most articles appear to be sourced from Xinhua and not “*benbao*” (本报) reporting. In the Taiwan dispute, then, the *PLA Daily* fulfills its mission to communicate CCP policies throughout China's armed forces. At the same time, given the clear advantages of a Taiwan scenario for justifying PLA force modernization, the PLAN and PLA arguably face less of a need to push this issue to secure increased budgetary resources.

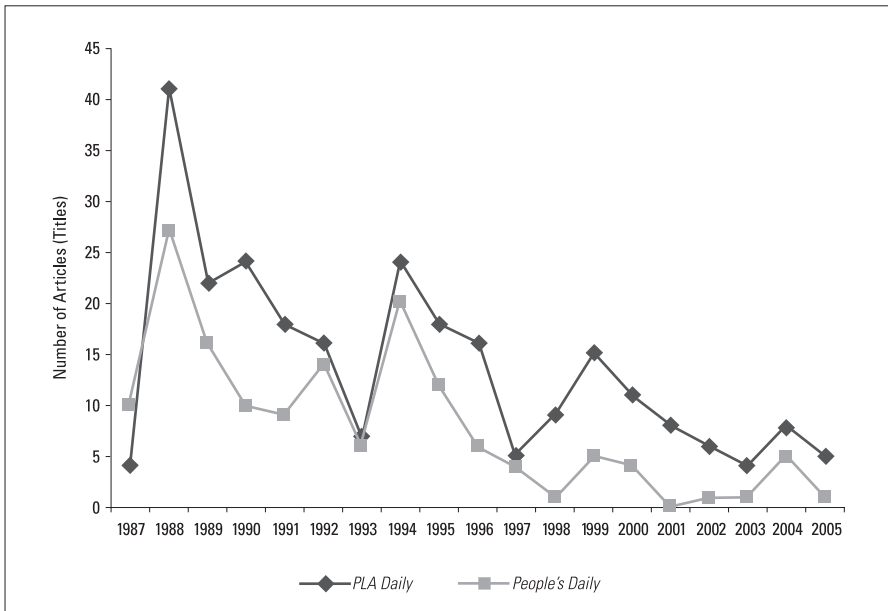
Second, the *PLA Daily* has occasionally sent deterrent signals during periods of crisis across the Strait, publishing articles with an even more aggressive and assertive tone than contained in official government statements or the *People's Daily*. In 1999, amid the crisis sparked by Lee Teng-hui's articulation of the “two state theory” (*liangguo lun*), the *PLA Daily* issued articles by a “staff commentator” (*benbao pinglunyuan*). The first appeared in July 1999, warning “Lee Teng-hui Don't Play With Fire” [*Li Denghui buyao wanhuo*].²⁴ In

early March 2000, just before Taiwan's presidential election, the *PLA Daily* published a commentary entitled "Taiwan Independence Means War" [*Taidu' ji yiwei zhanzheng*].⁵ Since 2000, however, the *PLA Daily* has not published a staff commentary on Taiwan. As the *PLA Daily* falls under the supervision of the Central Military Commission (CMC), these articles can be interpreted as representing the PLA's perspective on the Taiwan issue, which certainly has an impact on China's Taiwan policy. Nevertheless, as the *PLA Daily* represents all of the PLA, and not just the PLAN, any specific naval influence is difficult to ascertain.

Although the role of the PLA and PLAN in the Taiwan dispute cannot be addressed fully in this paper, writings on Taiwan increasingly stress a maritime dimension. That is, the importance of Taiwan is cast in terms of its strategic value for China, not just the imperative of national unification.⁶ For Jiang Zhijun, the head of the China Naval Research Institute, "As long as the Taiwan issue isn't resolved, we will always be hindered in our capacity to defend our nation's maritime regions."⁷ According to one academic at the Shenyang Artillery Academy who specializes in maritime defense, Taiwan along with other coastal islands such as Changshan and Zhoushan serve both as military buffers for the mainland and a battlespace that links the land and the sea.⁸ An article in *Modern Navy* likewise noted Taiwan's role as China's "gate to the Pacific," allowing it to break through the "first island chain" and as a key to the defense of one-fifth of China's population along the east coast.⁹

South China Sea—the Spratly Islands

Not surprisingly, the South China Sea disputes receive less attention in news media sources than the Taiwan dispute. As China has controlled the Paracel Islands that Vietnam also claims since the early 1970s, this section focuses on China's claims to the Spratlys. Among China's maritime disputes over the sovereignty of offshore islands, the Spratlys receive much more attention in PLA media than the dispute with Japan over the Senkakus. Figure 3–4 shows the number of articles per year in the *PLA Daily* and *People's Daily* where "Spratlys" (*nansha*) appears in the title. Although both figures demonstrate the prominence of South China Sea disputes when compared with the Senkakus, coverage of these disputes has not increased over time, especially coverage of the Spratlys. The *PLA Daily* published 24 articles with "Spratlys" in the title in 1994, but only 5 such articles in 2005. Likewise, as shown in figure 3–3, the number of articles in *Modern Navy* containing the word "Spratlys" in the full text has remained steady and not increased appreciably since 1994.

Figure 3–4. The Spratlys Dispute in Core Newspapers (Title Search)

As the Spratlys played a role in efforts to justify PLAN modernization in the 1980s, the lack of continued increased coverage of this dispute is noteworthy. This trend, however, could be interpreted in two ways. On the one hand, it may be that growing conflict across the Strait has provided the PLAN with a much more suitable rationale for force modernization. On the other hand, the PLAN may have succeeded in the 1980s in framing China's interests in the South China Sea, especially after it occupied six features in early 1988 and Mischief Reef in late 1994. As a result, this dispute requires less attention than before, since the Spratlys are commonly accepted as an intrinsic part of Chinese territory that the PLA must defend.

Two aspects of news coverage of the Spratlys dispute support this second interpretation. First, in contrast to coverage of the Taiwan dispute, the *PLA Daily* has published more articles on the Spratlys than the *People's Daily* has published. Second, the timing and content of articles in the *PLA Daily* support the view that the PLA has taken the lead in framing this issue for the public. In contrast to articles about Taiwan (or the Senkakus discussed below), much of the *PLA Daily* reporting on the Spratlys contains original content, not Xinhua reports. Many of the *PLA Daily*-written articles discuss relatively benign topics, including how soldiers endure the hardship of such a remote

posting or the diversity of fish in the surrounding waters. In tone and content, these stories are similar to *PLA Daily* articles on garrison troops defending the first line of China's land borders, especially at high altitude and in harsh climates. Although relatively benign, such articles also help to "construct" China's interest in defending its position in these disputes and consolidate China's sovereignty claims by demonstrating the links between these distant islands and the Chinese mainland, links created by the presence of Chinese troops. Indeed, some of these "fluff" pieces in the *PLA Daily* about the troops stationed on the reefs and atolls in the South China Sea appear to be reprinted in the *People's Daily*, reversing the pattern of coverage in the Taiwan dispute.

The development of China's operational campaign doctrine suggests one explanation for the lack of a substantial increase in the attention given to the Spratlys in PLAN and PLA sources. Unlike its predecessor, the 2006 edition of *The Science of Campaigns* contains a new type of naval campaign, described as "attacks against coral islands and reefs" (*dui shanhu daojiao jingong zhanyi*), a campaign scenario that appears to be tailored to the South China Sea disputes where China might consider attacking islands and reefs held by other claimants. The discussion of the campaign is brief, only five pages long. Moreover, most of the discussion highlights the obstacles and challenges that the PLAN would face, including the distance from the mainland and difficulties in command, air defense, and logistics support along with the harsh natural environment characterized by typhoons and subsurface obstacles. The emphasis on the difficulties in the discussion of this campaign is noteworthy and suggests one reason for decreasing prominence.¹⁰

Although the Spratlys dispute is not attracting increasing attention within the PLAN or PLA, these sources stress several themes about the dispute in addition to reiterating China's sovereignty claim. The first is the threat that China faces from the other claimants. One survey of maritime hot spots on China's periphery published in *Modern Navy*, for example, notes that other claimants have "seized" (*qinzhuan*) China's islands in the South China Sea, stolen its maritime resources (especially petroleum), and threatened the lives and property of Chinese fishermen.¹¹

As this article suggests, a second and closely related theme is the link between control of disputed offshore islands and China's broader maritime rights and interests. In a *Modern Navy* article, popular military commentator Zhang Zhaozhong stresses that the islands in the South China Sea are the focal point for drawing baselines used to claim territorial waters and EEZs.¹²

A third theme is the challenge posed by outside powers to China's claims. One article in *Modern Navy*, for example, notes that the United States seeks to use the South China Sea disputes as a "trump card" (*wangpai*)

with which to contain China after the Taiwan conflict is resolved. The U.S. strengthening of military ties with other claimants in the dispute through cooperative military agreements, joint exercises, and ship visits is noted as evidence of such intentions. Likewise, Japan is seen as using its treaty with the United States to participate in efforts to protect the freedom of navigation in the adjacent sea lanes. At the same time, Japan's engagement of ASEAN (Association of Southeast Asian Nations) states is cast as "internationalizing" the dispute to China's disadvantage.¹³

Directly or indirectly, these three themes provide rationales for strengthening China's naval power. At the same time, there is little evidence even in PLAN sources that China should abandon Deng Xiaoping's strategy for pursuing China's claims in these disputes, which calls for "setting aside conflict, pursuing joint development" (*gezhi zhengyi, gong-tong kaifa*). Thus the islands serve as a rationale for force modernization, but not necessarily a change in China's policy. Critique of Deng's dictum in PLAN or PLA sources would signal an important change and potential effort to influence national policy. At the moment, however, Deng's strategy continues to receive broad-based support in PLA publications. If the military differs slightly from discussion of Deng's policy, it is to stress the phrase "*zhuquan gui wo*" and the idea that sovereignty is nonnegotiable even while pursuing joint development.¹⁴

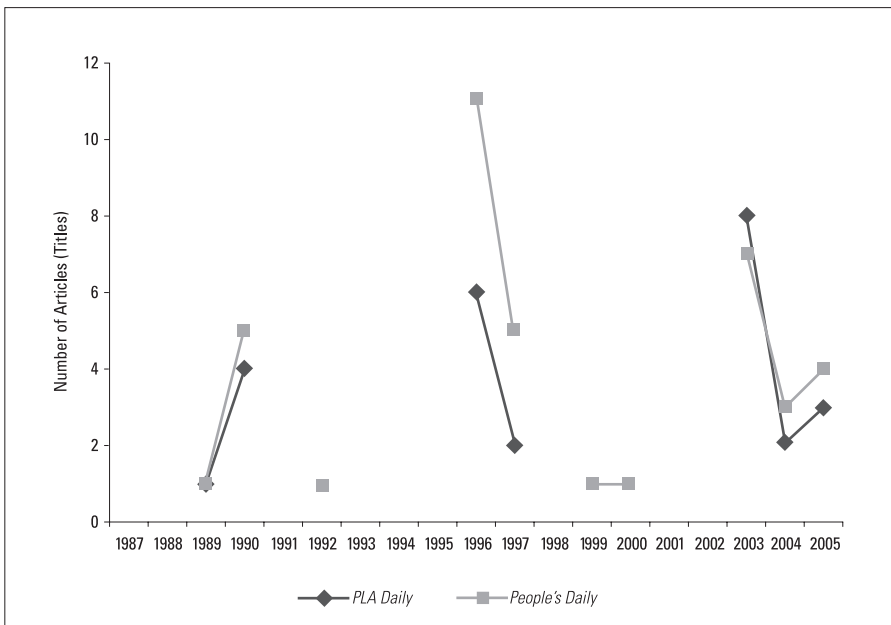
The other aspect of the dispute in which the PLAN might carry weight regards the role of international law. China's claim in the South China Sea is often depicted on maps by a series of 9 or 11 "dotted lines" (*duanxian*). The status of these lines in international law, however, is unclear. Noted PLA strategist at the Academy of Military Sciences, Pan Shiyong, forcefully argued after his retirement that the dotted lines refer to "historical waters" and that China can claim sovereignty over all of the territorial features in the South China Sea contained within these lines, including contested islands and reefs as well as the adjacent waters.¹⁵ UNCLOS, however, contains no provision for "historical waters" and the concept itself was developed to describe rights to enclosed areas, such as the Bohai Gulf, not waters abutting other states. At the same time, when China issued its territorial baselines in 1996, it did not draw baselines for the Spratlys, which indicated that the government's position was likely still being debated and thus room for PLAN influence exists on this issue. Zhang Zhaozhong, for example, appears to join Pan in pushing for claiming historical waters in the South China Sea on the basis of the dotted lines.¹⁶ If the PLAN, or PLA, maintains a perspective in the Spratlys dispute distinct from the government, it is likely in the interpretation of international law and how it should be applied in this conflict.

The Senkakus

What is striking about coverage of China's dispute with Japan over the Senkaku Islands is the lack of coverage. As figure 3–5 shows, the total number of articles with “Senkaku Islands” (*diaoyu dao*) in the title in the *PLA Daily* and *People's Daily* is low, roughly one-tenth of those published on the Spratlys.¹⁷ Moreover, no clear trend exists in the frequency or timing of articles on the Senkakus. Analysis of individual news reports suggests that the timing results from events linked to the dispute, such as attempts by activists from both sides to land on the islands in support of each country's claim. As figure 3–3 demonstrates, only 32 articles in *Modern Navy* since 1994 even mention the Senkakus anywhere in the text. Since this is a maritime sovereignty dispute with China's main rival in East Asia, one might expect the PLA to stress this conflict and to do so with increasing frequency since the mid 1990s as relations with Japan entered a more turbulent phase.

In addition, in contrast to coverage of the Spratlys, *PLA Daily* coverage of the Senkakus consists almost entirely of articles from Xinhua or the *People's Daily*. With just three exceptions, the *PLA Daily* has published no original

Figure 3–5. The Senkaku Dispute in Core Newspapers (Title Search)



content or reporting on the dispute, focusing instead on official government statements and Ministry of Foreign Affairs (MFA) press conferences. Most of the reporting on the Senkakus is not on the first page, but on the inside of the paper. No staff commentaries have been authored that mention the Senkaku dispute.

An exception to the lack of original content occurred in early 2003. In January, the Japanese government announced that it would lease three of the disputed islands from a private Japanese citizen. This report unleashed a flurry of protests throughout the month in Beijing, as it appeared that Japan was consolidating its claim in the dispute. Although the *PLA Daily* printed the MFA's protest on January 5, two named articles by *PLA Daily* journalists appeared toward the end of the month. Nevertheless, these articles only reinforced the government's objections and did not adopt a more assertive or aggressive position.¹⁸

What does this mean? First, there appears to be close coordination between the government and PLA over the Senkakus dispute, at least in the area of propaganda. Overall, the goal is to minimize public discussion of the conflict, but demonstrate China's "resolute" stance on the question of sovereignty when the Japanese government is viewed as challenging China's claim. Second, both the PLA and the government likely do not want to raise expectations among the public regarding China's ability to make progress in the dispute. The islands have been under Japanese administration since 1972 and the United States indicated in the mid-1990s that the defense of the islands was included in the U.S.-Japan alliance. The islands are perhaps also a referent in the chapter on attacks against coral islands in the 2006 edition of *The Science of Campaigns* discussed above.

In the limited publications on the Senkakus, several themes emerge in PLA and PLAN writings. To start, several articles on the Senkakus offer short summaries of the historical basis for China's sovereignty claim. These articles lack an aggressive tone and do not appear to push the government to take a more assertive stance. Instead, they simply review the history of China's claims as the government has articulated publicly in the past.¹⁹

In addition, discussion of the Senkakus highlights their economic and military value. As one article in *National Defense* notes, for example, Japanese sovereignty over the islands would allow it to exploit resources in 200,000 square kilometers of "maritime national territory" (*haiyang guotu*).²⁰ Other articles stress the military value of the islands, which are located only 90 nautical miles from Taiwan. One author in *Modern Navy* notes that the islands could extend Japan's defensive range more than 300 nautical miles to the west from Okinawa, threatening China's coastal regions and Taiwan through the placement of radar or missile systems.²¹ Because of this strategic value, this article concludes that

the United States is currently examining the strategic value of the islands and “plotting” with Japan to deploy troops there. According to Jin Yinan, a professor of strategy at the PLA’s National Defense University, the military importance of the islands is to serve as a “protective screen” (*pingzhang*) for the East China Sea. At the same time, in contrast to the article in *Modern Navy*, Jin notes that the islands lack suitable conditions for the placement of military assets and stresses that their primary importance is economic.²²

Interestingly, Chinese writings differentiate between Japan’s current administration of the islands (sometimes described as “actual control” (*shiji kongzhi*) and any potential or future Japanese “occupation” of the islands. By implication, occupation, described as “*qinzhān*” or “*zhanling*,” appears to refer to any permanent military use of the islands, especially for assets that could be used in a conflict over Taiwan.²³ Thus, although only by implication, these writers have highlighted what might be viewed as a “red line” for China in its dispute with Japan.

Finally, one article on the Spratlys deserves mention, as it offers an instance of the PLAN seeking to influence national policy with respect to maritime law enforcement and the establishment of a coast guard–type capability. Published in *Modern Navy*, the article reviews the development and application of Japan’s coast guard under the alarmist title of “Warning: Japan’s Coast Guard’s Threat to Our Maritime Space.” The author first reviews the expansion of Japan’s coast guard as a military force (*junshi liliang*), highlighting its role in the Senkakus and East China Sea disputes, such as preventing Chinese protestors from landing on the islands while protecting right-wing Japanese activists. The author laments diffusion of authority for maritime law enforcement in China among a number of agencies, arguing through example that China should develop a centralized system to strengthen its ability to defend its interests at sea. Currently, China has a Maritime Safety Agency (海事局) under the Ministry of Transportation and a Maritime Patrol Detachment (海监总队) under the State Oceanic Administration (海洋局), among others. The author also notes how Japan has used its coast guard to defend its sovereignty claims, both to the Senkakus as well as in the East China Sea.²⁴

Maritime Rights and Resource Security

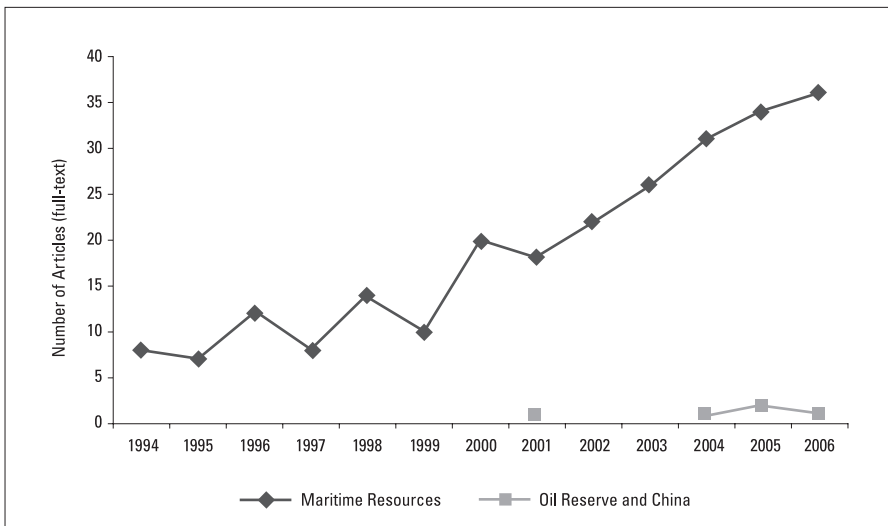
PLAN Focus on Maritime Resources

As China’s economy has grown, so has its demand for natural resources. This phenomenon is well reported in the Western press, and it is now common knowledge that China became a net energy importer in 1993. Since 1993, China’s imports of oil, gas, and uranium, as well as metals like tin and copper, have grown rapidly. This phenomenon has generated discussion among naval

authors along two lines. First, how can China secure more resources within its own territory to reduce import dependence? Second, for products that must be imported, how can China secure its supply in the event of a crisis? In this section we evaluate the PLAN's position on developing the resources in China's EEZ. In the next section we look at the PLAN's attitude toward protecting SLOCs.

How should China solve its growing dependence on foreign resources? Civilian and military views on this question tend to follow that iron law of bureaucratic politics: where you stand depends on where you sit. There are many potential ways for China to ameliorate its position: building a strategic oil reserve, exploiting offshore resources, increasing energy efficiency at home, just to name a few. On this issue, the PLAN has shown much more interest in developing offshore resources and placed almost no emphasis on building a strategic oil reserve; the *People's Daily*, on the other hand, has shown very little interest in offshore resources but much interest in building a strategic oil reserve. Consider figures 3–6 and 3–7:

Figure 3–6. *Modern Navy* Coverage of “Maritime Resources” (海上资源) and “Oil Reserve and China” (石油储备·中国)



Comparing *Modern Navy's* and *National Defense's* coverage of maritime resources, it also appears that the PLAN has shown more interest than the PLA as a whole. Coverage in *Modern Navy* started earlier and has continued to grow after 2004. In *National Defense*, on the other hand, coverage grew more slowly and has been declining since 2004.

Figure 3-7. *People's Daily* Coverage of “Maritime Resources” (海上资源) and “Oil Reserve and China” (石油储备·中国)

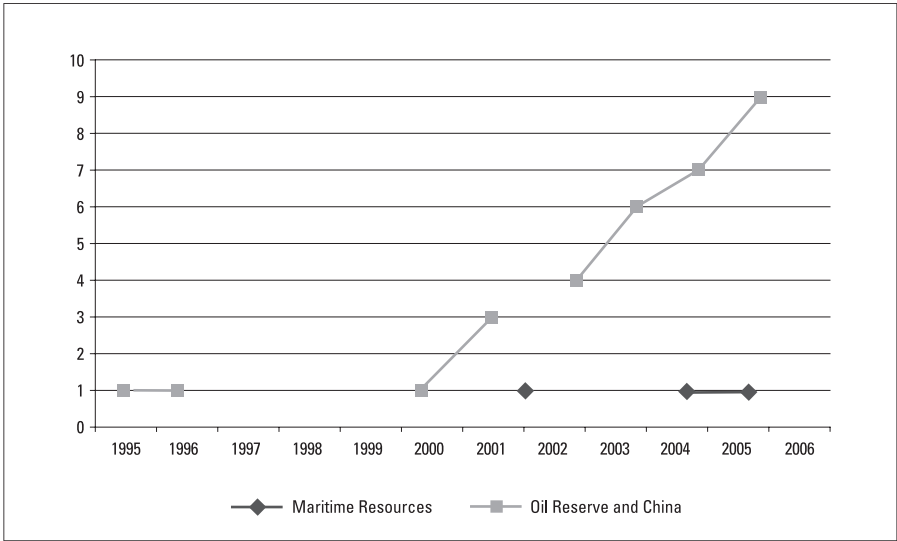
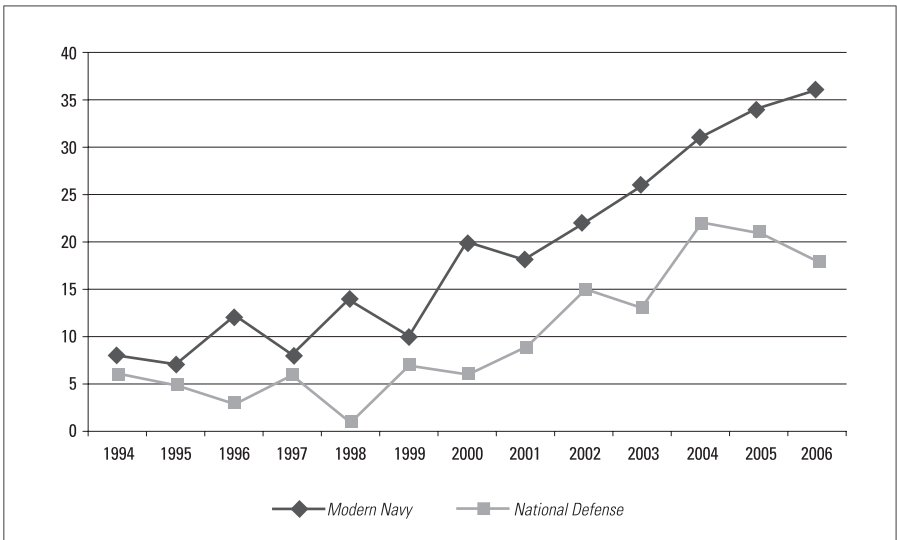


Figure 3-8. *Modern Navy and National Defense* Coverage of “Maritime Resources” (海上资源)



These graphs suggest that the PLAN places more importance on the development of maritime resources to improve China's energy security situation than either the PLA as a whole or the civilian leadership. This is not surprising: it is the one area over which the PLAN might play a leading role. But what is the case that naval authors are making for the importance of these offshore resources?

The PLAN's Case For Maritime Resources

Numerous authors in *Modern Navy* and naval authors in *National Defense* propound a similar case for focusing on maritime resources. They start with the common premise that China's population, along with the world's population, continues to increase. As a consequence of both population increase and economic growth, demand for natural resources has risen.²⁵ The problem, they argue, is that "land resources are gradually being exhausted."²⁶ Seventy-one percent of the world's surface, they happily remind us, is covered by the oceans, but to date only minimal efforts have been made to exploit maritime resources. For most of history, getting at these resources was extremely difficult or impossible; today, technological progress has made these resources accessible in a way they never have been before.²⁷ Exploiting the oceans is thus an ideal way to improve China's resource security.

The catch—and this is where the PLAN comes in—is that in order to get at maritime resources, China's territory and EEZ must be protected from other countries who want to take those resources. As Luo Xianlin, a Senior Captain in a command post in Huai Bei (淮北舰艇长), put it in 1994: "Protecting and developing the ocean's resources is a historic responsibility that our navy cannot shirk."²⁸ This new mission has been emphasized by numerous naval authors. In a series of interviews with naval academics and officers, Liu Zhenhuan (刘振环), a Senior Captain at the China Naval Research Institute (海军军事学术研究所), argued in a 2000 piece in *Modern Navy* that the PLAN must make itself capable of "protecting China's 'maritime territory' and the development of its resources . . . the scope of China's maritime defense must be enlarged to include the entirety of the waters under China's jurisdiction, including the EEZ and continental shelf."²⁹ This requires expanding traditional conceptions of maritime defense and pushing out China's defensive line. In the same series, Liu Xuxian (刘续贤), a researcher at the Academy of Military Sciences (AMS) and vice chair of the AMS Military Science Research Guidance Department (军事科研指导部), argued that the navy must change its strategy:

The most important elements of shifting strategy are: the navy's activities and war-planning areas should move from the coast towards nearby seas; our main tasks in warfare are shifting from protecting the country's land-mass towards protecting maritime territory, from defeating an enemy attack in nearby waters towards protecting our country's rights and interests at sea.³⁰

Zhang Shiping (章示平), an AMS researcher in the Campaign and Tactics Department (*zhanyi zhanshu bu*, 战役战术部), argued that China must change its understanding of “naval forces” to include five elements: 1) naval ships, including aircraft carriers; 2) civilian shipping vessels; 3) fishing ships; 4) oil and resource exploration ships, and 5) law enforcement ships.³¹ The significance of this is that Zhang defines naval strength not only in terms of the PLAN’s ability to defeat foreign navies, but in terms of the navy’s ability to protect the exploitation of the ocean’s resources by Chinese vessels. In doing so, Zhang defines naval strength in economic as much as in military terms. He emphasizes that “protecting the development of natural resources from being stolen or ruined is one of the basic tasks of our navy.”³²

Effect of UNCLOS

While the United Nations Convention on the Law of the Sea (UNCLOS) receives a fair amount of attention among naval authors, its effect is probably not that anticipated or hoped for by the framers of that document. International regimes are intended to increase cooperation and reduce conflict. In helping states to see that they can protect their interests through agreed-upon rules, rather than through military force, international regimes ideally slow the pace of arms races and military buildups. Such, at least, is the theory. The PLAN’s reaction to UNCLOS, however, has not followed such logic. Instead, naval authors see UNCLOS as increasing the scope of China’s sovereignty and thus the maritime area to be administered and secured from external threats. If UNCLOS laid down a law, the PLAN argues that there must be an entity responsible for enforcing that law—the PLAN itself.

In a 1996 piece in *National Defense*, Liu Zhenhuan (刘振环), then head of the China Naval Research Institute, analyzed the effect of UNCLOS on China’s maritime interests. UNCLOS had notable positive effects: it increased the amount of territory under China’s jurisdiction and thereby provided much space for development; it provided a legal basis for China’s exploitation of deep sea mining; it also provided for free navigation of the Tumen River; and finally, it provided military and civilian vessels free access through crucial straits and international waters. But for Liu, this does not mean that the PLAN’s responsibilities have decreased; on the contrary, it implies that they have increased. Most fundamentally, it means that China must stop thinking of its navy as a military force that spends most of its time preparing for conflict but only a short time actually fighting (*yangbing qiari, yangbing yishi*, 养兵千日, 用兵一时) and instead think of it as a force that is not only being built and improved every day, but is actually in constant use in both wartime and peacetime (*tiantian jian haifang, riri yong haijun*, 天天建海防, 日日用海军).³³

In a piece 10 years later in *China Military Science*, Tang Fuquan (唐复全), a professor at the Dalian Naval Ship Academy (大连舰艇学院), reiterated many of the same themes. The navy no longer need only prepare for a military showdown with another navy, but now must execute numerous functions to protect economic well-being—most important, China must be able to protect its EEZ and continental shelf. On the one hand, they argue that UNCLOS has played a “positive role in protecting the world’s economic development.” At the same time, however, they emphasize that it has also “complicated” many issues. First, because many developed countries such as the United States have not signed the convention, it is often unclear whether or not it applies. Second, countries which have signed hold different interpretations of how the law affects their claim to their maritime boundaries and to their islands. As a result, the law will cause “conflicts over maritime interests throughout the world to become more fierce.”³⁴ Similarly, Liu Zhenhuan argued that UNCLOS did not obviate the need for a strong navy: “In today’s complicated conditions in China’s surrounding waters, without a strong naval force as a shield, it is very difficult to implement scientific exploration, economic development and common development [of natural resources] in disputed waters.”³⁵ Thus, by expanding China’s maritime rights, UNCLOS has also “increased the area of the navy’s maritime activities and its enforcement responsibilities.”³⁶

Other authors have picked up on this theme. Xu Xuehou (徐学厚) of the Jinan Ground Forces Academy (济南陆军学院) argued that UNCLOS “brought us new opportunities to develop ocean resources, but has also brought us new challenges.”³⁷ A 2001 article in *Modern Navy* goes so far as to argue that because UNCLOS has given coastal countries different rights (in other words, some countries have been given more than others), UNCLOS has “to a certain extent become an incentive for both contradictions and conflict, and has even become a potential focus for regional maritime wars and military clashes.”³⁸ While this position is extreme, what is representative about his thinking is that UNCLOS does not reduce, and probably increases, the need for naval development. A 1999 article in *Modern Navy* similarly argues that since the 1990s, with the expansion of maritime interests to include EEZs, coastal Third World countries gained huge amounts of fishing and mineral resources, but that this creates a real challenge, namely, how to protect territory that is 200 nautical miles off the coastline.³⁹ Indeed, these articles conclude China’s navy remains unable to accomplish these tasks and thus unable to protect China’s *haiquan*. Therefore, to meet these new challenges, China must continue to build up its navy.

Some PLAN sources raise questions about certain provisions within UNCLOS. For example, PLAN authors question both the “right of innocent

passage” within a country’s territorial waters as well as through “freedom of navigation and overflight” in a country’s EEZ, especially for military ships. This provision is seen as allowing “hegemonic” states to pursue “gun-boat diplomacy.”⁴⁰ During the 2001 EP-3 incident, the *PLA Daily* issued a staff commentary, charging that it represented a serious violation of China’s sovereignty. In particular, the commentary charged that the U.S. plane had disregarded the international legal regulations on freedom of overflight by conducting surveillance in the airspace above the coastal areas of China’s EEZ.⁴¹ The implication was that UNCLOS prohibits (or should prohibit) military activities in a country’s EEZ, a theme that a Chinese international legal scholar echoed in the *People’s Daily* on the same day.⁴²

As a result, Dalian Naval Vessel Academy Professor Tang Fuquan proposed several ways in which China could improve its position in the competition over maritime rights created by the passage of UNCLOS. First, China should conduct extensive surveys of its maritime boundaries in preparation for delimitation negotiations. Second, China should strengthen its maritime legal regime, citing gaps in current domestic and international laws that China could use to protect its maritime rights. Third, China should enforce maritime law through a centralized system that would enable effective monitoring of areas under China’s jurisdiction and through increased range and frequency of patrols in these areas.⁴³

In sum, Chinese naval authors see the protection of China’s EEZ as a vital means of developing offshore natural resources. While these rights are legally protected by UNCLOS, PLAN authors believe that they themselves must be able to enforce the terms of that treaty. In order to do so, China must continue its naval buildup.

Energy Security vs. Resource Security

In discussions of China’s growing dependence on imported raw materials, the concepts of “resource security” and “energy security” seem to be used interchangeably. In fact, however, while related, the two concepts actually address slightly different issues. Keyword searches of both concepts in a variety of journals show that the PLA has consistently been more interested in the concept of resource security, while civilians have emphasized energy security. Consider figures 3–9 and 3–10 below. A full-text search in *Modern Navy* for both concepts shows that while both have been growing rapidly, there is greater emphasis on resource security. This is even more pronounced in *National Defense*.

It is worth comparing these charts with data from the *People’s Daily* for the same two searches; as can be seen in figure 3–11, the results are basically opposite.

Figure 3-9. *Modern Navy Coverage of “Energy Security” (能源安全) and “Resource Security” (资源安全) (Full-text Search)*

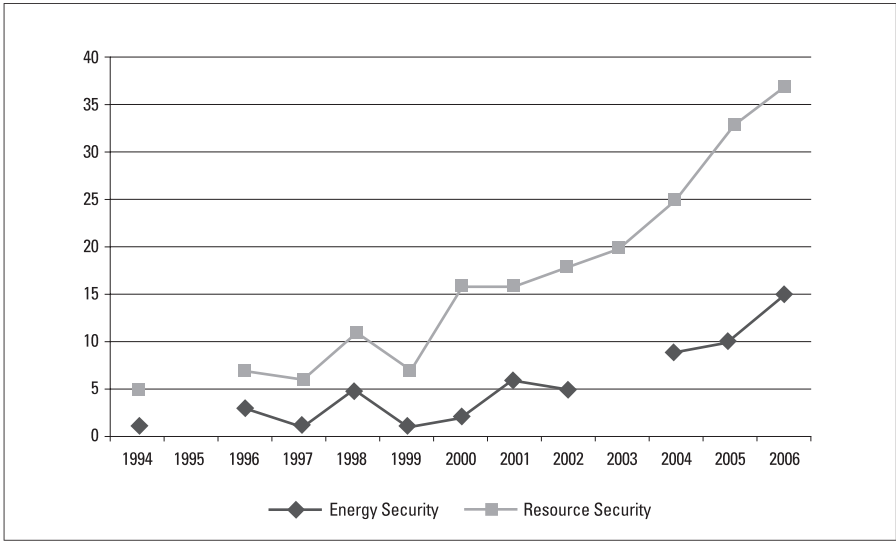


Figure 3-10. *National Defense Coverage of “Energy Security” (能源安全) and “Resource Security” (资源安全) (Full-text Search)*

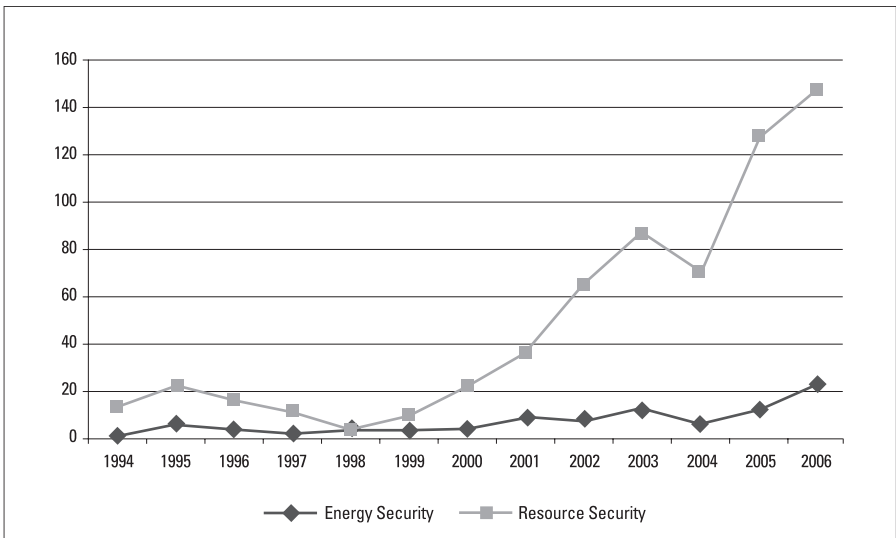
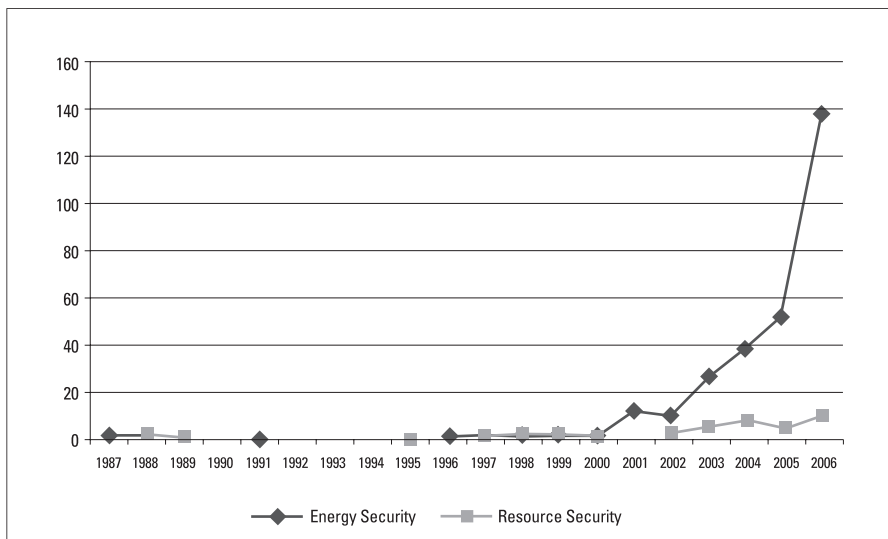


Figure 3–11. *People’s Daily* Coverage of “Energy Security” (能源安全) and “Resource Security” (资源安全) (Full-text Search)



These searches may suggest that the PLA has a broader conception of import dependence than the civilian leadership has. Indeed, authors in *Modern Navy* and *National Defense* talk not only about energy security (see the next section on SLOCs for more), but also about resource security in general. This includes mined products from the ocean (hence the higher amount of attention paid to maritime resources), and also food. In fact, several authors emphasize that as China’s population grows and land is paved over for industrial or commercial use, food imports will increase. One place where China can make up some of the difference is in food products harvested from the ocean; this, in turn, requires a navy able to protect fishermen in Chinese waters and beyond.⁴⁴

Sea Lines of Communications

The difficulty of analyzing the PLAN’s attitude toward the protection of sea lines of communications (SLOCs) is that there is no issue on which there is a greater diversity of opinions, both within the Chinese military and between the Chinese military and civilians. Some are convinced that there is no problem at all; others argue the problem is primarily political and not military; and others argue that China must rapidly build up the capability to escort oil resources home. At the same time, because the issue is politically sensitive in the United States, it can often be interpreted as a litmus test among Chinese

officers for their level of hawkishness. A quick glance at a search for “sea lanes” below (figures 3–12 and 3–13) shows that while *National Defense* did increase its coverage of the issue slightly in the early 2000s, that coverage has since fallen back to just above original levels in the early 1990s. Similarly, the *People’s Daily* has seen only a modest increase. In *Modern Navy*, however, the issue has continued to grow in importance. The case is even more pronounced when searching for the related concept of “sea lane security” (航线安全). The issue gets a large and growing amount of attention in *Modern Navy*, with minimal and non-increasing coverage in the other three.

No geographic region is a greater source of concern than the Malacca Strait. When Hu Jintao regularly uses the phrase “the Malacca Dilemma” (马六甲困境), he is referring to the fact that a large and growing percentage of China’s imported oil (about 75 percent) is shipped through that strategic waterway. This growing concern over the security of the Malacca Strait is reflected in the following full text search (figure 3–14). As can be seen, *Modern Navy* has been writing about the Malacca Strait security issue since 1994, while the *People’s Daily* only began real coverage of the issue in 2002. Interestingly, *National Defense* has paid only minimal attention to the issue. As these two charts show, sea lane security has become an increasingly important issue for the PLAN, suggesting that this may be one policy area in the future where the navy exerts special influence.

Figure 3–12. *Modern Navy, National Defense, People’s Daily, and PLA Daily Coverage of “Sea Lanes” (海上通道)*

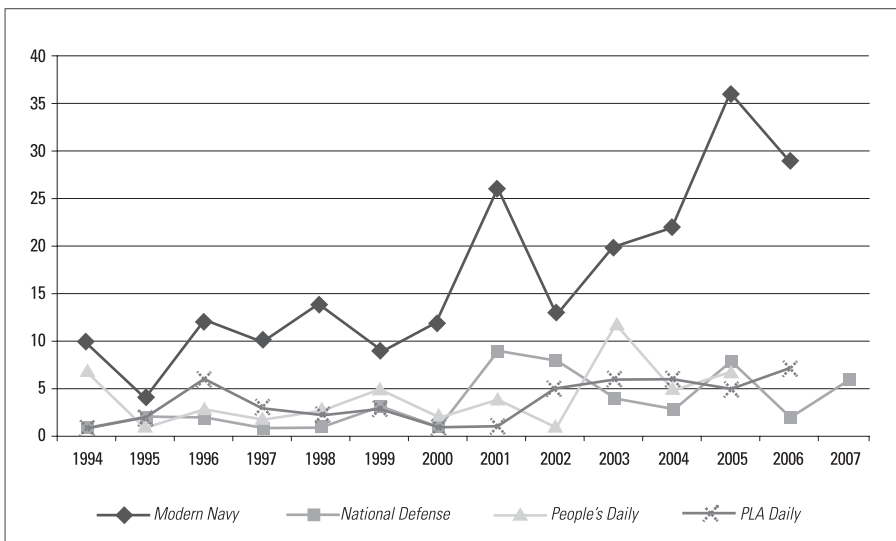
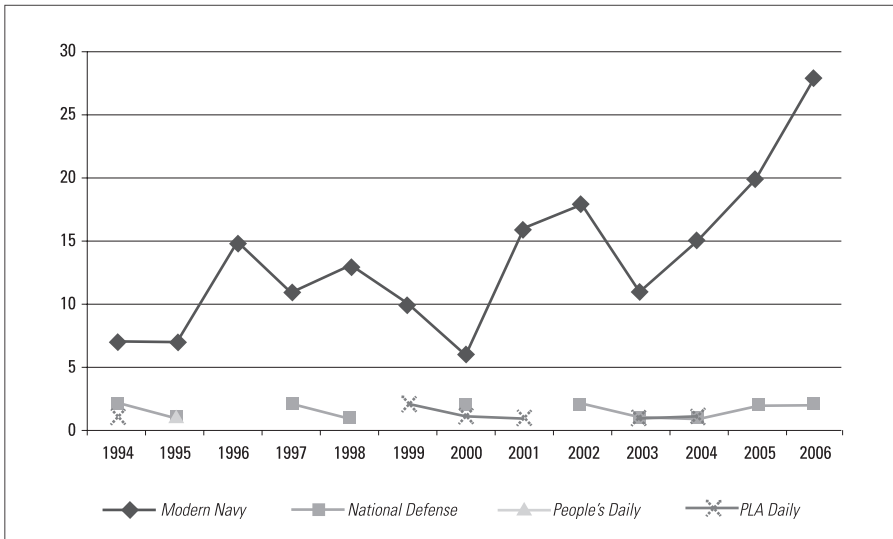


Figure 3–13. *Modern Navy, National Defense, People’s Daily, and PLA Daily Coverage of “Sea Lane Security” (航线安全)*

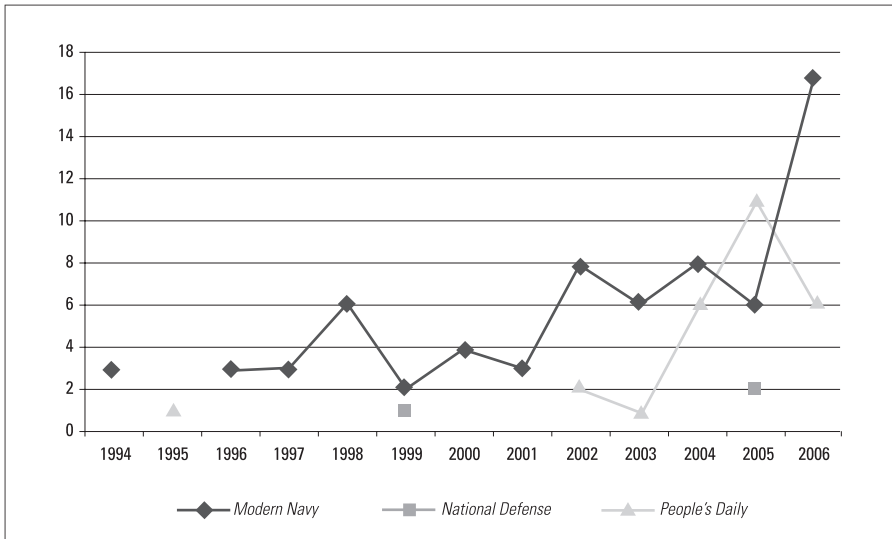


The issue of “sea lanes,” however, is not monolithic: it is composed of many smaller issues which deserve to be analyzed separately. This is because sea lanes can come under threat for a variety of reasons and in a variety of locations from a variety of different sources. In this section, therefore, we first focus on two potential threats to sea lanes—piracy and terrorism. We discuss the PLAN’s attitude toward the risk of a great power blockade and who might potentially instigate such a blockade. Here we find an unexpected amount of attention paid to the intentions and capabilities of the Indian navy. Finally, we provide two opposing viewpoints from civilian and military sources, which argue that China’s SLOC problem is actually a problem best solved by market or diplomatic, not military, means.

Piracy and Terrorism

What are the threats to Chinese shipping through the Malacca Strait? One clear threat is pirate attacks (or a potential terrorist attack). On this issue, though, there is a variety of opinion among naval authors. The *People’s Daily*, the *PLA Daily*, and *Modern Navy* have all focused quite a bit of attention on the topic. In fact, the full-text searches (figure 3–15) indicate the navy was, if anything, led by the civilians in terms of drawing attention to the issue, with *Modern Navy* having very little coverage in the early 1990s but increasing its coverage throughout the late 1990s and early 2000s.

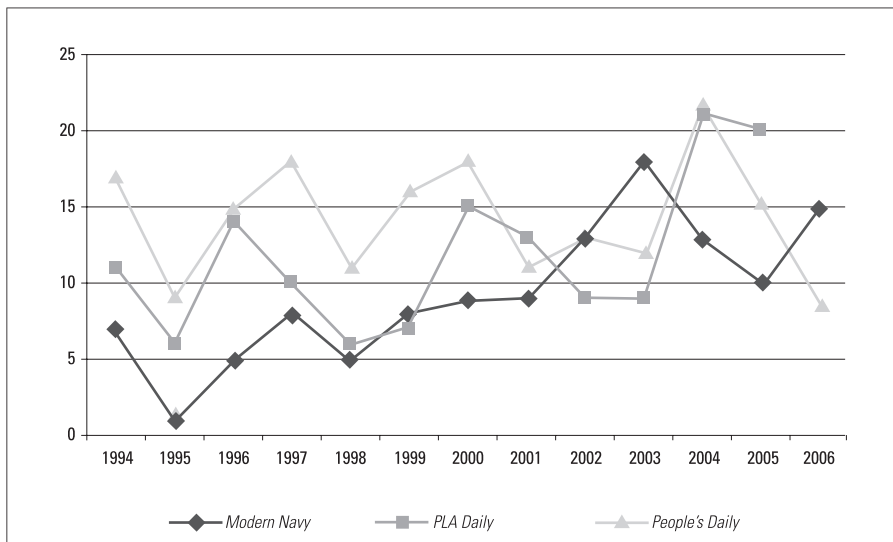
Figure 3–14. *Modern Navy*, *National Defense*, and *People’s Daily* Coverage of “Malacca Strait and Security” (马六甲。安全) (Full-text Search)



In general, naval authors are less afraid of piracy itself than they are of the prospect that other countries (the United States, Japan, India) will use piracy as an excuse to set up bases or increase naval activity in the Malacca Strait region. It is worth noting that both the 2000 and 2006 editions of *The Science of Campaigns* do not discuss operations to protect against piracy. To be sure, though, there are authors who acknowledge that piracy or a terrorist attack would have a devastating impact on the East Asian economy. A July 2006 article in *Modern Navy* by staff writer Zhang Gang (张刚) points out that pirate attacks are increasing in the region, and that a terrorist attack which closed down Singapore could cost the world \$200 billion a year.⁴⁵ The *PLA Daily* has run reports that al Qaeda has as many as 25 ships, and that a terrorist attack could devastate shipping.⁴⁶ Most of the articles on piracy in *Modern Navy* are written by staff writers, and tend to be largely descriptive.⁴⁷ To the extent that these authors discuss dealing with the piracy problem, the focus tends to be on supporting the efforts of the countries bordering the strait (Singapore, Malaysia, and Indonesia), and engaging in cooperative police efforts. For example, Zhang Gang praises the statement made at the 2003 ASEAN Regional Forum (ARF) meeting that promises to deal with the piracy problem.

Naval publications, however, tend to be less worried about both piracy and terrorism than they are about the use of those problems as an excuse for foreign navies to increase their presence in the region. A 2000 piece in

Figure 3–15. *Modern Navy*, *PLA Daily*, and *People’s Daily* Coverage of “Pirates” (海盜) (Full-text Search)



Modern Navy describes Japanese policy after a 1999 hijacking of a Japanese ship (carrying aluminum) which ended up costing \$20 million. The Japanese responded by sending their navy into the Malacca Strait. But this article argues that piracy is merely an excuse: tracing Japanese naval policy from before World War II to the Gulf War, the author argues that Japan has used any opportunity to increase the range of its navy. While Japanese actions have thus far been cooperative, the size of the Japanese navy is expanding, cooperation with India is increasing, and military exercises are becoming more frequent. The article ends by saying that Japanese warships, 56 years after the end of the “Southern Advance” policy, are now returning to Southeast Asia, and asking: “When thinking about this, people will always wonder: ‘is this really to defeat piracy?’”⁴⁸

A similar tack is taken in response to American efforts to fight terrorism in the region. A July 2004 piece in *Modern Navy* acknowledges that terrorism is a real threat, but that the United States (and Japan) now claim that “the entire world has become a terrorist world . . . fighting terrorism has already become a kind of fashion, and fighting terrorism has become a perfect excuse for some countries to interfere in other countries’ affairs.”⁴⁹ The real reason the United States wants to control the Malacca Strait is both to protect trade and to protect the U.S. Navy’s route from Japanese bases to the Persian Gulf should the need arise. But this severely affects China’s interests:

The Malacca Strait is an important node in China's ocean oil lifeline, and is directly related to China's economic security. According to statistics, of all the ships that cross the Malacca Strait every day, almost 60% are bound for China, and of those the vast majority carry oil. So we can say that whoever controls the Malacca Strait can control China's strategic oil lifeline, and can thereby threaten China's energy security at any time.⁵⁰

Furthermore, for China's navy to sail out to the rest of the world, it must cross the Malacca Strait; for example, the PLAN's 2002 global tour went through it.

In his 2006 article, Zhang Gang makes a similar case: that the United States, Japan, and India are all using the piracy/terrorism issue as an excuse to get a foothold in the Malacca region. To counteract this trend, Zhang proposes that China provide more aid to the regional countries so as to balance (抗衡) American and Japanese efforts. This will "increase China's influence in the region, and also accords with ASEAN's traditional policy of balance in foreign diplomacy."⁵¹

The Indian Threat

Three countries are the focus in discussions of how to protect China's SLOCs: Japan, the United States, and India. Japan's efforts to extend the reach of its navy are worrisome for both territorial reasons and the historic animosity between the two countries; the United States cannot be ignored because of the power of its navy. And, as shown above, there is coverage of both countries; in particular, American efforts to secure a base of operations in the region after leaving Subic Bay in the Philippines are reported.⁵² Indeed, articles in *Modern Navy* often refer to the United States' 1986 declaration to control the world's 16 key straits, and put the Malacca Dilemma into that context.⁵³ Surprisingly, though, attention to the Indian Ocean and the Indian navy are growing rapidly in naval discussions. This anxiety stems from geography: China's most important SLOCs run through the Indian Ocean. These authors go on to analyze both India's intentions and its capabilities, and infer both from Indian statements and from growing cooperation with the United States and Japan (for example in the Malabar Exercises of 2007) that China's oil from Africa and the Middle East may be threatened.

Consider the full-text searches for "Indian Navy" shown in figures 3-16 and 3-17. While the *PLA Daily* dramatically increased its coverage of the Indian navy starting in the late 1990s, the *People's Daily* only increased slightly in 2004, and has since fallen back to original levels. A similar phenomenon can be observed in comparing *Modern Navy* and *National Defense*. While coverage in *Modern Navy* increased by the mid 1990s, that in *National Defense* has remained constant over the past decade. This suggests that increasing coverage in the *PLA Daily* was driven by increasing attention to the PLAN's point of view, similar to coverage of the Malacca Strait.

Figure 3–16. *People’s Daily* and *PLA Daily* Coverage of “Indian Navy” (印度海军) (Full-text Search)

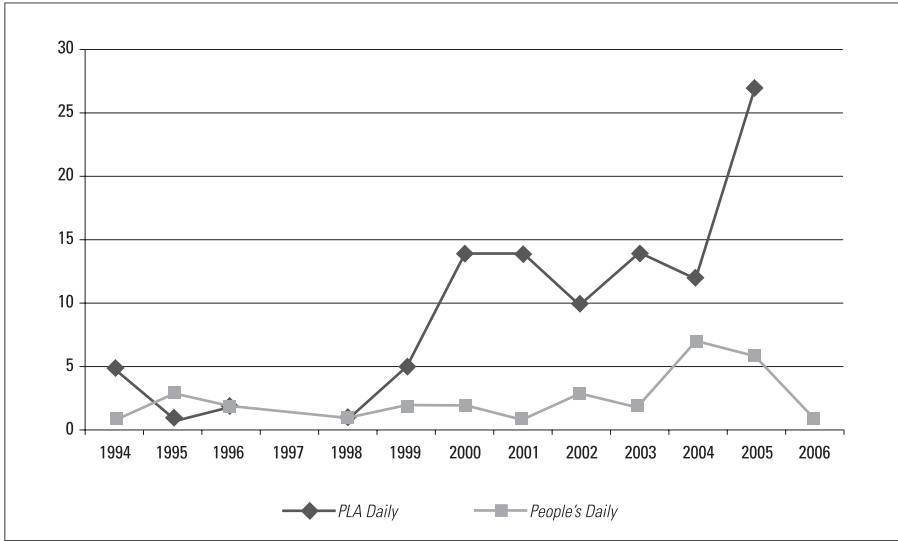
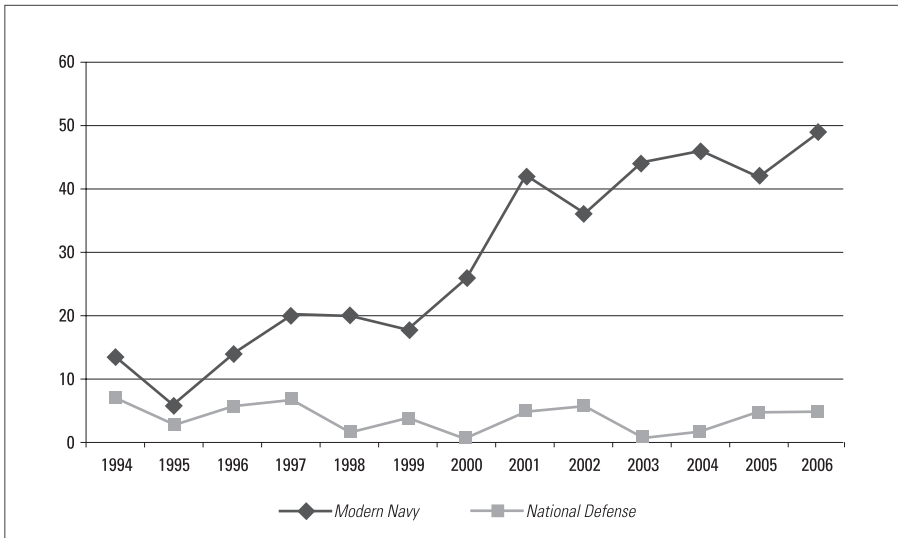


Figure 3–17. *Modern Navy* and *National Defense* Coverage of “Indian Navy” (印度海军) (Full-text Search)



Indian Intentions

What are naval authors actually writing about the Indian navy? First, they are worried about India's desire to control the Indian Ocean. The Indian Ocean holds China's most crucial SLOCs—those that link it to its supplies of oil in the Middle East and Africa. In 2002, *Modern Navy* published an article written by a Pakistani naval officer who argued that India wanted to turn the Indian Ocean into "India's lake." In addition to representing a grave threat to Pakistan, India's increasingly powerful navy poses a threat to Chinese SLOCs. The author concludes by exhorting China to build up its navy faster.⁵⁴ As early as 1994, the *PLA Daily* asserted that India's navy "intends to control the Indian Ocean"⁵⁵ and even to "make the Indian Ocean 'India's Ocean.'"⁵⁶ By 2001, however, naval authors were asserting much larger ambitions as part of India's "go East" policy to develop a presence in the Pacific. A September 2001 article in *Modern Navy* argued that India had a four directional strategy: defend against China in the North, attack Pakistan to the West, occupy the Indian Ocean to the South, and increase its sphere of influence to the East. The goal of all these activities is to "contain China" (*qianzhi zhongguo*, 牵制中国).⁵⁷

Naval authors also infer Indian intentions from growing cooperation with the United States and Japan. In 2002, *Modern Navy* translated an article from a U.S. naval officer describing the reasons for the increasing U.S. cooperation with India, which even asserted that, while there are obstacles, the U.S. Navy hopes to build a level of cooperation with the Indian navy equal to that of its cooperation with Japan and Great Britain.⁵⁸ A 2001 article in *Modern Navy* described growing Japanese and Indian "global cooperation," with military exercises in Southeast Asia, followed by joint antipiracy exercises in 2001. The author asserts that Japan must really want to cooperate with India because Japan broke with its own precedent and downgraded sanctions against India for its nuclear test.⁵⁹ The Malabar Exercises of 2007 undoubtedly strengthened the PLAN's worries. Not only has India increased cooperation with Japan and the United States, but it also enjoys close relations with ASEAN. Indeed, while Singapore, Malaysia, and Indonesia have been cautious about accepting help from the American or Japanese navies, they have sought more active cooperation with India. For example, in the 2004 antipiracy exercises, India was invited to participate while the United States was not.⁶⁰

Indian Capabilities

If PLAN sources perceive Indian intentions to be aimed at containing China, they also see India rapidly building the capabilities necessary to do so. *Modern Navy* has covered India's naval buildup fairly extensively. In April 2003, it ran an article titled: "Will the South China Sea Become the 'Second

Persian Gulf?” that laid out India’s 2003 plan to spend \$62 billion over the next 22 years to modernize the navy, and also detailed India’s growing interactions with ASEAN. In a December 2005 article, *National Defense* asserted that India seeks to have a top four navy by 2010.⁶¹ An October 2005 article in the *PLA Daily* described the efforts India is making as part of its new strategy to “destroy the enemy in distant seas” (远海歼敌). As part of this effort, India spent \$3.5 billion buying submarines from France, and plans under “Project 75” to build 20 nuclear attack submarines equipped with long distance cruise missiles over the next 30 years. In addition, India is building aircraft carriers, with the first homemade aircraft carrier expected to be operational in 2012.⁶² Indeed, the *PLA Daily* also reported that India wants to develop an aircraft carrier fleet on a par with England’s, and that this fleet will allow it to move into the Pacific.⁶³

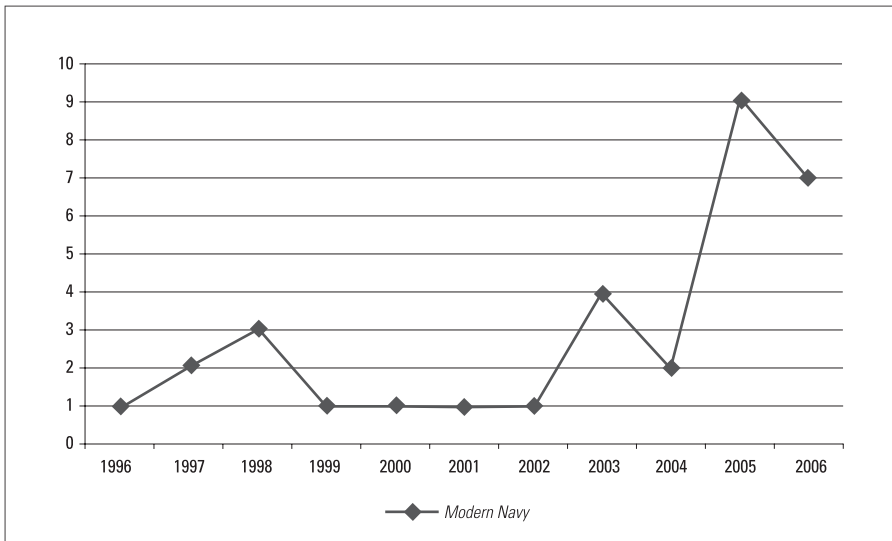
The concern over growing Indian capabilities is perhaps most clear in the increasing attention *Modern Navy* paid to the Indian naval base in the Andaman Islands. Consider the full-text keyword search in figure 3–18.

The Indian decision to build a naval base in the Andaman Islands is significant due to its strategic location. In his July 2006 article in *Modern Navy*, Zhang Gang argues that India intends to use the Andamans/Nicobar as a base for extending influence or controlling the Sunda Strait (between Java and Sumatra); the Palk Strait (between India and Sri Lanka); the Mandab Strait (between Yemen and East Africa); and the Hormuz Strait (Persian Gulf outlet).⁶⁴ A June 2004 article is worth quoting at length:

India is telling the world that the purpose of its base in the Andaman Islands is to stop weapons smuggling and piracy, to protect its naval rights and interests, and to improve its military cooperation with ASEAN, etc. But hidden in this action is their true intention to contain China’s activities in the Indian Ocean, and also to control the Malacca Strait, and gradually to enlarge their sphere of influence into the South China Sea and Pacific Ocean area. India sees China as a long term potential opponent, and the Indian military has on numerous occasions repeated this nonsense about China having ambitions in the Indian Ocean, helping Burma build military bases, and rapidly building up its navy so that within fifteen years it can cross the Malacca Strait and into the Indian Ocean, which is a challenge to India’s naval strategy. Using this groundless excuse, the Andaman Islands have become a forward base for Indian’s containment of China.⁶⁵

The article goes on to accuse India of trying to become the hegemon of the Indian Ocean, but also worries about India’s statement in 2001 that it should be a part of protecting SLOCs all the way to Japan.

Figure 3–18. *Modern Navy* Coverage of “Andaman” (安达曼)
(Full-text Search)



Chinese naval authors seem to worry about India for two reasons. First, because it is in the process of military buildup, its future power remains unknown. Compared to the United States, therefore, the future of the Indian navy is difficult to predict. Second, the Indian navy enjoys a political position in Southeast Asia which neither the United States nor Japan can claim. Japan, due to its World War II history, and the United States, due to its power, both draw suspicions in Southeast Asia. India, on the other hand, has no historical burden and is much less powerful, and therefore finds it easier to cooperate with ASEAN states.

Opposing Viewpoint 1: SLOCs Can Be Protected by Free Trade

The question of whether the PLAN needs the capabilities to protect SLOCs is becoming controversial. A 1999 article in *Modern Navy* reviews the past 100 years of trade over the oceans, concluding that “free trade” is often just a “façade for hegemony.” For example, during the Cold War the United States did not promote free trade with the Communist world, and at various points imposed sanctions on China, which, he argues, can help to explain China’s underdevelopment. The implication is that “free trade” cannot be depended on to provide for China as it can always be cut off by the hegemon.⁶⁶ Similarly, an August 2004 article in *Modern Navy* argues that economics and free trade cannot protect China’s oil supply, claiming that “The market decides

the price of oil, but politics determines where it flows. . . . It is easy to see that without economic and military power, it is very hard to control the effects of geopolitics, and very hard to protect energy security.⁶⁷ The article goes on to suggest that, just as India, the United States, and Japan have done, China too should use piracy and terrorism as reasons to expand its naval presence. Building its navy will allow China to “stabilize the supply chain.”

These mercantilist views clearly favor the institutional interests of the navy (see the conclusion), but there is some evidence that civilians are starting to push back. In a provocative June 2007 piece in *Contemporary International Relations*, Zhao Hongtu (赵宏图), a researcher at CICIR (China Institute of Contemporary International Relations) who focuses on energy and resource issues, lays out a comprehensive case against China developing such naval capabilities. He states bluntly, presumably referring to the kinds of arguments made above, that some “lack an understanding of a market economy, and this has led people to an inadequate understanding of mutual dependence in global oil markets and in the globalized economy.”⁶⁸ Zhao’s argument is that the United States is extremely unlikely to impose a blockade of the Malacca Strait because doing so would cause a huge spike in global oil prices, which would hurt it just as badly as everyone else. Mikkal E. Herberg, the research director of the Energy Security Program at the National Bureau of Asian Research (NBR), told the U.S.-China Economic and Security Review Commission that while mercantilist ideas about locking up supplies still exist, more and more the Chinese are understanding that oil is one global market and that barrels are always available at the market price.⁶⁹ Presumably, Zhao and others in China are helping to spread this understanding. Second, any blockade of the Malacca Strait would affect Japan and Korea—two U.S. allies—as badly as it affected China, because distinguishing which ships are bound for which ports is no easy task. He also cites a report from the CATO Institute saying that the United States does not have the capability to block the Malacca Strait.

More important, though, Zhao argues that China should not be making policy based on “in the event something happens [一旦有事],” or “under special circumstances [特殊情况下].” Zhao levels a variety of critiques of such thinking. First, such thinking is only related to energy supply in the event of a war—but if war can be avoided, then there is no need for military protection of the energy supply. Second, in the event of a war China has more than enough oil domestically produced to supply the military itself, and simpler methods such as a strategic oil reserve can provide a buffer for the domestic economy. But it is unrealistic to think that in the event of war there would be some way to completely insulate the domestic economy from ill effects. Third, even if the Malacca Strait is blockaded or blocked due to piracy or terrorism, having tankers sail around through other Indonesian straits would only add marginally

to the price of oil and is hardly worth fighting over (he refers to the blockade on oil shipping through the Suez Canal when Western countries had to start going around the Cape of Good Hope, which did not devastate the economy). Fourth, he argues that efforts on the part of the Chinese navy are already beginning a spiral of hostility, and therefore that such efforts are likely to bring on precisely the sort of threat to energy security that China should try to avoid. Finally, he argues that piracy and terrorism are threats, but not of the sort that can dramatically alter China's energy situation, and should be handled with military-to-military cooperation. It will be interesting to see whether and how Zhao's argument is responded to by the PLAN (and others whose interests he implicitly attacks—he argues against pipelines, for example, claiming that they are even more vulnerable to terrorism than shipping).

Opposing Viewpoint 2: SLOC Protection Is a Political, Not a Military, Problem

If Zhao asserts that the market rather than the military will solve China's SLOC problem, another school of thought argues that politics is the appropriate means to protect China's SLOCs. In the January 2007 issue of *China Military Science*, Feng Liang (冯梁) and Duan Yanzhi (段延志) of the Naval Command Academy (海军指挥学院) repeat familiar arguments about China's growing dependence on international markets, but come to a very different conclusion. They argue that

on the surface, the SLOC issue appears to be an issue of the security of sea lanes; in reality it is an issue of [political] stability in the oceans. Suppose we don't have close security cooperation with countries bordering crucial SLOCs, then even if we have a strong naval force, we still won't be able to protect the security of long SLOCs . . . creating a secure geopolitical environment in the oceans has become an important condition for China's sustained development in this new century.⁷⁰

In other words, building a powerful navy is inadequate for the protection of China's vital sea lanes and can be at best only one part of a larger strategy to protect them. The bulk of the focus must be on political and diplomatic efforts to improve coordination and cooperation with countries astride key sea lanes and, presumably, with countries whose navies control those sea lanes. This line of thinking is also endorsed by Bi Yurong (毕玉蓉) of the PLA's Academy of International Relations, who advocates a variety of measures for protecting China's SLOCs, including improving relations with ASEAN states and diversifying the sources of supply and transportation routes (he refers to creating a "spider web" [蛛网式] of supply lines).⁷¹

It is interesting to note that one political method under discussion by naval authors in the context of UNCLOS is passing domestic laws to supplement areas in which UNCLOS is vague. In a 2006 article in *China Military Science*, Tang Fuquan and coauthors discuss the relationship between domestic law and international law. They argue that while international law provides an overall basis, UNCLOS has areas which are not clear or are not fair, and domestic law can thus help to “reinforce and enrich particular countries’ maritime legal system.”⁷² The authors refer to several laws that China has already passed, the most important being the “Law of China’s Territorial Waters and Contiguous Zone” (passed in February 1992) and the “Law of China’s EEZ and Continental Shelf” (passed in June 1998). The idea of passing more domestic laws has been suggested by others as well⁷³ and suggests that the Anti-Secession Law of 2005 may be inspiring other attempts to enshrine international goals in domestic laws. Unfortunately, what to do if various parties to UNCLOS pass mutually conflictual domestic laws is not addressed.

What these approaches—pursuing international agreements, friendly diplomacy, and passing domestic laws—share is the belief that the protection of China’s international interests depends on more than just a strong navy. But it is clear that a debate is brewing over how best to protect China’s energy supply; in *China Military Science*’s second 2007 issue, Wang Shumei and others argue that China’s SLOCs can only be protected by building a stronger navy.⁷⁴

Conclusion: Navy and the Budget

One assumption in bureaucratic politics is that every institution tries to make itself as essential as possible so as to increase its share of the budget. There is some evidence to suggest that the PLAN is no exception. First, in addition to generic calls for China to build a powerful navy, some authoritative authors have directly called for an increase in the percentage of the military budget that is devoted to the PLAN. In the July 2007 issue of *National Defense*, a vice-head of the PLAN political department, two star Admiral Yao Wenhui (姚文怀), writes that China should

gradually increase the proportion [of money] spent on naval development. In military development, whether the amount of money spent on each branch is reasonable is decided by the country’s security situation and the military tasks it faces. For a long period of time, our military’s main task has been to protect the borders and defend our territory, so the army always had a relatively large proportion. For a while, this proportion accorded with the demands of the times. But as the world political situation has changed, as the revolution in military affairs and the forms

of warfare have changed, as well as the needs of the country's development and security, our army's traditional system of having a "big land force" is no longer suitable for today's situation and tasks, and we must therefore increase the percentage spent on the navy.⁷⁵

But what are these new needs that Yao refers to? Overall, the PLAN seems to be casting itself not only as a consumer of China's rapid economic growth, but as the protector of and potential contributor to that economic growth. To a certain extent, naval authors acknowledge that spending on the military means less money that can be spent on economic development and improving living standards for the people. A January 2006 article in *National Defense* argues that in a market economy, "the relationship between national defense building and economic development is both mutually contradictory [相互矛盾] and mutually promoting [相互促进]."⁷⁶ It is obvious that military spending and economic development can be at odds, but on what grounds are naval authors arguing that the relationship can be productive?

Naval authors rely on four main arguments, some of which, as suggested by Yao, follow directly from new interests generated by Chinese economic growth. First, the PLAN is the only branch of the military that can protect the exploitation of China's maritime resources. Given the risk that a lack of resources becomes a bottleneck in the Chinese economy, spending on the PLAN may well turn out to be a good investment for the future. Second, the PLAN is the only branch of the military capable of protecting China's developed eastern coast and its sea lanes. Yao writes:

The heart of our country's economy is more and more concentrated in coastal areas; if the coastal areas are not safe, then we can't even begin to talk about the safety of our economy; maritime shipping and energy and resource SLOCs have already become the vital vein of our economy and societal development, especially oil and other important imported materials; our dependence on maritime shipping is big, and so protecting our country's SLOCs is extremely important.⁷⁷

Third, naval authors are also making more subtle arguments for increased funding. Yao makes the case that naval spending can stimulate the economy by comparing China to America. He argues that much of the technology which led the American economy to boom came out of research done by the military. To achieve similar results, the navy is precisely the branch of the military to invest in because it is the branch which requires the highest technology, and therefore has the highest likelihood of spillover to the civilian economy. Fourth, naval authors insist that the PLAN is the only branch of the military that has major peacetime missions to accomplish (fighting piracy, protecting sea lanes, defending areas with natural resource development).

Further, they argue that it is the service with the farthest reach, as it can show the flag all over the world in a way no other branch can.

The PLAN, of course, also continues to assert that the situation with Taiwan is only growing more and more dangerous—and hence the continued need to fund the PLAN. But even on the Taiwan issue we can observe a shift in PLAN arguments; while the unification of China was long simply assumed to be an important end goal of China's foreign policy, there is some evidence to suggest that it is also being viewed as a means to other ends, namely, the creation of a platform upon which to defend China's EEZ, contested islands, and vital sea lanes, all of which in turn protect China's economy. Thus even the Taiwan issue is starting to be portrayed in the same way: that spending on the navy is an investment in China's economy.

In addition, the analysis presented in this paper highlights a number of specific issues where the PLAN may seek to shape national policy debates. One issue concerns how China will interpret international maritime law. PLAN and PLA sources promote the concept of "historical waters" as the basis of China's claim to islands in the South China Sea as well as surrounding waters, but the Chinese government has not clarified its position. Likewise, several sources indicate dissatisfaction with elements of UNCLOS and support an interpretation of certain provisions such as freedom of navigation to strengthen China's influence. A second issue concerns the importance of establishing a strong and centralized maritime law enforcement agency along the lines of the U.S. Coast Guard, an issue likely to build support from certain sectors within the government. A third issue is the current emphasis on sea lane security and potential threats that China faces.

Beyond these specific issues, the overall unifying theme has been to cast the PLAN as the protector of China's economy. Indeed, there is a tendency to reverse the common logic of "rich country, strong army" (富国强兵). PLAN authors do acknowledge that a big economy allows the material basis for a strong army, but also assert that without a strong army, one cannot have a strong economy. Yao argues that excessive military spending without economic development spells doom (he cites the Soviet Union), but that no military spending with excessive wealth also spells doom (he cites Kuwait). This logic is laid out even more bluntly by Wang Shumei et al.:

The strength of rights and interests at sea and a country's rise and fall are correlated phenomena . . . if the navy does not have great strength, then it may be a burden on the country, becoming merely a consumer [消耗, of resources]; but if the navy is a strong force, then it can create a positive effect, and create a virtuous cycle with promoting overall development. Naval power is directly proportional to the development of a country's maritime interests.⁷⁸

In other words, if small amounts of money are spent on naval development, it will be a drag on the economy, but if large amounts are spent and a strong navy is created, then it will actually promote economic development. The overall point here echoes Yao's: strong navies don't just emerge from strong economies; rather, strong navies can help to generate strong economies.

Notes

¹ Niu Baocheng, "Cong haiquan dao junshi haiquan" [From Rights and Interests at Sea to Military Rights and Interests at Sea], *Dangdai Haijun*, no. S1 (2000), 32. No rank or affiliation is listed for the author.

² For detailed statistics on invasions China has suffered from the sea, see Yao Wenhui, "Jianshe qiandaguo haijun weihu woguo haiyang zhanlue liyi" [Build a Powerful Navy and Protect Our Country's Strategic Maritime Interests], *Guofang*, no. 7 (2007), 1. The author is a Rear Admiral and the director of the PLAN's Political Department.

³ These search criteria were intended to return articles linked clearly with the dispute over Taiwan and not the mention of Taiwan for reasons related to cross-Straits trade and communication. "Taidu" refers clearly to the nature of the dispute.

⁴ *Jiefangjun Bao*, July 15, 1999, 1.

⁵ *Jiefangjun Bao*, March 6, 2000, 1.

⁶ For an excellent review of the geostrategic rationales for the importance of Taiwan to the CCP, see Alan M. Wachman, *Why Taiwan? Geostrategic Rationales for China's Territorial Integrity* (Stanford: Stanford University Press, 2007), especially chapter 7.

⁷ Quoted in *ibid.*, 145. For the original interview with Jiang Zhijun, see "Zhongguo haijun junshi xueshu yanjiusuo suozhang tan Zhongguo haishang youhuan" [China Naval Research Institute Director Discusses China's Maritime Concerns], *PLA Daily Web* site, January 2, 2004, available at <http://www.pladaily.com.cn/gb/pladaily/2004/01/02/20040102001237_zgjs.html>.

⁸ Gao Xinsheng, "Daoyu yu xin shiji zhongguo haifang jianshe" [Islands and China's Maritime Defense Construction in the New Century], *Guofang*, no. 11 (2006), 47.

⁹ Qiao Li, "Taiwan, hezhi shi 'bu shen de hangkong mujian'" [Taiwan, Much More Than an Unsinkable Aircraft Carrier], *Dangdai Haijun*, no. 2 (1998), 14. The author's rank and affiliation are not given.

¹⁰ Zhang Yuliang, ed., *Zhanyi Xue [The Science of Campaigns]* (Beijing: Guofangdaxue chubanshe, 2006), 535–538.

¹¹ Qing Zhou, "Guanzhu woguo zhoubian haiyang redian wenti" [Pay Attention to Our Country's Maritime Hotspots on the Periphery], *Dangdai Haijun*, no. 9 (2004), 63. No rank or affiliation is noted for the author.

¹² Zhang Zhaozhong, "Nan Zhongguo hai wenti zhi wo jian" [The South China Sea Problem in My Eyes], *Dangdai Haijun*, no. 5 (2000), 3.

¹³ Li Xiaonian and Chen Liejing, "Nan zhongguo hai cheng wei 'di er boshiwan' ma?" [Is the South China Sea Becoming a "Second Persian Gulf"?], *Dangdai Haijun*, no. 4 (2003), 9–10. The authors are journalists for *Modern Navy*.

¹⁴ Zhang, "Nan Zhongguo hai wenti zhi wo jian," 5.

¹⁵ Pan Shiyong, *Nansha qundao, shiyou zhengzhi, guoji fa* [The Spratlys Archipelago, Oil Politics, International Law] (Xianggang: Xianggang jingji daobao chubanshe, 1996), 131–171. Also, see Pan's 1995 interview in *Modern Navy*, in Qu Shiqiang, "Nansha, Dang shu shejia?: Fang Zhongguo haiyang zhanlue zhuanjia Pan Shiyong jiaoshou" [Spratlys, Who Do They Belong To? Interview with China Maritime Strategy Expert Professor Pan Shiyong], *Dangdai Haijun*, no. 4 (2005), 20.

¹⁶ See, for example, Gao Xinsheng, "Zhongguo haifang fazhan mianlin de zhuyao tiaozhan yu duice" [Key Challenges Facing the Development of China's Maritime Defense and Policy Countermeasures], *Guofang*, no. 11 (2005), 63; Zhang, "Nan Zhongguo hai wenti zhi wo jian," 3–5; "Jin Yinan tan Zhongguo Diaoyudao xianzhuang" [Jin Yinan Discusses the Present Condition of China's Diaoyu Islands], online content on *PLA Daily Web* site, at <http://www.pladaily.com.cn/site1/ztpd/2006-01/25/content_393925.htm>.

¹⁷ This paper was written before the 2010 incident involving the arrest of a Chinese fisherman by the Japanese Coast Guard. Undoubtedly, the number of articles related to the Senkakus and the East China Sea will have increased in this time period.

¹⁸ *Jiefangjun Bao*, January 20, 2003, 11 and *Jiefangjun Bao*, January 27, 2003, 7.

¹⁹ Yao Bailin, “Diaoyudao zhuquan sukao” [Reflecting and Examining the Diaoyu Islands Sovereignty], *Guofang*, no. 5, (2004), 54; and Lin Mu, “Diaoyudao wenti huigu” [Reflections on the Diaoyu Islands Problem], *Dangdai Haijun*, no. 5 (2000), 33–34. Yao is affiliated with the Political Warfare Department in the Guangzhou MR Joint Logistics Department.

²⁰ Gao Xinsheng, “Daoyu yu xin shiji zhongguo haifang jianshe” [Islands and China’s Maritime Defense Construction in the New Century], *Guofang*, no. 11 (2006), 46. Gao is affiliated with the Shenyang Artillery Academy.

²¹ Du Chaoping, “Meiguo miaozhun Diaoyudao” [America Takes Aim at the Diaoyu Islands], *Dangdai Haijun*, no. 7 (2003), 36. No affiliation or rank for Du is reported.

²² “Jin Yinan tan Zhongguo Diaoyudao xianzhaung.”

²³ Du, “Meiguo miaozhun Diaoyudao,” 37; and Gao, “Daoyu yu xin shiji zhongguo haifang jianshe,” 47.

²⁴ Chen Shangjun, “Jingti: Riben haishang bao’an ting dui wo haiyu de weixie” [Warning: Japan’s Maritime Safety Agency’s Threat to Our Country’s Maritime Space], *Dangdai Haijun*, no. 1 (2005), 30–31. No affiliation or rank for Chen is reported.

²⁵ See, for example, Xu Xuehou, “Shidai huhuan haiyangguan” [The Era Calls for Understanding of the Oceans], *Guofang*, no. 5 (1999), 13. The author is from the Jinan Ground Forces Academy.

²⁶ Qiao Lin, “Haishang zhengba yibai nian” [One Hundred Years of Struggle to Control the Ocean], *Dangdai Haijun*, no. 6 (1999), 53. No rank or affiliation is given for the author.

²⁷ Qing Dan, “Guanzhu woguo zhoubian haiyang redian wenti” [Pay Attention to Our Country’s Controversial Ocean Issues], *Dangdai Haijun*, no. 9 (2004), 62. No rank or affiliation is given for the author.

²⁸ Luo Xianlin, “Haiyang yishi: Yige buneng huibi de huati” [Ocean Consciousness: A Topic Which Cannot Be Avoided], *Dangdai Haijun*, no. 5 (1994), 15.

²⁹ Liu Zhenhuan et al., “Zoujin haiyang shiji qiangda Zhongguo haijun” [Enter the New Century of the Ocean, Strengthen China’s Navy], *Dangdai Haijun*, no. 1 (2000), 4.

³⁰ *Ibid.*, 5.

³¹ Also see Feng Liang and Duan Yanzhi, “Zhongguo haiyang diyuan anquan tezheng yu xin shiji haishang anquan zhanlue” [Characteristics of China’s Sea Geostategic Security and Sea Security Strategy for the New Century], *Zhongguo Junshi Kexue*, no. 1 (2007), 29. They also emphasize more than just military ships in the definition of naval strength.

³² Liu, “Zoujin haiyang shiji qiangda Zhongguo haijun,” 6.

³³ Liu Zhenhuan, “Lianheguo haiyangfa gongyue pingshu (xia)” [An Appraisal of the UN Law of the Sea (Part II)], *Guofang*, no. 11 (1996), 15.

³⁴ Tang Fuquan et al., “Zhongguo haiyang weiquan zhanlue chutan” [Initial Thoughts on the Strategy to Protect China’s Ocean Interests], *Zhongguo Junshi Kexue*, no. 6 (2006), 63.

³⁵ Liu, “Lianheguo haiyangfa gongyue pingshu (xia),” 15.

³⁶ *Ibid.*, 15.

³⁷ Xu, “Shidai huhuan haiyangguan,” 13.

³⁸ Luo Qing, “21 Shiji shenhai zuozhan yanxi” [An Analysis of Deep Ocean Fighting in the 21st Century], *Dangdai Haijun*, no. 4 (2001), 37. No rank or affiliation is provided for the author.

³⁹ Qiao, “Haishang zhengba yibai Nnan,” 55.

⁴⁰ Tang, “Zhongguo haiyang weiquan zhanlue chutan,” 63.

⁴¹ “Zhongguo zhuquan burong qinfan” [Violations of China’s Sovereignty Will Not Be Tolerated], *Jiefangjun Bao*, April 6, 2001, 1.

⁴² *Renmin Ribao*, April 6, 2001.

⁴³ Tang, “Zhongguo haiyang weiquan zhanlue chutan.”

⁴⁴ See, for example, Oing; and Xu.

⁴⁵ Zhang Gang, “Dongnanya haishang tongdao anquan yu daguo boyi” [The Security of Southeast Asia’s SLOCs and the Great Power Game], *Dangdai Haijun*, no. 7 (2006), 33. No rank or affiliation is given for the author.

⁴⁶ *Jiefangjun Bao*, “Maliujia anliu yongdong” [Undercurrents in the Malacca Strait], July 26, 2004, 11.

⁴⁷ See, for example, Wang Zhicheng, “Haidao changjue Maliujia” [Pirates Are Rampaging in the Malacca Strait], *Dangdai Haijun*, no. 9 (2004), 38. No rank or affiliation is given for the author.

⁴⁸ Han Ding, “Maliujia qiandong riben mingan shenjing” [The Malacca Strait Is Hitting a Sensitive Nerve in Japan], *Dangdai Haijun*, no. 5 (2000), 18. No rank or affiliation is given for the author.

⁴⁹ Chen Angang and Wuming, “Mei yu zai Maliujia haixia bushu jundui” [America Is Trying to Deploy Troops in the Malacca Strait], *Dangdai Haijun*, no. 7 (2004), 58. No ranks or affiliations are given for the authors.

⁵⁰ *Ibid.*

⁵¹ Zhang Gang, “Dongnanya haishang tongdao anquan yu daguo boyi,” 35.

⁵² Wu Daihai, “Meiguoren zujue Jinlanwan nan ruyi” [America Is Having a Hard Time Getting Its Way in Leasing the Jinlan Bay], *Dangdai Haijun*, no. 4 (2002), 5. No rank or affiliation is given for the author.

⁵³ Shi Ping and Si Ping, “Meiguo haijun yanhou quanzhan” [America Surveys All Vital Shipping Choke Points], *Dangdai Haijun*, nos. 5, 6 (1996), and no. 1 (1997). No ranks or affiliations are given for the authors.

⁵⁴ Han Asade, trans. Long Dongxiao, “Zai Yinduyang jianli xin de zhanlue pingheng” [Create a New Strategic Balance in the Indian Ocean], *Dangdai Haijun*, no. 7 (2001), 15. The author is a Senior Captain in Pakistan’s navy.

⁵⁵ Sun Tunda, “Jinglue haiyang” [Planning and Managing the Ocean], *Jiefangjun Bao*, November 14, 1995, 6.

⁵⁶ Li Zhenglun et al., “Yindu haijun shixian xiang yuandong gongjixing zhuanhua” [India’s Navy is Realizing Its Shift Toward Being Able to Attack in the Far East], *Jiefangjun Bao*, August 2, 1994, 4.

⁵⁷ Hai Yun, “Riyin chengle haishang zhanlue huoban” [Japan and India Have Become Strategic Partners in the Ocean], *Dangdai Haijun*, no. 9 (2001), 7. No rank or affiliation is given for the author.

⁵⁸ Kemo, Sikete A, trans. Niu Junxiao, “MeiYin liangguo haijun haoshang la!” [The American and Indian Navies Are Growing Fond of Each Other!], *Dangdai Haijun*, no. 6 (2002), 20.

⁵⁹ Hai.

⁶⁰ *Jiefangjun Bao*, “Maliujia anliu yongdong” [Undercurrents in the Malacca Strait], July 26, 2004, 11.

⁶¹ Gao Xinsheng, “Zhongguo haifang fazhan mianlin de zhuyao tiaozhan yu duice” [The Main Challenges and Answers to the Development of China’s Maritime Defense and Policy Countermeasures], *Guofang*, no. 11 (2005), 62. The author is from the Shenyang Artillery Academy, Basic Maritime Defense Tactics Teaching and Research Office (沈阳炮兵学院基础部海防战术教研室).

⁶² *Jiefangjun Bao*, “Yindu tuijin yuanhai jianmie de xin zhanlue” [India Pushes a New Strategy of Destroying the Enemy in Distant Seas], November 9, 2005, 12.

⁶³ *Jiefangjun Bao*, “Hangmu youyixia de Yatai zhanlue qiji” [Asia’s Strategic Chessboard of Aircraft Carriers], July 20, 2005, 9.

⁶⁴ Zhang Gang, “Dongnanya haishang tongdao anquan yu daguo boyi,” 35.

⁶⁵ Du Chaoping and Liang Guihua, “Yindu xin jian yuandong zhanlue fangyu jidi” [India Builds a New Far Eastern Strategic Defense Base] *Dangdai Haijun*, no. 4 (2004), 26. No ranks or affiliations are given for the authors.

⁶⁶ Qiao Lin, “Haishang maoyizhan bainian sikao” [Thinking About One Hundred Years of Trade Wars on the Oceans], *Dangdai Haijun*, no. 4 (1999). No rank or affiliation is given for the author.

⁶⁷ Gu Zuhua, “Wei hu haishang shiyou anquan xuyou qiangda haishang biandui” [To Protect the Security of Ocean Oil We Must Have an Ocean Force] *Dangdai Haijun*, no. 8 (2004), 49. No rank or affiliation is given for the author.

⁶⁸ Zhao Hongtu, “Maliujia kunju yu Zhongguo nengyuan anquan zai sikao” [Rethinking China’s Energy Security and the Malacca Dilemma], *Xiandai Guoji Guanxi*, no. 6 (2007), 37.

⁶⁹ US-China Economic and Security Review Commission, Hearing on “China’s Energy Consumption and Opportunities for U.S-China Cooperation to Address the Effects of China’s Energy Use,” June 14–15, 2007. Transcript available at <http://www.uscc.gov/hearings/2007hearings/transcripts/june_14_15/07_06_14_15_trans.pdf>.

⁷⁰ Feng Liang and Duan Yanzhi, “Zhongguo haiyang diyuan anquan tezheng yu xin shiji haishang anquan zhanlue,” 27.

⁷¹ Bi Yurong, “Zhongguo haiwai liyi de weihi yu shixian” [The Protection and Realization of China’s Overseas Interests], *Guofang*, no. 3 (2007), 8.

⁷² Tang, “Zhongguo haiyang weiquan zhanlue chutan,” 66.

⁷³ Passing domestic laws to reinforce UNCLOS is also discussed by Feng and Duan.

⁷⁴ Wang Shumei et al., “Luxing jundui liushi shiming shuli kexue haiquanguan” [Carry Out the Historic Mission of the Army and Establish the Scientific Concept of Sea Right], *Zhongguo Junshi Kexue*, no. 2 (2007), 141. The author is a postdoctoral fellow at the Academy of Military Sciences.

⁷⁵ Yao, “Jianshe qiangda haijun weihu woguo haiyang zhanlue liyi,” 6.

⁷⁶ Yi Sheng and Li Hua, “Zhongguo de heping fazhan yu janshe qiangda de guofang” [China’s Peaceful Development and the Building of a Strong National Defense], *Guofang*, no. 1 (2006), 3. No ranks or affiliations are given for the authors.

⁷⁷ Yao, “Jianshe qiangda haijun weihu woguo haiyang zhanlue liyi,” 6.

⁷⁸ Wang Shumei et al., “Luxing jundui liushi shiming shuli kexue haiquanguan,” 142.

Chapter 4

Toward a Maritime Security Strategy: An Analysis of Chinese Views Since the Early 1990s

*Daniel M. Hartnett and Frederic Vellucci*¹

Since at least the early 1990s, China—historically a continental nation—has been increasingly looking to the sea as a strategic arena vital for its future economic growth and development. Arguably, for the first time in history, China's continued economic growth is dependent on maritime access and security. In 2009, for example, China's international trade accounted for almost 45 percent of its total economy.² China's containerized shipping industry has increased by a factor of 15 in the course of the past decade, and 42 percent of the world's shipping containers (by tonnage) traversed Chinese ports in 2007.³ China has been a net importer of oil since 1993, and Beijing imported 55 percent of its oil in 2008.⁴ As China's energy needs and volume of trade continue to expand, Chinese analysts have increasingly come to view secure access to shipping lanes as a necessity for sustained development and growth.

Chinese maritime security specialists, both civilian and military, have been writing in open sources over the past two decades about how China should best secure its maritime interests. Analysis of these writings suggests an ongoing debate about the present and future roles and missions of the Chinese People's Liberation Army Navy (PLAN). This research paper analyzes a sample of articles written by military and civilian maritime security specialists from the early 1990s to the present to provide the reader with an overview of these debates on China's maritime strategy.⁵ Our research illustrates the range of Chinese views concerning the components of China's maritime strategy and the navy's role within that strategy, and provides outside observers with a baseline to better ascertain possible future Chinese naval policies.⁶

First, the concept of sea power has been heavily debated in the Chinese press, and Chinese writings reveal a general consensus that sea power is important. However, there appeared to be little consensus on the actual definition of sea power. Definitions ranged from regional administrative control of the maritime environment, to the military concept of "command of the sea." In addition, some authors called for a new definition of sea power, one that more closely

fits China's actual conditions and needs. As China continues to develop both its navy and civilian maritime capabilities, it is probable that debates on the meaning and significance of sea power will continue to appear in Chinese writings.

Second, on the frequently cited need to develop Chinese citizens' "sea consciousness," there appears to be no significant debate among the authors we reviewed. All authors who discussed this issue agreed that sea consciousness is necessary for developing China's sea power. As Jiang Zemin mentioned the need to increase sea consciousness in 1995, it is possible that this concept has been incorporated into the "Party line." If that is the case, then regardless of whether China is a continental or maritime power, the likelihood that China is aspiring to enhance its sea power is even stronger since increasing sea consciousness is seen as the foundation for developing sea power.

Third, concerning the role of the PLAN in China's maritime strategy, all authors surveyed advocated some role for the PLAN in China's maritime strategy. However, there is still disagreement as to whether that strategy should focus exclusively on using the navy for maritime security, or whether the navy represents only one component of a more comprehensive maritime strategy that also includes civilian law enforcement as well as other diplomatic, economic, and cultural methods.

Fourth, the various authors who write about the role and status of international law and cooperation disagreed on how these two factors should be integrated into China's maritime strategy. Several authors advocated increasing reliance on a national maritime police force, while others thought that international cooperation is the linchpin to Chinese maritime security. Significantly, even though the authors disagreed on whether increased reliance on the law and international cooperation should be components of China's maritime strategy, nearly all advocated strengthening the PLAN—just in case.

Finally, there was generally broad agreement among the articles surveyed that the operational range of the PLAN needed to be expanded. There was some divergence of opinion, however, as to how much expansion was necessary or desirable, or exactly how far the PLAN should expand its operational capabilities. The vast majority of authors surveyed agreed that at a minimum, the PLAN's operational range should extend to the borders of China's claimed exclusive economic zone (EEZ) and the continental shelf. Beyond that limit, there was much more disagreement over the costs and benefits of PLAN forces operating beyond various geographical markers including the first and second "island chains." This ongoing debate suggests that Chinese security analysts are still attempting to identify the right mix of missions and capabilities for China's navy, even as the PLA Navy has slowly expanded the scope of regular operations to increasingly greater distances beyond China's shores.

Theme 1: "Sea Power with Chinese Characteristics"

Chinese articles discussing the concept of sea power (*haiquan*, 海权) first emerged in the mid-1990s.⁷ However, most of the early articles merely described Admiral Alfred T. Mahan and his sea power theory and did not present a discussion of how that theory should be applied to China. Since 2000 and continuing into the present, however, articles have begun to discuss the actual definition of sea power and its significance for China. Yet, Chinese writings on the definition and significance of sea power appear to vary widely, ranging from the ability to exert administrative control over a regional sea area, to the military term "command of the sea" (*zhihaiquan*, 制海权).⁸ Adding more confusion into the mix, a few recent articles call for revising the Mahanian theory of sea power to account for China's specific characteristics.

Chinese writings on sea power provide varying definitions. For example, one 2002 article defined *sea power* using regional terms, as "a nation's ability to administer, control, and protect its territorial waters [*linghai*, 领海] (including a nation's internal waters [*lingshui*, 领水] and the air space above them), the contiguous zone [*pilianqu*, 毗连区],⁹ and their exclusive economic zones."¹⁰ Wuhan University Professor Liu Xinhua (刘新华) wrote that sea power is the "power to freely move in the maritime arena."¹¹ On the other hand, Professor Lu Rude (陆儒德) from the Dalian Vessel Academy appeared to adopt the more traditional, Western concept when he argued that sea power signifies "possession of actual and potential forces to control and develop the seas, and to effectively protect and realize [a nation's] maritime interests in accordance with the law."¹² Zhang Wenmu (张文木), a researcher at the Ministry of State Security think tank—the China Institutes of Contemporary International Relations (CICIR)—posited a definition that bears more of a resemblance to the military term of "command of the sea" (*zhihaiquan*, 制海权).¹³ Peking University Professor Ye Zicheng (叶自成) appeared to rebuke other writers when he wrote that some people in China incorrectly equate sea power with possessing powerful navy vessels.¹⁴ In 2008, Liu Zhongmin, professor at the Law and Politics College of the Ocean University of China, lamented how people in China continue to confuse the definitions of "sea power" and "maritime rights and interests."¹⁵

Several recent authors have maintained that China needs to have a new definition of sea power that is not based upon the Western, traditional Mahanian concept. Instead, a Chinese sea power definition should reflect China's current circumstances. Peking University Professor Ye Zicheng (叶自成), for example, argued that Chinese sea power implies the ability to research, develop, use, and control the seas, as well as China's influence over these areas.¹⁶ Dalian Vessel Academy Professor Lu Rude (陆儒德), countering Ye's proposal, also offered his own new definition for Chinese sea power, which includes:¹⁷

- a nation's comprehensive power and maritime strategy
- a nation's sea consciousness and views on the sea
- a comprehensive maritime education system
- skilled maritime technicians
- advanced maritime technology and equipment
- a powerful navy, as well as ocean-going commercial, fishing, surveying, and engineering fleets
- a set of maritime laws
- a powerful maritime law enforcement force.

Similarly, the War Theories and Strategic Studies Department of the Academy of Military Science (AMS) wrote that China cannot follow the Western path of sea power, and instead needs “sea power with Chinese characteristics” (*zhongguo tese de haiquan*, 中国特色的海权).¹⁸ According to this department, sea power with Chinese characteristics is:

- Limited in both goals and operational range: it focuses solely upon China's maritime rights and interests only within the context of national sovereignty and the United Nations Convention on the Law of the Sea (UNCLOS).
- Diverse in content: it includes national territorial, sea lane, and maritime nontraditional security; the safeguarding, development, and use of maritime resources; and the safety of China's important overseas interests.
- Comprehensive in nature: it is a combination of military, political, economic, diplomatic, and cultural methods.¹⁹

The Extent of Chinese Sea Power

Based on the writings we surveyed, China's views on the roles and extent of sea power in its maritime strategy began to appear after 2000, and can be roughly divided into three groups. Some held that sea power is of the utmost importance to China's future. Others argued that sea power should have the same value as land power, not more. Finally, some stated that sea power is less important than land power. The three schools of thought will be fleshed out in the following paragraphs.

One group of authors argued that China desperately needs sea power. CICIR researcher Zhang Wenmu (张文木) made no qualms about the importance of the navy and sea power to China's future when he stated: “The navy is concerned with China's sea power, and sea power is concerned with China's

future development. As I see it, if a nation lacks sea power, its development has no future.”²⁰

A *Dangdai Haijun* (*Modern Navy*) article further posited that “whoever controls sea power controls the key to the gate of future existence and sustainable development.”²¹ Similarly, Rear Admiral Yao Wenhui (姚文怀), Deputy Director of the PLAN Political Department, succinctly noted that China’s fate lies with the sea.²²

A second group of authors maintained that China should not develop its sea power at the expense of its land power, but rather develop both simultaneously. For example, a former PLAN Political Commissar, Yang Huaqing (杨怀庆), argued that China is simultaneously a great continental nation (海洋强国) and a great coastal nation (*binhai daguo*, 濒海大国), and needs to act as such. This point is also held by Dalian Vessel Academy Professor Lu Rude (陆儒德).²³ An article in the PLAN journal *Modern Navy* pointed out that although China needs to develop its sea power, ignoring land power is not an option as both affect China’s strategic initiative and security.²⁴

Finally, the third group, consisting of only two identified authors, maintained that sea power should be subordinate to land interests. In two different articles, Peking University Professor Ye Zicheng (叶自成) argued that China can have sea power, but since China is a continental nation, it must be a land power with strong sea power, not a strong maritime nation.²⁵ Xu Qiyu (徐弃郁), a researcher from the National Defense University’s Institute for Strategic Studies, struck a similar tone when he stated that simultaneously developing the military in both land *and* sea directions could waste already limited resources, create new adversaries, and even lead to nations balancing against China. Xu argued that in the end, it is comprehensive national power that decides sea power, not sea power that determines comprehensive national power.²⁶

Arguments for Increasing Chinese Sea Power

The various Chinese authors who argue for increasing China’s sea power cited different reasons for why China needs to develop in the direction of the sea. These arguments can be generally categorized as follows:

- *Regional economic interests* and the need to protect them are among the most frequently cited reasons for needing to expand China’s sea power. According to one estimate, China’s maritime economy accounted for 10 percent of its gross domestic product (GDP) in 2006, and that percentage is growing.²⁷ Problems exist, however, because much of China’s claimed maritime territory is exploited or controlled by other nations.²⁸ By expanding China’s sea power, it is believed that China

can bolster its claims to its disputed natural resources in the Asia Pacific region.²⁹ The War Theories and Strategic Studies Department of the AMS went so far as to point out that these resources are the sole guarantee for China's continued economic development.³⁰

- *Territorial integrity* was cited by many authors, and can be further divided into two parts: the Taiwan issue, and the disputed maritime islands and reefs in the East China and the South China Seas. Concerning Taiwan, Taiwanese independence forces (*Taidu lilian*, 台独力量) are seen as seriously threatening China's sovereignty and security.³¹ Some authors believed that without the deterrence of sea power, national reunification will be impossible.³² In addition to citing Taiwan, Chinese writers frequently pointed out that a large section of China's maritime territory is in dispute. According to one source, roughly half, or 1.5 million square kilometers, of the approximately 3 million square kilometers of maritime territory under China's legal jurisdiction is in dispute or already controlled by other regional nations.³³ The importance of Taiwan and other maritime territories was a recurring theme in Chinese writings on maritime security from the early 1990s through the present.
- *Traditional security threats* were quoted in some articles as still likely to occur.³⁴ This concept predominantly refers to military combat between states, such as invasions and military incursions from the sea.

China's Maritime Disputes

- 1. Taiwan**
- 2. Senkaku/Diaoyu Islands and location of overall maritime boundary with Japan**
- 3. Paracel Islands and surrounding waters with Vietnam**
- 4. Spratly Islands and surrounding waters in the South China Sea with Taiwan, Vietnam, the Philippines, Brunei, and Malaysia**
- 5. Maritime border with Vietnam**
- 6. Fisheries areas and quotas with North Korea, South Korea, Japan, Vietnam, and the Philippines**

Source: Bernard D. Cole, *The Great Wall at Sea: China's Navy in the Twenty-first Century*, 2^d ed. (Annapolis: Naval Institute Press, 2010), 19.

Because traditional security threats to China still exist, some argued that China should fully use geostrategic locations—such as islands—within its peripheral seas in order to defend itself.³⁵ In a surprisingly detailed article, Liu Yijian (刘一建) from the Naval Command Academy argued that China needs to build up and prepare a naval battlefield, using the Spratly and Paracel Islands as forward positions.³⁶ Some writers held the view that the buildup of the U.S. military and other regional navies in Asia was an attempt to slowly contain China within the first island chain, and count this as a future traditional security threat.³⁷ Interestingly, Da Wei (达巍) from CICIR pointed out in 2005 that the era of traditional security threats to China from the maritime direction has more or less passed.³⁸

- *Expanding overseas economic concerns* were also a factor in recent articles that some saw as necessitating Chinese sea power. For example, in 2003, Zhang Wenmu (张文木) from CICIR stated, “Wherever our interests go . . . our military force needs to go there too.”³⁹ Another author from the Logistics Command Academy wrote:

The Navy is a necessary investment for a nation to safeguard and develop its overseas trade. A nation’s overseas trade requires strong naval support. This positive interaction is the basic rule of sea power development.⁴⁰

An article published in the military journal *Junshi Jingji Yanjiu* (*Military Economic Research*) in 2005 captured the growing importance of overseas economic interests best when it stated:

The degree of development of the external-facing economy, regardless if it is the protection of maritime passageways, the expansion of foreign trade, the spreading of the overseas market, or defending overseas production, all require having a powerful military force as a guarantee, otherwise China will be possibly caught being passive.⁴¹

Within this category also fall energy security issues. For example, it has become very clear to Chinese scholars in recent years that 70 percent of China’s petroleum imports pass through the Strait of Malacca. In 2003, Wuhan University’s Liu Xinhua (刘新华) and Qin Yi (秦仪) maintained that by developing its sea power, China can ensure the security of maritime oil deliveries.⁴² Two years later, Da Wei (达巍) from CICIR referred to this shipping route as the “lifeline” for China’s economic development.⁴³

The number of authors stressing the importance of safeguarding overseas economic concerns will likely continue to grow along with China’s growing dependence on overseas markets and foreign energy supplies.

- *Security of overseas Chinese* was also mentioned in two recent articles as a reason for China to continue increasing its sea power. CICIR’s Zhang

Wenmu (张文本) stated that unless Chinese workers feel that they will be secure when they go abroad, they will be unwilling to go overseas for work. This sense of security can only be provided by the PLAN.⁴⁴ Similarly, *Modern Navy* staff reporter Xu Lifan (徐立凡) while calling for an expanded role for the PLAN, pointed out that anti-Chinese sentiment in some nations could seriously affect overseas Chinese, and that China “as the motherland” needs to take the safety of these overseas Chinese into consideration.⁴⁵ This sort of thinking is continuing to grow as increasing numbers of Chinese venture abroad for work.

Theme 2: The Necessity of Sea Consciousness for China’s Maritime Strategy

In the mid-1990s, as the debate on the importance of China’s developmental strategy became increasingly focused on the sea, academic journals and news media began publishing articles that called for China to increase “sea

Figure 4-1. First and Second Island Chains



Source: Bernard D. Cole, *The Great Wall At Sea: China’s Navy Enters the Twenty-First Century* (Annapolis: U.S. Naval Institute Press, 2001), 165.

Figure 4-2. Extent of China's Claimed South China Sea Territory

Source: Bernard D. Cole, *The Great Wall At Sea: China's Navy Enters the Twenty-First Century* (Annapolis: U.S. Naval Institute Press, 2001), 33.

consciousness” (*haiyang yishi*, 海洋意识) among the population. According to Chinese authors, increasing sea consciousness is an attempt to create and mold Chinese citizens’ views on various maritime issues. The idea of increasing sea consciousness to promote sea power bears striking resemblance to Alfred Mahan’s 1890 seminal work, *The Influence of Sea Power Upon History, 1660–1783*, which is worth quoting here:

The government’s policies can favor the natural growth of a people’s industries and its tendencies to seek adventure and gain by way of the sea; or it can try to develop such industries and such sea-going bent, when they do not naturally exist; or, on the other hand, the government may, by mistaken action check and fetter the progress which the people left to themselves would make.⁴⁶

Thus by increasing the sea consciousness of its citizenry, China hopes that the people will have a clearer understanding of the importance of the sea to China and of China’s maritime efforts.

“Sea consciousness” appears to be an umbrella term that encompasses several different maritime issues. According to one Chinese author, when someone has sea consciousness, that person understands the following:

- China’s maritime national territory (*haiyang guotu*, 海洋国土)
- China’s maritime economy (*haiyang jingji*, 海洋经济)
- China’s maritime politics (*haiyang zhengzhi*, 海洋政治)
- China’s maritime rights and interests (*haiyang quanyi*, 海洋权益)
- maritime resources (*haiyang ziyuan*, 海洋资源)
- maritime environment (*haiyang huanjing*, 海洋环境)
- maritime science and technology (*haiyang keji*, 海洋科技)
- China’s national security (*guojia anquan*, 国家安全)
- China’s maritime military space (*haiyang junshi kongjian*, 海洋军事空间).⁴⁷

One of the earlier calls in the open press for increasing the Chinese people’s sea consciousness appears in a 1994 article in the journal of the Dalian Vessel Academy’s Political Department, *Zhenggong Xuekan* (*Journal of Political Work*). In that article, the author argued that because global maritime disputes are intensifying, PLAN officers and sailors need to have a new understanding

Maritime rights and interests (*haiyang quanyi*, 海洋权益) is a frequently encountered term in Chinese writings on maritime strategy. It refers to the right to:

- **Exercise sovereignty over one’s maritime national territory**
- **Have jurisdiction over and develop one’s contiguous zones, exclusive economic zones, and continental shelf**
- **Carry out transportation and military activities during both peacetime and wartime**
- **Develop and use the resources of the high seas, the seabed, and subsoil, as well as carry out scientific investigation of these areas.**

Source: Zhang Xusan, ed., *Haijun Dacidian* [*The Navy Dictionary*] (Shanghai: Shanghai Dictionary Press, 1993), 9.

of what he terms “maritime territory consciousness” (*haiyang guotu yishi*, 海洋国土意识).⁴⁸ Later that year, Lieutenant Commander Luo Xianlin (罗仙林) expanded upon this concept, calling for sea consciousness to be spread among the entire Chinese nation.⁴⁹ Jiang Zemin echoed these thoughts during a 1995 inspection of a PLAN unit on Hainan Island:

Developing and using the sea will have more and more significance to China’s long-term development. We certainly need to understand the sea from a strategic highpoint, and increase the entire nation’s sea consciousness.⁵⁰

Since then, many Chinese authors writing on China’s sea power and maritime strategy have emphasized the importance of developing the Chinese people’s sea consciousness. For example, one AMS researcher noted that sea consciousness is necessary in order to defend China’s national development.⁵¹ As Zhang Dengyi (张登义), a member of the Chinese People’s Political Consultative Conference and former director of the State Council’s State Oceanic Bureau, pointed out, increasing the people’s sea consciousness establishes within them a conviction “to build a strong maritime nation [*haiyang qiangguo*, 海洋强国].”⁵² The call for establishing a Chinese sea consciousness continues up to today, as an April 2009 article demonstrates. Fifteen years after some of the first calls for establishing sea consciousness in China, Wen Yufu writes that sea consciousness in China is still weak, hindering China’s maritime development.⁵³ Based on the openly available literature, the necessity of developing sea consciousness does not appear to be a divisive issue.

Chinese authors feel that increasing sea consciousness is important because China has neglected the seas for so long. As noted in 1995 by former State Oceanic Bureau Director and PLAN Training Department Deputy Director Luo Yuru (罗钰如), most Chinese people downplay the importance of the ocean for their survival.⁵⁴ Luo believes that such thinking is not only wrong, but also dangerous. A decade later, Liu Shuiming (刘水明) and Chen Lu (陈璐), both from PLA’s Nanjing Political Academy, argued the same point, stating that although the sea is important to China’s prosperity, a number of factors—including history, tradition, and geography—have caused the Chinese to ignore or downplay the sea’s importance.⁵⁵ As a result, China’s maritime defense has been habitually weak, allowing overseas enemies to repeatedly invade China. Professor Gao Xinsheng (高新生) from the Shenyang Artillery Academy argued that fostering a sense of sea consciousness in the people would help to prevent similar events from recurring in the future.⁵⁶

Theme 3: Toward a Navy-centric or Comprehensive Maritime Security Strategy?

This section categorizes the various Chinese views on what the components of China's maritime security strategy should look like. The authors who write about this topic can be generally divided into two groups:

- those advocating a navy-centric maritime security strategy
- those calling for a more comprehensive maritime security strategy.

The authors in the navy-centric group didn't necessarily argue that a strong navy is the only guarantee for China's maritime security, but rather think that the PLAN should be the main or dominant actor. Those in the second group call for a more holistic approach to maritime security, arguing that the PLAN is but one tool in the toolbox—some even advocate a relatively minor role for the navy. First evidence of this debate in open sources was observed around 1995, and can still be seen in 2007 print media articles.

Navy-centric Maritime Security Strategy

Those who advocated a navy-centric strategy argue that China's maritime security should predominantly rely upon a strong military (specifically, a strong navy). Therefore, China needs to emphasize the importance of using the PLAN as the *primary* component of its maritime security strategy. In a 1995 article, former State Oceanic Bureau Director and PLAN Training Department Deputy Director Luo Yuru (罗钰如) pointed out that although China must focus on developing its maritime comprehensive national power (*haishang zonghe guoli*, 海上综合国力), it must pay particular attention to the modernization and development of the navy.⁵⁷ He also argued that "the PLAN must be elevated to a higher strategic level and become a unified force for administering the seas and oceans."⁵⁸ Liu Zhenhuan (刘振环) from the Naval Research Institute pointed out that although sea power is comprised of such factors as science and technology, economics, and the military, the navy is "the most solid and crucial maritime force."⁵⁹ Another Chinese author wrote in 1999 that *only* with a strong, modern PLA and PLAN that are focused on territorial integrity and national unity, can China fulfill its goals for becoming a "strong and prosperous, territorially sovereign, and moderately developed country."⁶⁰ Vice Admiral Feng Liang (冯梁), deputy director of the Navy Command Academy's Strategy Teaching and Research Office, addressed economic issues when he wrote that the navy "is the basic force for protecting the state's overseas economy (*haiwai jingji*, 海外经济) and maritime rights and interests."⁶¹ *Modern Navy* staff writer Gu Zuhua (顾祖华) went even further, stating that regardless of what the problem is—

energy security, a Taiwan crisis, or other national defense problems—priority must be given to building a strong navy.⁶²

Comprehensive Maritime Security Strategy

Others argue that while developing the PLAN is beneficial, China should not ignore other actors or processes of maritime security, such as political, economic, diplomatic, cultural, or scientific methods. In 1996, Dalian Vessel Academy Professor Lu Rude (陆儒德) argued that the maritime security situation had become very complex, and that maritime defense must now be coordinated with various government departments—such as Public Security, Communications, Tax Administration, Customs, Fishing Industry, Environmental Protection, and Health Departments.⁶³ Almost a decade later, a 2004 article in *Liaowang* (*Outlook*) mirrored Lu's argument by pointing out that the military is but one aspect of a more comprehensive strategy:

In reality, concerning the content of China's interests in the maritime direction, they are present not only in the military arena, but also appear at the mutual intersection and melding of the many arenas of politics, diplomacy, economics, environment, and information. Defending these interests cannot simply depend upon one measure; only by systemic and comprehensive use of many mutually supporting measures, each shining more brilliantly than the other, can China acquire the greatest national interest.⁶⁴

In a book sponsored by CICIR, the Ministry of State Security think tank, Da Wei (达巍) outlined the composition of a “comprehensive maritime force” (*zonghe haiyang lilian*, 综合海洋力量) as consisting of military, economic, and scientific research capabilities.⁶⁵

Finally, the War Theories and Strategic Studies Department of the Academy of Military Science asserted that the role of nonmilitary force in sea power is actually on the rise, as compared to military force:

The position and use of a maritime non-military force in the development of sea power is increasing daily, and only when military force is joined together with political, economic, and diplomatic measures will it give play to the effective use [of sea power].⁶⁶

We should point out, however, that we found no arguments that totally dismissed the PLAN's role in maritime security. Even Peking University Professor Ye Zicheng (叶自成), arguably the PLAN's greatest detractor in China, took the view that the PLAN has a role to play, albeit a limited one.⁶⁷

Several Chinese authors posited specific details about what China's comprehensive maritime security structure should look like. For example, some agreed that a maritime law enforcement force (*haishang zhifa liliang*, 海上执法力量) is an important component of Chinese maritime security strategy.⁶⁸ Others wrote that cooperation with foreign nations and international organizations should be a key aspect of China's maritime security.⁶⁹ Both of these aspects will be discussed further in the following section.

Theme 4: Role of the Law and International Cooperation in Maritime Dispute Management

In this section we will analyze the role of international cooperation and the law in safeguarding China's sovereignty, security, and maritime rights and interests. Significantly, the first article calling for increased reliance on international laws and principles to manage China's maritime territory appeared in 1995, just 1 year after the UNCLOS became effective, and 1 year before China ratified that treaty.⁷⁰ Chinese authors on this subject can be divided into three broad groups:

- first, those who advocated stronger reliance on domestic and international laws
- second, those who argued for increased cooperation with regional navies, multilateral security organizations, and the United Nations
- third, those who argued that the only effective guarantor of China's rights and interests is a powerful navy—in other words, that China must be prepared to “go it alone.”

As we will show, these three groups do overlap somewhat. Significantly, most authors surveyed—including those who advocated increased reliance on the law and international cooperation—argued that the PLAN should be strengthened as a backup in case peaceful multilateral means fail to safeguard China's interests.

Increase Reliance on the Law

Of the articles calling for increasing reliance on domestic and international law to protect China's maritime rights and interests, most called for strengthening some type of Chinese maritime law enforcement force. Noting that the legitimacy of China's maritime territorial claims is based on law, including the UNCLOS as well as several domestic laws, in 2001 former State Oceanic Administration Director Zhang Dengyi (张登义) argued that China should use maritime law enforcement forces (*haishang zhifa liliang*, 海上执法

力量) to safeguard its sovereignty, rights, and interests within that territory.⁷¹ In particular, this author called for centralizing all civilian maritime security forces from the center to the localities and enhancing the Chinese maritime police forces' ability to accompany maritime traffic, monitor fishing, expand the force's zone of operations, and effectively safeguard China's maritime rights and interests.

In 2007 Xiu Bin (修斌), a professor from the Ocean University of China in Qingdao, Shandong Province, wrote an article exploring how China could protect its maritime rights and interests within the context of its "peaceful development" strategy.⁷² He argued that China must use the law to protect its rights and interests because "non-military force and peaceful means have become the main methods for safeguarding national maritime interests in the context of peaceful development." Noting that China's development requires a stable regional environment, this professor argued that if China were to use more forceful means of securing its maritime rights and interests, the regional security environment would deteriorate and China's prospects for development would be harmed. However, Xiu Bin noted that countries can easily violate agreements and treaties. As a result,

China must establish a powerful maritime police force to protect the rights entrusted to us in the UNCLOS, and safeguard our national interests. This civilian police force must supervise and manage other nations' activities in the sea areas under China's jurisdiction.⁷³

While the two arguments described above were both written by civilians, military authors also argued that China should rely on international law to protect China's maritime rights and interests. In 1996, Dalian Vessel Academy Professor Lu Rude (陆儒德) argued that China needed to strengthen its system of domestic maritime laws to ensure Beijing enjoyed all of the maritime rights and interests specified in the UNCLOS.⁷⁴ In a 2001 article written by Feng Liang (冯梁) and Zhang Xiaolin (张晓林), two professors from the Naval Command Academy, the authors argued that "while in wartime nations can rely on armed force to obtain their objectives, in peacetime a responsible member of the community of nations must conduct itself within the boundaries permitted by international law."⁷⁵ Similarly in 2005, Gao Xinsheng (高新生), a professor from the Shenyang Artillery Academy, argued that China should "rely on international law for managing and resolving maritime disputes to the greatest extent possible."⁷⁶

However, and perhaps not surprisingly, while the civilians argued for strengthening civilian maritime police forces as a backup plan, the military authors argued that while China should rely on international law to the greatest

extent possible, it should strengthen the PLAN as a deterrent force. The two Naval Command Academy authors referred to above noted, “International law is still incapable of dealing with the increasingly complex maritime disputes between nations. As such a naval deterrence force is required.”⁷⁷ Shenyang Artillery Academy Professor Gao Xinsheng argued that to deal with the uncertainty of international law, China must “spend more money on the navy, incorporate advanced foreign technology and experience, increase research on highly effective maritime defense weapons, and strengthen maritime air defense.”⁷⁸

Increase Regional Cooperation

Like those who advocate relying on the law to protect maritime rights and interests, proponents of increased international cooperation on maritime security issues noted that China should take the utmost care to preserve regional peace and stability. Several articles advocated increasing cooperation with regional navies, including those of the United States, Japan, India, and the ASEAN states, as an effective means of assuaging regional fears of a rising Chinese navy, ensuring maritime security, and preserving regional peace.⁷⁹ As Gu Zuhua (顾祖华), a staff writer for the PLAN’s official journal, *Dangdai Haijun* (*Modern Navy*), argued,

While simultaneously developing the navy, we should participate in even more exchanges with global navies, especially the navies of developed nations, to build up trust. We will then be able to effectively eliminate the China Threat Theory and establish an image of a peaceful rise.⁸⁰

One interesting aspect of the debate on how much cooperation is good for China’s maritime strategy is that the advocates of increased regional cooperation include authors with very different views on the PLAN’s role in Chinese maritime strategy. For example, in 2005, three authors from the Naval Command Academy argued that China should increase regional cooperation as an acceptable means by which the PLAN could take a more active role throughout the Asia Pacific region.⁸¹ These authors argued that if China assumed a more assertive role in working with regional nations for the maintenance of peace and stability in Asia, regional nations would accept the increasingly powerful navy that it is building. They argued:

The PLAN should participate in naval military activities arranged by the United Nations or other international organizations, and participate in bilateral or multilateral naval military exercises; we could also routinely or occasionally venture outside [*qianchu*, 前出] the first island chain to conduct training and patrols. In short, we need to expand the influence of China’s navy within the Asia Pacific region and in the world, making it become an important, indispensable force for safeguarding Asia Pacific regional stability, and safeguarding world peace.⁸²

The most vocal proponent of limited PLAN expansion, Ye Zicheng (叶自成), also argued that China should increase its cooperation with regional powers as a component of China's developing maritime strategy.⁸³ However, instead of seeing this as socializing regional powers to the existence of an increasingly powerful PLAN, Ye viewed it as an alternative to a greatly expanded PLAN that would divert scarce resources required for land-based military and economic development.

Another viewpoint raised was that China should increase its diplomatic cooperation in order to reassure its maritime neighbors—especially in Southeast Asia—that the growing power of China's navy poses no threat to them. Zhai Kun (翟崑), a Southeast Asian expert at CICIR, stated that those advocating for a more forceful approach to maritime issues were wrong, and following such a policy would cost China in the long run. Zhai felt that it was better to work cooperatively with the various nations, to include the United States, to resolve any problem that might arise.⁸⁴

Go It Alone

The third view concerning the law and international cooperation is that neither is an effective means of protecting China's sovereignty, security, and maritime rights and interests. According to Ni Lexiong (倪乐雄), a professor at Shanghai Normal University, "The idea that China could rely on 'international cooperation' instead of the capability of 'fighting by ourselves' is simply incorrect . . . Most of the 'cooperative' efforts in the world today, such as the proliferation security initiative and energy security are dominated by the U.S. and primarily serve U.S. hegemonic interests."⁸⁵ Liu Shuiming (陆水明) and Chen Lu (陈璐), two scholars from the PLA Nanjing Political Academy, agreed with this assessment, noting:

While the UNCLOS granted China exclusive jurisdiction over a large area of maritime territory, current maritime politics teaches us that without a powerful at-sea military force [*qiangda de haishang junshi liliang*, 强大的海上军事力量], we will very likely encounter a situation where we will be unable to enjoy the rights granted to us by international law. Therefore, to protect our legal rights and interests [*hefa quanyi*, 合法权益] we must strengthen our maritime defense construction [*haifang jinshe*, 海防建设].⁸⁶

Theme 5: Operational Range of the PLAN

This final section will outline the various Chinese arguments concerning the operational range of the PLAN. The vast majority of the Chinese writings since the mid-1990s advocated increasing the PLAN's operational range

(*zuozhan fanwei*, 作战范围) or operational zone (*zuozhan haiqu*, 作战海区). Significantly, most articles supported the view that China needs to adapt to an increasingly competitive international maritime environment, and to revise its concept of maritime defense so that instead of focusing on defending the coast (*hai'an*, 海岸) and territorial waters (*linghai*, 领海), it will focus on a larger portion of the sea. While most authors agreed that the PLAN's operational range should be expanded, there was some divergence of opinion as to how much expansion was necessary or desirable.

Many arguments called for an expanded PLAN zone of operations to protect Chinese interests and national security. Depending on how the authors defined "Chinese interests and national security," they advocated a PLAN operational zone demarcated variously by the 200–350 nautical mile (nm) exclusive economic zone (EEZ), the first or second island chain, or beyond. Most authors argued that the range of PLAN operations should focus on the "offshore area" (*jinhai haiyu*, 近海海域). However, this fact reveals very little about the PLAN's operational range since "offshore" is a vague concept that could be interpreted to mean anything as close as China's coastal waters (24 nm) or as far out as the Pacific Ocean beyond the second island chain. On the conservative end (less expansion), even Ye Zicheng (叶自成), the most vocal opponent of PLAN development, argued that PLAN operations should be focused on the "offshore area" (*jinhai*, 近海).⁸⁷ Analysis of these arguments will help shed light on the question of how Chinese commentators believe Beijing should choose to exercise its increasingly capable navy.

Controlling the Exclusive Economic Zone

One central theme in arguments supporting an expanded range for the navy's operational activities is that China must acquire the ability to control its exclusive economic zone. The United Nations Convention on the Law of the Sea (UNCLOS), which became effective in 1994, provided new international legitimacy for China's claims to an expanded scope of "maritime national territory" (*haiyang guotu*, 海洋国土).⁸⁸ Beginning at that time, and continuing into the present, many articles argued that the PLAN must develop new capabilities and increase its operational range out to the limits of the continental shelf and the EEZ to protect China's newly expanded sovereignty and territorial interests, as defined by international law.⁸⁸ The first such argument that we identified was put forth in 1995, when former State Oceanic Bureau Director and PLAN Training Department Deputy Director Luo Yuru (罗钰如) argued that as a result of UNCLOS, the PLAN must be prepared to protect maritime national territory out to the continental shelf, the EEZ, and in international waters.⁸⁹ As a *Dangdai Haijun* (*Modern Navy*) editorial argued a few years later:

We must broaden our focus to the entire area of the ocean that we have jurisdiction over. We also need to keep in mind that our maritime defensive mission is more than just resisting invasion from enemies. This mission also includes protecting the sovereignty of China's maritime islands and protecting China's maritime rights and interests [*haiyang quanyi*, 海洋权益].⁹⁰

In 1999, Naval Command Academy professor Liu Yijian (刘一建) argued that the PLAN must develop the capability to operate within and beyond the “offshore area” [*jinhai haiyu*, 近海海域]—which he defined as 200–350 nautical miles out to sea—to protect the newly expanded realm of Chinese maritime rights and interests. Liu argued:

Since the nation's maritime rights and interests have extended beyond the range of the offshore sea area [*jinhai haiyu*, 近海海域], the PLAN must possess highly mobile mid- to long-range at-sea operational platforms [*zhong-yuancheng haishang zuozhan pingtai*, 中远程海上作战平台] equipped with intermediate- and long-range weapons and attack capabilities. While at present, the PLAN does possess some long-distance operational capabilities, overall the PLAN is still an offshore-type navy.⁹¹

Island Chains and Beyond

Significantly, while a number of articles identified certain distances or geographic island chains as demarcation lines for future PLAN zones of operation, these geographic targets appear to be merely benchmarks of progress rather than end goals. For arguments that used geographical boundaries, the distance of the boundary identified depended on the time frame of the author's argument. For example, in 2001 Wuhan University Professor Liu Xinhua (刘新华) argued that for the PLAN to execute its *current* maritime security missions, it must develop the capability to control “the entire sea area within the first

United Nations Convention on the Law of the Sea

In 1996, China ratified the 1982 3^d United Nations Convention on the Law of the Sea. This law provided an international legal basis for China's claims to “maritime national territory” (*haiyang guotu*, 海洋国土) out to 200–350 nautical miles from the coastal baseline depending on the terminal location of the continental shelf.

Source: “Maritime Zones and Maritime Delimitation,” United Nations Division for Ocean Affairs and Law of the Sea, available at <<http://www.un.org/DEPTS/los>>.

island chain.”⁹² Another article took a much longer perspective: Naval Command Academy Professor Liu Yijian (刘一建) argued that by 2050 the PLAN must transition from “an offshore navy [*jinhai haijun*, 近海海军] to a regional navy [*quyu haijun*, 区域海军] . . . capable of operating and attaining control of the sea [*haiyu zhihaiquan*, 海域制海权] [beyond the first island chain].”⁹³ He continued, arguing that China’s active defense strategy [*jiji fangyu de zhanlue*, 积极防御的战略] must use international waters and freedom of the seas to be effective. In terms of the operational range of the PLAN, Liu argued:

[By 2050] the Chinese navy’s strategic operational zone should not be restricted to the offshore area [*jinhai*, 近海]. It must extend from the forward edge of the offshore area to the Northwest Pacific . . . To guarantee the nation’s security in the maritime direction [*haishang fangxiang*, 海上方向], a modern navy must possess the capability to intercept and attack the enemy’s forces at sufficient distance (more than 1,000 nm) from the coast.⁹⁴

To achieve these operational capabilities, Liu Yijian outlined a three-phase development strategy for the first half of the 21st century:⁹⁵

- Phase 1, 2000–2010: The PLAN must focus on developing its operational capabilities in the offshore area (*jinhai*, 近海). This includes the development of large-scale operational platforms (*zuozhan pingtai*, 作战平台) and intermediate-and long-range precision-guided munitions.
- Phase 2, 2011–2020: The PLAN should evolve into a force that has a core of large- and medium-sized operational platforms capable of effectively controlling the offshore sea area (*jinhai haiyu*, 近海海域) within the first island chain.
- Phase 3, 2020–2050: The PLAN must begin its transition into a regional navy. It will have a core of large-scale operational platforms, and possess not only the ability to operate throughout the Northwest Pacific, but also the ability to attain command of the sea (*zhihaiquan*, 制海权) in this area.

Some authors maintain that the extent of China’s operational maritime zone is directly related to its economic development. According to the 2006 *Theory of National Security Strategy* (*Guojia Anquan Zhanlue Lilun*, 国家安全战略理论), authored by the AMS War Theories and Strategic Studies Department, as China’s economic power and level of technology increase, “the PLAN’s operational sea zone will gradually expand to the second island chain of the North Pacific.”⁹⁶ Writing in 2009, two naval officers from the Dalian Vessel Academy point out that the navy’s operating area has expanded—and will continue to expand—with the strategic needs of the nation.⁹⁷ Another

volume published by the National Defense University, *Science of Service Strategy* (*Junzhong Zhanlue Xue*, 军种战略学), also argued that the strategic range of PLAN operations will not be confined to any geographic location.⁹⁸

“Offshore” is not a simple geographic concept, it is a strategic concept. The operational range [*zuozhan fanwei*, 作战范围] of the offshore defense includes the offshore sea area [*jinhai haiyu*, 近海海域] defined as the area of the sea that is under China’s legitimate jurisdiction as well as any area that can be used by an enemy to threaten China’s security. The strategic range of PLAN operations is any area where operations must be conducted to protect the entirety of China’s “maritime national territory [*haiyang guotu*, 海洋国土],” safeguard national unity, territorial integrity, maritime rights and interests, and conduct strategic control over “hot spot” sea zones around the boundaries of Chinese territory. As China’s strategic environment evolves and the PLAN’s strategic capabilities are enhanced, the future range of “offshore operations” could be expanded as required to effectively guarantee China’s national security.

As noted above in the section on sea power with Chinese characteristics, Chinese authors argue that the PLAN must develop the capability to protect China’s increasing numbers of enterprises and nationals located abroad.⁹⁹ The telling comment “wherever our interests go, our military force must be capable of following,” also supported the notion that the PLA Navy should have an unlimited operational range.¹⁰⁰ Other articles advocating an essentially unlimited operational range for the navy argued that the PLAN must possess blue-water capabilities to show a military presence at sea, provide deterrence, and conduct military diplomacy missions.¹⁰¹

Since the PLA Navy began participating in antipiracy operations off the Horn of Africa, there have been muted calls for establishing overseas bases—primarily logistics and supply hubs.¹⁰² One of the earliest calls for this was in a February 2009 article in the PRC-owned *Huanqiu Shibao* (*Global Times*). In this article, the author, PLA Air Force Colonel Dai Xu (戴旭), openly calls for establishing bases overseas in order for China to fulfill its international obligations and truly act as a “mature power.”¹⁰³ Later that same year, Yin Zhuo (尹卓), director of the PLA Navy’s Informatization Experts Advisory Committee and member of the Chinese People’s Political Consultative Conference, also discussed the need to set up a “supply and repair base” in the Horn of Africa in order to support the navy’s escort missions there.¹⁰⁴ Within less than a week, the English-language newspaper *China Daily* ran an article that appeared as a weak attempt at damage control. In this article, Jin Canrong, a professor from Renmin University, stated that while the opinions of Yin were just those

of a “retired admiral,” the idea of establishing such a base should not be ruled out entirely.¹⁰⁵ A few months later, Yin appeared to retreat slightly from his original statement, and likened any future Chinese supply points to a port call for restocking:

Concerning how the outside world is surmising whether China will establish overseas military bases, Yin Zhuo directly replied in the negative. He said, our escort task force only needs supply points (*bujidian*, 补给点), it doesn’t require establishing military bases. Just like when a U.S. aircraft carrier enters Hong Kong, it is only to carry out a resupply.¹⁰⁶

Another article that argues for supply points that are temporary in nature appeared in January 2010, and quotes a supposed military expert who makes the analogy that China’s overseas supply bases should not be permanent military bases, but rather should be temporary in nature—akin to “renting a house” for a longer period of time.¹⁰⁷ All of these articles state that the reason for overseas bases is to make logistics and supply support more efficient and affordable.

Conclusions

The existence of these various, persisting debates in Chinese open source writings over the past 20 years concerning fundamental aspects of maritime security reflects China’s lack of a coordinated maritime security strategy. Of the five themes presented in this paper, only the importance of building sea consciousness does not appear to be under debate. The level of debate on the other issues we identified varied from slight differences of opinion (operational range of the PLAN), to hotly contested disagreement (meaning of sea power, the role of the PLAN, as well as other actors and processes). In other words, the importance of the sea to China is not contentious. Rather, how to coordinate Chinese economic, diplomatic, military, and political strategies to adequately account for the importance of the sea is much more controversial.

Second, the large and increasing number of articles and books focused on the topic of China’s maritime security strategy over the past 20 years suggests that China is working to create a coordinated maritime security strategy. The sample of articles and books exploited for this paper included Chinese security analysts representing a broad spectrum of society. It included not only PLA and PLAN officers, but also military-affiliated civilians, former government officials, and civilian academics from prestigious universities and government think tanks. These authors have written articles published in a wide variety of sources, including credible civilian, party-affiliated, and military journals. The substantial variance among the authors’ views on maritime security strategy suggests that this may be an officially sanctioned debate intended to

help create a comprehensive maritime strategy. If the Chinese government had already implemented a maritime security strategy, it is unlikely that such debates would exist in public media.¹⁰⁸

Third, based on an analysis of these debates, we may identify certain trends that are likely to emerge as components of a future Chinese maritime strategy:

- (1) As the Chinese economy becomes increasingly dependent upon maritime resources, as well as overseas trade and energy, its security strategy will increasingly focus in the maritime direction. Safeguarding these maritime interests requires developing China's maritime capabilities, including economic, military, diplomatic, scientific, and cultural capabilities.
- (2) Closely related to the first trend, the PLAN's operational range is likely to expand in the near future. Although Chinese debates on this issue vary widely, almost all authors advocated expanding the operational range of the PLAN to adapt to China's increasing need for maritime access and security. Signs of this are already occurring, as evidenced by the growing frequency of PLAN out-of-area operations.¹⁰⁹
- (3) Any future maritime security strategy that China creates will likely be comprehensive in nature. Although the PLAN will probably play a large role, it will not be the only actor. Other actors, such as a maritime police force, or processes, such as international cooperation forums, will also be key components. A strengthened PLAN will likely exist as a means of last resort in contentious international situations when peaceful means have failed to protect Chinese sovereignty, security, and maritime rights and interests. China's frequent use of non-PLAN maritime security forces, such as its China Maritime Surveillance forces, in recent maritime disputes confirms this point.¹¹⁰

Finally, from the Chinese writings on maritime security sampled here, it is clear that most Chinese security analysts concerned with maritime affairs are looking beyond the Taiwan issue. Although mention of using the PLAN to safeguard territorial integrity (i.e., Taiwan) appeared throughout the timeline of articles surveyed, not all articles focused on or even discussed this issue. Other issues, such as defending China's maritime rights and interests and safeguarding overseas economic interests, also frequently appeared in the writings. Surprisingly, the need to defend maritime rights and interests was actually mentioned more often than territorial integrity as the main reason for strengthening the PLAN and defining a coordinated maritime strategy. This demonstrates that although reunification with Taiwan remains an important issue, other drivers of PLAN modernization also exist; even if the

current cross-strait disagreement was resolved, the PLAN would likely remain on the same fast-paced developmental trajectory.

In conclusion, it is important to continue following Chinese writings on this subject to better understand the methods and objectives of China's future maritime security strategy. Following the evolving Chinese debates on maritime strategy will allow foreign observers to anticipate any changes to China's maritime security strategy prior to their inception, and will enable those nations most affected by China's evolving maritime security strategy to respond accordingly.

Notes

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² Central Intelligence Agency, "China," *The World Factbook*, available at <<https://www.cia.gov/library/publications/the-world-factbook/geos/ch.html>>.

³ "China container shipping industry annual growth seen at 10 pct – researcher," AFX News Limited, *Forbes Online*, April 24, 2006, available at <<http://www.forbes.com/markets/feeds/afx/2006/04/25/afx2693887.html>>. World Shipping Council, "Trade Statistics," 2009, available at <<http://www.worldshipping.org/about-the-industry/global-trade/trade-statistics>>. The 42 percent includes containers traversing the port of Hong Kong as well.

⁴ Central Intelligence Agency, "China."

⁵ The research for this paper focused exclusively on Chinese-language materials that addressed the issue of Chinese maritime strategy, including books, journals, and news articles written by both civilian and military authors. In this paper, we surveyed 21 articles and one book published by civilian professors and commentators, and 39 articles and three books published by military personnel, primarily professors who teach at the PLA's military academies.

⁶ For a discussion of the value of Chinese open source writings for illuminating official policies, see David Finkelstein, "Thinking about the PLA's Revolution in Doctrinal Affairs," in James Mulvenon and David Finkelstein, eds., *China's Revolution in Doctrinal Affairs*, CNA Publications Online (November 2005), 21, available at <<http://www.cna.org/documents/DoctrineBook.pdf>>.

⁷ For example, see Kong Li, "Mahan yi Xiandai Haijun de Fazhan" [Mahan and the Development of a Modern Navy], *Guofang*, no. 6 (1995), 6; Liu Yongtao, "Mahan ji qi 'Haiquan' Lilun" [Mahan and His 'Sea Power' Theory], *Fudan Xuebao*, no. 4 (1996), 69–73; Du Mingcai, "Mahan 'Haishang Shili Lilun' Jianshu" [A Simple Narration of Mahan's 'Maritime Power Theory'], *Junshi Lishi*, no. 6 (1998), 36, 40.

⁸ The term "Command of the Sea" (*Zhihaiquan*, 制海权) is often translated into English as "sea control," "sea superiority," "sea dominance," or "maritime superiority." However, this paper will use the term "command of the sea" as this is how both the official *PLA Encyclopedia* and the *PLA Navy Dictionary* translate this term.

⁹ "Territorial waters" are defined by Chinese and international law as extending 12 nautical miles (nm) out to sea from the coastal baseline. The "contiguous zone" extends an additional 12 nm out to sea from the end point of "territorial waters." Source: "Maritime Zones and Maritime Delimitation," United Nations Division for Ocean Affairs and Law of the Sea, available at <<http://www.un.org/DEPTS/los>>.

¹⁰ Niu Baocheng, "Cong Haiquan dao Junshi Haiquan" [From Sea Power to Military Sea Power], *Dangdai Haijun*, vol. S-1 (December 2000), 32.

¹¹ Liu Xinhua, "Shilun Zhongguo Fazhan Haiquan de Zhanlue" [Dealing with the Development of China's Sea Power Strategy], *Fudan Xuebao*, no. 6 (2001), 69.

¹² Lu Rude, "Zai Da Zhanlue zhong gei Zhongguo Haiquan Dingwei" [Defining Sea Power in China's Grand Strategy], *Renmin Haijun*, June 6, 2007, 4.

¹³ Zhang Wenmu, “Jingji Quanqihua yu Zhongguo Haiquan” [Economic Globalization and Chinese Sea Power], *Zhanlue yu Guanli*, no. 1 (2003), 92–100. According to one author, the confusion between the terms “sea power” and “command of the sea” in Chinese writings has been present for some time, and could negatively affect China’s maritime security and sea power in the long run. For more on this see Liu Xinhua, “Shilun Zhongguo Fazhan Haiquan de Zhanlue” [Dealing with the Development of China’s Sea Power Strategy], *Fudan Xuebao*, no. 6 (2001), 69.

¹⁴ Ye Zicheng and Mu Xinhai, “Dui Zhongguo Haiquan Fazhan Zhanlue de ji dian Sikao” [Some Reflections on China’s Sea Power Development Strategy], *Guoji Zhengzhi Yanjiu* 97, no. 3 (2005), 5.

¹⁵ Liu Zhongmin, “‘Haiquan’ yu ‘Haiyang Quanyi’” [“Sea Power” and “Maritime Rights and Interests”], *Zhongguo Haiyang Wang*, April 16, 2008, available at <http://www.lrn.cn/science/seaknowledge/200804/t20080416_220158.htm>.

¹⁶ *Ibid.*, 9–12.

¹⁷ Lu Rude, “Da Zhanlue.”

¹⁸ Ge Dongsheng, ed., *Guojia Anquan Zhanlue Lun [Theory of National Security Strategy]* (Beijing: Military Science Publishing, 2006), 225. This book was written by the War Theories and Strategic Studies Department of the Academy of Military Science, thus increasing its authoritativeness.

¹⁹ *Ibid.*

²⁰ Zhang Wenmu, 96.

²¹ Niu Baocheng.

²² Yao Wenhui, “Jianshe Qiangda Haijun, Weihe Woguo Haiyang Zhanlue Liyi” [Build a Powerful Navy, Defend China’s Maritime Strategic Interests], *Guofang*, no. 7 (2007), 1–2.

²³ Yang Huaiqing, “Zhidao Renmin Haijun Jianshe de Qiangda Sixiang Wuqi” [The Great Ideological Weapon Guiding Construction of the People’s Navy], *Qiushi*, no. 15 (August 2000), 26. Lu Rude, “Da Zhanlue.”

²⁴ Zhang Huayun, “Jinglue Haiyang—Kouxiang Da Zhanlue zhi Men” [Strategic Uses of the Sea—Knocking on the Door of a Grand Strategy], *Dangdai Haijun* (May 2007), 19.

²⁵ Ye Zicheng and Mu Xinhai, 5. Ye Zicheng, “Zhongguo Haiquan xu Congshu yu Luquan” [China’s Sea Power Must Be Subordinate to Its Land Power], *Guoji Xianqu Daobao*, March 2, 2007, available at <http://news.phoenixtv.com/mil/4/200703/0302_342_82091.shtml>.

²⁶ Xu Qiyu, “Haiquan de Wugu yu Fansi” [Long-standing Mistaken Ideas and Rethinking on Sea Power], *Zhanlue yu Guanli*, no. 5 (2001), 16.

²⁷ Lu Rude, “Da Zhanlue.”

²⁸ Gao Xinsheng, “Zhongguo Guofang Fazhan Mianlin de Zhuyao Tiaozhan yu Zhance” [Main Challenges and Countermeasures Facing China’s Maritime Defense Development], *Guofang*, no. 11 (2005), 63.

²⁹ Liu Xinhua and Qin Yi, “Zhongguo de Shiyou Anquan ji qi Zhanlue Xuanze” [China’s Oil Security and Its Strategic Choices], *Xiandai Guoji Guanxi*, no. 12 (2003), 39. This journal is published by the Ministry of State Security’s think tank, China Institutes of Contemporary International Relations (CICIR). See also Zhang Dengyi, “Guanhao Yonghao Haiyang, Jianshe Haiyang Qiangguo” [Manage and Use the Ocean Wisely, Establish a Strong Maritime Nation], *Qiushi*, no. 11 (2001), 46; and Hou Songling and Chi Dianting, “Zhongguo Zhoubian Haiyu de Zhanlue Diwei he Diyuan Zhanlue Jiazhi Chutan” [Preliminary Explorations on the Strategic Position and Geostategic Value of China’s Peripheral Sea Area], *Dangdai Yatai*, no. 10 (2003), 47.

³⁰ Ge Dongsheng, 223.

³¹ *Ibid.*, 363.

³² Liu Shuiming and Chen Lu, “Haiyang Yishi yu Haifang Jianshe” [Sea Consciousness and Maritime Defense Construction], *Nanjing Zhengzhi Xueyuan Xuebao*, no. 1 (2005), 84.

³³ Ge Dongsheng, 223.

³⁴ Feng Liang and Zhang Xiaolin, “Lun Heping Shiqi Haijun de Zhanlue Yunyong” [A Discussion of the Navy’s Strategic Use in Peacetime], *Zhongguo Junshi Kexue*, no. 3 (2001), 78.

³⁵ Hou Songling and Chi Dianting, 47.

³⁶ Liu Yijian, “Zhongguo Weilai de Haijun Jianshe yu Haijun Zhanlue” [The Future of China’s Naval Development and Naval Strategy], *Zhanlue yu Guanli*, no. 5 (May 1999), 98.

³⁷ Ge Dongsheng, 223. See Appendix II for a map of the island chains.

³⁸ Da Wei, 363.

³⁹ Zhang Wenmu, 96.

⁴⁰ Lang Danyang and Liu Fenliang, "Hailu zhi Zheng de Lishi Jianshi" [Historical Exploration into the Land-Sea Dispute], *Zhongguo Junshi Kexue*, no. 1 (2007), 46.

⁴¹ He Jiacheng, Zou Lao, and Lai Zhijun, "Guoji Junshi Anquan Xingshi ji Woguo de Guofang Jingji Fazhan Zhanlue" [The International Military Situation and China's Strategy of National Defense Economic Development], *Junshi Jingji Yanjiu*, no. 1 (2005), 12.

⁴² Liu Xinhua and Qin Yi, "*Zhongguo de Shiyou*," 39.

⁴³ Da Wei, "Zhongguo de Haiyang Anquan Zhanlue" [China's Maritime Security Strategy], in Yang Mingjie, ed., *Haishang Jiaodao Anquan yu Guoji Hezuo* (Beijing: Shishi Chubanshe, 2005), 365. This book is the result of a conference sponsored by the Ministry of State Security think tank, China Institutes of Contemporary International Relations (CICIR).

⁴⁴ Zhang Wenmu, 96.

⁴⁵ Xu Lifan, "San da Xianshi Tiaozhan Yaoqiu Zhongguo cong Haiyang Daguo Chengwei Haiyang Daguo" [Three Big, Actual Challenges That Require China to Go from a Great Maritime Nation to a Strong Maritime Nation], *Huaxia Shibao* (July 12, 2005).

⁴⁶ Alfred T. Mahan, *The Influence of Sea Power Upon History: 1660–1783* (Charleston, SC: Biblio-bazaar, 2007), 101.

⁴⁷ Jiao Yongke, "Hongyang Haiyang Wenhua, Fazhan Haiyang Jingji" [Enhance Maritime Culture, Develop the Maritime Economy], *Zhongguo Haiyangbao*, no. 1407 (unknown date), available at <<http://www.soa.gov.cn/zhanlue/14073a.htm>>.

⁴⁸ Yin Dunping, "Shuli Xiandai Haiyang Guotu Yishi" [Establish a Modern Sea Territory Consciousness], *Zhengong Xuekan*, no. 2 (1994), 10.

⁴⁹ Luo Xianlin, "Haiyang Yishi: yi ge bu Neng Huibi de Huati" [Sea Consciousness: A Subject That Cannot Be Avoided], *Dangdai Haijun*, no. 5 (1994), 14.

⁵⁰ Jiao Yongke.

⁵¹ Tao Shelan, "Zhuanjia: Zhongguo Jundui Poqie Xuyao Cengqiang Weihu Haishang Anquan de Nengli" [Expert: Chinese Military Urgently Needs to Improve Its Ability to Safeguard Maritime Security], *Xinwenshe*, online (January 11, 2007), available at <<http://www.heb.chinanews.com.cn/news/gnzx/2007-01-12/13242.shtml>>.

⁵² Zhang Dengyi, 48.

⁵³ Wen Yufu, "Bie Rang Shili Paiming Chonghun Tounao" [Avoid Getting Carried Away by Rank in Terms of Real Strength], *Guofang Bao* (April 23, 2009), 3.

⁵⁴ Wu Xiangshu and Wang Shengrong, "Haiyang, Haiyangguan, Haiyang Changcheng: Guojia Haiyangju Yuanjuzhang Luo Yuru Fangtanlu" [The Sea, Sea Concept, and the Great Wall at Sea: An Interview with Former State Maritime Bureau Director Luo Yuru], *Guofang*, no. 10 (1995), 4. According to the article, Luo Yuru has served as the deputy director of the PLAN Military Training Department, director of the PLAN Military Academy Department, and director of the State Council's State Oceanic Bureau.

⁵⁵ Liu Shuiming and Chen Lu, 81.

⁵⁶ Gao Xinsheng, 63.

⁵⁷ Wu Xiangshu and Wang Shengrong, 6.

⁵⁸ *Ibid.*

⁵⁹ Liu Zhenhuan, "Guanyu 'Lianheguo Haiyangfa Gongyue' yu Zhongguo Xinshiqi Haifang Jianshe de Sikao" [On the UN Law of the Sea and Thoughts on China's New-Age Coastal Defense Establishment], *Zhongguo Junshi Kexue*, no. 2 (1997), 98.

⁶⁰ Liu Yijian, 96.

⁶¹ Feng Liang and Zhang Xiaolin, 78.

⁶² Gu Zuhua, "Weihu Haishang Shiyou Anquan Xuyou Qiangda Haishang Biandui" [Protecting Maritime Oil Security Must Have a Strong Maritime Formation], *Dangdai Haijun*, no. 8 (2004), 49.

⁶³ Lu Rude, "Cong Guoji Haiyangfa Tan Xin de Guotu Guannian" [Discussing a New Concept of Territory from the International Law of the Sea], *Zhongguo Ruankexue*, no. 9 (1996), 22.

⁶⁴ Zheng Hong, "Dazao Zhongguo Qiangda Haijun" [Forge a Powerful Chinese Navy], *Liaowang Xinwen Zhoukan* (July 26, 2004), 35.

⁶⁵ Da Wei, 365.

⁶⁶ Ge Dongsheng, 224.

⁶⁷ Ye Zicheng and Mu Xinhai, 16.

⁶⁸ Zhang Dengyi, 48. Lu Rude, "Da Zhanlue." Xiu Bin, "Zhongguo 'Heping Fazhan' Zhanlue Shiye xia de Haiyang Quanyi Weihu" [Safeguarding Maritime Rights and Interests under the Field of Vision of China's 'Peaceful Development' Strategy], *Zhongguo Haiyang Daxue Xuebao*, no. 1 (2007), 1–5.

⁶⁹ Liu Xinhua and Qin Yi, "Zhongguo de Shiyou Anquan ji qi Zhanlue Xuanze" [China's Oil Security and Its Strategic Choices], *Xiandai Guoji Guanxi*, no. 12 (2002), 39; Ye Zicheng and Mu Xinhai, 16; Da Wei, 372. Gao Xinheng, 63; Wang Bo, "Haiyang Zhoubian: Jinnian Pin Chushi" [Regional Seas: Frequent Trouble This Year], *Shijie Zhishi* (December 1, 2009), 4–25.

⁷⁰ Wu Xiangshun and Wang Shengrong.

⁷¹ Zhang Dengyi, 46–48.

⁷² Xiu Bin, 4.

⁷³ Ibid.

⁷⁴ Lu Rude, "Gujoi Haiyangfa," 21.

⁷⁵ Feng Liang and Zhang Xiaolin, 83.

⁷⁶ Gao Xinheng, 62–63.

⁷⁷ Feng Liang and Zhang Xiaolin, 83.

⁷⁸ Gao Xinheng, 62–63.

⁷⁹ See variously: Liu Xinhua and Qin Yi, "Shiyou Anquan," 39; Feng Liang and Zhang Xiaolin, 81. Gu Zuhua, 49.

⁸⁰ Gu Zuhua, 49.

⁸¹ He Jiacheng et al., 10–14.

⁸² Ibid., 13. Significantly, the PLAN conducted its first search and rescue (SAREX) exercise with a foreign navy (Pakistan) in 2003.

⁸³ Ye Zicheng and Mu Xinhai, 5–17.

⁸⁴ Wang Bo, 25.

⁸⁵ Ni Lexiong, "Haiquan yu Zhongguo de Fazhan" [Sea Power and China's Development], in Guo Shuyong, ed., *Zhanlue Yanjin Lu* [Lectures on Strategy] (Peking: Peking University Press, 2005), 115.

⁸⁶ Liu Shuiming and Chen Lu, 81–84.

⁸⁷ Ye Zicheng and Mu Xinhai, 5–17.

⁸⁸ See variously: Lu Rude, "Gujoi Haiyangfa," 19–22. Liu Zhenhuan, 51–54; Lu Rude, "Shuli Haiyang Zhanlue Yishi Jianshe Haishang Jingji Qiangguo," *Zhongguo Ruan Kexue*, no. 4 (1997), 13–17; Niu Baocheng, 32–33; Yang Huaqing, 26–29; Liu Shuiming and Chen Lu, 81–84; Gao Xinheng, 62–63.

⁸⁹ Wu Xiangshun and Wang Shengrong, 4–6.

⁹⁰ Niu Baocheng, 33.

⁹¹ Liu Yijian, "Weilai de Haijun," 96.

⁹² Liu Xinhua, "Shilun Zhongguo Fazhan," 71.

⁹³ Liu Yijian, 96–100.

⁹⁴ Ibid., 97.

⁹⁵ Liu Yijian, 100. Significantly, the time-frame of this 1999 strategy corresponds exactly with the PLA's overall "three step development strategy" outlined in China's 2006 defense white paper, *China's National Defense in 2006*. According to that report, "China pursues a three-step development strategy in modernizing its national defense and armed forces, in accordance with the state's overall plan to realize modernization. The first step is to lay a solid foundation by 2010, the second is to make major progress around 2020, and the

third is to basically reach the strategic goal of building informationized armed forces and being capable of winning informationized wars by the mid-21st century." *China's National Defense 2006*, Section 2, available at <<http://english.peopledaily.com.cn/whitepaper/defense2006/defense2006.html>>.

⁹⁶ Ge Dongsheng, 227–228.

⁹⁷ Tang Fuquan and Han Yi, "Renmin Haijun Yanzhe Dang Zhiyin de Hangxiang Polang Qianjin" [The People's Navy Sails Forward Along the Course Set by the Party], *Zhongguo Junshi Kexue*, no. 4 (2009), 19.

⁹⁸ Huo Xiaoyong, ed., *Junzhong Zhanlue Xue [The Science of Service Strategy]* (Beijing: National Defense University Press, 2006), 242.

⁹⁹ Zhang Wenmu, 90–91. See also Xu Lifan, 2005.

¹⁰⁰ *Ibid.*, 91.

¹⁰¹ Feng Liang and Zhang Xiaolin, 77–84. Ge Dongsheng, 227.

¹⁰² On December 26, 2008, Beijing dispatched a three-ship task force to the Gulf of Aden to conduct escort patrols as part of an international effort to combat piracy in the region. As of this writing, China continues this exercise, and is on its eighth rotation. For an excellent analysis of Chinese views on the need for some sort of overseas infrastructure to support deployed naval forces, see Daniel Kostecka, "Places and Bases: The Chinese Navy's Emerging Support Network in the Indian Ocean," *Naval War College Review* 64, no. 1 (Winter 2011).

¹⁰³ Dai Xu, "Zhongguo Ying Jianli Yuan Yang Jidi" [China Should Establish Far Sea Bases], *Huanqiu Shibao* (February 3, 2009), 11.

¹⁰⁴ Sun Li, "Haijun Zhuanjia Yin Zhuo: Zhongguo Haijun Ke Tanguo Jianli Changqi Anji Buji Jidi" [Navy Expert Yin Zhuo: The Chinese Navy Can Explore Establishing Long-term Coastal-based Supply Bases], *Zhongguo Wang* (December 26, 2009), available at <<http://www.cri.cn>>.

¹⁰⁵ Zhang Haizhou, "China Rules out Overseas Naval Base Now," *China Daily* (January 1, 2010), available at <http://www.chinadaily.com.cn/china/2010-01/01/content_9254142.htm>.

¹⁰⁶ Zhai Xuan, "Haijun Zhuanjia Yin Zhuo: Zhongguo bu Hui Zai Haiwai Jian Junshi Jidi" [Navy Expert Yin Zhuo: China Cannot Establish Overseas Military Bases], *Chinagate.com* (March 4, 2010), available at <http://cn.chinagate.cn/society/2010-03/04/content_19518948.htm>.

¹⁰⁷ Yu Zhong, "Zhongguo Haijun Haiwai Bujidian Jian Zai Na?" [Where to Set up Chinese Overseas Supply Points?], *Guoji Xianqu Daobao* (January 8, 2010), 8.

¹⁰⁸ See, for example, the calls for the creation of a national maritime security strategy during the 2011 National People's Congress. Russell Hsiao, "Military Delegates Call for National Maritime Strategy to Protect Expanding Interests," *China Brief* 11, no. 4 (March 10, 2011).

¹⁰⁹ See for example, Christopher D. Yung and Ross Rustici with Isaac Kardon and Joshua Wiseman, *China's Out of Area Naval Operations: Case Studies, Trajectories, Obstacles, and Potential Solutions*, China Strategic Perspectives 3 (Washington, DC: National Defense University Press, December 2010).

¹¹⁰ BBC, "China Boosts Maritime Surveillance Fleet Amid Disputes," October 28, 2010, available at <<http://www.bbc.co.uk/news/world-asia-pacific-11646489>>; and Lyle J. Goldstein, "Five Dragons Stirring Up the Sea: Challenges and Opportunities in China's Improving Maritime Enforcement Capabilities," *China Maritime Study* 5 (April 2010).

Chapter 5

The Evolution of China's Naval Strategy and Capabilities: From "Near Coast" and "Near Seas" to "Far Seas"¹

Nan Li

How have China's naval strategy (*haijun zhanlue*, 海军战略) and capabilities evolved over time? What factors drive this evolution? What are the major implications for future Chinese naval development? Answering these questions is important mainly because such answers have important implications for Asian security. This essay addresses these research questions in order to offer empirical insights to scholars, military planners, and strategists.

Empirically, scholarly literature on the People's Liberation Army Navy (PLAN) illuminates significantly the dynamics of China's naval modernization. It addresses issues such as how change in China's overall military strategy has affected the PLAN, particularly in terms of a new emphasis on local war, on offense, and on technical expertise over politics;² whether and when the PLAN will acquire an aircraft carrier;³ how mature the PLAN is; and what strategic dilemmas Washington might encounter as a result of China's modernizing submarine force.⁴ It also offers detailed accounts of the historical, geostrategic, and economic contexts underlying China's maritime and naval development, and the PLAN's organization, hardware, and personnel.⁵ Because these studies have specific analytical emphases, they are relatively unconcerned with a diachronic comparison of China's naval strategy and capabilities over time, or with issues such as what has changed in China's naval strategy and capabilities over time, and what drives these changes. This study provides a systematic answer to these questions, and thereby fills a significant void in the existing literature.

This study first shows that China's naval strategy has undergone two major changes: from the "near-coast defense" (*jin'an fangyu*, 近岸防御) strategy prior to the mid-1980s to the "near-seas active defense" (*jinhai jiji fangyu*, 近海积极防御) after the mid-1980s, and then to the advancement of a "far-seas operations" (*yuanhai zuozhan*, 远海作战) strategy by the mid-2000s.⁶ Related to the evolution of the naval strategy is the change in naval capabilities: from limited capabilities for coastal defense to more expansive capabilities to

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operate more effectively in China's *near seas* by the late 2000s. The new strategy of "far-seas operations" endorsed since the mid-2000s may have major implications for the future development of PLAN capabilities.

Second, this study argues that changes in naval strategy and capabilities cannot be accounted for by just one variable or factor, but rather by a combination of major or more important variables or factors. These include the role of naval leadership and personal experience, endorsement by the civilian leadership, changing perception of the external security environment, availability of funding and technologies, and institutionalization of naval research. A related point is that while a major change in naval capabilities may be related to a change in naval strategy, sometimes it may be driven more by other highly contingent or idiosyncratic reasons.

This study employs an approach of what Arend Lijphart calls "diachronic comparison": identifying changes/differences over time in a single country, and attempting to explain these changes/differences. An ideal approach to explanation is, first, to concentrate on major or more important variables, and second, to control for all other variables, or to establish the condition of "other things being equal," similar, or constant. This is because such a control increases the confidence level that a particular change/difference is caused by a particular variable or factor that the researcher has hypothesized, but not by others.⁷ But what is closer to reality, particularly for social sciences, is that a particular change/difference may not be caused by a change in one variable, but by changes in a few major and more important variables. As a result, a more realistic and reasonable approach to an explanation is a multivariable explanation based on "necessary and sufficient" conditions, which this study employs. An endorsement of a change by the naval leadership in naval strategy, for instance, is necessary but not sufficient to cause a change in naval capabilities. For such a change to take place, other things also need to take place: civilian leadership needs to endorse the new strategy, naval analysts need to articulate and socialize the new strategy, and money and technologies need to become available. Indeed, this second approach can explain why a particular change takes place at a particular time and place but not others.

The study has four sections. The first discusses the "near-coast defense" strategy and related capabilities. The second examines the "near-seas active defense" strategy and related capabilities, and answers the question of what drove the shift from near-coast defense to near-seas active defense. The third section discusses the advancement of the "far-seas operations" strategy and addresses the question of what accounted for this new development. The concluding section discusses major implications of the findings.

Near-Coast Defense

Any conceptualization of military strategy should address two issues: the nature of military operations in terms of defense and offense and the geographic bounds of such operations. By these criteria, the concept of near-coast defense reflects accurately the People's Republic of China's naval strategy from the time of its founding in 1949 to the 1980s.

Near-Coast Defense Strategy

The near-coast defense strategy refers to the defense of up to a dozen or so nautical miles (nms) of waters that extend seaward from China's coastline and the land territory of about 300 kilometers (kms) that stretches inland from the coastline, a region where China's politically and economically important cities are located. Because China's coastline is arguably as long as 18,000 kms and it is difficult to establish effective control of such a long and narrow span at all times, naval defense was largely focused on particular straits and waterways of strategic importance, or those that could be exploited by the enemy to invade China by sea to conquer strategically important land targets. These include the Strait of Bohai, which is the maritime gateway to Tianjin and Beijing and concerns the security of China's north coast; the Strait of Taiwan, which relates to the security of China's east coast, the reunification of Taiwan with the mainland, and the security of sea lines of communications (SLOCs) around the island; and the Strait of Qiongzhou, which is central to securing Hainan Island and China's south coast. The deployment of the three PLAN fleets, namely the North Sea Fleet, East Sea Fleet, and South Sea Fleet, correlates well with the defense of the three straits and the adjacent seas.

During the 1950s and 1960s, the central concern of the People's Liberation Army (PLA) was small-scale incursions of the coastline by the Taiwan-based Kuomintang (KMT) forces, which were usually suspected as preparations for major offensives to recapture the mainland. To repel such incursions, the PLA relied on ground coastal defense forces more than on the PLAN. Occasionally, however, the PLAN did play a more important and offensive role, particularly in amphibious-landing operations to capture inshore islands controlled by the KMT forces.⁸

By the late 1960s, however, China's relations with the Soviet Union deteriorated to the level where both sides engaged in armed skirmishes on their common border. As a result, guided by Mao Zedong's notion of "people's war," the PLA began to shift its defense emphasis from the east and the south to preparing against a massive Soviet invasion of China from the north. Faced with a technologically superior opponent such as the Soviet Union, the PLA

would compensate for its technological inferiority with its abundance in space, manpower, and time. The vast, familiar territory of China, coupled with a protracted, manpower-intensive people's war of dispersion, mobility, harassment, and attrition, would gain China sufficient time. This would allow China to gradually weaken the overextended invading forces, identify their vulnerabilities, reconstitute resistance forces, and finally win the war through decisive, strategic offensives. Such a strategy of "luring the enemy in deep," however, would render the PLAN almost irrelevant because, in such a scheme, coastal defense became virtually unnecessary.

By the late 1970s, when Deng Xiaoping became the paramount leader, however, the notion of people's war was replaced by "people's war under modern conditions," in which naval operations were deemed necessary, but still largely supportive to land operations. A major war with the Soviet Union would be continental in nature and primarily fought by the land forces. But because China has a long coastline where important strategic assets are located, it constitutes the maritime flank of China's landmass, which is strategically important but also exposed and vulnerable. As a result, for the purpose of accelerating a land offensive or averting a negative strategic posture, the invading Soviet forces might foreseeably launch an offensive on the maritime flank through amphibious-landing operations to capture straits, islands, and strategic assets. This could serve the purpose of creating a posture of "advancing on both land and sea" and "two-pronged assault from both south and north."⁹

To deal with such an offensive from the sea, the PLAN would assist the land-based defense by providing counter-amphibious-landing operations to thwart the invading forces from driving straight inland. The PLAN was also responsible for defending naval bases, harbors, and coastal airfields to prevent the enemy from paralyzing the PLA defense with one stroke. Finally, because Soviet offensive operations would consume a large amount of materiel and the enemy forces would be far away from their homeland, the Soviets would be dependent on vulnerable merchant ships for resupply. So the PLAN would launch ambush and sabotage operations against the enemy's merchant supply vessels as they approached the Chinese littoral, thus weakening the enemy's land-war effort.¹⁰

Specifically, counter-amphibious-landing operations constituted the PLAN's central task during this period and such operations would give full play to the PLAN's relative advantages and the invading forces' moments of vulnerability. Numerous islands, for instance, spread over China's coastal waters. Because of the coastline's geographical complexity, it offers many natural bays, harbors, berth places, and caves for accommodating and constructing naval, air, artillery, missile, and forward observation facilities, and these

offer the PLAN comparative advantages in concealment, maneuverability, coordination, and detection. Also, the PLAN ships had smaller profiles, were more agile and faster, were more numerous in number and kind than the Soviet ships, and carried some weapons (such as missiles and torpedoes) that were quite powerful. They also operated within the range of land-based intelligence and firepower support. These factors made it possible for an effective concealment followed by surprise attacks of multiple directions and means.¹¹

In tactical terms, the first issue to be addressed in counter-amphibious-landing operations was how to survive the first wave of enemy strikes. Because "the enemy is on the offensive and has the technological superiority," the first phase of such operations was to "hide," i.e., "to preserve our strength through concealing and dispersing ships, and transferring planes to the second-line bases. This is accompanied by organizing electronic interference and air defense operations to reduce the damage and increase the difficulties of the enemy offensive." The purpose of self-preservation, however, was to strike back, "otherwise, self-preservation serves little purpose or becomes increasingly difficult."¹²

For strikes, naval and air strike zones would be established "within the coastal waters of several dozen kms" to exploit the advantages of concealment and land-based firepower support. Also, strike groups consisting of missile, torpedo, and gun boats capable of attacks from multiple routes would be organized, and would be supported by torpedo bombers if possible. Strikes would be launched when the enemy landing force switches ships, removes obstacles, and organizes into columns to drive to shore. These were the enemy's moments of vulnerability mainly because the formation would become denser, the maneuver more restricted, and the communications and coordination more confused. Also "sinking one enemy ship at these moments is equivalent to wiping out one enemy company or battalion later." Another method was to combine barriers, including mines and engineered obstacles, with firepower to prevent the enemy from removing obstacles and from driving to shore.¹³ To put this strategy in practice, the PLAN had planned a major counter-amphibious-landing exercise for 1984, and various drills had been conducted during 1983, involving primarily the North Sea Fleet and elements from the East Sea Fleet. The exercise, however, was apparently cancelled partly because of a major submarine accident.¹⁴

Generally speaking, the central objectives of near-coast defense during this period were concerned with ensuring national survival in a major war with the Soviet Union, but not with capturing lost or disputed territories, or with securing maritime resources and SLOCs for shipping traded goods and imported oil. It was also a purely defensive strategy, even though it involved guerrilla warfare-type attacks of the enemy forces by smaller ships and boats. Compared

to those of the Soviet Navy, the ships of the PLAN were too small and vulnerable and ill-equipped in early warning, communications, and firepower. Most of them had only a singular role, and suffered from a limited radius of operations and poor sustainability. As a result, the success or failure of the near-coast defense strategy was highly dependent on land-based intelligence and firepower support and particularly on whether the land war would succeed. Faced with a much more powerful enemy such as the Soviet Navy, the PLAN even had major difficulties in establishing local and temporary coastal sea denial, not to mention that it was completely unable to develop some level of “sea control” (*zhihaiquan*, 制海权) in these waters. With few exceptions, all the fighting methods seem to have amounted merely to delaying tactics.¹⁵

Naval Capabilities

In keeping with their role in a naval strategy of near-coast defense, the PLAN fleets in the 1950s and 1960s consisted mainly of such ships as mine-sweepers and torpedo, gun, and missile boats, supplemented by a few Soviet-made light destroyers and frigates and land-based, short-range naval bombers. The PLAN also had a fleet of Soviet-designed, conventional-powered *Romeo*-class (Type 033) submarines (SS).¹⁶ The surface ships were relatively small and had a limited radius of operations and therefore low sustainability. The surface ships had singular roles and were weak in early warning, command and control, communications, and protection. As a result, they were vulnerable to sea and air attacks, and were highly dependent on land-based intelligence, command and control, and air cover for operations. In comparison, the PLAN submarine force was more capable of operating in areas farther away from home waters. This is because these submarines were larger and more sustainable,¹⁷ and they were more concealed. But they were poor in communications and as a result incapable of operating in groups. They were also noisy and had to resurface regularly to recharge batteries. Because of these shortcomings, the submarines were also quite vulnerable and largely confined to shallow coastal waters.

Since the early 1970s, however, a number of China’s first-generation *Luda*-class (Type 051) guided-missile destroyers (DDG) and *Jianghu*-class (Type 053) guided-missile frigates (FFG) were built and commissioned by the PLAN. China had also begun to deploy its small contingent of first-generation *Han*-class (Type 091) nuclear-powered attack submarines (SSN). Because they were larger, had better endurance, and therefore could operate farther away from home waters, these surface and underwater combatants changed the composition of the PLAN to some degree.¹⁸ But the long range and high speed of the surface combatants were hampered by the lack of effective air-defense and antisubmarine warfare (ASW) capabilities. Neither did they have a combat direction system (CDS) to integrate the on-board sensors with the weapons

systems so that they could react quickly to incoming attacks. A few of these ships were later modified to incorporate surface-to-air missiles (SAM), ASW helicopters, better surveillance and fire-control radars, electronic warfare (EW) capabilities, CDSs, and more powerful antiship cruise missiles (ASCMs). But the newly installed HQ-7 SAM system has a maximum range of only 8–12 kms and therefore is incapable of dealing with long-range air strikes, nor can it handle effectively attacks by sea-skimming ASCMs. Because it is a point-defense system, it cannot provide air defense for other ships. The nuclear submarines suffered from deficiencies such as radiation leakage, reliability problems, and inability to launch missiles while submerged. These shortcomings hampered their ability to operate effectively in far and deep oceans.

What Drove the Change in Capabilities in the 1970s?

In spite of the just-mentioned inadequacies, changes in capability such as acquisition of DDGs and SSNs in the 1970s represent significant improvements in China's naval capabilities and deserve an explanation. It is commonly assumed that change in military strategy and doctrine would drive change in military capabilities.¹⁹ But such an assumption may be inadequate to account for the change in PLAN capabilities in the 1970s. No major change in China's naval strategy had taken place in the 1970s, while DDGs and SSNs had been acquired. These platforms may not have been optimized for coastal defense, mainly because they were too large and their ranges were too long. The motivations for having these platforms actually have less to do with naval strategy per se. The immediate reason for deploying the DDGs, for instance, was to provide escort, salvage, search and rescue, and supply for ships at China's long-range rocket testing sites in the Pacific. These ships were there because they were involved in missions such as the retrieval of instrument packages from long-range ballistic missiles (LRBMs) and submarine-launched ballistic missiles (SLBMs), and measurement, tracking, telemetering and control, and recovery of satellites.²⁰

The purpose of building nuclear submarines, on the other hand, was to overcome the two technological "bottlenecks" for constructing nuclear-powered ballistic missile submarines (SSBNs): the propulsion technology and the technology to launch missiles from a submarine while submerged.²¹ Also, because of the economic hardship caused by the disastrous "Great Leap Forward" and withdrawal of Soviet aid, China had to terminate its nuclear submarine program in 1962. The program was revived in 1965 partly because Mao insisted that China "needs to build its own nuclear submarines even if it takes 10,000 years." To the extent that China's nuclear submarines had not helped very much in overcoming the technological "bottlenecks" because the single *Xia*-class (Type 092) SSBN remained mostly inoperational, building nuclear

submarines may be understood as Mao's project to construct the Chinese national identity. Indeed, in 1989, after China's successful test of the JL-1 SLBM, Liu Huaqing, then vice chair of the Central Military Commission (CMC), stated, "As Comrade Deng Xiaoping has said, if we did not have atomic bombs, [strategic] missiles, [and] satellites, then we would not [enjoy] our present international status."²²

Near-Seas Active Defense

Beginning in the late 1970s, however, the near-coast defense strategy was gradually abandoned and a new naval strategy of near-seas active defense was adopted.

Change in Naval Strategy

As an official strategy, the new concept of near-seas active defense was first proposed by Deng Xiaoping when he met with those who attended an expanded conference of the PLAN's Party Committee Standing Committee in July 1979.²³ It was further fleshed out by Liu Huaqing in the following years, couched in the notion of "defend actively, operate in the near seas" (*jiji fangyu, jinhai zuozhan*, 积极防御, 近海作战).²⁴ The concept was extensively socialized among the PLAN leadership as well as the PLA's central institutions, which contributed to a general consensus reached implicitly by 1987 to treat the concept as China's new naval strategy.²⁵

In comparison to the near-coast defense strategy, the near-seas active defense strategy covers much larger sea areas and requires much more substantial naval capabilities. In such a strategy, for instance, the PLAN is regarded as a "strategic service," which means that it would operate more independently and have its own geographical bounds of operations, a clear departure from the near-coast defense which regards the PLAN as a supportive service primarily for assisting land operations. For operational bounds and space, near-seas active defense is defined as covering 1) the first island chain, which stretches from the Kurile islands through the islands of Japan, Ryukyu Archipelago, Taiwan, the Philippines to Borneo Island (see figure 5-1); 2) the Yellow Sea, East China Sea, and South China Sea, or the three near seas within the inner rims (*neiyuan*, 内沿) of the first island chain, and 3) sea areas adjacent to the outer rims (*waiyan*, 外沿) of this island chain, and those of the north Pacific.²⁶ "The scope to be defended in China's sea defense strategy is 'near seas' but not 'near coast.'" On the other hand, this concept "does not cover the south Pacific and the Indian Ocean."²⁷ Still, the geographical space defined as "near seas" is larger than the traditional understanding of the concept as covering the extension of 200 nautical miles seaward from China's coastline.

Figure 5-1. China's "Near Seas" and "Far Seas"



Source: Based on U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2010*.

Near-seas active defense aims to reunify Taiwan with the mainland, restore lost and disputed maritime territories, protect China's maritime resources, secure major SLOCs in times of war, deter and defend against foreign aggression from the sea, and achieve strategic nuclear deterrence. In operational terms, near-seas active defense requires the PLAN to acquire the capabilities for capturing and maintaining sea control in the primary operational direction of the near seas within the required time; for establishing effective control of major SLOCs in the near seas within the necessary time; for operating effectively in the near seas; and for nuclear retaliation.²⁸

After the 1996 Taiwan Strait crisis, however, the PLAN planners had largely focused their analytical attention on the issue of how to establish local and temporary sea-control for sea-crossing and amphibious-landing operations. To the PLAN strategists, the navy has several relative advantages in such operations. Because the PLAN is the offensive side, for instance, it has the initiative to launch surprise and concentrated attacks. It can also choose and control the direction, space, and pace of operations. Moreover, because the opponent has limited depth of defense, targets are relatively concentrated and therefore it is easier to inflict serious losses. Finally, the PLAN strategists believe that the PLA has relative superiority in campaign and tactical missiles and absolute superiority in offensive air and submarine capabilities. The specific objectives for the PLAN operations include 1) "destroying props," or bases and logistics facilities that can sustain the opponent's counter-sea-control operations; 2) "crushing outposts" or hedges that can enable the opponent to strike back; 3) "destroying main forces," or the opponent's main naval capabilities for counterattack; and 4) "controlling sea areas," or maintaining the security of captured sea lanes for sea-crossing operations.²⁹

To accomplish these objectives, several warfighting methods are specified. One is "blockade and isolation," which involves the employment of water mines, submarines, and air capabilities to establish layered blockade of the opponent's naval bases and harbors, sea lanes, and water areas. The purpose is to prevent the opponent's ships from exiting bases and harbors in order to enhance the strike effect. The other is "joint strike," which refers to the use of conventional missile, air, naval, and special operations capabilities to strike the opponent's reconnaissance and early warning systems, command and control, naval and air bases, and logistics infrastructure, for the purpose of crippling the opponent's capabilities to counter the PLAN's sea-control operations. The third method is "suppression of outlying islands," which involves the use of coastal firepower, ground-attack aircraft, and light surface combatants to strike the defense systems of these islands. This serves the purpose of suppressing and reducing their role as the forward platforms for countering

sea-control and amphibious-landing operations. The fourth method is "search and annihilation," which involves the use of submarines, major surface combatants, and sea-attack aircraft to search and destroy the opponent's major naval combatants outside the blocked areas, for the purpose of capturing and maintaining sea control. Such a method may involve flanking movements, deception, and inducement and compulsion to lure the opponent's ships into the designated sea areas, thus creating favorable fighting opportunities. The final method is "comprehensive barrier removal," which refers to employing various means to remove the threat of water mines to ensure the security and freedom of sea-crossing and amphibious-landing operations.³⁰

Two more operational scenarios related to a Taiwan campaign have also been intensively analyzed: a naval blockade of the island, and fighting aircraft carrier battle groups. For a naval blockade, analytical attention has been focused on harmonizing the relationships between military objectives and political objectives, between naval operations and operations of the other services, between the offensive to impose a blockade and the defense against the opponent's counter-blockade operations, between a protracted campaign of attrition and "quick battle and quick resolution," and between abiding by international law and employing the law for blockade goals.³¹ Moreover, methods of blockade such as employing mines in early operations and conducting air-sea operations to fight the opponent's air-sea counterblockade operations during the blockade are intensively explored.³² For fighting aircraft carrier battle groups, various fighting methods have been analyzed, including submarine warfare, electronic warfare, mine warfare, air operations, and air-submarine operations.³³

The PLAN's strategy of near-seas active defense appeared to be stuck in planning for a Taiwan campaign during the second half of the 1990s. In such a scenario, the PLAN has an offensive role to play, i.e., to capture and maintain local and temporary sea control for sea-crossing and amphibious-landing operations, or to impose a naval blockade. It also gains independent operational time and space, i.e., it dominates the sea-control operations phase of the overall campaign. On the other hand, while the Taiwan issue helps the PLAN planners to think more about the independent and offensive role of the navy and required capabilities, it also constrains and confines the PLAN to the littoral waters around the island. As a result, the hands of the PLAN are tied when it comes to conducting operations in blue-water seas beyond the 200 nms from China's coast, which was envisioned by Liu Huaqing in his original conception of the new naval strategy. Consequently, naval operations were still highly dependent on land for intelligence, surveillance, and reconnaissance (ISR) and missile and air firepower support. No major surface combatants

capable of advanced ISR and command and control, area air-defense, and high sustainability were added to the PLAN fleets during the 1990s. Finally, no systematic thinking had been done on how to organize naval battle groups that can operate independently and effectively in the seas farther away from the home waters.

Change in Naval Capabilities

Associated with the new naval strategy of near-seas active defense, the PLAN had commissioned its second-generation *Luhu*-class (Type 052) and *Luhai*-class (Type 051B) DDGs since the mid-1990s. Second-generation *Jiangwei*-class (Types 055 and 057) FFGs had also begun to enter into service since the early 1990s. Moreover, since the early 1980s, the PLAN had begun to deploy a handful of *Ming*-class (Type 035) SSs, an improved variant of the *Romeo*. China's single *Xia*-class SSBN, the sea component of China's nuclear deterrence force, also became operational in the early 1980s.³⁴ While these two types of platforms had less to do with introduction of the new naval strategy, they have nevertheless contributed to the PLAN operational capabilities in the near seas.

The two *Luhu* DDGs and one *Luhai* DDG, however, are much larger than the old *Luda* DDGs, just as the *Jiangwei* FFGs are larger than the old *Jianghu* FFGs.³⁵ This means they have better endurance and can operate in sea areas farther away from home waters. They are also equipped with improved CDSs. The CDS of the *Luhu*, for instance, is said to be connected to the off-board sensors through a data-link, making it possible to track several hundred targets simultaneously and designate targets to on-board weapons systems. These ships are also equipped with ASW helicopters and some are armed with ASW missiles. Their air-defense systems, however, are severely inadequate. Their SAM systems, for instance, have ranges between 10 and 14 kilometers, making them vulnerable to multidirectional attacks from high-speed, low-altitude aircraft and sea-skimming missiles. What is ironic is that the *Luhu* has a long-range air-search radar that can detect targets 150 kilometers away, but its SAMs cannot engage these targets because their range is insufficient. Also, the lack of stealth design for most of these ships means that they are easy to locate and attack.

In comparison to the old *Romeo*, the *Ming* SS has better speed, maneuverability, sea-keeping, and underwater endurance. But the design of these boats is too old and they seem to have serious safety problems.³⁶ Their noise level can be relatively high and therefore they are relatively easy to detect and attack. The single *Xia* is reported to have limited capabilities and remains mostly inoperational, and test firings of its missiles were not satisfactory because of fire control problems. Because of these deficiencies and

vulnerabilities, these surface and underwater combatants are extremely difficult to operate effectively in either near or far seas.

Since the late 1990s, however, the PLAN has embarked on a more serious path to enhance its capabilities compared to previous efforts, and this new round of modernization has apparently provided important remedies to the major deficiencies in China's naval capabilities. The PLAN, for instance, has acquired four *Sovremenny*-class (Type 956E and Type 956EM) DDGs from Russia. By 2008, the PLAN had also commissioned two *Luyang* I-class (Type 052B) and two *Luyang* II-class (Type 052C) DDGs. The construction of two *Luzhou*-class (Type 051C) DDGs was also completed. Moreover, two *Jiangkai*-class (Type 054) FFGs were commissioned, and four of a new variant of *Jiangkai* (Type 054A) were built. Furthermore, the PLAN has acquired eight *Kilo*-class (Project 636) SSs from Russia, adding to the four *Kilos* of earlier versions acquired in the mid-1990s. The PLAN has also deployed at least 10 indigenously built, modified *Song*-class (Type 039G) SSs. The construction of one *Yuan*-class (Type 039A) SS was also completed, and as of early 2008, three more had been built. Finally, two *Shang*-class (Type 093) SSNs and a pair of *Jin*-class (Type 094) SSBNs have been launched, with additional units to follow.

Acquisition of these surface and underwater platforms has filled major capability gaps in ISR, strike range and lethality, and self-protection. The surface combatants, for instance, are comparatively larger, have better endurance, and therefore can sustain operations in sea areas farther away from home waters.³⁷ These ships also have powerful antiship capabilities. The *Sovremenny* DDGs carry supersonic ASCMs with ranges of 160 kms (Type 956E) and 240 kms (Type 956EM), and *Luyangs* and *Luzhous* carry subsonic ASCMs with ranges of 150 kms (*Luyang* I and *Luzhou*) and 280 kms (*Luyang* II). These ships also have improved ASW capabilities because they carry improved sonar and ASW helicopters. Moreover, most of these ships have incorporated stealthy design to make them more difficult to detect and attack. They also have more advanced CDSs that integrate the on- and off-board sensors, command and control, and weapons systems.

But more importantly, they now possess area air-defense capabilities against air and missile attacks of different ranges and altitudes. The SAMs on *Sovremennys* have ranges between 25 kms (Type 956E) and 45 kms (Type 956EM). The *Luyang* II DDG has a U.S. Aegis-type missile-guidance system, where an automatic detect-and-track, multidimensional phased-array radar (PAR) system embedded in the ship's forward superstructure is integrated with eight 6-cell vertical launching systems (VLSs), or 48 VLS-based SAMs with a range of 90 kms. The *Luzhou* DDG is armed with an air-defense system that integrates a PAR with 48 VLS-based SAMs with a range of 120 kms. The

Jiangkai Type 054A variant has 32 VLS-based SAMs with a range of 80 kms. Finally, these ships are equipped with close-in weapons systems (CIWS). As the last line of defense, CIWS can automatically search, detect, track, and engage the enemy's high-speed, low-level aircraft and sea-skimming missiles.

Similarly, the acquisition of the *Kilos* has enhanced the PLAN's underwater capabilities to operate effectively in the littoral waters and sea lanes of the near seas. These platforms are substantial enough to carry a variety of weapons systems and have good endurance.³⁸ Some carry SAMs and have digitized CDSs to integrate sensors and weapons systems. More importantly, *Kilos* have very quiet propulsion and are covered with sound-absorbing tiles, and as a result are difficult to locate and attack. Those of the newer Project 636 model are fitted with ASCMs with a range of 300 kms, making them a potent force to carry out sea-denial missions in the near and middle seas. Compared to the *Ming*, the *Song* 039G variant has a smoother hydrodynamic design and quieter propulsion. Anechoic tiles have also been applied to reduce the acoustic signature. These boats are also armed with ASCMs with a range of 40 kms, and these missiles can be launched while submerged.³⁹ The *Yuan*, on the other hand, is estimated to be comparable to the newer Project 636 variant *Kilo* in size, sensors, command and control, weapons systems, and performance.

Finally, the deployment of the *Shang*- and *Jin*-class submarines would clearly enhance PLAN capabilities in the far seas and for nuclear deterrence. The *Shang*, for instance, is sufficiently large to sustain operations in the far and deep oceans, and to carry a variety of weapons systems, including ASW missiles, ASCMs, and land-attack cruise missiles (LACM).⁴⁰ It has an efficient hydrodynamic design and quiet propulsion, and its acoustic signature is further reduced by the application of sound-damping tiles. Compared to the single *Xia*, the *Jin* has better sensors, more reliable propulsion, and more application of quieting techniques.⁴¹ More importantly, the *Jin* is armed with 12 strategic ballistic missiles with a range of over 7,200 kms, which are alleged to be multiple independently targetable reentry vehicle (MIRV)-capable.

Driving Factors for Change in Naval Strategy

What can account for the change from the near-coast defense strategy to the near-seas active defense strategy? It is clear that a major driving factor for this change was Liu Huaqing himself. Liu, as PLAN commander from 1982 to 1988, was central in explicating and promoting near-seas active defense to replace the old concept of near-coast defense. But what has influenced the thinking of Liu so that he was able to develop the concept? Some suggest that Sergei Gorshkov, the Soviet admiral who steered the Soviet navy from a coastal defense force to a blue-water navy of global reach, had a strong influence on

Liu, because Liu studied under him at the Voroshilov Naval Academy in St. Petersburg from 1954 to 1958.⁴² In his memoirs, however, Liu makes no mention of taking a course with Gorshkov, even though he mentions that Gorshkov graduated from that academy and that he did study naval strategic employment in the third year as a student. Regarding his Soviet experience, Liu complains several times about the difficulties stemming from the almost total lack of training in Russian and mathematics.⁴³

Moreover, instead of Gorshkov's writings, Liu highlights Alfred Mahan's *The Influence of Sea Power upon History* in his memoirs. For instance, he particularly appreciates Mahan's argument that oceans are central to growing the wealth and power of a nation, because by establishing control of SLOCs, a nation can develop commercial shipping and trade in times of peace, and accomplish military objectives in times of war.⁴⁴ While some Western analysts compare Liu to China's Gorshkov, Liu writes that other Western analysts actually consider him China's Mahan, a comparison he humbly dismisses.⁴⁵

Some argue that Liu's idea of employing island chains as the defensive and offensive perimeters is influenced by Gorshkov's notion of establishing layers of defense that become increasingly difficult for the invading force to break the closer it approaches the coast. But a more careful reading of the Chinese literature shows that such a strategy may be influenced by the PLA's own warfighting experience instead. PLA strategists, for instance, usually divide a battlefield into two realms: a near and narrow realm where a relatively clear front would develop to define the engagement of the two sides, which is known as the interior line; and a far and vast realm where the PLA elements can maneuver to and operate in. Because this second realm is outside but close to the exterior flanks and rear of the enemy's deployment, such maneuverings are also known as exterior-line operations. These operations usually aim to regain battlefield initiative or create momentum in order to shift enemy forces and generate vulnerable targets, thus creating more favorable fighting opportunities.⁴⁶

In the minds of the PLAN planners, operations within and around the first island chain constitute the interior-line defense and offense, while the space beyond this chain is the far and vast realm for exterior-line operations. This explains why Liu writes that as China's sea power grows, the PLAN would "employ the guiding thought that if the enemy advances, we advance as well, i.e., when the enemy launches attacks on our coastal region, we launch attacks on the enemy's rear."⁴⁷ Such a strategy may be different from Gorshkov's in that while Liu places emphasis on maneuver-based offense to deal with the enemy's offense, the latter stresses reinforced and expanded defense against the enemy's offense.

Moreover, the preponderant view of the civilian leadership must also have had a major impact on Liu's thinking about naval strategy. Liu, for instance, writes that he was influenced by a State Council research report which argued that China needs a "strategic navy" to restore China's historical position as a maritime power and develop the "maritime consciousness" among its people.⁴⁸ Also, as shown earlier, Liu promoted a new naval strategy only after Deng had proposed it. It is possible that Liu's advocacy of the new naval strategy since 1983 contributed to Deng's 1985 decision that requires the PLA to make the "strategic transition" from preparing for "early, total and nuclear war" against a possible Soviet invasion to peacetime army-building with an eye toward preparing for "local, limited war." This is because Liu had a close relationship with Deng developed while serving under him during the war years, and the new naval strategy deals mainly with local, limited conflicts in China's maritime direction and, as a result, the PLAN would benefit more from the "strategic transition."⁴⁹ But it was not until after Deng's 1985 decision, which also required all PLA services to formulate long-term development strategy, that Liu formally introduced the new strategy at a PLAN operational planning meeting.⁵⁰ These show that Liu was cautious enough not to impose his idea on the civilian leadership.

Furthermore, the 1985 "strategic transition" was based on the assumption of a decline in the Soviet threat. But there were still lingering doubts among China's military planners on whether such an assumption was correct.⁵¹ By 1987, however, it became clearer that the threat might have indeed declined because of Gorbachev's new thinking on foreign policy. Such a development may have influenced Liu's decision to officially endorse the new naval strategy that year in a report that was forwarded to the CMC and the General Staff Department (GSD). The new naval strategy would have looked much less credible and persuasive had the Soviet threat continued to look real and imminent, mainly because such a threat would have made it virtually impossible for the PLAN to move away from the near-coast defense.

Finally, by the mid-1980s, the PLAN had made some progress in its surface and underwater operational capabilities. Its fleet of *Luda*-class DDGs had become fully operational, as did the *Han*-class SSNs. The construction of the second-generation multi-role DDGs such as the *Luhus* had also been planned by 1984. Being much larger than their predecessors, these ships could operate beyond China's coastal waters. These developments may have enhanced Liu's confidence in endorsing the new naval strategy.

While Liu may have been instrumental in driving the change in China's naval strategy, there were major constraints that also limited his ability to translate change in strategy into change in capabilities. Even among the PLAN leadership, for instance, some argued that the PLAN did not have to have a

separate strategy, but rather should implement the overall military strategy formulated by the CMC.⁵² Such an argument implies that the PLAN should continue to function as a service supporting land operations. Such thinking may have had some level of credibility mainly because many of the more serious threats to China at the time were land-based. The PLA, for instance, had been waging a protracted war with Vietnam along their common border for some years, and there was no sign that it would end soon. Even though the Soviet threat had declined, the Sino-Soviet dispute over border boundaries had not been fundamentally resolved, nor had the border dispute with India. All these made it difficult to argue that attention and resources should shift to maritime issues and the emphasis of military modernization should be reoriented toward the navy.

Furthermore, Deng's policy of economic reform and opening up had been implemented for only a few years. Such a policy had not yet triggered the rapid economic growth that would generate substantial revenue to sustain more spending on the military. The 1985 "strategic transition" actually led to a drastic decrease in military spending, because Deng wanted the funds to be spent on economic development. As a result, the PLA had to go into business in order to generate funds to supplement its expenditures. This made it difficult to argue for expanding the navy, which would involve the construction of capital-intensive and technology-intensive operational platforms. Also, Chinese technologies crucial to naval development in areas such as shipbuilding, propulsion, and information were quite backward at the time. These technologies needed to be developed to a level close to the world standards before they could be utilized for constructing naval operational platforms and software. Otherwise, investment would have been wasted by producing an expanded navy with obsolete technologies, which might be incapable of operating effectively in the near seas.

Moreover, some maritime issues such as Taiwan were not ranked high on the agenda of the PLA planners at the time, mainly because "pro-independence" forces in Taiwan were not as pronounced, and the cost of building up a force to conquer Taiwan would be too high. The Spratlys dispute was a more urgent issue in the eyes of the PLA planners. But the archipelago is too distant, too shallow and small, and too exposed, and therefore easier to capture than to defend. It was unclear at the time whether the cost of building an aircraft carrier to defend the Spratlys was worth the benefit of keeping these islets. Also, the Chinese economy had just begun to shift from agriculture-based self-sufficiency to export-oriented manufacturing. Its dependence on overseas markets and energy supply was still low. This means that China at the time had not yet developed and felt the vulnerability associated with the SLOCs on which the shipment of traded goods and imported oil depends. These reasons should have reduced the persuasiveness of Liu's argument for a naval expansion.

These constraints may explain why Liu was not able to turn his planned aircraft carrier program into a reality.⁵³ In terms of major naval combatants, all he could accomplish during his tenure as the PLAN commander and the CMC vice chair between 1982 and 1997 was the construction and deployment of two *Luhus*. What is ironic is that by building these two ships, Liu became politically vulnerable. Because these ships incorporated more than 40 foreign technologies, for instance, some considered them as representing “allied forces of the eight foreign countries,”⁵⁴ and examples of “national humiliation.” As a result, Liu had to defend the policy of integrating foreign technologies by arguing that such a policy can save cost and time and expose Chinese engineers to the more advanced technologies so that they could learn and adapt, and that the most advanced countries such as the United States also incorporate foreign technologies while building military hardware.⁵⁵

Finally, if one argues that Liu’s personal influence is decisive in bringing about China’s naval modernization, then after his retirement in 1997, we should have seen some level of decline of Chinese interest in the navy, or even of naval capabilities. But a more rapid naval buildup in China began after 2000, a few years after Liu’s retirement from the PLA. This shows that there are other factors that are just as important as Liu’s personal influence in driving naval modernization in China. Liu’s contribution was indispensable, not just in promoting a new concept, but more importantly in institutionalizing research on naval technological and doctrinal issues. Under Liu’s auspices, for instance, the Research Center for Evaluating Naval Equipment was launched in 1983, and the Navy Military Art Research Institute was founded in 1985.⁵⁶

The influence of individual leaders is important. But such an influence can also be highly unpredictable and elusive, because leaders come and go. These research institutions, however, remain. Being more stable, they can mobilize resources to do more systematic and sophisticated research, and as a result develop technical and functional expertise in their areas of specialization. The development and control of expertise should enhance their credibility and legitimacy further, and make it easier to mobilize more resources for more persuasive research.

Does Change in Strategy Drive Change in Capabilities?

While it is true the new strategy of near-seas active defense can explain the acquisition of two *Luhus* and one *Luhai* in the 1990s, it is also important to note that deployment of these ships would in itself not turn the PLAN from a coastal defense navy to one capable of near-seas active defense, mainly because their number was too few. Liu wanted a navy capable of near-seas active defense by 2000, but little had happened for more than a decade between the mid-1980s when the new strategy was endorsed, and the projected

time-line for possessing the required capabilities. As discussed earlier, the perceived dominance of land-based threats and the lack of funding and technologies had largely neutralized the role of the new strategy in catalyzing a major change in capabilities.

Acquisition of the *Ming*-class submarines in the 1980s also had less to do with the new strategy. Liu, for instance, was particularly critical of building obsolete submarines based on the Soviet designs of the 1940s and 1950s.⁵⁷ Lack of a better alternative, the scale requirement of the PLAN submarine force to replace *Romeos*, and relatively low cost may have been the motivating factors for the construction and deployment of the *Ming*-class.

Some may argue that the more serious modernization that began in the late 1990s is the best evidence that the new strategy of near-seas active defense had made a difference in capabilities, even though the change lagged behind the timetable by a few years. While this is largely true, some aspects of this change may have been driven by the contingent issue of Taiwan and by the possibility of a U.S. military intervention if a military conflict over Taiwan occurred. The acquisition of the *Sovremenny*-class and the *Kilo*-class, for instance, can be seen as part of a PLAN strategy to deter the intervention of the U.S. aircraft carrier battle groups in a Taiwan conflict. This is because these platforms are armed with powerful antiship capabilities.

But preparation for a military conflict over Taiwan does not contradict the new naval strategy, because it is one type of operations that the PLAN has been prepared for in the near seas. Also, according to China's naval researchers, developing capabilities to operate effectively in the near and far seas was a more solid basis for resolving the issue of Taiwan.⁵⁸ Moreover, in the eyes of PLA analysts, the chances of war over Taiwan have declined over time.⁵⁹ Naval modernization, on the other hand, continues. This shows that the PLAN modernization may be indeed driven by a more systematic and coherent naval strategy.

A coherent naval strategy is necessary but not sufficient to bring about a major change in capabilities. The lack or availability of funding and technologies also determines whether capabilities change. Such a difference may explain why not much had changed in capabilities for more than a decade after the endorsement of the near-seas active defense strategy, but a significant change has occurred since the late 1990s. Because of the rapid growth of the economy, for instance, Chinese defense spending has grown steadily in recent years. In the meantime, the PLA has completed three rounds of downsizing since 1985, leading to the demobilization of about 1.7 million personnel.⁶⁰ As a result, more funding has become available for developing the technology-intensive services such as the navy.

But more importantly, major "bottlenecks" in producing platforms and weapons systems were removed due to availability of key technologies.

Such technologies include more advanced stealth design of hulls; combined diesel or gas (CODOG) propulsion; quieting propulsion, techniques, and materials for submarines; more advanced CDS based on data-link technology; the automatic detect-and-track, multifunctional and multidimensional PAR system; the VLS-based SAM system; and CIWS. The construction and deployment of two *Luyang* Is and two *Luyang* IIs in a relatively short period of time also show that the shipbuilding industry is now capable of modular design and construction, where ships with different functional emphases and on-board systems can be built quickly with standardized modules. Finally, China has made substantial progress in developing space-based surveillance, navigational and guidance, and telecommunications systems and in developing airborne warning and control systems (AWACS). These systems would clearly enhance the operational capabilities of the PLAN platforms by providing assistance in detecting and tracking targets, in navigation and weapons guidance, and in telecommunications.

The availability of these technologies can be attributed to several sources. First, the central government has invested heavily in research and development (R&D) in basic science and technologies in areas such as information, automation, new materials, ocean, and space.⁶¹ Many results of such R&D have been applied to developing naval technologies. Moreover, China's naval planners now believe that development of naval technologies should be based on the notion of "more research, more technological accumulation, but less armament."⁶² This means that more trial and improvisation of new technologies are necessary before they are incorporated into production. Also, production should involve only a small number of platforms so that there would be more trial and improvisation of these platforms. Based on trial and improvisation, a few more modified platforms would be built. This is a key lesson learned from past experience, in which the PLAN paid a high price by mass-producing platforms based on immature or obsolete technologies, or on technologies with no accessory systems.⁶³ This partially explains the lack of major progress for more than a decade after the endorsement of the near-seas active defense strategy. By the late 1990s, however, major technologies had become more mature through trial and improvisation. As a result, they were incorporated into production of major platforms that contributed to the important improvements in capabilities.

Importing complete systems or buying key technologies and systems of technologies from foreign sources have also contributed to developing China's naval technologies. This is because they make it possible for China to reverse-engineer the technologies or for Chinese scientists and engineers to learn and develop new technologies.⁶⁴ Furthermore, development of naval technologies has benefited from civil-military integration (CMI) in China's

shipbuilding industry. Chinese civilian shipyards, for instance, have been modernizing their production technologies through technical cooperation and joint ventures with foreign shipbuilding firms. By being located in civilian shipyards, military shipbuilding programs can benefit from their civilian counterparts in ship design, development, and construction.⁶⁵

Far-Seas Operations

While the official discourse continues to employ "near-seas active defense" as the strategic guide for China's naval modernization, the new concept of "far-seas operations" has also been advanced since the late 1990s.

Change in Naval Strategy

When Liu Huaqing fleshed out the near-seas active defense strategy in the mid-1980s, he stated that the PLAN would operate within and around the first island chain, or in China's "near seas," for a long time to come. But he also suggested that the growth of the economy and strengthening of science and technology would translate into expansion of Chinese naval power in the long run. This in turn would allow the PLAN to extend its operational range from the first island chain to the second island chain, which extends from northern Japan to the Northern Mariana Islands, Guam, and farther southward (see figure 5-1). By the time the PLAN is capable of operating independently and effectively around and beyond the second island chain, it would become truly a regional blue-water navy.⁶⁶

In December 2001, China's third generation leader Jiang Zemin stated that while continuing to implement the near-seas active defense strategy, the PLAN should "in the long run pay attention to enhancing the far-seas defense and operations capabilities [*yuanhai fangwei zuozhan nengli*, 远海防卫作战能力]." After Hu Jintao succeeded Jiang as China's fourth generation leader in 2002, he also stressed the need for the PLAN to "make the gradual transition to far-seas defense, enhancing the far-seas maneuvering operations capabilities [*yuanhai jidong zuozhan nengli*, 远海机动作战能力]."⁶⁷ As a result, the PLAN's think tank set out to flesh out the new concept of "far-seas operations."⁶⁸

In terms of operational scope, because "all the sea areas beyond the 'near seas' are 'middle and far seas' [*zhongyuanhai*, 中远海],"⁶⁹ the sea areas adjacent to the inner and outer rims of the second island chain and the maritime space beyond this chain can be understood as the PLAN's definition of the "far seas." This is clearly a vast area that stretches from the northwest Pacific to the East Indian Ocean. Such a definition also implies that in order for the PLAN to encompass this vast area effectively, it must develop substantial capabilities to project power up to and beyond 1,000 nautical miles from its territorial waters.

In operational terms, analytical attention has begun to shift to specific issues related to middle- and far-seas operations. On tasking formation, for instance, one newly developed concept is the “small battle group,” which means organizing major naval surface and underwater combatants of different functions but of similar maneuvering speed into a battle group. Such a group should be based on complementarity of functions such as ISR, command and control, antiship, air defense, ASW, and electronic warfare. Such a group would have the benefits of synchronized maneuver, easier coordination, and smaller profile and therefore better survivability, particularly if it operates in distant waters with no land-based intelligence and firepower support. Because firepower precision is more important than density in modern naval warfare, such a group can also be quite lethal because it has a sufficient number of ASCMs. Such a group can fulfill versatile naval missions to serve political objectives. Finally, several such groups can be coordinated at the campaign level to deal with the opponent’s large-scale battle group, by posing a threat from multiple directions and making it difficult for the opponent to determine the operational intentions of these groups, and by having superiority in numbers.⁷⁰

Besides tasking formation, far-seas operations also require battlefield preparation and sustainable logistics. New naval sea and air platforms that the PLAN is acquiring, for instance, are generally larger ones that would allow longer-range operations. To accommodate these operations, it is now necessary to construct large-scale and multifunctional in- and on-shore infrastructure capable of command and communications, active defense, stationing and berth, training, technological and technical support, materiel supply, and cultural entertainment. Therefore, “navy cities” (*haijun cheng*) that incorporate networks of central and satellite ports and airfields need to be built. Furthermore, off-shore facilities should shift the emphasis from defense to offense. This means forward bases on islands far away from home waters need to be developed to accommodate facilities for ISR, for navigation and communications, for ocean geological, hydrological, and meteorological observation and forecast, and for naval and air operations, and some of these facilities need to be built in deep oceans or on the ocean floor. Finally, because new naval platforms would consume large amounts of materiel, logistics becomes more important in sustaining naval operations in the far seas. Therefore, at-sea supply-replenishing capabilities need to be enhanced, particularly those that can conduct synchronized parallel and vertical replenishment of large moving platforms. Also, materials such as fuel, munitions, equipment, and technical maintenance can be predeployed in forward locations or floating logistics bases.⁷¹

Driving Factors for Change in Naval Strategy

A major driving factor for the advancement of far-seas operations strategy is clearly the Navy Military Art Research Institute, because researchers from this institute promoted and articulated the concept of far-seas operations. Since doctrinal research is more institutionalized, it becomes more systematic and sophisticated. Also, many of the constraints that limited Liu Huaqing from translating his vision into reality had been removed by the mid-2000s, and these changes provided empirical materials that can be utilized by the naval researchers to rationalize the new concept.

According to Chinese naval researchers, for instance, China has resolved its border disputes with most of its land neighbors by signing treaties to delineate the boundaries, and these countries include Russia, Vietnam, and the Central Asian republics of the former Soviet Union. Most of China's disputes with its maritime neighbors over maritime territories, however, have not been resolved. Neither has reunification of Taiwan with the mainland been accomplished, and possible U.S. intervention may complicate the issue. Therefore, future threats to China's traditional security are projected to come from the sea.⁷²

Moreover, the integration of the Chinese economy with the world's economy means not just opportunities but also vulnerabilities. Foreign trade grows rapidly over the years, and 95 percent of traded goods and materials are shipped by sea.⁷³ China has both one of the world's largest merchant fleets and major shipping lines that connect China to the major ports of the world.⁷⁴ Also, China has become increasingly dependent on imported oil to fuel its economy. As a result, it has been acquiring major overseas oil equities and facilities, and imported oil has mostly been shipped to China through major SLOCs and the associated "chokepoints." The continental shelves, exclusive economic zones, and islands over which China has disputes with its maritime neighbors are thought to have rich deposits of oil and natural gas.⁷⁵ Furthermore, major types of minerals for China's economic and technological development need to be imported, but can be found in the oceans.⁷⁶ Also, the value of China's maritime economy has been growing rapidly over the years.⁷⁷ Moreover, 40 percent of the Chinese people live in the coastal region, which produces 60 percent of China's annual gross domestic product (GDP).⁷⁸ Finally, Chinese overseas investment has been growing, as has the number of Chinese students, visitors, and immigrants going abroad.⁷⁹ Major SLOCs, ships and goods, maritime territories and resources, the coastal region, and Chinese assets and people overseas, however, are either exposed, contested, or controlled by others, and therefore are highly vulnerable.

To reduce threats and vulnerability from the sea, according to naval researchers, the geostrategic disposition of China in its maritime direction is

highly unfavorable. China's coastal front is too wide and its flanks are highly exposed, and as a result, are difficult to defend. China's near seas, which constitute the close forward position and where the PLAN operates, are also vulnerable, because the battlespace in these "three seas" is quite constrained. This is so mainly because these seas are partially blocked by the first island chain, which leaves too few exits to the far and vast west Pacific that can provide the necessary space for the PLAN's maneuvers. The straits and channels constituting these exits are mostly narrow and controlled by others. Also, navies operating in these near seas are quite formidable. They include Russia's Pacific Fleet in the north and the Japanese Navy in the east, and the latter is shifting from a posture of "defensive defense" to that of "offensive defense." Both the Taiwanese Navy and the ASEAN navies, which operate in the southeast and the south, are modernizing. The Indian Navy, driven by a strategy to control the Indian Ocean, is moving eastward into the South China Sea. Finally, the 7th Fleet of the U.S. Navy, which is more powerful than all the others, is forward deployed in the region. These fleets render the PLAN more vulnerable, and limit and reduce the effectiveness of the near-seas active defense strategy for both deterrence and warfighting.⁸⁰

To alleviate vulnerability and enhance effectiveness, according to Chinese naval researchers, the PLAN needs to break out of the interior-line constraints, or those associated with the narrow and near seas within and around the first island chain. Acquiring capabilities to operate in the far seas, or the vast space beyond the first island chain, would allow the PLAN to regain initiative and momentum. While "interior-line operations require near-seas capabilities, exterior-line operations are based on far-seas capabilities. . . . Far-seas capabilities make it possible to carry out offensive operations and ambush and sabotage operations in the far and vast naval battlespace beyond the first island chain, and would have the effect of shock and awe on the enemy." Forward operations and offense are central to naval combat also because oceans have few invulnerable physical objects to base the defense on, and naval platforms are difficult to recover once crippled. An emphasis on offense also helps to optimize naval force structure and is more cost-effective. This is because as strikes are more long-range, precise, and powerful, and therefore more lethal, defense becomes more expensive to maintain. History also shows that a strategy of close and static defense led to the decisive defeat of the Qing Navy in the first Sino-Japanese War of 1894.⁸¹

Moreover, according to the Chinese naval researchers, the Chinese economy has grown rapidly to the extent that it has contributed to a more solid industrial base and infrastructure and more revenue, both of which make it possible to develop the navy based on the new strategy of far-seas operations.

It has also contributed to the rapid development of technologies in shipbuilding, propulsion, information, aviation, and aerospace, which are indispensable to sustain the development of better naval platforms and software.⁸² Finally, a revolution in military affairs (RMA) favors naval development and far-seas operations. Compared to some other services, for instance, the navy is smaller, less bureaucratic, and more technology-based and therefore can accommodate information technology (IT) faster and better. It also has its own sea, air, and land services and therefore can be employed as the experimental service for IT-based integrated joint operations. Naval operations under informatized conditions require the deepening and widening of the operational space to enhance survivability and initiative, and this is consistent with the notion of far-seas operations. The concept of net-centric warfare also originated from the navy for the U.S. military transformation.⁸³

While institutionalization of doctrinal research is crucial to articulating and socializing the new naval strategy, it is important to note that this would not have been possible had the naval researchers not received general guidance and instructions from the higher leadership. Therefore, the higher leadership, particularly the civilian leadership, is a major factor in driving the change. Unlike the time of Liu Huaqing when research institutions were either non-existent or underdeveloped and, as a result, Liu had to personally articulate and socialize the new idea, the institutionalization of research means naval researchers would articulate and socialize the idea, but not the PLAN leadership. This may explain why PLAN Commander Zhang Dingfa was not as vocal as Liu in propagating the new concept.⁸⁴ However, Zhang probably gave general guidance on the doctrinal change. More importantly, however, the articulation and socialization of the new concept by naval researchers can be understood as an attempt to operationalize the general instructions given by the central civilian leadership, and in this case, those given by Jiang Zemin.

With the death of Deng and retirement of Liu Huaqing and Zhang Zhen from the CMC in 1997, Jiang's position as the CMC chair became more secure. As a result, he became more active in military affairs. As mentioned earlier, Jiang was the first civilian leader to endorse the new concept of far-seas operations. But unlike Liu Huaqing, Jiang did not offer any specifics on why and how to develop naval operations capabilities in the far seas. So it was left to the naval researchers to flesh out the details of Jiang's general instructions.

Major Implications

This study shows that China's naval strategy and capabilities have been shifting from near-coast defense, to near-seas active defense, to far-seas operations. This finding has several important implications. First, the current

naval modernization effort clearly intends to transform the PLAN from a coastal defense navy to one capable of near-seas active defense. It also aims to lay the basis for further development of the PLAN into one capable of far-seas operations around the time of 2020.⁸⁵ It is likely that the process is incremental, with several units of new platforms built each time for trial and improvisation. This makes it possible for the new platforms and technologies to be improved, and for the next round of development to incorporate these mature technologies. In this way, the PLAN would limit costs but not become technologically obsolete. Because of such a pattern of development, one should not expect to see a quick and sharp surge in China's naval capabilities.

Second, the new strategy of far-seas operations shows that the PLAN is clearly interested in having regional blue-water capabilities, or those to operate effectively in the far seas. To achieve such capabilities, the PLAN will probably make several necessary preparations in the coming years. First, it may build aircraft carriers in order to have exterior-line operations capabilities. Currently, the newly acquired PLAN ships may provide area air defense, but they do not have the offensive air capabilities to "attack the enemy's rear." But carriers can provide such capabilities. Also, the PLAN may acquire long-range strategic bombers, which can support far-seas naval operations as well as "attack the enemy's rear." Moreover, the current strait garrison-oriented fleets may be reorganized into multifunctional battle groups for operations in spaces of different ranges such as the coastal waters, the near seas, and the far seas.⁸⁶ The PLAN may also attempt to acquire overseas facilities for ISR and logistics support of its far-seas operations.⁸⁷ Finally, the PLAN may enhance its at-sea supply-replenishing capabilities to sustain operations in the far seas.

As this study shows, it took almost two decades for the near-seas active defense strategy to translate into capabilities that are more or less appropriate for accomplishing the objectives of such a strategy. For the new strategy of far-seas operations to translate into appropriate capabilities, however, it may take less time, mainly because the budgetary and technological constraints that the PLAN faces are less formidable. There are other major challenges, however, that the PLAN may need to overcome in order to translate the new strategy of far-seas operations into appropriate capabilities.

First, compared to the near-coast defense and near-seas active defense strategies, where the PLAN had specific issues such as the Soviet threat and Taiwan independence to deal with, the new strategy of far-seas operations seems to lack concrete objectives on which the PLAN can concentrate attention, energy, and resources.⁸⁸ As a result, the new strategy does not sound as persuasive and convincing. Second, acquiring aircraft carriers and overseas bases for power projection seems to contradict China's desire to project

the image to the world that unlike the rise of other great powers, China's rise will be more peaceful. Finally, there seems to be a school of thought in China that argues that rather than striving to be a maritime power, China should be content to remain a land power. This means policy priorities should be given to resolving domestic problems such as official corruption, uneven wealth distribution, environmental pollution, and most recently, ethnic unrest in China's land frontiers such as Tibet and Xinjiang.⁸⁹ These priorities also seem to be more cost-effective if compared to building capital-intensive and technology-intensive naval platforms. Whether the PLAN can negotiate these issues successfully may also determine whether China will develop a genuine blue-water navy.

Notes

¹ The author would like to thank Andrew Erickson, Peter Dutton, Bill Murray, and Jonathan Pollack for their valuable comments on an earlier draft. The author, however, is responsible for all the shortcomings.

² See Alexander Chieh-cheng Huang, "The Chinese Navy's Offshore Active Defense Strategy: Conceptualization and Implications," *Naval War College Review* 47, no. 3 (Summer 1994).

³ Ian Storey and You Ji, "China's Aircraft Carrier Ambitions: Seeking Truth from Rumors," *Naval War College Review* 57, no. 1 (Winter 2004); Andrew Erickson and Andrew Wilson, "China's Aircraft Carrier Dilemma," *Naval War College Review* 59, no. 4 (Autumn 2006).

⁴ Lyle Goldstein and William Murray, "Undersea Dragons: China's Maturing Submarine Force," *International Security* 28, no. 4 (Spring 2004); Eric McVadon, "China's Maturing Navy," *Naval War College Review* 59, no. 2 (Spring 2006); Lyle Goldstein and Andrew Erickson, "China's Future Nuclear Submarine Force: Insights from Chinese Writings," *Naval War College Review* 60, no. 1 (Winter 2007).

⁵ See Bruce Swanson, *Eighth Voyage of the Dragon: A History of China's Quest for Seapower* (Annapolis, MD: Naval Institute Press, 1982); Bernard Cole, *The Great Wall at Sea: China's Navy in the Twenty-First Century* (Annapolis, MD: Naval Institute Press, 2001); Gabriel Collins, Andrew Erickson, Lyle Goldstein, and William Murray, *China's Energy Strategy: The Impact on Beijing's Maritime Policies* (Annapolis, MD: Naval Institute Press, 2008).

⁶ "近岸" can also be translated as "in-shore." "近海" is sometimes translated as "off-shore." But "off-shore" is too vague to reflect the relative distance that the Chinese term intends to express. To the extent the Eurocentric terms of Near East, Middle East, and Far East are translated as 近东, 中东, and 远东, it is appropriate to translate the Sinocentric terms of "近海," "中海," and "远海" as "near seas," "middle seas" and "far seas" to reflect the relative distance from China's shores.

⁷ See Arend Lijphart, "Comparative Politics and the Comparative Method," *American Political Science Review* 65, no. 3 (September 1971).

⁸ A major example is the PLA's sea-crossing and amphibious-landing operations to capture the Yi Jiangshan Islands off the coast of Zhejiang Province in January 1955. See Liang Guanglie et al., eds., *Duhai denglu zuozhan* [Sea-Crossing and Landing Operations] (Beijing: National Defense University Press, 2001), 192–210.

⁹ See Liu Jixian et al., *Haiyang zhanlue huanjing yu duice yanjiu* [Research on the Maritime Strategic Environment and Policy Response] (Beijing: Liberation Army Press, 1997), 355.

¹⁰ *Ibid.*, 355–356. The PLAN's submarine force is primarily responsible for ambush and sabotage missions.

¹¹ Zhang Feng, "Kang denglu zuozhan ying queli jianjue burang diren shanglu de zhidao sixiang" [The Guiding Thought That the Enemy Must Not Be Allowed to Land Should Be Established for the Counter-Amphibious-Landing Operations], *Junshi xueshu* [Military Art Journal], no. 8 (1983), collected in *Military Art Journal*, Editorial Department, ed., *Junshi xueshu lunwenji, xiace* [A Collection of Academic Papers

on *Military Art, Book Two*] (Beijing: Military Science Press, 1984), 463–464; Xiong Shuozhi, “Guanyu daoyu kang denglu zuozhan wenti de tantao” [An Inquiry into the Question of the Islands-based Counter-Amphibious-Landing Operations], *Military Art Journal*, no. 11 (1980), collected in *A Collection of Academic Papers*, 470; Zheng Guozhong, “Jin’an daji di haishang jidong biandui wenti zhi wojian” [My Opinion on the Question of Striking Enemy Maneuvering Formation on the Seas from the Near Coast], *Military Art Journal*, no. 10 (1979), collected in *A Collection of Academic Papers*, 478.

¹² Zhan, “The Guiding Thought,” 467.

¹³ Chen Jingsan, “Kang denglu ruogan zhanshu shouduan de yanjiu” [Research on Several Tactical Means to Counter Amphibious Landing], *Military Art Journal*, no. 12 (1981), collected in *A Collection of Academic Papers*, 442; Rao Shoukun, “Shilun kang denglu zhanyi zhong de luhaikong sanjun xietong” [An Exploratory Comment on Coordinating Ground, Naval and Air Forces in Counter-Amphibious-Landing Campaign], *Military Art Journal*, no. 6 (1983), collected in *A Collection of Academic Papers*, 457–458; Zhang, “The Guiding Thought,” 467–468.

¹⁴ See Liu Huaqing, *Liu Huaqing huiyilu* [Liu Huaqing’s Memoirs] (Beijing: Liberation Army Press, 2004), 482–485.

¹⁵ An exception to this highly vulnerable and defensive posture is the Chinese naval operations over the Paracels in early 1974. See John Garver, “China’s Push to the South China Sea: The Interaction of Bureaucratic and National Interests,” *China Quarterly*, no. 132 (1992).

¹⁶ The PLAN’s self-characterization of its capabilities during this period was “aircraft, submarines, and fast attack crafts” [“fei, qian, kuai,” “飞, 潜, 快”].

¹⁷ The standard displacement of a *Romeo* is 1,710 tons. See Jane’s Information Group, *Jane’s Fighting Ships*, available at <http://jfs.janes.com/docs/jfs/browse_country_results.jsp?&SelPub=jfs&bucket=Country&selected=China>; John Pike (director), *Global Security*, at <<http://www.globalsecurity.org/military/world/china/navy.htm>>; and Huitong, *Chinese Military Aviation*, at <<http://mil.jschina.com.cn/huitong/index.html>>. The analysis of PLAN capabilities in this article is largely based on these three sources.

¹⁸ The full-load displacement of a *Luda* ranges from 3,670 to 3,730 tons (for the improved variant), while that of a *Jianghu* ranges from 1,702 to 1,925 tons (for improved variant). The displacement of a *Han* is estimated to be between 4,500 and 5,500 tons while submerged. *Ibid.*

¹⁹ PLA analysts, for instance, argue that development of PLA capabilities should be guided more by strategic and doctrinal innovation, citing U.S. “Air-land battle” and “Star War” concepts as examples. They also cite the German doctrine of “Blitzkrieg” as central to developing required capabilities quickly, leading to victory against France at the early stage of World War II. See Hu Guangzheng and Xiao Xianshe, *Yingxiangdao ershiyishiji de zhengming* [Contention Affecting the 21st Century] (Beijing: Liberation Army Press, 1986), 202–204. For an English account explaining early German victory in World War II, see Ernest May, *Strange Victory* (Farrar, Straus and Giroux, 2001). I want to thank Lyle Goldstein for bringing my attention to Ernest May’s book.

²⁰ *Liu Huaqing’s Memoirs*, 314.

²¹ *Ibid.*, 316.

²² Both Mao and Liu cited in *ibid.*, 476.

²³ Deng Xiaoping, “Haijun jianshe yao jiang zhenzheng de zhandouli” [Real Combat Effectiveness Should be Stressed for Navy Construction], in *Deng Xiaoping lun guofang he jundui jianshe* [Deng Xiaoping on National Defense and Army Construction] (Beijing: Military Science Press, 1992), 63; Deng cited in Tang Fuquan and Wu Yi, “A Study of China’s Sea Defense Strategy,” *Zhongguo junshi kexue* [China Military Science] no. 5 (2007), 92. As a general concept to guide future naval development, the strategy was advanced as early as 1970 by Zhou Enlai. See Liu Jie, “The Strategic Thought of Zhou Enlai on Navy Construction and Revelations,” *Junshi lishi* [Military History], no. 2 (2008), 22.

²⁴ Liu was the PLAN commander during 1982–1988 and a CMC vice chair during 1988–1997. The new strategy was particularly substantiated in his speech delivered to a military research class of high-ranking naval officers, entitled “Several Questions Regarding Implementing the Strategic Principle of Active Defense by the Navy.” See *Liu Huaqing’s Memoirs*, 434.

²⁵ Liu promoted the idea at several high-level meetings of the PLAN leadership between 1984 and 1986, and by early 1987, he was able to formulate a formal report entitled “On the Question of Clarifying the Naval Strategy,” and forwarded it to the CMC and the General Staff Department (GSD). This was followed by

a GSD Operations Department meeting where representatives from nine PLA central institutions were invited to discuss the report. The participants of the meeting largely endorsed the concept. See *ibid.*, 434–439.

²⁶ *Ibid.*, 432, 434, 436, and 437.

²⁷ *Ibid.*, 437; Tang and Wu, "A Study of China's Sea Defense Strategy," 92–93.

²⁸ *Liu Huaqing's Memoirs*, 437–438.

²⁹ See Yang Yushu, "Shilun lianhe denglu zhanyi zhong duoqu he baochi zhihaiquan wenti" [An Exploratory Comment on the Question of Capturing and Maintaining Sea-Control in Joint Amphibious-Landing Operations], in NDU Scientific Research Department and Campaign Teaching and Research Section, eds., *Gaojisu tiaojianxia zhanyi lilun yanjiu* [Research on Theory of Campaign under High-Technology Conditions] (Beijing: National Defense University Press, 1997), 188.

³⁰ *Ibid.*, 189, 189–190, 190–191; Wang Yongguo, "Haishang fengsuo zuozhan tantao" [An Inquiry into the Question of Sea-Blocking Operations], in *Research on Theory of Campaign*, 197–198; Li Dingwen, "Lun haijun bingli zai lianhe duhai jingong zhanyi zhong de diwei he zuoyong" [On the Status and Role of the Naval Force in Joint Sea-Crossing Offensive Campaign], in *Research on Theory of Campaign*, 201–202, 205.

³¹ Zhao Shengtang, Fan Jinfa, "Haishang fengsuo zuozhan ying chulihao liuge guanxi" [Six Relationships That Should Be Handled Well in Sea-Blockade Operations], in Hu Wenlong et al., eds., *Lianhe fengsuo zuozhan yanjiu* [Research on Joint Blockade Operations] (Beijing: NDU Press, 1999), 34–39. See also Zhao Rongtang, "Haishang fengsuo zhanyi zuozhan zhidaoshang ying bawo de jige wenti" [Several Questions That Should Be Grasped in the Operational Guidance of Sea-Blockade Campaign], in *Research on Joint Blockade Operations*, 30–31; Mou Yuefu, "Tantan fengsuoku he haizhanqu wenti" [A Discussion of the Question Regarding Blockade Zone and Naval Operations Zone], in *Research on Joint Blockade Operations*, 40–45.

³² Zhao Rongtang, "Several Questions," 31–32; Chen Li, Lai Qiaoguo, "qiantan dui di daxing daoyu zhuyao chuhaikou de fengsuo" [A Preliminary Discussion on Blocking the Main Exits of the Enemy's Large Islands to the Sea], in *Research on Joint Blockade Operations*, 46–49; Zhang Baoshan, "Shuilei fengsuo zai haishang fengsuo zuozhan zhong de zuoyong" [The Role of Water Mine-Based Blockade in Sea-Blockade Operations], in *Research on Joint Blockade Operations*, 78.

³³ Ding Yiping, "Da di daxing jianting biandui de zhuyao zhanfa" [Major Methods to Strike the Enemy's Large-Scale Combatants Formation], in *Research on Joint Blockade Operations*, 55–59; Yuan Caijin, "Da di daxing jianting biandui ying zhongshi fahui qianting bingli de zuoyong" [The Role of Submarine Force Should Be Stressed and Given Full Play in Striking the Enemy's Large-Scale Combatants Formation] in *Research on Joint Blockade Operations*, 69–74; Wu Lianqing, "Hangkongbing xietong qianting da di daxing jianting biandui de jige wenti" [Several Questions Regarding Coordinating Aviation Force and Submarine Force to Strike the Enemy's Large-Scale Combatants Formation], in *Research on Joint Blockade Operations*, 60–63.

³⁴ A *Ming*-class submarine weighs 2,100 tons while submerged. The displacement of a *Xia*-class submarine is estimated to be between 6,500 and 8,000 tons. See Jane's Information, *Jane's Fighting Ships*; Pike, *Global Security*; and Huitong, *Chinese Military Aviation*.

³⁵ The full displacement of a *Luhu* is 4,800 tons, while that of the single *Luhai* is 6,600 tons. The displacement of a *Jiangwei* ranges from 2,250 to 3,000 tons (for the upgraded variant). See *ibid.*

³⁶ According to a Chinese official report, one *Ming* was lost in the Bohai Bay in late April or early May of 2003 because of a critical mechanical failure. In late May of 2005, another *Ming* was crippled by a fire on-board in the South China Sea, and had to be towed back to the home port on Hainan Island.

³⁷ The full displacements of a *Sovremenny*, *Luyang I*, *Luyang II*, and *Luzhou* are 7,625 tons, 6,600 tons, 7,000 tons, and 7,000 tons, respectively. The full displacement of a *Jiangkai* is estimated to be between 3,000 and 4,000 tons (for Type 054A). Jane's Information Group, *Jane's Fighting Ships*; Pike, *Global Security*; and Huitong, *Chinese Military Aviation*.

³⁸ The submerged displacement of a *Kilo* is estimated to be 3,076 tons. *Ibid.*

³⁹ The submerged displacement of a *Song* is 2,250 tons. *Ibid.*

⁴⁰ The full displacement of a *Shang* is estimated to be between 6,000 and 8,000 tons. *Ibid.*

⁴¹ The displacement of a *Jin* is estimated to be between 8,000 and 9,000 tons. *Ibid.*

⁴² Ian Story and You Ji, "China's Aircraft Carrier Ambitions: Seeking Truth from Rumors," *Air Power Journal* 1, no. 2 (September-December 2004), 126.

⁴³ *Liu Huaqing's Memoirs*, 265, 266, 268, 269–270, 271.

⁴⁴ *Ibid.*, 432–433.

⁴⁵ *Ibid.*, 439. To determine whether Liu is influenced by Gorshkov or Mahan is important mainly because it may help to understand whether the PLAN would stress bastion defense or power projection in its future development.

⁴⁶ See Nan Li, "The PLA's Evolving Campaign Doctrine and Strategies," in James Mulvenon and Richard Yang, eds., *The People's Liberation Army in the Information Age* (Santa Monica, CA: RAND, 1999), 165.

⁴⁷ *Liu Huaqing's Memoirs*, 437. While serving as a brigade political commissar in the Second Field Army led by Liu Bocheng and Deng Xiaoping, Liu participated in one of the most well-known PLA exterior-line operations in 1947, known as "advance a thousand *li* into Mount Dabie." Such an experience cannot have an insignificant influence on Liu's thinking about China's naval strategy.

⁴⁸ *Ibid.*, 435.

⁴⁹ The 1985 decision led to downsizing of the PLA by a million personnel, or elimination of four military regions and 12 infantry corps. See *ibid.*, 329. It is quite clear that the PLA land forces suffered much more from the downsizing than the PLAN.

⁵⁰ *Ibid.*, 435–436.

⁵¹ See Nan Li, "The PLA's Evolving War-fighting Doctrine, Strategy and Tactics, 1985–1995," in David Shambaugh and Richard H. Yang, eds., *China's Military in Transition* (Oxford: Clarendon Press, 1997), 185.

⁵² *Liu Huaqing's Memoirs*, 434.

⁵³ For Liu's aircraft carrier program, see *ibid.*, 477–481.

⁵⁴ This refers to the foreign forces that entered Beijing in 1900 following the suppression of the Boxer Rebellion. For a discussion of the PLA's difficulties in integrating foreign technologies, including the example of *Luhu*-class DDGs, see Eric McVadon, "Systems Integration in China's People's Liberation Army," in James Mulvenon and Richard Yang, eds., *The People's Liberation Army in the Information Age* (Santa Monica, CA: RAND, 1999), 217–244.

⁵⁵ See *Liu Huaqing's Memoirs*, 665.

⁵⁶ *Ibid.*, 449, 451.

⁵⁷ *Ibid.*, 351.

⁵⁸ See Ye Xinrong and Zuo Liping, "Guanyu haijun you jin hai zouxiang yuanhai de zhanlue sikao" [Strategic Reflections Regarding the March of the Navy from the Near Seas to the Far Seas], *Military Art Journal*, no. 10 (2004), 30.

⁵⁹ PLA analysts, for instance, believe that a combination of military, diplomatic, economic, and legal strategies employed in recent years has had the effect of convincing the leaders and people in Taiwan that the cost of pursuing formal independence is too high and the benefit too low. Some also acknowledge that without Taiwan's declaration of formal independence, the PLA lacks the legitimacy to attack Taiwan because the people in Taiwan are considered Chinese. The election of the anti-independence KMT candidate Ma Ying-jeou as Taiwan's new president in 2008 seems to have reinforced this view.

⁶⁰ The 1985–1987 round of downsizing led to demobilization of a million personnel. The 1997–2000 round removed 500,000, while the 2002–2005 round demobilized another 200,000. These numbers represent the positions that have been eliminated. They do not include those that are regularly demobilized every year, whose positions are replenished by new recruits.

⁶¹ See "863 *jihua gaikuang*" [A General Introduction of Plan 863], available at <<http://www.chinat-ech.com.cn/techachieve/intro/plan863.htm>>.

⁶² Yang Chunchang, *Deng Xiaoping xinshiqi jianjun sixiang yanjiu* [Study of Deng Xiaoping's Thought on Army Construction in the New Period] (Beijing: Liberation Army Press, 1989), 277.

⁶³ See *Liu Huaqing's Memoirs*, 353. Liu argues that the United States and the Soviet Union had also adopted an incremental approach in their naval development.

⁶⁴ See *ibid.*, 678. This is especially true with the air defense system, the propulsion system, the CDS system, and the CIWS, which are all based on either a Russian or Dutch system. The author wants to thank Bill Murray for fleshing out this point.

⁶⁵ See Richard Bitzinger, "Dual-Use Technologies, Civil-Military Integration, and China's Defense Industry," in Nan Li, ed., *Chinese Civil-Military Relations* (London and New York: Routledge, 2006), 183–184.

⁶⁶ See Liu Huaqing's *Memoirs*, 437. The PLAN planners divide the world's navies into three categories: the far-oceans offensive type (*yuanyang jingong xing*, or global blue-water type), regional defensive and offensive type (*quyu fangyu jingong xing*, or regional blue-water type), and coastal defensive type (*yan'an fangyu xing*). The U.S. Navy belongs to the first category, while the British, French, German, Italian, Japanese, and Russian Navies belong to the second category. The Indian Navy is alleged to be "sub-regional" ("*ci quyu*"), or somewhere between the second and the third categories, while other navies belong to the third category. The medium-term (around 2020) goal of the PLAN is to become the second type. This type of navy can operate effectively for control of the seas within its own region. In the meantime, it also possesses the capabilities to project power beyond its own region and compete effectively for sea-control and impose sea-denial in the seas of the other oceans, as did the British Navy during the Falklands War. The concept of "far seas" is in line with the second type, while the concept of "far oceans" (*yuanyang*, 远洋) is compatible with the first type. China's medium-term goal is to develop a far-seas but not a far-oceans navy.

⁶⁷ Jiang and Hu cited in Tang and Wu, "A Study of China's Sea Defense Strategy," 93; Jiang cited in Wang Zhigang, "Haijun shi hanwei guojia liyi tuozhan de zhongyao lilian" [Navy Is an Important Force in Defending the Extension and Development of National Interests], *Guofang daxue xuebao* (*Journal of NDU*), no. 10 (2005), 24, and in Chen Xuesong, Du Kai, "Zhongguo de haiquan yu haijun fazhan jianshe" [China's Sea Power Consciousness and Navy Development and Construction], *Military History*, 4 (2008), 72.

⁶⁸ See particularly Ye Xinrong and Zuo Liping, "Strategic Reflections Regarding the March of the Navy from the Near Seas to the Far Seas," *Military Art Journal*, no. 10 (2004), 30–33. Both authors are from the Navy Military Art Research Institute.

⁶⁹ Liu Huaqing's *Memoirs*, 434.

⁷⁰ Su Jinrong, "Haijun zhanyi ying guanche 'xiaojiqun jidong zuozhan' de zhidao sixiang" [Navy Campaign Should Implement the Guiding Thought of Small Group Maneuvering Operations], *Journal of NDU*, no. 3 (2004), 30–32. See also Wang Yemin, "Haishang zhandouqun daji di jidong bianhui de zhuyao yangshi" [Major Ways for Sea Battle Group to Strike the Enemy's Maneuvering Formation], *Military Art Journal*, no. 1 (2004), 62–64. Such a multifunctional battle group clearly can serve as an escort flotilla to secure SLOCs far away from the home waters. It can also serve as the organizational basis for incorporating much larger platforms such as aircraft carriers in the future.

⁷¹ See Jiang Kaihui, "Youhua Haizhan huanjing, jiaqiang zhanchang jianshe" [Optimize Sea Operations Environment, Enhance Battlefield Construction], *Military Art Journal*, no. 5 (2005), 51–52; Zhou Hanrong, "Xinxihua tiaojianxia haishang zuozhan houqin baozhang yanjiu" [Research on Logistics Services for Sea Operations under Informatized Conditions], *Military Art Journal*, no. 1 (2005), 62–64; Sun Baolong, "Yitihua lianqin baozhang tizhi xia haishang zuozhan houqin baozhang mianlin de wenti yu duice" [Problems Faced by the Logistics Services for Sea Operations under the System of Integrated Joint Logistics Services and Policy Response], *Journal of NDU*, no. 3 (2005), 15–17.

⁷² See Cheng Xiaochun, Hu Limin, "Jiawu haizhan dui xinshiqi zhenxin haijun de qishi" [Revelations of the Sino-Japanese War on Rejuvenating the Navy in the New Period], *Military Art Journal*, no. 10 (2004), 6; Zhang Wei, Zheng Hong, "Lun wo haijun fazhan de zhanlue xuqiu yu jiyu" [On the Strategic Necessities and Opportunities for Developing Our Navy], *Military Art Journal*, no. 10 (2004), 34. All four authors are from the Navy Military Art Research Institute.

⁷³ China's value of foreign trade in 1978 was \$20.6 billion. It grew to \$620.79 billion by 2002 and reached \$851.2 billion by 2003. By 2005 it grew to \$1.42 trillion, up 23.2 percent from a year earlier and nearly tripled the figure in 2001. For the first three figures and shipping by sea, see Ye and Zuo, "Strategic Reflections," 31; Zhang and Zheng, "On the Strategic Necessities," 34; Liang Fang, "Haiyang zai guojia anquan zhong de diwei zuoyong ji duice" [Status and Role of Oceans in National Security and Policy Response], *Military Art Journal*, no. 1 (2005), 66. For the rest, see Chris Buckley, "China Urged to Step up to WTO Plate," *Reuters*, August 29, 2006. See also Wang, "Navy Is an Important Force," 23.

⁷⁴ China's merchant fleet is allegedly the fifth largest in the world, and China has more than 30 shipping lines reaching more than 600 ports in 150 countries and regions. It is predicted that Chinese shipping will handle businesses that will be worth \$720 billion by 2010 and \$1.08 trillion by 2020. Ye and Zuo, "Strategic Reflections," 31; Liang, "Status and Role," 66.

⁷⁵ China imported 80 million tons of oil in 2000. The figure reached 91.12 million tons by 2003, the year China overtook Japan as the second largest consumer of oil. China's dependence on imported oil grew from 36.1 percent in 2003 to more than 40 percent by 2004, and is predicted to reach 80 percent by 2020.

Also, four-fifths of China's imported oil has to be shipped to China through the major SLOCs in the Indian Ocean and the South China Sea, and "chokepoints" such as the Strait of Malacca. See Ye and Zuo, "Strategic Reflections," 31; Zhang and Zheng, "Strategic Necessities," 34; Liang, "Status and Role," 66; Hou Zhiping, "Dui weihu woguo shiyou anquan de zhanlue sikao [Strategic Reflections on Safeguarding the Oil Security of Our Country], *Journal of NDU*, no. 8 (2005), 86.

⁷⁶ Half of the 45 types of strategic minerals, including oil, natural gas, zinc, manganese, molybdenum, and silver must either be imported or mined from the oceans. See Ye and Zuo, "Strategic Reflections," 31; Liang, "Status and Role," 66.

⁷⁷ In 1978, China's maritime economy was worth \$8 billion. In 2003, the figure grew to about \$129 billion. Zhang and Zheng, "Strategic Necessities," 34; Liang, "Status and Role," 66.

⁷⁸ Zhang and Zheng, "Strategic Necessities," 24; Liang, "Status and Role," 65.

⁷⁹ By 2003, the total value of the Chinese overseas investment was \$13.2 billion. Excluding those in the banking sector, China had 7,720 overseas enterprises. By 2005, the total value reached \$57.2 billion and the number of the Chinese overseas enterprises reached more than 10,000, largely due to the growth of the Chinese direct investment overseas, which hit \$12.26 billion, a 123 percent increase from 2004. The Chinese investment overseas for the first 6 months of 2006 was \$6.44 billion, a 65.3 percent increase from the same period in the previous year. For 2003 numbers, see Zhang and Zheng, "Strategic Necessities," 24. For others, see "China Overseas Investment Reaches Record," *United Press International*, September 4, 2006; Zhu Zhu, "Overseas Investment Expected to Increase," *China Daily*, September 6, 2005; *Caijing shibao* (Financial and Economics Times), September 9, 2006.

⁸⁰ Ye and Zuo, "Strategic Reflections," 31; Zhang and Zheng, "Strategic Necessities," 34; Liang, "Status and Role," 66.

⁸¹ For quotation, see Ye and Zuo, "Strategic Reflections," 31. For others, see Cheng and Hu, "Revelations of the Sino-Japanese War," 29. See also Liang, "Status and Role," 67.

⁸² Ye and Zuo, "Strategic Reflections," 32; Zhang and Zheng, "Strategic Necessities," 34. Naval researchers predict that the Chinese economy will constitute 17.5 percent of the world's total GDP by 2015 and 22 percent by 2020.

⁸³ Ye and Zuo, "Strategic Reflections," 31; Zhang and Zheng, "Strategic Necessities," 34–35; Zhang Jiyu, Mu Yongpeng, "Jiji tuijin haijun xinxihua jianshe" [Actively Carry Forward Navy Informatization Construction], *Guofang bao* [National Defense News], June 24, 2004, 3; Li Jie, "Meiguo haijun 'wangluo zhongxin zhan' jianshe ji qishi" [Construction of 'Net-centric Warfare' by the U.S. Navy and Lessons], *Military Art Journal*, no. 10 (2004), 36. Li is from the Navy Military Art Research Institute.

⁸⁴ Zhang had been ill for sometime, and this may have also contributed to his subdued profile. He recently died and his position was taken over by Wu Shengli. Wu once commanded the 6th DDG Flotilla of the East Sea Fleet and was a deputy chief of the PLA General Staff.

⁸⁵ This is also the timetable set by Jiang Zemin for completing the PLA mechanization.

⁸⁶ Partly for technical maintenance reasons, the antiship DDGs newly acquired from Russia are deployed in the East Sea Fleet, while the indigenously built air-defense DDGs are deployed in the South Sea Fleet and North Sea Fleet. This may also have to change in order to organize multifunctional battle groups.

⁸⁷ The development of such facilities on the Paracels and similar ones reported to be developed in Burma and Pakistan for the future may serve such a purpose. See Bill Gertz, "China Builds up Strategic Sea Lanes," *Washington Times*, January 18, 2005. For a discussion of the validity of the claims on Chinese bases in Burma, see Andrew Selth, "Burma, China and the Myth of Military Bases," *Asian Security* 3, no. 3 (2007).

⁸⁸ The author wants to thank Peter Dutton for highlighting this point.

⁸⁹ See Ye Zicheng, *Luchuan fazhan yu daguo xingshuai* [Land Power Development and Rise and Decline of Great Powers] (Beijing: New Star Press, 2007). Author's interview with Ye, Beijing University, Beijing, April 22, 2008.

Chapter 6

PLAN Force Structure: Submarines, Ships, and Aircraft

Ronald O'Rourke

Introduction¹

Force-Structure vs. Non-Force-Structure Changes

China since the 1990s has been modernizing its naval force structure by replacing older and technologically obsolete or obsolescent submarines, surface ships, and aircraft with foreign-made and indigenously produced units that are technologically much more modern and capable. This force-structure modernization effort is one of the most directly observable elements of China's effort to turn its navy into a modern and capable fighting force—an effort that also includes improvements, some of them less directly observable, in non-force-structure elements of military capability such as supporting C4ISR (command, control, communications, computers, intelligence, surveillance, and reconnaissance) capabilities, information warfare capabilities, and military doctrine, education, and training.

With enough money and industrial capability—and China has plenty of both—force structure can be modernized fairly quickly.² In contrast, certain non-force-structure elements of military capability, particularly those relating to personnel quality, education, and training, can take longer to improve. While the non-force-structure elements of China's military are improving, they might not in all cases be improving as quickly as some of the force-structure elements. If so, an analysis that focuses solely on the more rapidly modernizing elements of China's force structure could lead to an overstatement of China's military effectiveness.

Maritime Relevant Force-Structure Changes Outside the Navy

It should also be noted at the outset that China's military modernization effort includes some force-structure changes outside the navy that are potentially relevant to military operations in the Taiwan Strait area and the Western Pacific. The addition of modern aircraft to China's air force (PLAAF, or People's Liberation Army Air Force) is one potential example; China's

rapidly growing number of theater-range ballistic missiles (TBMs) is another. Of particular note, China reportedly is developing TBMs armed with maneuvering reentry vehicles (MaRVs) that will be capable of hitting moving ships at sea.³ Such weapons, if combined with a surveillance and targeting system of sufficient range, could pose a kind of threat that the U.S. Navy and other navies have not previously faced.

Near-Term and Broader/Longer-Term Goals

Changes in China's naval force structure are better understood when placed in the context of the apparent near-term goals and the apparent broader or longer-term goals of China's military modernization effort. There is a consensus among observers that a near-term goal of China's military modernization is to develop military options for addressing the situation with Taiwan. Consistent with this goal, observers believe, China wants its modernized military to be capable of acting as a so-called antiaccess force—a force that can deter U.S. intervention in a military crisis or conflict in the Taiwan Strait area, or failing that, delay the arrival or reduce the effectiveness of U.S. intervention forces, particularly U.S. naval and air forces. The U.S. Department of Defense (DOD) states that “If a quick resolution [to a situation involving Taiwan] is not possible, Beijing would seek to deter U.S. intervention or, failing that, delay such intervention, defeat it in an asymmetric, limited, quick war; or, fight it to a standstill and pursue a protracted conflict.”⁴

China's emerging maritime antiaccess force can be viewed as broadly analogous to the sea-denial force that the Soviet Union developed during the Cold War to deny U.S. use of the sea or to counter U.S. forces participating in a NATO-Warsaw Pact conflict. One significant potential difference between the Soviet sea-denial force and China's emerging maritime antiaccess force is that China's force could include the previously mentioned MaRV-equipped TBMs capable of hitting moving ships at sea.

Some analysts have speculated in recent years that China may attain (or believe that it has attained) a capable maritime antiaccess capability, or important elements of it, by about 2010.⁵ Other observers believe China will attain (or believe that it has attained) such a capability some time after 2010. DOD states that “The Intelligence Community estimates China will take until the end of this decade or later to produce a modern force capable of defeating a moderate-size adversary.”⁶ The term “moderate-size adversary” would appear to apply to a country other than the United States.

In addition to a near-term focus on developing military options for addressing the situation with Taiwan, DOD and other observers believe that

broader or longer-term goals of China's military modernization effort, including its naval modernization effort, include the following:

- asserting China's regional military leadership, displacing U.S. regional military influence, prevailing in regional rivalries, and encouraging eventual U.S. military withdrawal from the region
- defending China's claims in maritime territorial disputes, some of which have implications for oil, gas, or mineral exploration rights
- protecting China's sea lines of communication, which China relies upon increasingly for oil and other imports.

These broader or longer-term goals are significant for at least three reasons. First, they imply that if the situation with Taiwan is somehow resolved, China will find continuing reasons to pursue its modernization effort. DOD states that: "China's near-term focus on preparing for military contingencies in the Taiwan Strait, including the possibility of U.S. intervention, appears to be an important driver of its modernization plans. However, analysis of China's military acquisitions and strategic thinking suggests Beijing is also generating capabilities for other regional contingencies, such as conflict over resources or territory."⁷ The U.S. Director of National Intelligence has similarly stated: "Beijing continues its rapid rate of military modernization, initiated in 1999. We assess that China's aspirations for great power status, threat perceptions, and security strategy would drive this modernization effort even if the Taiwan problem were resolved."⁸

Second, if these broader or longer-term goals eventually become more prominent in the mix of reasons for China's military modernization effort—either because the situation with Taiwan has been resolved, or because the buildup of Taiwan-related force elements has been completed—it could prompt a shift in the composition of the naval modernization effort toward a greater emphasis on force-structure elements that are more closely associated with these broader or longer-term goals, such as aircraft carriers, nuclear-powered attack submarines (SSNs) as opposed to nonnuclear-powered attack submarines (SSs), serial production of destroyers as opposed to the recent production of new destroyer designs in ones and twos, at-sea logistics, and overseas bases.

Third, these broader or longer-term goals suggest that even if China's military never fires a shot in anger at an opposing military, its military forces, including in particular naval forces, will still be used on a day-to-day basis to promote China's political position in the Pacific. This creates an essentially political (as opposed to combat-related) reason for the United States or other countries to maintain a competitive presence in the region with naval and

other forces that are viewed by observers in the Pacific as capable of effectively countering China's forces.

Key Trends in Force Structure Composition and Capabilities

Submarines

China's submarine force-structure modernization effort has attracted substantial attention and concern. The effort in recent years has involved the acquisition of at least five classes of submarines that are expected to be much more modern and capable than China's aging older-generation submarines. China by the end of 2006 completed taking delivery on eight Russian-made *Kilo*-class nonnuclear-powered attack submarines that are in addition to four *Kilos* that China purchased from Russia in the 1990s. China has also built in recent years, or is currently building, four other classes of submarines, including the following:

- a new nuclear-powered ballistic missile submarine (SSBN) design called the *Jin*-class or Type 094
- a new nuclear-powered attack submarine (SSN) design called the *Shang*-class or Type 093
- a new SS design called the *Yuan*-class or Type 041
- another (and also fairly new) SS design called the *Song*-class or Type 039/039G.

China's submarines are armed with one or more of the following: anti-ship cruise missiles (ASCMs), wire-guided and wake-homing torpedoes, and mines. Although ASCMs are often highlighted as sources of concern, wake-homing torpedoes can also be very difficult for surface ships to counter. In addition to some combination of ASCMs, torpedoes, and mines, *Jin*-class SSBNs will carry a new type of submarine-launched ballistic missile (SLBM), and *Shang*-class SSNs may carry land-attack cruise missiles (LACMs).

***Jin*-class (Type 094) SSBN.** The first *Jin*-class boat is expected to become operational as a submarine in mid-2007 and as an SSBN in 2008–09, depending on progress with the new JL–2 SLBM.⁹ Additional units are expected, perhaps at 2-year intervals, and a total of four are expected.¹⁰ The *Jin*-class design may be derived from the *Shang*-class (Type 093) SSN design discussed below. The U.S. Office of Naval Intelligence (ONI) states that China “wishes to develop a credible, survivable, sea-based deterrent with the capability to reach the United States” and that the *Jin*-class design “benefits from substantial Russian technical assistance.”¹¹ The *Jin*-class design is expected to be armed with

12 JL-2 SLBMs. DOD estimates that these missiles will enter service between 2007 and 2010, and that they will have a range of 8,000+ kilometers (about 4,320+ nautical miles).¹² Such a range could permit *Jin*-class SSBNs operating in protected bastions close to China to attack U.S. targets in Hawaii, Alaska, and locations in the continental United States that are north and west of a line running from central or southern California to northern Minnesota.¹³

Shang-class (Type 093) SSN. The *Shang*-class SSNs are generally viewed as replacements for China's aging *Han*-class SSNs, which entered service between 1974 and 1990.¹⁴ (The first *Han*-class boat was reportedly decommissioned in 2003, and observers expect the other four will be decommissioned as *Shang*-class boats enter service.¹⁵) DOD states that the first *Shang*-class SSN began sea trials in 2005.¹⁶ The first boat was expected to be commissioned in 2006 and the second in 2007; the operational service dates for the two boats are expected to be 2007 and 2008. Construction of a third boat (possibly to a modified design) may have begun, but has not yet been confirmed. A total of five boats is generally expected, but one source states that "[the] Pentagon estimates 3-4 [units] in commission by 2010, with requirements likely to run to eight to ten submarines (providing mostly escort for 'Jin' [*Jin*-class SSBNs] and the 'Xia' No. 406 SSBN.)"¹⁷ ONI states that the *Shang*-class "is intended primarily for antisurface warfare at greater ranges from the Chinese coast than the current diesel force. China looks at SSNs as a primary weapon against aircraft carrier battle groups and their associated logistics support."¹⁸

Observers believe the *Shang*-class SSNs will likely represent a substantial improvement over the reportedly fairly noisy *Han*-class boats.¹⁹ The *Shang*-class reportedly was designed in conjunction with Russian experts and is derived from the Soviet *Victor III*-class SSN design that was first deployed by the Soviet Union around 1978. The *Victor III* was the first in a series of quieter Soviet SSN designs that, by the mid-1980s, led to substantial concern among U.S. Navy officials that the Soviet Union was closing the U.S. lead in SSN technology and thereby creating what Navy officials described as an antisubmarine warfare (ASW) "crisis" for the U.S. Navy.²⁰ Observers expect the *Shang*-class boats to be armed with a modern ASCM and also with a LACM broadly similar to the U.S. Tomahawk land-attack cruise missile.

One set of observers states that

the emergence of China's [Type] 093 SSN and [Type] 094 SSBN has been anticipated for some time. Nevertheless, these programs remain shrouded in mystery, and there is little consensus regarding their operational and strategic significance. In the broadest terms, it can be said that a successful [Type] 093 program will significantly enlarge the scope of Chinese submarine operations, perhaps ultimately serving as the cornerstone of a

genuine blue-water navy. The [Type] 094 could take the survivability of China's nuclear deterrent to a new level, potentially enabling more aggressive posturing by Beijing in a crisis. Moreover, these platforms are entering the PLA Navy (PLAN) at a time when reductions are projected to occur in the U.S. Navy submarine force; that fact was duly noted by a senior PLAN strategist recently in one of China's premier naval journals.²¹

Kilo-class SS. China ordered its initial four *Kilo*-class SSs from Russia in 1993; the first two were of the less capable (but still fairly capable) Project 877 variant, which Russia has exported to several countries; the other two were of the more capable Project 636 variant that Russia had previously reserved for its own use. China ordered its next eight additional *Kilos* from Russia in 2002; they reportedly are all of the Project 636 design. ONI states that the delivery of these eight boats "will provide the Chinese Navy with a significant qualitative increase in warfighting capability,"²² while another observer states that the *Kilo*-class boats are "among the most worrisome of China's foreign acquisitions. . . ."²³ The eight recently delivered *Kilos* are reportedly armed with the highly capable SS-N-27 Sizzler ASCM, while the four older ones reportedly are to be refitted in Russia, with the upgrades likely to include the installation of the SS-N-27. One source states that the boats might also be fitted at some point with the Russian-made Shkval, a supercavitating, high-speed (200-knot) torpedo.²⁴

Yuan-class (Type 041) SS. The first *Yuan*-class boat, whose appearance reportedly came as a surprise to Western observers,²⁵ was launched (i.e., put into the water for the final stage of construction) in 2004. Observers expected the first *Yuan*-class boat to enter service in 2006 and the second to enter service in 2009. One source states that in addition to the first two units in the class, "Two further units are currently building at Wuhan [Shipbuilding Industry Co.]. By 2010, boats No. 9 & 10 will likely commission. Twenty of [the] class are expected to be built and [the] Jiangnan Shipyard (Shanghai) is expected to be integrated into [the] programme during 2006 with completion of [the] last 'Song-II' class."²⁶

Some observers believe the *Yuan* class may incorporate technology from Russia's most recent SS design, known as the *Lada* or *Amur* class, as well as technology from the *Kilo* design. One observer states: "There are few details at present but the design appears to exhibit some features of the *Song* class, although it appears to be shorter and broader, and possibly also of the Russian *Kilo* class. The design of the fin [i.e., the sail] is similar to that of the former while a distinctive 'hump' on top of a teardrop shaped hull is characteristic of the latter. It is possible therefore that the boat is of double-hulled construction. [The boat is] fitted with a seven-bladed propeller. It is not known whether an AIP [air-independent propulsion] system has been incorporated."²⁷

Song-class (Type 039/039G) SS. The first *Song*-class boat entered service in 1999, and a total of 13 were in service by 2006. Further ships in the class are not expected. The first boat reportedly experienced problems, resulting in design changes that were incorporated into subsequent (Type 039G) boats. Some observers believe the *Song*-class design may have benefitted from PLA Navy experience with the *Kilo* class. One set of observers states:

The design and production rates of China's new *Song*-class diesel submarine represent a significant advance over its predecessor, the *Ming*-class submarine. The *Song* class has a hydrodynamically sleek (teardrop) profile, possesses new cylindrical environmental sensors, and relies on German engines for propulsion. Most significantly, the *Song* is much quieter because it is fitted with an asymmetrical seven-blade skew propeller, and the *Song* uses anechoic rubber dampening tiles on the hull and shock absorbency for the engine to reduce its acoustic signature. The *Song* may also be able to launch cruise missiles when submerged, another design advance for China's conventional submarines.²⁸

Older Ming-class (Type 035) and Romeo-class (Type 033) SSs. China's submarine force in 2007 also included about 19 older *Ming* (Type 035) SSs and about 8 even-older remaining *Romeo*-class (Type 033) SSs. The first *Ming*-class boat entered service in 1971 and the 20th was launched in 2002. If China decides that *Ming*-class boats have continued value as minelayers or as bait or decoy submarines that can be used to draw out enemy submarines (such as U.S. SSNs), it may elect to keep some of them in service even as new submarines enter service. China's *Romeo*-class boats entered service between the early 1960s and the late 1980s. Of the eight still in service as of 2007, one is a modified boat that has been used as a cruise missile test ship. With the possible exception of this missile test ship, the remaining *Romeos* are expected to be decommissioned soon.

China's submarine modernization effort is producing a substantially more modern and capable submarine force. As shown in table 6-1, observers expect China to have a total of 31 *Jin*-, *Shang*-, *Kilo*-, *Yuan*-, and *Song*-class submarines in commission by the end of 2010.²⁹

The figures in table 6-1 show that between 1995, when China took delivery of its first two *Kilos*, and 2007, China placed into service a total of 37 submarines, or an average of about 2.8 submarines per year. This average commissioning rate, if sustained indefinitely, would eventually result in a steady-state submarine force of 57 to 85 boats of all kinds, assuming an average submarine life of 20 to 30 years. Excluding the 12 *Kilos* purchased from Russia,³⁰ the total number of domestically produced submarines placed into service between 1995 and 2007 is 25, or an average of about 1.9 per year. This average rate of domestic production, if sustained indefinitely, would result in a

steady-state force of domestically produced submarines of 38 to 58 boats of all kinds, again assuming an average submarine life of 20 to 30 years.

Only two of the submarines placed into service between 1995 and 2007 are nuclear powered. If the mix of China's submarine-production effort shifts at some point to include a greater proportion of nuclear-powered boats, it is

Table 6–1. PLA Navy Submarine Commissionings Actual (1995–2006) and Projected (2007+)

| Year | <i>Jin</i> (Type 094) SSBN | <i>Shang</i> (Type 093) SSN | <i>Kilo</i> SS (Russian-made) | <i>Yuan</i> (Type 041) SS | <i>Song</i> (Type 039) SS | <i>Ming</i> (Type 035) SS ^a | Total |
|------|----------------------------------|-----------------------------------|----------------------------------|---------------------------------|---------------------------------|--|-------|
| 1995 | | | 2 ^b | | | 1 | 3 |
| 1996 | | | | | | 1 | 1 |
| 1997 | | | | | | 2 | 2 |
| 1998 | | | 1 ^b | | | 2 | 3 |
| 1999 | | | 1 ^b | | 1 | | 2 |
| 2000 | | | | | | 1 | 1 |
| 2001 | | | | | 2 | 1 | 3 |
| 2002 | | | | | | 1 | 1 |
| 2003 | | | | | 2 | | 2 |
| 2004 | | | 1 | | 3 | | 4 |
| 2005 | | | 4 | | 3 | | 7 |
| 2006 | | 1 | 3 | 1 | 2 ^c | | 7 |
| 2007 | | 1 ^d | | | | | 1 |
| 2008 | 1 | n/a | | | | | n/a |
| 2009 | | n/a | | 1 | | | n/a |
| 2010 | 1 ^e | n/a | | n/a | | | n/a |
| 2011 | | n/a | | n/a | | | n/a |
| 2012 | 1 ^e | n/a | | n/a | | | n/a |
| 2013 | | n/a | | n/a | | | n/a |
| 2014 | 1 ^e | n/a | | n/a | | | n/a |

Source: *Jane's Fighting Ships 2007–2008*, and previous editions. n/a = data not available.

^a Figures for *Ming*-class boats are when the boats were launched (i.e., put into the water for final construction). Actual commissioning dates for these boats may have been later.

^b First four boats, commissioned in the 1990s, are to be refitted in Russia; upgrades are likely to include installation of the SS–N–27 antiship cruise missile.

^c No further units expected after the 12th and 13th shown for 2006.

^d Construction of a third ship (possibly to a modified design) may have started but has not been confirmed. A total of five boats is expected.

^e Additional units are expected, perhaps at 2-year intervals. A total of four boats is expected. One news article, citing information from the Office of Naval Intelligence, states that a total of five are expected. (Bill Gertz, "China Expands Sub Fleet," *Washington Times*, March 2, 2007.)

possible that the greater resources required to produce nuclear-powered boats might result in a reduction in the overall submarine production rate. If so, and if such a reduced overall rate were sustained indefinitely, it would eventually result in a smaller steady-state submarine force of all kinds than the figures calculated in the preceding paragraphs.

ONI stated in 2004 that “Chinese diesel submarine force levels are stabilizing as quality replaces quantity,” and published a graph accompanying this statement suggesting that the figure may stabilize at a level between 25 and 50.³¹ The 2007–2008 edition of *Jane’s Fighting Ships* states: “Looking ahead, further modern conventional boats are expected to be constructed as the 27 older and less capable units (*Romeo* and *Ming* classes) are paid off [i.e., retired] and, while predictions are hazardous, an overall force level of about 40–50 boats is expected.”³² A third observer states: “China will have at least 34 advanced submarines deployed in the Pacific by 2010—some analysts expect as many as 50 to 60—assuming that those under construction will be completed within three years. China will certainly have over 60 advanced submarines by 2020.”³³ A fourth observer states: “Although China is modernizing its submarine force, it is not ‘expanding’ it. Since the mid-1980s, the force has been in steady decline from nearly 120 boats to roughly 55 operational submarines today. The U.S. Navy expects the force will level out around 40 boats in the next decade. The decline of the submarine fleet is part of a transition where large older classes are being phased out and replaced with newer but less numerous submarine classes.”³⁴

Aircraft Carriers

The issue of whether and when China might deploy one or more aircraft carriers, and what the design and capabilities of Chinese aircraft carriers might be, has been a topic of discussion among government and nongovernment observers for the last several years.³⁵ Developments since mid-2005 have suggested to some observers that China now intends to complete the unfinished ex-Russian carrier *Varyag*, which it purchased from Russia several years ago, and place it into service in the near future, possibly as an aviation training ship.

The *Varyag* has an estimated full load displacement of about 58,500 tons, compared to about 100,000 tons for a U.S. Navy *Nimitz*-class (CVN-68) aircraft carrier, about 42,000 tons for the French aircraft carrier *Charles de Gaulle* (which was commissioned in 2001), and about 65,000 to 70,000 tons for aircraft carriers that the United Kingdom and France plan to commission into service between 2013 and 2016. It is estimated that the *Varyag* can embark an air wing of 18 Su-33 Flanker fighters, compared to 70 or more aircraft on a *Nimitz*-class carrier, 36 aircraft on the *Charles de Gaulle*, and 40 to 45 aircraft on the future UK and French carriers.

One source states that “Beijing statements allude more consistently to a 3-carrier force requirement, which may or may not include the ex-*Varyag*. . . . Were a Chinese carrier contract finalised in 2006, it would be 2011 before launching and 2014 before commissioning; a second ship could follow in 2016.”³⁶

DOD states the following:

In October 2006, Lieutenant General Wang Zhiyuan, vice chairman of the Science and Technology Commission of the PLA's General Armament Department stated that the “Chinese army will study how to manufacture aircraft carriers so that we can develop our own. . . . [A]ircraft carriers are indispensable if we want to protect our interests in oceans.”

China first began to discuss developing an indigenous aircraft carrier in the late 1970s. In 1985, China purchased the Australian carrier the HMAS *Melbourne*. Although the hull was scrapped, Chinese technicians studied the ship and built a replica of its flight deck for pilot training. China purchased two former Soviet carriers—the *Minsk* in 1998 and the *Kiev* in 2000. Neither carrier was made operational; instead, they were used as floating military theme parks. Nevertheless, both provided design information to PLA Navy engineers.

In 1998 China purchased the ex-*Varyag*, a *Kuznetsov*-class Soviet carrier that was only 70 percent complete at the time of the Soviet Union's collapse. Recent deck refurbishment, electrical work, fresh hull paint with PLA Navy markings, and expressed interest in Russia's Su-33 fighter has re-kindled debate about a Chinese carrier fleet. The PLA's ultimate intentions for the *Varyag* remain unclear, but a number of possibilities exist: turning it into an operational aircraft carrier, a training or transitional platform, or a floating theme park—its originally-stated purpose.

Regardless of Beijing's final objective for the ex-*Varyag*, PLA Navy study of the ship's structural design could eventually assist China in creating its own carrier program. Lieutenant General Wang stated that, “we cannot establish a real naval force of aircraft carriers within three or five years.” Some analysts in and out of government predict that China could have an operational carrier by the end of the 12th Five-Year Plan (2011–2015); others assess the earliest it could deploy an operational aircraft carrier is 2020 or beyond.³⁷

The 2007–2008 edition of *Jane's Fighting Ships* expected that China would return the *Varyag* to service in 2008, possibly under the name *Shi Lang*, and that the ship would become fully operational as an aviation training ship in 2010:

Procurement of an aircraft carrier capability has been a high priority for the Chinese Navy since the 1990s. Ex-*Varyag*, the second of the *Kuznetsov* class (the first of class, *Admiral Kuznetsov*, remains in service in the Russian Navy) was between 70 and 80 per cent complete by early 1993 when building was terminated after an unsuccessful attempt by the Russian Navy to fund completion. Subsequently the ship was bought by China and, having been towed through the Bosphorus on 2 November 2001, arrived at Dalian in March 2002. Since then, there have been conflicting reports about Chinese plans for the ship but, following its emergence from dock in mid-2005 painted in military colours, it is likely that it is intended to bring the ship into operational service. Work in 2006 included the apparent application of a non-skid surface to the flight deck. Reports in November 2006 that China was negotiating to procure up to 50 Sukhoi Su-33 fighters was a further indicator of Chinese intentions. A further major docking period is probably required to fit shafts and/or propellers and to complete survey and renovation of hull fittings. . . .

Initial sea trials are expected to start in 2008 after which an extensive period of trials and training is likely to follow. It is unlikely that the ship will begin operational flying training until about 2010. The ship's (unconfirmed) pennant number [83] suggests that her initial status will be as a training ship. The aircraft inventory is not yet known but is likely to comprise a mixture of Russian-built fixed-wing aircraft and helicopters. The ship's name has also not been confirmed; Admiral Shi Lang was commander-in-chief of the Manchu fleets which conquered Taiwan in 1681.³⁸

Another observer stated in May 2007 that:

For over a year, the PLAN has been more or less open about China's eventual deployment of an aircraft carrier battle group. Except for the carrier, China has all the elements of a carrier battle group in place, according to Lieutenant General Wang Zhiyuan of the PLA General Armaments Department. China will finish constructing its first aircraft carrier by 2010, according to an unnamed lieutenant general (probably General Wang again), but its first operational carrier will likely be the *Varyag*, the former Soviet carrier bought from Ukraine.

China's once-secret naval aviation program appears to be underway at full steam. At its center is the massive 67,000-ton former Ukrainian aircraft carrier, which the Chinese government extracted from the Black Sea in 2001 after considerable costs in both treasure and political capital with Turkey. In March 2002, the *Varyag* finally completed its 15,200-mile journey to its new home port of Dalian, where it was immediately placed under heavy security at the PLAN dry docks.

China has reportedly negotiated a contract for 48 Sukhoi-33 jet fighters, the carrier-based version of the Su-27, and is now preparing the *Varyag's* flight deck for flight operations. Reports in the PRC media indicate that China will also configure its new Jian-10 fighter for carrier operations.

The PLAN Air Force (PLANAF) schedule apparently envisions developing a carrier air wing by the time China launches its own aircraft carrier, despite official Beijing's continuing protestations that while "China already is capable of building an aircraft carrier, a final decision on construction has not yet been made."³⁹

Another observer stated in 2006 that:

The year 2005 marked a turning point in China's willingness to continue to deny or obfuscate its ambitions to build aircraft carriers. Last May it moved the old Russian uncompleted aircraft carrier hulk the *Varyag*, that it purchased and moved to Dalian harbor in 2002, from dockside into a drydock. It then emerged in early August painted in PLA Navy grey, and the most recent Internet-source photos show that the carrier deck is receiving new multiple coatings. China's ruse was that the *Varyag* would be turned into a casino and Chinese officials have repeatedly denied they were developing carriers. But on March 10, Hong Kong's Wen Wei Po quoted General Wang Zhiyuan, a Deputy Director of the Science and Technology Committee of the General Armaments Department, that in "three to five years," "The Chinese army will conduct research and build an aircraft carrier and develop our own aircraft carrier fleet." He went on to add that the escort and support ships for this carrier group are either being built or have already been built. These would likely include the new *Luyang 1*, *Luyang 2* and *Luzhou* class air defense destroyers launched from 2003 to 2005, new Type 093 nuclear powered attack submarines, and new *Fuchi* class underway replenishment ships.

If General Wang is to be believed, then the carrier *Varyag*, now undergoing what appears to be substantial refurbishment, will be used for some kind of military mission. These could include the refinement of China's anti-aircraft carrier doctrine and tactics, training and development of a new carrier air wing, and future aerial and amphibious support combat missions. In August 2005 Russian sources interviewed at the Moscow Airshow offered confirmation of China's carrier plans in that two Russian companies offered that China was interested in two types of future carrier combat aircraft, the Sukhoi Su-33 and the Chengdu J-10 modified with a new Russian engine thrust vector to enable slower carrier landing

speeds. The Russians also used the Moscow Airshow to market the twin-seat Su-33UB, but modified with thrust vector engines. It is quite likely that all three will be upgraded with new more powerful Russian AI-31 engines, have new active-phased array radar, and carry a range of active guided and helmet display sighted air-to-air missiles and precision ground attack missiles. As such both could offer some performance parameters that equal or even exceed that of the U.S. Boeing F/A-18E/F, the main U.S. carrier combat aircraft. Internet sources also indicate that China is developing a carrier-sized AWACS aircraft that could also be developed into antisubmarine and cargo support variants. While the U.S. Navy benefits from its over 70 years of constant practice and employment of effective carrier aviation, it is nonetheless a major shock that China's carrier fleet could commence with combat capabilities that could neutralize those of the U.S. Navy in some scenarios.⁴⁰

Destroyers, Frigates, and Fast Attack Craft

China since the early 1990s has purchased four *Sovremenny*-class destroyers from Russia and built nine new classes of destroyers and frigates that demonstrate a significant modernization of China's surface combatant technology. China has also deployed a new kind of fast attack craft that uses a stealthy catamaran hull design. One observer stated in 2005 that by 2010, China's surface combatant force "could exceed 31 destroyers and 50 frigates, backed up by 30 ocean-capable stealthy fast attack craft."⁴¹

Sovremenny-Class Destroyers. China in 1996 ordered two *Sovremenny*-class destroyers from Russia; the ships entered service in 1999 and 2001. China in 2002 ordered two additional *Sovremenny*-class destroyers from Russia; the ships entered service in 2005 and 2006. *Sovremenny*-class destroyers are equipped with the SS-N-22 Sunburn ASCM, a highly capable ASCM. DOD says the two ships ordered in 2002 "are fitted with anti-ship cruise missiles (ASCMs) and wide-area air defense systems that feature qualitative improvements over the [two] earlier *Sovremenny*-class DDGs China purchased from Russia."⁴² China reportedly has an option for another two *Sovremenny*-class ships.

Five New Indigenously Built Destroyer Classes. China since the early 1990s has built five new classes of destroyers. Compared to China's 16 older *Luda*-class (Type 051) destroyers, which entered service between 1971 and 1991, these five new destroyer classes are substantially more modern in terms of their hull designs, propulsion systems, sensors, weapons, and electronics. A key area of improvement in the new destroyer designs is their anti-air warfare (AAW) technology, which has been a significant shortcoming in China's navy. Like the older *Luda*-class destroyers, these new destroyer classes are armed with ASCMs.

As shown in table 6–2, China to date has commissioned only one or two ships in each of these five classes, suggesting that a key purpose of at least some of these classes may be to serve as stepping stones in a plan to modernize destroyer technologies incrementally before committing to larger-scale series production.⁴³ One source says the limited production runs of these four designs to date “might be financially related, or may relate to debate over what ships should follow the Type 051C air defence and Type 052C multi-role classes, or that once the Type 054A [frigate design] is *accepted* as the future missile frigate design, three or four of the major warship shipyards will all be assigned to construction of this design, delaying a future CG/DDG class.”⁴⁴ If one or more of these destroyer designs are put into larger-scale production, it would accelerate the modernization of China’s surface combatant force.

Table 6–2. New PLA Navy Destroyer Classes

| Class name | Type | Number built | Hull number(s) | In service (actual or projected) |
|------------------|------|--------------|----------------|----------------------------------|
| <i>Luhu</i> | 052 | 2 | 112, 113 | 1994, 1996 |
| <i>Luhai</i> | 051B | 1 | 167 | 1999 |
| <i>Luyang I</i> | 052B | 2 | 168, 169 | 2004 |
| <i>Luyang II</i> | 052C | 2 | 170, 171 | 2004, 2005 |
| <i>Luzhou</i> | 051C | 2 | 115, 116 | 2006, 2007 |

Source: *Jane's Fighting Ships 2007–2008*.

The *Luhu*-class ships reportedly were ordered in 1985 but had their construction delayed by a decision to give priority to the construction of six frigates that were ordered by Thailand. The *Luhai*-class ship is believed to have served as the basis for the *Luyang*-class designs. One set of observers states that the *Luhai*-class design

represented a significant design advance over China’s second-generation *Luhu*-class destroyer. In terms of overall size, the *Luhai* is 20 percent larger. It has a widened hull beam to enhance stability, armament-carrying capacity, and crew living space. In particular, the *Luhai*’s larger size permits four quad launchers for C801/C802 anti-ship missiles, which is double the number, deployed on the *Luhu*. The *Luhai* also uses a gas turbine engine, which is more powerful than the *Luhu*’s diesel gas turbine system. In addition, the design of the *Luhai*’s bridge and superstructure exhibits a number of stealthy characteristics (particularly in comparison to the *Luhu*’s structure). These design features include a streamlined superstructure with inclined angles and two solid masts with fewer protruding electronic sensor arrays. The stepped superstructure may have

been designed with the intention to equip the *Luhai* with vertical launch systems, possibly for SAMs [surface-to-air missiles] for an enhanced area-defense capability. The absence of such a system on the *Luhai* suggests that option was deferred for a time.⁴⁵

Compared to the *Luhai*, the *Luyang I*-class ships appear stealthier. DOD states that the *Luyang I* design is equipped with the Russian-made SA-N-7B Grizzly SAM and the Chinese-made YJ-83 ASCM.⁴⁶ The *Luyang II*-class ships appear to feature an even more capable AAW system that includes a Chinese-made SAM system called the HHQ-9 that has an even longer range, a vertical launch system (VLS), and a phased-array radar that is outwardly somewhat similar to the SPY-1 radar used in the U.S.-made Aegis combat system.⁴⁷

One set of observers states that the *Luyang I* and *II* classes

represent important advances in the shipbuilding industry's overall design and production techniques. . . . The latter have a similar design as the former, but they appear to be optimized for air-defense missions.

These four new destroyers represent an important evolution in shipbuilding design capabilities, production techniques, and management practices. The hulls are larger than the *Luhai*'s, which increases their weapons capacity, versatility, and stability on the high seas. The designs of these vessels are even stealthier, with sloped sides and a superstructure with a reduced profile—attributes that, collectively, reduce the vessel's radar signature. Also, these hulls were built using modular shipbuilding, a technique increasingly widespread in China's most modern shipyards. Modular construction (as opposed to keel-up) allows for work to be done on different sections at the same time, increasing the efficiency and speed of the production process. One of the most significant aspects of the new destroyers is the fact that China constructed these four new destroyers at the same time and quite quickly as well, at least compared with past experiences. This serial production of an indigenously designed vessel is a first in the PRC's naval history and a testament to improved project management. The four new 052B- and 052C-class vessels have been built or have been under construction within the past four years. By comparison, in the entire decade of the 1990s China only built a second *Luhu* (1993) and one *Luhai* (1997) destroyer.

The 052C-class destroyer, in particular, possesses several important attributes. First, according to Goldstein and Murray, it uses a phased array or planar radar on the four corners of the bridges' vertical superstructure, which would be used with a SAM vertical launch system (VLS) for

air-defense missiles—a second important innovation. Both of these attributes are a first for a Chinese combatant and help the PLAN resolve its long-standing weakness with air defense. In the past, Chinese combatants relied on short-range SAMs for air defense. A medium-range VLS SAM system would provide the Chinese navy with its first, real area-defense vessel, and a collection of such ships could allow the PLA Navy to operate surface action groups. If China is able to successfully reverse engineer Russian-purchased SAMs, then it may deploy them on the 052C destroyer. Some reports indicate that China may deploy its HQ-9 system (a Chinese version of a Russian SAM with a range of about 120 km) on the new destroyers. Such a system on the front of the new platform, combined with older Chinese SAMs in the stern, would give the Chinese their first fleet air-defense vessels.⁴⁸

Regarding the radar to be carried by the *Luyang II* class, a January 2006 journal article states: “The two Chinese Project 052C destroyers have fixed array radars that are often described as active arrays, though that cannot be certain.”⁴⁹ Active radar arrays use a technology that is more modern and more capable in certain respects than the technology used in the SPY-1 radars on the U.S. Navy’s *Aegis* ships.

Regarding the HQ-9 SAM believed to be carried by the *Luyang II*-class destroyers, ONI states:

The most challenging threat to aircraft and cruise missiles comes from high-performance, long-range [SAM] systems like the Russian SA-10/SA-20 family. The system combines very powerful three-dimensional radar and a high-performance missile with engagement ranges in excess of 100 nautical miles against a conventional target. The SA-10/SA-20 has been marketed widely and has enjoyed some success in the export market, but its high cost has limited its proliferation. Technology from the SA-10 is being incorporated into China’s 50-nautical mile range HQ-9 SAM, which is intended for use on the new *Luyang* destroyer. The HQ-9 will provide China’s navy with its first true area air defense capability when the SAM becomes operational in the next few years.⁵⁰

DOD says the *Luzhou*-class “is designed for anti-air warfare. It will be equipped with the Russian SA-N-20 SAM system controlled by the TOMBSTONE phased-array radar. The SA-N-20 more than doubles the range of current PLA Navy air defense systems marking a significant improvement in China’s ship-borne air defense capability.”⁵¹ Both *Luzhou*-class ships have conducted sea trials and were expected to enter service during 2007.⁵²

Four New Indigenously Built Frigate Classes. China since the early 1990s has built four new classes of frigates that are more modern than China’s

31 older *Jianghu*-class (Type 053) frigates, which entered service between the mid-1970s and 1989. The four new frigate classes, like the new destroyer classes, feature a number of improvements over earlier-generation ships, including improved AAW capabilities. Unlike the new destroyer designs, two of the new frigate designs have been put into larger-scale series production. Table 6–3 summarizes the four new classes.

Table 6–3. New PLA Navy Frigate Classes

| Class name | Type | Number built or building | Hull number(s) | In service (actual or projected) |
|--------------------|----------|--------------------------|---------------------|----------------------------------|
| <i>Jiangwei I</i> | 053G H2G | 4 | 539-542 | 1991–1994 |
| <i>Jiangwei II</i> | 053H3 | 10 | between 521 and 567 | 1998–2005 |
| <i>Jiangkai I</i> | 054 | 2 | 525, 526 | 2005 |
| <i>Jiangkai II</i> | 054A | 4 | 530 (lead ship) | 2007–2008 |

Source: *Jane's Fighting Ships 2007–2008*.

One set of observers states that the *Jiangkai I*-class design

is larger and more modern than that of China's *Jiangwei II*-class frigates. Like China's new destroyers, the new frigate has a more streamlined design and has a larger displacement. These changes augment the new vessel's warfighting capabilities and its seaworthiness. Some sources note that the [Type] 054 frigate resembles the French *Lafayette*-class guided-missile frigate because of the minimalist design of the Type 054's superstructure. The design of the new frigate also offers greater options for outfitting the vessel with various weapon suites. Some estimates indicate that the new frigate will have a significantly enhanced set of weapon capabilities over the *Jiangwei*-class frigates, possibly including VLS capabilities.⁵³

The *Jiangkai II*-class ships are a modified version of the *Jiangkai I*-class design that features a VLS system for its SAMs. The 2007–2008 edition of *Jane's Fighting Ships* states that "Under construction at two shipyards, it is likely that this design will be built in sufficient numbers to replace the ageing Jianghu class frigates."⁵⁴ Another source similarly states that a total of 28 to 30 Type 054A frigates "are believed scheduled" for production to replace China's older-generation frigates.⁵⁵

Fast Attack Craft. In addition to its 190 older fast attack craft (including 37 armed with ASCMs), China in 2004 introduced a new type of ASCM-armed fast attack craft, called the *Houbei* or *Qiuxin* class, that uses a stealthy, wave-piercing, catamaran hull. Observers believe the hull design—one of the more advanced used by any navy in the world today—is based on a design

developed by a firm in Australia, a country which is a world leader in high-speed catamaran designs. The *Houbei* class is being built in at least six shipyards. At least 25 were in service as of 2007, and a total of at least 40 are expected.⁵⁶ In addition to the *Houbei* class, one source states that China in 2005 ordered 24 to 30 Project 12421 *Molniya*-class ASCM-armed fast aircraft from Russia. The *Molniya*-class is an upgraded version of the *Tarantul*-class design that might be armed with four SS-N-22 ASCMs. The first four, according to this source, may be delivered by late 2007 or early 2008.⁵⁷

Amphibious Ships

DOD states that:

The PLA has increased amphibious ship production to address its lift deficiencies; however, the [U.S.] Intelligence Community believes these increases alone will be inadequate to meet requirements. The PLA is also organizing its civilian merchant fleet and militia, which, given adequate notification, could augment organic lift in amphibious operations. Transport increases were accompanied by an increase of 25,000 troops, 200 tanks, and 2,300 artillery pieces in the military regions opposite Taiwan, according to the latest figures from the Defense Intelligence Agency (DIA). The increased troops and equipment in these military regions all appear capable of participating in expeditionary operations.⁵⁸

Type 071 Amphibious Ship. China has built a new class of amphibious ship called the Type 071 class. The first Type 071 ship was expected to enter service in 2008. Since then, the Type 071 or Yazhao did enter service in the PLAN in 2008.⁵⁹ The Type 071 design features a clean, slope-sided hull design that resembles the hull designs of modern Western amphibious ships and appears intended to reduce the ship's visibility to radar. The design has an estimated displacement of about 17,600 tons, compared to about 15,900 tons to 16,700 tons for the U.S. Navy's *Whidbey Island/Harpers Ferry*-class (LSD-41/49) amphibious ships, which were commissioned into service between 1985 and 1998, and about 25,900 tons for the U.S. Navy's new *San Antonio*-class (LPD-17) amphibious ships, the first of which was commissioned into service in 2006.

The 2007–2008 edition of *Jane's Fighting Ships* states that the Type 071 program

constitutes a key component of the PLA(N)'s plan to improve its sea-lift and power projection capabilities. . . . The principal features of the ship include a large well deck area to accommodate four Air Cushion Vehicles (ACV) in the aft two-thirds of the ship. The ACVs are likely to

access the ship through a stern gate. The ship may have to ballast down for operation. There is a large stern helicopter flight deck and a hangar. An internal garage deck for vehicles may be accessed via side ramps (port and starboard). There is space for the HQ7 launcher which may be fitted at a later date. . . . This ship represents a major enhancement of amphibious capability.⁶⁰

Jane's also states that:

The construction of such a vessel had been anticipated for several years as the logical next-step in the modernisation of amphibious forces. The new ship, and expected follow-on units, is intended to overcome shortcomings in command and control and rapid cross-beach movement that have constrained amphibious capability. This despite the introduction into service of three new classes of landing craft, comprising 30 ships, since 2003. The principal methods of landing troops from the LPD are to be by heavy helicopters and by air-cushion vehicles, four of which can be accommodated. The ship is unlikely to be commissioned until 2008 and, thereafter, a long period of trials can be expected as the Chinese Navy evaluates and learns to operate in its first major [amphibious] unit.⁶¹

Another observer states that the Type 071 “was built in about six months in the second half of 2006 and appears to be the first of four LPDs. The Type 071 appears to be designed to land 500–800 troops and 25–50 armored vehicles and supplies using 15 landing craft or several large hovercraft. It will carry at least two Changhe Z–8 helicopters, each capable of transporting 30 soldiers inland beyond the beachhead.”⁶²

Report of Potential Type 081 Amphibious Ship. In August 2007, it was reported that

at the May 2007 IMDEX naval technology show in Singapore, a Chinese industry source confirmed to *Jane's* that China has a programme for a LHD [i.e., a large amphibious assault ship], but did not disclose details other than to note: ‘We can now build that ship.’ However, late 2006 reports in India’s *Force* magazine noted that China would build up to three Type 081 LHD ships and six Type 071 LPD vessels, the first of which was launched in late December 2006. One Asian military source has told *Jane's* that the flat-deck Type 081 will displace about 20,000 tonnes, and as such, would be similar in size to the French Mistral LHD. There have been no reports so far that China has started building LHDs. China’s interest in LHDs has been noted since the late 1990s and would form a logical compl[e]ment to its Type 071 LPDs. Asian military sources put

the Type 071 also at about 20,000 tonnes displacement with a capacity to carry up to 800 troops plus scores of armoured vehicles. One Asian military source tells *Jane's* that China could build two to eight Type 071s.⁶³

Other New Amphibious Ships and Landing Craft. In addition to the new Type 071 class amphibious ship, three other new classes of smaller amphibious ships and craft entered service between 2003 and 2005:

- *Yuting II*-class helicopter-capable tank landing ships (LSTs). Three of these 4,800-ton ships entered service in 2003, another six in 2004, and a tenth in 2005. Each ship can transport 10 tanks and 250 soldiers, and has a helicopter landing platform for two medium-sized helicopters. The ships were built at three shipyards, and observers believe additional units might be built.
- *Yunshu*-class landing ships (LSMs). Ten of these 1,850-ton ships entered service in 2004. Each ship can transport 6 tanks or 12 trucks or 250 tons of supplies. The ships were built at four shipyards, and observers believe additional units might be built.
- *Yubei*-class utility landing craft (LCUs). Eight of these landing craft entered service in 2004 and another two in 2005. Each craft can transport 10 tanks and 150 soldiers. The ships were built at four shipyards, and observers expect additional units.

Older Landing Ships and Craft. China also has numerous older landing ships and craft of various designs, including 10 *Yuting I* class (Type 072 IV) helicopter-capable tank landing ships (LSTHs) displacing 4,800 tons each that entered service between 1992 and 2002.

Mine Countermeasures (MCM) Ships

China is building one or two new classes of mine countermeasures (MCM) ships called the *Wozang* class and the *Wochi* class. The 2007–2008 edition of *Jane's Fighting Ships* states that “modernisation plans for the mine-countermeasures force are difficult to discern. The first *Wozang*-class [ship] entered service in 2005 and was expected to replace the [existing] T-43s [class mine warfare ship], albeit that the design looked very similar. This ship was then followed in 2006 by a longer version known as the *Wochi* class. Little is known about the capabilities of either vessel.”⁶⁴

Naval Aircraft

As with its submarines and surface ships, China's navy has modernized its aircraft force structure in recent years through a combination of purchases

of foreign made aircraft, including fourth-generation fighters, and indigenous aircraft production. Despite advancements in Chinese aircraft manufacturing, China's navy appears to remain substantially dependent on foreign suppliers for both complete aircraft and key aircraft components.

Negotiations Regarding 48 to 50 Su-33 Flanker D Carrier-Capable Fighters. As mentioned earlier in connection with China's aircraft carrier development program, China reportedly has been negotiating with Russia on the purchase of 48 to 50 carrier-capable Su-33 Flanker D naval fighters. The Su-33, a derivative of the Su-27 design, can operate from carriers using a ski-jump ramp and is capable of in-flight refueling. One source states that

China has acquired one of the T-10K naval FLANKER prototype[s] from the Ukraine. Shortly after EURONAVAL 2006, Russian authorities confirmed that two Sukhoi Su-33 FLANKER aircraft had been ordered by China. [The] Anticipated order—by Moscow's estimates—is [that another] 48-50 [are] likely to follow over the coming five years in batches of 12 to 18 aircraft each, with [a] total contract value of about US\$2.5Bn. Such numbers would likely equip three PLA-N Air Regiments (squadron[s]), plus a smaller dedicated training squadron. . . .

The SU-33's Mach 2+ speed, 3,000km [kilometer] range and great variety of weapon options, enhances current PLA-N offshore capability, should a limited number be based on the ex-*Varyag* in the next few years. Weapons likely to be acquired by China would include the Novator KS-172 300km range ASM, Kh-59MK anti-ship and Kh-31 ARM missiles, plus Vympel R-77 AAM[s], and with PLA-N already buying sub-launched Novator[s], the air-launched 3M-54E ALCM is very likely to be eventually added to Su-33 weapon options.⁶⁵

J-10 Fighters. As noted earlier in the discussion of China's aircraft carrier program, one source states that "Reports in the PRC media indicate that China will also configure its new Jian-10 fighter for carrier operations,"⁶⁶ while another similarly states that "In August 2005 Russian sources interviewed at the Moscow Airshow offered confirmation of China's carrier plans in that two Russian companies offered that China was interested in two types of future carrier combat aircraft, the Sukhoi Su-33 and the Chengdu J-10 modified with a new Russian engine thrust vector to enable slower carrier landing speeds."⁶⁷

24 Su-30 MKK 2 Flanker Land-Based Fighters. China's naval aircraft inventory includes 24 Russian-made Su-30 MKK 2 Flanker land-based fighters whose delivery was completed in 2004. The Su-30, like the Su-33, is a derivative of the Su-27. Some of the navy's Su-30s might eventually be fitted with the Russian-made Kh-35 ASCM. *Jane's Fighting Ships* also notes that

China's air force operates at least 130 Su-27s, and that these aircraft might be used for fleet-defense operations.

36 JH-7 Fighter-Bombers. China's navy operates 36 JH-7 fighter-bombers that were delivered between 1998 and 2004. The JH-7 is broadly comparable in outward appearance to the Russian-made Su-24 Fencer or the British Tornado. The planes can be armed with Chinese-made C-701, C-801, or C-802 ASCMs or laser-guided bombs, and might be fitted in the future to carry Russian-made Kh-31 ASCMs.

Other Land-Based Airplanes. China's other front-line naval aircraft include, among other models, 110 J-8-Finback fighters (with another 450 or more in the air force); 70 Q-5 (Fantan-A) fighters (a derivative of the J-6 design); 100 J-7 (MiG-21-like) fighters; about 30 H-6D/H-6X (Tu-16 Badger-type) maritime bombers/reconnaissance aircraft; 3 KJ-2000 AWACS aircraft based on the A-50 Mainstay/Il-76 airframe; perhaps 30 older H-5 (Il-28 Beagle-type) maritime strike aircraft; 4 SH-5 amphibious ASW/multipurpose airplanes, and 3 Y-8X maritime patrol aircraft. One source states that "Xian Aircraft has also begun test flying a new variant of the BADGER, designated H-6K. Redesigned to accommodate Russian DA-30 turbo fans, the aircraft has been seen with six pylons for air-launched anti-ship missiles. If tests go well, the fuel economy of the DA-30 and greater reliability will likely result in the replacement of all H-6D aircraft."⁶⁸

Ship-Based Helicopters. China's inventory of naval ship-based helicopters includes 20 Changhe Z-8/Super Frelon ASW helicopters (8 made in France, the other 12 made in China); 25 Z-9C (Dauphin 2-type) ASW and anti-surface-warfare helicopters, with possibly more under construction; and 10 Ka-28 Helix ASW and SAR helicopters. One source states: "While most analysts believe [the] ex-*Varyag* will be employed as an air doctrine and development ship, some permanent basing of helicopters is likely. Helicopters will include Ka-28 HELIX ASW and Ka-31 (Ka-252 RLD) AEW&C [models]. China has been making inquiries regarding the Ka-252TB (Ka-29) assault and fire-support version, but this is probably intended for the new Type 071 LPD and [the] LST force."⁶⁹

UAVs and UCAVs. In addition to manned aircraft, China's navy in the future might acquire land-based and ship-based unmanned aerial vehicles (UAVs) and unmanned combat aerial vehicles (UCAVs) of various kinds for use as reconnaissance and surveillance platforms, decoys, and weapon launchers. DOD states that "acquisition of UAVs and UCAVs, including the Israeli HARPY [UCAV], expands China's options for long-range reconnaissance and strike."⁷⁰

Open-Source Force Level Projections

Given China's lack of transparency regarding its shipbuilding and aircraft construction plans, and its planned naval ship and aircraft force

structure, projecting China's future naval force structure becomes, for outside observers, a matter of semi-informed guesswork or speculation. Readers looking for open-source projections of China's warship and naval aircraft force structure can find an online example at the Internet site maintained by the organization GlobalSecurity.org.⁷¹ When accessed on November 4, 2007, GlobalSecurity.org's projection of China's warship force structure extended out to 2020 and stated that it was last modified on October 23, 2007,⁷² while its projection of China's naval aircraft force-structure extended out to 2010 and stated that it was last modified on April 27, 2005.⁷³ GlobalSecurity.org's figures are in some cases not consistent with figures discussed elsewhere in this paper, which come primarily from the Jane's Information Group. The data sources underlying GlobalSecurity.org's presentations are not cited in the presentations. Projections presented by other organizations might differ in various ways; GlobalSecurity.org's projections are mentioned here without endorsement and merely as an illustrative example of an easily-accessed open-source projection.

Ability of China's Naval Forces to Work Together

China in recent years has increased the complexity and realism of its military exercises, which, other things held equal, would be expected to improve the ability of China's submarines, surface ships, and naval aircraft to operate with each other. At the same time, however, the delivery in recent years of the various new classes of submarines, surface ships, and naval aircraft discussed above might, for a time at least, require the operators of all this new equipment to concentrate on gaining proficiency in operating these units as individual platforms, which could, for a time at least, reduce the amount of time available for gaining proficiency in coordinated operations. Improvements in the capability for conducting coordinated operations might also be held back by personnel-related factors. As a consequence, where, exactly, China's naval forces currently stand on the coordinated operations learning curve is not clear.

At the higher joint (i.e., interservice) level, observers believe China has a ways to go before it achieves proficiency in complex, coordinated operations. DOD states that "Since 2004, the PLA has conducted a number of exercises designed to develop the PLA's joint operational concepts and demonstrate new capabilities, command automation systems, and weapons. The PLA hopes eventually to fuse service-level capabilities with an integrated network for command, C4ISR, a new command structure, and a joint logistics system. However, it continues to face deficiencies in inter-service cooperation and actual experience in joint operations."⁷⁴

Similarly, another set of observers states that China's military "confronts many obstacles," including the following:

The sophistication of new equipment generally exceeds current joint command-and-control capabilities. Its reliance on a blend of obsolete and modern equipment makes effective large-scale planning, training, and operations difficult. Its dependence on multiple foreign arms suppliers makes it hard to build efficient supply chains and maintenance regimes. It has a shortage of technically knowledgeable, innovative, initiative-taking personnel who can operate high-tech systems, a deficiency exacerbated by China's lack of a professional corps of noncommissioned officers. . . . None of these obstacles can be overcome swiftly, and none can be overcome merely by throwing more money at the problem.⁷⁵

Since coordinating operations within a single service can be less complex than coordinating operations between services, one might speculate that the ability of China's navy to coordinate the operations of its submarines, surface ships, and naval aircraft is somewhat greater than the ability of China's military as a whole to conduct complex joint operations. It can also be noted that the significance of China's ability to coordinate the operations of its submarines, surface ships, and naval aircraft can vary with the kind of operation in question. At one extreme, an ability to coordinate such operations would be critical in undertaking a major amphibious landing, while at the other extreme, an ability to coordinate such operations could be of little importance for surface ships making diplomatic port calls or conducting other simple "show-the-flag" missions. Certain approaches to implementing a blockade could require substantial coordination among different naval force structure elements. Other kinds of operations might fall elsewhere between these two extremes in terms of the need for coordinating actions among different kinds of naval platforms.

How China's Naval Forces Might Be Used

A key question is how the PLAN envisions using its improving capabilities and the different parts of its force structure to perform its various missions. This section discusses how these capabilities might be used in a Taiwan contingency, as part of antiaccess strategies, and in operations away from Chinese waters.

Potential Use in Taiwan Contingencies

DOD lists China's potential military options regarding Taiwan as follows:

- **limited force options** that "could include computer network attacks against Taiwan's political, military, and economic infrastructure to undermine the Taiwan population's confidence in its leadership. PLA

special operations forces infiltrated into Taiwan could conduct acts of economic, political, and military sabotage. Beijing might also employ SRBMs [short-range ballistic missiles], special operations forces, and air strikes against air fields, radars, and communications facilities on Taiwan. . . .”

- **air and missile campaign**, in which “Surprise SRBM attacks and precision air strikes against Taiwan’s air defense system, including air bases, radar sites, missiles, space assets, and communications facilities could support a campaign to degrade Taiwan defenses, neutralize its military and political leadership, and rapidly break its will to fight while attempting to preclude an effective international response.”
- **blockade**, in which “Beijing could threaten or deploy a naval blockade as a ‘non-war’ pressure tactic in the pre-hostility phase or as a transition to active conflict. Beijing could declare that ships en route to Taiwan ports must stop in mainland ports for inspections prior to transiting on to Taiwan. It could also attempt the equivalent of a blockade by declaring exercise or missile closure areas in approaches and roadsteads to ports to divert merchant traffic, as occurred during the 1995–96 missile firings and live-fire exercises. Chinese doctrine also includes activities such as air blockades, missile attacks, and mining or otherwise obstructing harbors and approaches. More traditional blockades would have greater impact on Taiwan, but tax PLA Navy capabilities. Any attempt to limit maritime traffic to and from Taiwan would likely trigger countervailing international pressure, and risk military escalation. Such restrictions would have immediate economic effects, but would take time to realize decisive political results, diminishing the ultimate effectiveness and inviting international reaction.”
- **amphibious invasion**, about which DOD states that “Publicly available Chinese writings offer different strategies . . . the most prominent being the Joint Island Landing Campaign. The Joint Island Landing Campaign envisions a complex operation relying on supporting sub-campaigns for logistics, electronic warfare, and air and naval support, to break through or circumvent shore defenses, establish and build a beachhead, and then launch an attack to split, seize, and occupy the entire island or key targets.”⁷⁶

In the limited-force options described by DOD, China’s submarines could play a role in covertly inserting special operations forces in Taiwan. In both the limited-force options and the air and missile campaign described by

DOD, Chinese naval strike aircraft, perhaps supported by Chinese naval fighters and naval AWACS aircraft, could play a role in air strikes against air fields, radars, and communications facilities on Taiwan.

Analysts disagree regarding China's potential for mounting an effective blockade, particularly with its submarine force.⁷⁷ In the blockade options described by DOD, submarines, surface combatants, and land-based aircraft could all be used to lay mines, patrol shipping lanes, and threaten or carry out attacks on merchant ships, and the surface combatants could additionally be used to intercept ships and conduct boarding operations.

In the amphibious invasion option described by DOD, amphibious ships and landing craft would be used to land the primary forces ashore, surface combatants could be used to protect the amphibious ships and provide naval gunfire support, submarines might be employed to covertly insert supporting special operations forces and counter enemy surface ships attempting to attack the amphibious ships or surface combatants, and land-based aircraft would be used to strike targets ashore and counter enemy aircraft, surface ships, or submarines attempting to attack the amphibious ships, surface combatants, and submarines.

Potential Use in Antiaccess Strategies

A 2007 RAND report based on an analysis of Chinese military doctrinal writings presents an extensive analysis of potential Chinese antiaccess strategies.⁷⁸ The report states that elements of Chinese military strategy with potential implications for U.S. access to the theater of operations include:

- attacks on C4ISR systems (including computer network attacks, electromagnetic pulse [EMP] attacks, and attacks against satellites)
- attacks on logistics, transportation, and support functions
- attacks on enemy air bases
- blockades
- attacks on sea lanes and ports
- attacks on aircraft carriers
- preventing the use of bases on allied territory.

The report's summary states in part:

Although the Chinese military doctrinal writings we examined for this study do not explicitly discuss antiaccess as a separate and distinct strategy, they do suggest that Chinese doctrine for defeating a militarily superior adversary, such as the United States, includes a number of tactics that are clearly antiaccess in intention or effect. The PLA has

identified the U.S. military's reliance on information systems as a significant vulnerability that, if successfully exploited, could paralyze or degrade U.S. forces to such an extent that victory could be achieved. In particular, PLA analysts believe that attacks against information systems can delay the deployment of U.S. military forces by disrupting communications or denying the U.S. military access to information on enemy whereabouts. PLA analysts note that information warfare can employ either "soft-kill" or "hard-kill" methods. Soft-kill methods include computer network attacks and electronic jamming, while possible hard-kill methods include directed energy weapons, explosives, and kinetic energy attacks. Targets could include computer systems based in the United States or abroad, command and control nodes, and space-based intelligence, surveillance, and reconnaissance and communications assets. . . .

Noting the great distances that U.S. forces would need to travel in a conflict with China, attacks against logistic systems are also discussed. The goals of these attacks would be to delay the deployment of additional U.S. forces to the region and to render existing forces in the region less effective or more vulnerable by preventing timely supplies of the materiel needed for warfighting. Attacks against logistic systems described in PLA writings include blockades, attacking supply depots, and striking at air or sea supply missions. . . .

PLA writings also discuss attacks against air bases and ports. Such attacks would prevent or disrupt the inflow of personnel and supplies, as well as the basing of air and naval assets. PLA analysts state that attacking these targets is the most efficient way to gain air or sea superiority, although the difficulty of achieving success is not understated. While no source specifically indicated which U.S. bases might be attacked, the importance that bases in the western Pacific would have for U.S. military operations in a conflict with China suggests that they may be key targets for PLA planners. . . .

Similarly, the importance of naval aviation to U.S. operations is of great concern to the PLA. Chinese sources describe the disproportionate role aircraft carriers sometimes play in conflict but also make clear their belief that aircraft carriers can be defeated. Massed attacks using air- and sea-launched cruise missiles can be used to overwhelm an aircraft carrier's defenses, and submarine-launched torpedoes can be used in ambush. Ballistic missiles are also discussed as possible anticarrier weapons. . . .

In addition to military strategies, China might also use diplomatic and political strategies to deny or limit the use of forward bases, most notably in Japan. While Chinese writings are not explicit in discussing strategies to limit or deny support to the United States, interviews with Chinese military officers suggest that deterrence and coercion, including threats of force, could be used against Japan.⁷⁹

The RAND report discusses China's military forces in general, mixing together comments about various force elements. The report does not systematically separate out the specific roles of various Chinese naval units in potential antiaccess operations.

As part of an antiaccess strategy, China's naval aircraft and LACM-armed submarines could contribute to attacks on regional air bases, ports, and other logistics nodes. Submarines, surface ships, and aircraft (and also merchant vessels) could be used to lay mines outside ports or across sea routes. China's amphibious forces, supported by other naval units, could seize small islands considered important to establishing a stronger antiaccess perimeter. And Chinese naval units of various kinds could form a significant part of a multilayer force for more directly confronting U.S. naval and air forces moving to the theater of operations. In addition to "regular" TBMs and MaRV-equipped antiship TBMs, the outermost layer of this force could include SSNs and maritime bombers and reconnaissance aircraft. Some of these SSNs might operate close to U.S. shores in an attempt to tie down some portion of U.S. naval forces far from the Taiwan Strait. The next layer inward could additionally include SSs and shorter-ranged land-based fighters and strike aircraft. A third layer farther inward could additionally include the surface combatants (and also land-based surface-to-air missiles).

Potential Use in Support of Broader/Longer-Term Goals

In support of the broader or longer-term goals of China's military modernization effort that were discussed earlier, surface combatants, amphibious ships, and (in the future) aircraft carriers could be used for making diplomatic port calls and for carrying out other day-to-day presence and engagement operations. Surface combatants, amphibious ships, and (in the future) aircraft carriers might be used to contribute to humanitarian- or disaster-relief operations. Surface ships, perhaps supported by land-based naval aircraft, submarines, or (in the future) carrier-based aircraft, could be used to land forces on disputed islands or atolls, or otherwise back up Chinese diplomacy in maritime territorial disputes. China's naval forces have already been used, or are now being used, for some of these purposes, such as the port calls.⁸⁰ Surface combatants additionally could be used to escort merchant ships

through areas that are subject to piracy, and surface combatants, submarines, and (in the future) carrier-based aircraft could be used to provide some measure of defense against a perceived threat of open-ocean attack on, or interdiction of, merchant ships by U.S. or other naval forces.

Submarines (particularly SSNs), surface ships, land-based aircraft (especially longer-ranged types), and (in the future) carrier-based aircraft, could be used to conduct day-to-day intelligence, surveillance, and reconnaissance operations directed at other naval forces and near-shore installations and activities. The submarines' contribution to such ISR operations could include not only making observations from the submarine itself, but also covertly inserting and recovering spies or special operations forces. Submarines, surface ships, and land-based aircraft could also be used on a day-to-day basis in the future to maintain a protected bastion for China's SSBNs.

Notes

¹ The views expressed in this paper are solely those of the author and do not necessarily reflect the views of the Congressional Research Service (CRS), the Library of Congress, or any other part of the U.S. Government. This paper is based on open-source information. Unless indicated otherwise, information in this paper is taken from the 2007–2008 edition and previous annual editions of *Jane's Fighting Ships*, a widely used reference source on world navies. Information on China's navy presented by other open sources differs somewhat from the information presented in *Jane's Fighting Ships*, but tends to paint a similar overall picture of changes in China's naval force structure. Portions of this paper are adapted from CRS Report RL33153, *China Naval Modernization: Implications for U.S. Navy Capabilities—Background and Issues for Congress*, by Ronald O'Rourke. This CRS report, which is based on open-source information, was first published in November 2005 and has been updated numerous times since then. As of this writing, the most recent update was published on December 1, 2010.

² It should also be noted, however, that China remains substantially dependent on foreign suppliers for key ship systems, aircraft, and aircraft components, and that foreign or domestic bottlenecks in the production of these items can restrain the rate of force structure modernization.

³ In January 2007, the U.S. Director of National Intelligence stated: "The Chinese are developing more capable long-range conventional strike systems and short- and medium-range ballistic missiles with terminally guided maneuverable warheads able to attack US carriers and airbases." (John D. Negroponte, Director of National Intelligence, *Annual Threat Assessment of the Director of National Intelligence*, January 11, 2007, 10.)

⁴ U.S. Department of Defense, *Annual Report to Congress: Military Power of the People's Republic of China, 2007* (Washington, DC: Office of the Secretary of Defense, released May 25, 2007), 5–18, 32. (Hereafter cited as *2007 DOD CMP*; previous annual editions cited similarly.)

⁵ One observer states: "By 2008, China will have the capability to credibly conduct short-term sea denial operations out to about 400 nautical miles from its coastline; and by 2010 may be able to sustain such operations for a few weeks. Obviously, this capability does not accrue to the Straits of Malacca and the Indian Ocean—China can at best hope to 'show the flag' for coercive and/or defensive purposes in those waters until after 2015." (Statement of Cortez A. Cooper III before the U.S.-China Economic and Security Review Commission [hereafter referred to as USCC], March 16, 2006, 3.) This observer also states: "Looking at a net assessment of emerging Chinese capabilities and U.S. power projection in the Pacific theater, there is a window of concern between roughly 2008 and 2015. Many Chinese programs focused on Taiwan and the near periphery (new cruise and maneuverable ballistic missiles, submarines, and destroyers) will be fully online around 2008; but some of the US capabilities to defeat China's sea denial strategy (missile defenses, littoral strike assets, a state-of-the-art, integrated ASW network) may not be in place until around the middle of the next decade." (*Ibid.*, 8.)

Another observer states: "Because the Chinese submarine fleet will operate in nearby waters and in the mid-Pacific, China need not wait until 2020 to challenge the U.S. at sea. It will likely have a home-field advantage in any East Asian conflict contingency as early as 2010, while the U.S. fleet will still have operational demands in the Middle East, and in tracking Russian ballistic missile submarines elsewhere. (Statement of John J. Tkacik, Jr., at hearing on China grand strategy and military modernization before the House Armed Services Committee, July 27, 2005, 8.) See also the statement for this hearing of Richard Fisher, which cites the year 2010 on pages 3, 4, 7, 9 (twice), 11, and 16 in discussing China's military modernization and the resulting impact on the regional military balance, and Fisher's statement for a USCC hearing held on February 6, 2004, which states on page 85, "It is possible that before the end of the decade the PLA will have the capability to coordinate mass missile attacks on U.S. Naval Forces by submarines and Su-30s." On page 88, Fisher prints his table summarizing potential PLA anticarrier forces by 2010. Another observer states: "QDR [Quadrennial Defense Review] planners have recently moved forward (to 2012) their estimate of when key warfighting capabilities might be needed to fight China, and have postulated conflict scenarios lasting as long as seven years." (Loren B. Thompson, "Pentagon Fighter Study Raises Questions," Lexington Institute Issue Brief, August 22, 2005.)

⁶ 2007 DOD CMP, 15.

⁷ Ibid., page I (Executive Summary). Similar statements can be found on pages 8–9, 15, and 22–24.

⁸ Negroponte, 10.

⁹ *Jane's Fighting Ships 2007–2008*, 116. See also 31 (Executive Overview).

¹⁰ One news article, citing information from the Office of Naval Intelligence, states that a total of five is expected. (Bill Gertz, "China Expands Sub Fleet," *Washington Times*, March 2, 2007.)

¹¹ U.S. Department of the Navy, *Worldwide Maritime Challenges 2004* (Washington, DC: Office of Naval Intelligence), 37. (Hereafter cited as 2004 ONI WMC.)

¹² 2007 DOD CMP, 3, 19 (figure 3), and 42 (figure 14). Editors' note: As mentioned in the introductory chapter, since the presentation of this paper in 2007, the JL-2 has reportedly been delayed in production.

¹³ 2007 DOD CMP, 19 (figure 3).

¹⁴ See, for example, *Jane's Fighting Ships 2007–2008*, 31 (Executive Overview).

¹⁵ Another source paints a somewhat different picture of plans for the *Han* class, stating: "Type 091/09 (Han) #403 underwent modernization and overhaul during 2003–04, including [an] 8m hull extension possibly to accommodate [a] new towed passive array, [a] new bow sonar, plus [the] ability to fire Yingji-82 ASuW [antisurface warfare] torpedoes. Others are expected to be modernized in similar fashion. #401 is non-operational, [and] maybe [it will be] next scheduled for re-build and modernisation beginning 2007." Keith Jacobs, "PLA-Navy Update," *Naval Forces*, no. 1 (2007), 24.

¹⁶ 2007 DOD CMP, 3.

¹⁷ Jacobs, 20. Editors' note: Since the author wrote this paper, current assessments indicate that production of the *Shang*-class submarine will stop at two boats, and may be followed up by the production of a new SSN design possibly referred to as the Type 095 class submarine. See *Jane's Fighting Ships 2010–2011*, and Ronald O'Rourke, *China Naval Modernization: Implications for U.S. Navy Capabilities—Background and Issues for Congress*, December 1, 2010, Congressional Research Service, 10 and 13.

¹⁸ 2005 ONI WMC, 14.

¹⁹ One set of observers states: "Chinese sources universally recognize that noise reduction is one of the greatest challenges in building an effective nuclear submarine. PRC scientists have long been conducting research concerning the fundamental sources of propeller noise. For instance, experts at China Ship Scientific Research Center developed a relatively advanced guide-vane propeller by the late 1990s. This, and the fact that China already has advanced seven-blade propellers with cruciform vortex dissipaters on its indigenous *Song*-class and imported *Kilo*-class diesel submarines, suggests that the [Type] 093 and [Type] 094 will have significantly improved propellers. A researcher in Qingdao's 4808 Factory also demonstrates Chinese attention to the need to use sound-isolation couplings to prevent transmission of vibrations to the ocean from major fresh-water circulating pumps in the steam cycle. Advanced composite materials are credited with capability to absorb vibrations and sound." These observers continue: "One Chinese researcher states that the [Type] 093 is not as quiet as the U.S. *Seawolf* class or *Virginia* class but is on a par with the improved *Los Angeles* class. Another analyst estimates that the [Type] 093's noise level has been reduced to that of the Russian *Akula*-class submarine at 110 decibels. He states that the [Type] 094's acoustic signature has been reduced to 120 decibels. According to this report, this is definitely not equal to that of the *Ohio* class, but is on a par with the *Los Angeles*. There is no additional information given to evaluate concerning the origins or comparabil-

ity of these 'data.' Andrew S. Erickson and Lyle J. Goldstein, "China's Future Submarine Force: Insights from Chinese Writings," *Naval War College Review* (Winter 2007), 67.

²⁰ See, for example, Ronald O'Rourke, "Maintaining the Edge in US ASW," *Navy International* (July/August 1988), 348–354.

²¹ Erickson and Goldstein, 55–56.

²² 2004 ONI WMC, 12.

²³ Tkacik, 8; see also the statement for this hearing of Richard Fisher, 11–12.

²⁴ In discussing the weapons to be carried by China's *Kilos*, this source states that "China in late-2005 also firmed contracts" for Shkval torpedoes, and that "The Russians viewed it as a 'last ditch' weapon for use against either ships or submarines." Keith Jacobs, "PLA-Navy Update," *Naval Forces*, no. 1 (2007), 21.

²⁵ *Jane's Fighting Ships 2005–2006*, for example, states: "It is fair to say that the intelligence community was caught completely unawares by the emergence of the Yuan class." (Executive Overview, 30). See also Bill Gertz, "Chinese Produce New Type of Sub," *Washington Times*, July 16, 2004, 1.

²⁶ Jacobs, 20. Editors' note: Since the presentation of this paper in 2007, China has already put four Yuan-class submarines into service and may be planning to construct 15 additional hulls. See O'Rourke (2010), 10.

²⁷ *Jane's Fighting Ships 2007–2008*, 118.

²⁸ Evan S. Medeiros et al., *A New Direction for China's Defense Industry* (Santa Monica, CA: RAND Corporation, 2005), 148. (MG-334, RAND Project Air Force. Hereafter cited as 2005 RAND report.)

²⁹ See O'Rourke (2010), 11.

³⁰ Some observers might view purchase of the 12 *Kilos* as a one-time event intended to jump-start the modernization of China's submarine force. Other observers, while conceding the value of the 12 *Kilos* in jump-starting the modernization effort, might argue that additional foreign purchases of Russian-made submarines in the future are still quite possible.

³¹ 2004 ONI WMC, 11. The range of 25 to 50 is based on visual inspection of the graph.

³² *Jane's Fighting Ships 2007–2008*, Executive Overview, 31.

³³ John J. Tkacik, Jr., *China's Quest for a Superpower Military*, Heritage Foundation Background No. 2036, May 17, 2007; *Jane's Fighting Ships 2007–2008*, 9–10. A footnote at the end of this quoted passage states: "Including at least five Type-94 *Jins*, five Type-093 *Shangs*, five Type-095s, one *Yuan*, 13 *Songs*, and 13 *Kilo* 877s and 636s."

³⁴ Federation of American Scientists (FAS), "China's Submarine Fleet Continues Low Patrol Rate," published online at <<http://fas.org/blog/ssp/2007/02/>>.

³⁵ For an article that discusses at length the question of China's potential development and acquisition of aircraft carriers, see Andrew S. Erickson and Andrew R. Wilson, "China's Aircraft Carrier Dilemma," *Naval War College Review* (Autumn 2006), 13–45.

³⁶ Jacobs, 24.

³⁷ 2007 DOD CMP, 22–24. Brackets and ellipses as in the original.

³⁸ *Jane's Fighting Ships 2007–2008*, 122. This source similarly states at another point that work being done on "the ex-Russian carrier *Varyag* (possibly to be named *Shi Lang*) continued at Dalian during 2006 and there now seems little doubt that the ship is destined to become the first Chinese aircraft carrier. The announcement in October 2006 by *Rosoboronexport*, Russia's arms export agency, that the Chinese government was in negotiations to buy up to 50 Su-33 naval fighters was a clear indication of intentions. A tentative timetable is for the ship to begin sea trials in 2008 with a view to commencing operational flying training in about 2010. It may be some years after that before the ship becomes fully operational and its initial status is likely to be as a training ship and as a test-bed for the development of China's indigenous carrier programme." (Executive Overview, 31). Editors' note: A more recent August 2009 unclassified Office of Naval Intelligence Report indicates that China is "undertaking a program to both operationalize [the *Varyag*] (likely as a training platform) and build an indigenous carrier to join the fleet between 2015 and 2020." See O'Rourke (2010), 15.

³⁹ Tkacik, 12–13.

⁴⁰ Testimony of Richard D. Fisher, Jr., for a hearing held on March 16, 2006, before the U.S.-China Economic and Security Review Commission, 5–6. See also David Lague, "An Aircraft Carrier for China?" *International Herald-Tribune*, January 31, 2006; Norman Friedman, "*Varyag* Redux?" *U.S. Naval Institute Proceedings* (December 2005), 91.

⁴¹ Statement of Richard Fisher at hearing on China grand strategy and military modernization before the House Armed Services Committee, July 27, 2005, 12. (Hereafter cited as *Fisher 7/27/05 testimony*.)

⁴² 2007 DOD CMP, 3. The DOD report spells *Sovremenny* with two “y’s” at the end.

⁴³ The 2006–2007 edition of *Jane’s Fighting Ships* states: “It is of note that the Chinese navy has chosen to adopt an incremental approach, in which only two ships of each class are built, rather than opt for a longer shipbuilding line with corresponding economies in development and building costs and equipment commonality. A possible explanation is that the navy is on a steep learning curve and that, rather than being cautious about the introduction of new technology, it is keen to ensure that every ship introduced into service reflects the latest developments” (Executive Overview, 30). Another set of observers states that “China was forced to cancel its production of the *Luhu* class of destroyers because the U.S.-made gas turbine engines were no longer available after the United States imposed export restrictions on military-related goods following the Tiananmen Square incident in 1989. China’s newest operational destroyers use Ukrainian, not Chinese, engines” (2005 RAND report, 140).

⁴⁴ Jacobs, 24. Italics as in the original.

⁴⁵ 2005 RAND report, 144–145.

⁴⁶ 2007 DOD CMP, 3–4.

⁴⁷ For a detailed article about the *Luyang II*-class, see James C. Bussert, “China Debuts Aegis Destroyers,” *Signal*, July 2005, 59–62. See also the statement of Richard Fisher at hearing on China grand strategy and military modernization before the House Armed Services Committee, July 27, 2005, 12.

⁴⁸ 2005 RAND report, 146–147.

⁴⁹ Norman Friedman, “A New Role For Active Radar Arrays?” *U.S. Naval Institute Proceedings* (January 2006), 91.

⁵⁰ 2004 ONI WMC, 29.

⁵¹ 2007 DOD CMP, 3.

⁵² *Jane’s Fighting Ships 2007–2008*, Executive Overview, 31. The *Luzhou*-class destroyers indeed were commissioned between 2006 and 2007. See O’Rourke (2010), 19.

⁵³ 2005 RAND report, 147.

⁵⁴ *Jane’s Fighting Ships 2007–2008*, 129. This source states at another point that on October 12, 2006, China launched (i.e., put into the water for final construction) “the first of what is expected to be a large class of *Jiangkai II* [class] ships. Noteworthy features include a vertical-launch system for the HHQ-16 missile.” Executive Overview, 31

⁵⁵ Jacobs, 26.

⁵⁶ *Jane’s Fighting Ships 2007–2008*, Executive Overview, 31 and 136. See also *Fisher 7/27/05 testimony*, 13; “PRC Appears Ready to Field New Trimaran Fast Missile Warship,” *Defense & Foreign Affairs Daily*, October 5, 2004; Yihong Chang, “First Sight of Chinese Catamaran,” *Jane’s Defence Weekly*, May 26, 2004.

⁵⁷ Jacobs, 27.

⁵⁸ 2006 DOD CMP, 30. See also *Fisher 7/27/05 testimony*, 13.

⁵⁹ See O’Rourke (2010), 21.

⁶⁰ *Jane’s Fighting Ships 2007–2008*, 139.

⁶¹ *Ibid.*, Executive Overview, 31.

⁶² Tkacik, 13.

⁶³ Richard D. Fisher, Jr., “Naval Gazing, Emerging Expeditionary Capabilities in the Western Pacific,” *Jane’s Intelligence Review* (August 2007), 55.

⁶⁴ *Jane’s Fighting Ships 2007–2008*, Executive Overview, 31, and 136.

⁶⁵ Jacobs, “PLA-Navy Update,” 21, 24.

⁶⁶ Tkacik, 12–13.

⁶⁷ Testimony of Richard D. Fisher, Jr., for a hearing held on March 16, 2006, before the USCC, 5–6.

⁶⁸ Jacobs, 30.

⁶⁹ *Ibid.*, 24.

⁷⁰ 2007 DOD CMP, 18. The report states further that “The Israelis transferred HARPY UCAVs to China in 2001 and conducted maintenance on HARPY parts during 2003–2004. In 2005, Israel began to improve government oversight of exports to China by strengthening controls of military exports, establishing controls on dual-use exports, and increasing the role of the Ministry of Foreign Affairs in export-related decisions,” 28.

⁷¹ For more information about GlobalSecurity.org, see <<http://www.globalsecurity.org/org/index.html>>.

⁷² <<http://www.globalsecurity.org/military/world/china/navy.htm>>.

⁷³ <<http://www.globalsecurity.org/military/world/china/plan-af-equip.htm>>.

⁷⁴ 2007 DOD CMP, 15.

⁷⁵ Council on Foreign Relations, *U.S.-China Relations: An Affirmative Agenda, A Responsible Course*, Report of an Independent Task Force sponsored by the Council on Foreign Relations, Washington, DC, 2007, 47. (Hereafter cited as *2003 CFR task force report*.)

⁷⁶ 2007 DOD CMP, 32–33. DOD further notes that “Amphibious operations are logistics-intensive, and their success depends upon air and sea superiority in the vicinity of the operation, the rapid buildup of supplies and sustainment on shore, and an uninterrupted flow of support thereafter. An amphibious campaign of the scale outlined in the Joint Island Landing Campaign would tax the capabilities of China’s armed forces and almost certainly invite international intervention. Add to these strains the combat attrition of China’s forces, and the complex tasks of urban warfare and counterinsurgency—assuming a successful landing and breakout—and an amphibious invasion of Taiwan would be a significant political and military risk for China’s leaders” (32–33). See also *2003 CFR task force report*, 2, 3, and 53.

⁷⁷ For an analysis that casts a skeptical eye on the potential, see Michael A. Glosny, “Strangulation from the Sea? A PRC Submarine Blockade of Taiwan,” *International Security* (Spring 2004), 125–160. For an analysis that expresses more concern about this potential, see the statement of Lyle J. Goldstein and William Murray as printed in the transcript of a February 6, 2004, hearing before the USCC, 132–133, 147–151. See also Michael C. Grubb, “Merchant Shipping in a Chinese Blockade Of Taiwan,” *Naval War College Review* (Winter 2007), 81–102.

⁷⁸ Roger Cliff et al., *Entering the Dragon’s Lair: Chinese Antiaccess Strategies and Their Implications for the United States*, MG-524-AF, RAND Project Air Force (Santa Monica, CA: RAND Corporation, 2007), 129.

⁷⁹ *Ibid.*, xvi–xvii.

⁸⁰ See, for example, [U.S.] Office of Naval Intelligence, *China’s Navy 2007* (Washington, DC, 2007), 111–119 (chapter 15).

Chapter 7

Getting Rid of the Rust: Preparing Chinese Navy Leaders for High-tech War

Susan M. Puska

We should turn our mourning to strength and draw lessons from the accident [of the No. 361 submarine] to advance our national defense capacity and speed up the PLA's modernization drive.

—Hu Jintao (2003)¹

Because of my involvement in economic crimes, I had been stripped from the post of deputy navy commander and thus I am no longer qualified to be a deputy in the NPC [National People's Congress]. Please remove me from my position.

—Vice-Admiral Wang Shouye (2006)²

Introduction³

The twin embarrassments of the 2003 *Ming* submarine accident and the 2006 relief and prosecution of Vice-Admiral Wang Shouye for economic corruption were dramatic low points for an aspiring navy at the beginning of what has been called “the Chinese Century.”⁴ Both incidents raise questions about the professional competence of China's military leadership to guide navy modernization to the realization of a blue-water navy.

Striving toward this goal, the People's Liberation Army (PLA) Navy (PLAN) today is pursuing change on an unprecedented scope and pace. Modernization encompasses the entire naval force from its submarines, to surface vessels, which will eventually include aircraft carrier capability, to its naval air force, all within the three fleets—North Sea Fleet (NSF), East Sea Fleet (ESF), and South Sea Fleet (SSF). Advanced weapons and equipment, however, are only one aspect of China's naval modernization. People—from the senior commander and political commissar levels down to the most junior and least experienced sailors—will be key to achieving a more capable naval force. Without a core of long-term, well-trained, and experienced personnel at all levels throughout the fleets, headquarters, and navy educational system, the Chinese navy will encounter significant difficulties in effectively employing and maintaining the new technology it is acquiring and developing to outfit a

high-tech navy. The PLAN's challenges will be further complicated by its continuing multigenerational and foreign-China mix of weapons and equipment, which require a corresponding mix of personnel with skills to effectively operate, maintain, and support the Frankenstein-like inventory of equipment and weaponry.

Although the PLA has always recognized the importance of people, it now realizes that its armed forces need more people who can effectively employ modern equipment and weapons based on ever-advancing technology. The Chinese Communist Party (CCP) preference for politically reliable (red) military personnel, who have the right thought, right background, and even the right family, remains a preoccupation in selecting personnel for entry into service; however, political correctness is now matched by a critical need for increasing numbers of well-educated and skilled (expert) personnel who can learn complicated tasks more quickly to operate and maintain sophisticated weapons and equipment.

Whether or not the Chinese navy can acquire and develop a higher concentration of red and expert personnel and leaders is the focus of this paper. It examines key problems in leadership and personnel management that the PLAN faces as it develops its navy, the steps it is taking to address these shortfalls, and an assessment of what it is achieving. An added area of the paper is a discussion of the global navies with whom the PLAN is cooperating, what it may be learning from these foreign navies, and how these interactions may be influencing China's naval modernization.

Leadership and Personnel Management Shortfalls

You can never get rid of all the rust, and you can never learn everything about a submarine's structure.

—Chinese Submariner saying⁵

It is required to "foster the firm conviction that the officers and men are . . . trustworthy and dependable."

—Dai Mingmeng, PLA delegate to 17th Party Congress (October 2007)⁶

Operational Deficiencies

The *Ming* Submarine No. 361 accident, which occurred east of the Neichangshan Islands near Shangdong Province, in April 2003, was the first time the PLA publicly reported an accident at sea. The openness of the announcement in late April was more remarkable for admitting that all aboard (70 people) were killed. Coming on the heels of the pressured acknowledgment of the severe acute respiratory syndrome (SARS) epidemic,

the submarine incident was quickly investigated by the Central Military Commission (CMC) during April 2003.

The official findings of the accident investigation were never publicly released, leaving room for speculation and rumor, including conclusions that the accident was caused by technical malfunctions in the aged submarine.⁷ In early May 2003, however, the CMC officially announced that “operational errors” caused the accident, and held North Sea Fleet senior military and political leaders responsible for “improper direction of the vessel’s operations.” Then-Vice Admirals Ding Yiping, Commander of the North Sea Fleet, and Chen Xianfeng, political commissar, were subsequently relieved of duty and demoted, along with eight other officers who were also demoted or dismissed.⁸

Although the exact nature of leadership failings in the submarine accident has not been revealed, the accident, nonetheless, illustrates a number of problems in leadership and personnel management that are relevant to the entire PLAN force. Many of these can be inferred or have been directly identified in public Chinese military writings in the years since the accident. Hu Jintao’s emphasis on military safety after he replaced Jiang Zemin as the Chairman of the Central Military Commission (CMC) in late 2003 was the first obvious conclusion from the lost submarine personnel. But a more comprehensive list of deficiencies can be inferred from an interview with model submariner Captain Ma Lixin in 2006, discussed below.⁹

The *Ming* Submarine No. 361 accident highlighted deficiencies such as leadership failures to ensure that proper safety, maintenance, and operational procedures were established and followed; a lack of sufficient technical training and experience within the crew to allow for execution of appropriate operational procedures and for capable response and problem-solving during a crisis; and a failure within the cadres (captain and other senior leaders on board) to respond quickly during a crisis.

During a well-choreographed *Jiefangjun Bao* interview in 2006, in which Captain Ma was directly asked about recent submarine accidents, he observed that submarine operations are “characterized by high Science and Technology content,” but also “great risk” as a submarine operates in a “difficult environment” at sea. The key attributes of a good Chinese submarine captain, Ma said, must be balanced among technical, physical, and mental (often meaning ideological) characteristics, such as firm ideals and convictions, tried and tested military skills (including advanced technical and tactical capabilities), strong and healthy physique, indomitable will, excellent psychological qualities, and a vigorous work style.¹⁰

The most important attributes a captain must have, according to Ma, are a strong professional dedication and sense of responsibility. If these are lacking,

he said, the captain will not withstand the “tests of time and difficulties,” which could lead to “carelessness or mishap on a sub captain’s part” and to “destruction of the boat and loss of life.”¹¹

In addition, Ma stressed the necessity to develop sufficient outstanding crewmembers and “back-up talent” for safe submarine operations. The entire crew, he said, must have comprehensive talent—“study-type, knowledge-type, and expert-type”—to operate a vessel safely and competently during normal operations and emergency situations. Contrary to the past emphasis placed on experience on the job, Ma said that any crew member who serves on a vessel, such as a submarine, which combines high-technology digitization, integration, and automation on a combat operations platform, must understand structural principles, operations, care and maintenance, and how to clear malfunctions.

Ma’s picture of the ideal captain reflects the official findings of the submarine accident, which condemned Admiral Ding and other navy leaders while highlighting the key importance of leaders rather than equipment—a theme that resonates throughout navy personnel management and development, discussed below.

Corruption

As a lesson in failed dedication and lack of responsibility, Vice-Admiral Wang Shouye’s corruption case provides its own example, which touches on the nerve of Party corruption and abuse of authority. Despite Hu Jintao’s no-tolerance policy for Party corruption, it is hard to assess how strongly the Wang case resonates within the PLAN’s leadership and personnel management system, particularly since many senior officers were involved in the corruption, and Wang may have had links to President and Party General Secretary Jiang Zemin.¹² During his tenure at the PLA General Logistics Department (GLD), where he was responsible for barracks construction and land management throughout the PLA, Wang was rumored to be involved with unsavory land deals in preparation for the 2008 Olympics in Beijing that reflected endemic corruption. Wang may have gained Jiang Zemin’s favor for constructing the new headquarters of the Central Military Commission in grandiose style and carrying out other purported schemes on Jiang’s behalf, but his ability to operate with impunity within the military over a period of several years, only to be undone by the threats of public exposure from his mistress, raises questions about the degree of official tolerance for corruption throughout the military leadership. The 17th Party Congress’s renewed efforts to fight Party corruption, even in the military, indicate how widespread and deeply intertwined corruption is throughout the Party system, even though it is recognized as a potential threat to Party rule.

Wang's death sentence (later commuted to life in prison) for economic crimes and "loose morals,"¹³ had some effect on the PLA, including the PLAN, particularly since Wang cooperated with investigators to provide the names of dozens of military officers. Of these, five were reportedly expelled from the PLA and six were demoted.¹⁴ After this purge of officers, however, the emphasis seems to have been more on rejuvenation of the Party, including expanding the size of the Party and recruiting accomplished personnel into the Party.

For the PLAN, Wang's corruption case may also have made an important point about the custom of appointing army officers to senior positions in other services, where they have no background or experience. As the PLAN continues to transform itself into a more advanced navy, it will not only need more seats at the head table of China's military leadership, which is dominated by the ground force, it will also need navy leaders who have worked their way up through their own service and intimately understand the resource needs and priorities to realize a modern blue-water navy, including the employment and support of high technology.

The *Ming* submarine accident and the Wang Shouye corruption case illustrate critical personnel problems facing the Chinese navy leadership and personnel management system as it seeks to recruit and develop better educated cadres (officers and noncommissioned officers) who will achieve a higher level of technical competence, perform with a strong sense of dedication and responsibility, remain loyal to the Party, and achieve uncorrupted professionalism.

Addressing the Problems

Navy transformation to integrate more complex and sophisticated high-technology weapons and equipment during peacetime, war, and crisis situations, calls for a higher proportion of officers, noncommissioned officers (NCOs), and sailors with an ability to more quickly acquire advanced skills than in the past. Peasants from the countryside, who are less educated and lack the technological savvy of their city counterparts, may still be able to fill less skilled jobs in support of the navy on land and at sea, where they can learn on the job, but the proportion of such positions can be expected to decline over time as navy weapons, equipment, and vessels become more uniformly advanced throughout the active force. To meet this challenge, the PLAN has taken several steps within the overall reform of PLA leadership and personnel management, to develop the type of leaders and personnel it will need to man a blue-water force. These efforts focus on programs to raise the quality of officers to lead a modern navy, expand the proportion of noncommissioned officers to serve as the technical backbone of the navy, including providing on-the-job training to recruits, and recruit and appoint college-educated civilian graduates.

The Accessions Problem

To meet the goal of developing a more advanced leadership core by 2010 and to make a dramatic breakthrough by 2020,¹⁵ the PLAN has steadily increased the proportion of civilian accessions to naval academy graduates, as well as other sources of commissioning, including highly competitive officer accessions from conscript and noncommissioned officer ranks. During the 11th Five Year Plan, the proportion of civilian graduates to be accessed into the PLAN commissioned officer programs is projected to reach 40 percent of the yearly total.¹⁶ These civilians will enter commissioned officer ranks via two main programs: (1) the National Defense Student Program; and (2) recruitment of college graduates, who receive 3 months of military-political training prior to assignment to units.¹⁷ The National Defense Student Program, which was instituted in 2000, recruits students as reserve officers and provides a stipend and summer training, similar to the U.S. Reserve Officer Training Corps (ROTC) programs. The students are required to join the Navy after they graduate from university.¹⁸

By raising the proportion of college-educated officers, particularly within key technical specialties, the PLAN hopes to inject a higher proportion of young officers who can achieve technical competency faster and who can meet the needs of a higher-tech navy.

Professional Education and Training

While civilian university graduates have provided a growing proportion of navy accessions since 2000, civilian schools have also augmented military education by opening on-campus courses to sponsored military members.¹⁹ The closer relationship that has developed between the military and university students could scarcely have been imagined after the civil-military schism that erupted with use of military force against students on June 4, 1989, in Tiananmen Square, but the passage of time and a concerted effort on the military's part to reestablish the PLA-serves-the-people myth and encourage patriotism among young intellectuals may be paying off over time.

For example, military indoctrination training for incoming freshmen—a program that began in the 1980s and which was firmly reemphasized after the Tiananmen incident—has flourished on college campuses across China. In 2007, several Web sites in China posted pictures of university presidents, some dressed in military uniforms, conducting military reviews of the graduating freshmen upon completion of their military training at Shandong University of Science and Technology, Changchun University of Science and Technology, Guangxi Normal University, Sanjiang University, Zhejiang University, and Remin University.²⁰ Although netizens criticized the

militaristic style of the college presidents, few questioned why Chinese college students should be exposed to military training prior to the start of their freshman year. A survey conducted by *China Youth Daily* reported that 69 percent of the 1,510 students who were polled in the survey said the military training was “a worthy and unforgettable experience.”²¹

Although Chinese society traditionally disdains the military as a career choice, and economic opportunities during the last 20 years have competed with the military to attract educated youth, changes over time (demographic shifts, economic trends, and international threats) could occur that make the military a more attractive alternative to a more receptive pool of college students and graduates.

Military academies, which have been significantly reduced as part of the overall reduction of the PLA, have also adjusted their curricula in response to complaints from navy units that academy training for both officers and NCOs placed too much emphasis on theory and classroom time. Accordingly, the study of theory has been reduced and more stress has been placed on practical experience with actual units. Greater reliance on simulation also augments classroom study and allows practical application of military procedures and concepts. Training and education targeted to support duty positions have also been developed to enhance leaders' preparation to perform in units.

Self-study and continuing education are now augmented with short-term courses tailored to develop expertise in specific skills. Overall there is greater emphasis on combat-oriented training, employing less formalism and more realism, including psychological toughening to better withstand the stress of combat and heighten the ability to perform in a crisis.

Operational Changes

To develop an NCO corps that will provide a stronger backbone for the active force, a shift in the division of labor has occurred between officers and NCOs. Additional duties, such as mess officer, that a commissioned officer would normally do, have shifted to NCO duties. NCOs also are being developed to train the trainer (other NCOs) and provide training to enlisted personnel that fell to a commissioned officer in the past. The result is the transition toward more stratified levels of work, responsibilities, and skills sets in which the NCO plays a key bridging role between the commissioned officers and conscripts. This not only frees the commissioned officers to focus on more administrative duties, including oversight and spot-checking, it also reinforces a more top-down command structure.

Greater emphasis has been placed on experience and practical application at sea. Spending more time at sea to train and develop skills under

pressure is the ideal, but on-shore preparation training on simulators is also helping to lay a more solid foundation for operations at sea. Testing and checking to ensure a higher level of safety and proper adherence to operational procedures have also been strengthened based on more realistic combat conditions and standards.

Additionally, the Party Committees, which continue to play a key role in collective decisionmaking, even at sea, have been encouraged to elevate their military competence and skill levels to better support high-tech modernization.

Retention

To keep the personnel the Navy would like to retain to promote as NCOs and officers, a number of benefits have been improved, such as pay and allowances and educational opportunities. The importance of post-demobilization treatment has also been emphasized, although the burden still largely rests with localities to provide. Propaganda plays an important role in highlighting praise and reward of navy models of self-sacrifice, self-study, perseverance, and innovation, as well as the punishment and relief of leaders who violate rules and regulations and fail to carry out their duties and responsibilities.

Noncommissioned Officers

A key reform of the PLAN personnel system is the development of a noncommissioned officer corps to serve as the navy's foundation and link between officers and conscripts. NCOs are primarily accessed from the enlisted conscription ranks. Some have also been recruited from civilian schools.²²

The duties and responsibilities of the NCOs are expanding to fill their roles as experts in multiple skills and as trainers of junior NCOs and conscripts. Some duties that previously fell on commissioned officers have also migrated to NCOs, who can also serve as acting platoon leaders and command smaller PLAN vessels.²³

The education goals for NCOs presently are either a secondary technical degree (high school equivalent) or senior technical degree (associate level—the first class of NCOs to graduate was in 2003), which puts them well above the education levels of conscripts, but also below commissioned officers. The PLAN has one NCO School located in Bengbu, Anhui Province. It provides 2- to 3-year courses in maritime and ground-based services, including 24 specialties in nine categories, such as chemical defense, communications, navigation, logistics, machinery, mechanical, electrical, and weapons. In addition, NCOs can also attend programs at the Dalian Vessel Academy, Naval Engineering University, Service Arms Command Academy, Submarine Academy, Logistics Academy, and Aviation Engineering Academy.²⁴

Challenges

The proportion of NCOs PLA-wide is estimated to be about one-third. Estimates vary as high as 50 percent to 60 percent, depending on the technical specialty (e.g., Second Artillery). While having sufficient numbers of NCOs will be key to establishing a corps, the greater challenge will lie in developing a sufficient and consistent level of training, education, and practical experience throughout the entire corps of NCOs to provide backbone leadership and expertise to the force.

While training and education of NCOs are increasing, they still are insufficient and must compete for funds for officer training and other improvements. Reports of corruption within the NCO system selections and promotions are not encouraging, but may be fueled by the yearly up-or-out testing of NCOs, and risk undermining the pace and scope of the establishment of an NCO corps. At present, NCOs are primarily technical experts who are evolving into a greater training and leadership role, which will take time, training, and experience to realize. Additionally, the weight given to the voice of an NCO in decisionmaking may be limited by power relationships between the officers, who appear to be becoming more elite, and the heavily burdened but relatively weak NCO base. Although the power and influence of the NCO corps may grow over time, their limited membership in Party Committees will work against this development, even if the commissioned officers encourage it. At this time in the development of the Chinese navy's NCO corps, it appears that their roles may be too broad and diverse, relieving commissioned officers of extra duties, while providing force continuity and expertise for daily naval operations and training. The normal tension that exists between NCOs and officers will likely be accentuated as the Chinese navy finds its way through this transition and duties, responsibilities, and roles, as well as power relationships, are further developed.

Party Matters: Addressing Personnel Problems

Any denial or neutralization of the Party leadership will be uncompromisingly fought against.

—Minister of Defense General Cao Gangchuan (17th Party Congress)

As the vanguard party in command of the gun (i.e., the PLA), the Chinese Communist Party oversees the modernization of the PLAN and armed forces. Its propaganda role is key to encouraging the right people (educated and skilled young people) to join the PLA in the right numbers, while also convincing families that it is their patriotic duty to allow their children to volunteer for the armed forces, particularly in the cities, where education

is higher, but where other opportunities are also more abundant. One-child families, who are reluctant to give up their only child to military service, may also be attracted to Party-led enhancements to military benefits, especially education and other opportunities for their sons and daughters, and better placement and treatment after leaving the armed forces.

The 17th Party Congress's explicit stress on the leading role of the Party, including the military, as well as the urgent need for rejuvenation of the Party and elimination of corruption at all levels, does not indicate that the Party feels confident and secure in its role. For the PLAN and other services, Party corruption beyond tolerable limits can undermine the military competency, cohesion, and resilience needed to respond to a crisis, which can be devastating to military modernization. While the Party seems to recognize the potential threat that corruption brings to its continued rule, at the same time old habits die hard, and the Party, even in the military, seems to continue to just nip around the edges of corruption without sinking into its heart.

The Party's latest reincarnation of the red-versus-expert dichotomy in the military stresses, first, the paramount position of Party leadership, and, second, Party member development of a higher level of military competency and professionalism more suitable to its vanguard role in leading high-tech modernization. It is debatable, however, how political officers, who have limited field experience as young officers before they are recruited into the political specialty at the platoon or company levels, can develop high-tech military expertise sufficient to make informed decisions, particularly in crisis, when they reach more senior levels. Although they are encouraged to raise their military competence, this aspect will likely remain secondary to their political duties and responsibilities. The navy's model Party member in 2007, Fang Yonggang, PLA Dalian Naval Academy Political Science Professor, may be more representative of what the Party seeks of its members. Fang was praised more for his dedication to self-sacrifice, clean living, and innovative propaganda, than for any knowledge of the needs of a modernizing Navy.

Nonetheless, the unquestioned authority of the Party Committee in all major decisionmaking, as emphasized by General Cao Gangchuan, Minister of Defense, at the 17th Party Congress, makes it clear that the Party will not be taking a back seat anytime soon to more professional military officers to lead the navy or other armed forces in their quest for high-tech capabilities.

Foreign Influences on Navy Modernization

The main reasons given [for the withdrawal of Soviet technical advisors in July and August 1960] were that: the Chinese did not follow Soviet technical

advice and often expressed their scorn for it; the Chinese created intolerable conditions for the Soviet advisors, spying on them, searching their belongings, opening their mail; in some cases, Soviet specialists had been molested and even attacked.”

—Mikhail Klochko²⁵

However great the disagreements between [China and the Soviet Union] may be, we hope that we can gradually find a way to eliminate those disagreements, since unity between us is very important.

—Deng Xiaoping, July 20, 1963²⁶

Russian influence in Chinese military modernization has spanned almost 20 years since the founding of the People's Republic of China in 1949, including during the 1950s, until military relations were severed in 1963, and beginning again after the normalization of relations in 1989. High-level military ties between China and the former Soviet Union were resumed in 1990²⁷ and continued to develop even after the Soviet Union disintegrated, making Russia the most consistent source of potential influence on the PLA. Since the 1990s, this influence has focused on arms sales from Russia to China, particularly relatively high technology for the navy and air forces.

The PLAN has also looked to other more advanced navies as potential models for its modernization. Several years after the normalization of relations with the United States in 1979, U.S.-China navy relations developed as part of the overall bilateral relationship between the two militaries. In the mid-1980s, the United States agreed to allow China to purchase four Honeywell MK46 Mod.2 antisubmarine torpedoes and associated equipment under the Foreign Military Sales (FMS) program.²⁸ From the mid-to-late-1980s, military-to-military contacts included technical exchanges and high-level visits, with the potential for further development. In anticipation of more FMS cases in the future, military attachés in that period of the 1980s received special training in managing military sales, and plans to add officers to monitor the programs were shaping up. This level of military-to-military contacts was severed, however, by the June 1989 Tiananmen incident, when the United States suspended FMS cases. These remained in limbo for several years until an agreement was brokered to close out the cases in 1993. The uncompleted projects were packed up, as is, and shipped back to China, removing a key obstacle to resuming military contacts. The suspension and close-out left behind a mutual understanding (that was hardened on the U.S. side by Congressionally mandated restrictions and bitterness, distrust, and embarrassment on the Chinese side) that FMS to China were no longer possible, and have limited the scope of U.S.-China military contacts since.

While contacts with the U.S. Navy since 1989 have ebbed and flowed, ongoing Chinese navy contacts with other countries have steadily developed to the point that China now even conducts joint navy exercises with foreign navies. Most of the exercises, with the exception of those with Russia, are limited to maritime search and rescue drills, but they provide a basis for further development in the future. Between 2003 and 2006, China conducted nine Joint Maritime Exercises with foreign navies, as reported in the 2004 and 2006 National Defense White Papers. These exercises began with two exercises in 2003 with the Pakistan and India navies in 1-day exercises on October 21 and November 14, respectively. In 2004, China conducted three Joint Maritime Search and Rescue exercises with France on March 16, the United Kingdom on June 20, and Australia on October 10. At the end of 2005, the Chinese navy conducted three exercises in quick succession with Pakistan on November 24, 2005, India on December 1, and Thailand on December 13. During the end of 2006, China also conducted a two-phase Joint Maritime Search and Rescue Exercise with the United States. The first phase was held on September 20 and the second phase was conducted during November 18–19.

The roster of foreign navy officer representation within the Beijing Attaché Corps (as of October 2007) covers the global naval capabilities of large and small naval forces including the following: Australia, Bangladesh, Brazil, Cameroon, Ecuador, France, Italy, Japan, Malaysia, Mexico, Pakistan, Republic of Korea, Thailand, United Kingdom, and the United States.²⁹ These officers interact with the PLAN directly through social and professional associations, as well as during coordination of port visits, exchange of high-level and technical delegations, maritime exercises, and other activities.

Although the proportion of PLAN officers assigned to Chinese embassies abroad is unknown, the army tends to fill the higher percentage of military attaché positions worldwide. In 2006, for example, only two Chinese naval officers served in the Chinese Embassy, Washington, DC. In any case, Chinese military attachés are often less knowledgeable of their own service and the PLA in general, than they are of foreign militaries of interest. Additionally, Chinese military attachés often lack significant practical experience in leadership and technical operations. Nonetheless, they provide a window for the Chinese armed forces into areas of interest in foreign military capabilities, which can assist the PLA in better understanding the operations, organization, weapons, doctrine, etc., of foreign militaries. The access also allows Chinese military representatives abroad to make foreign military information of interest more accessible to the PLA through their translations into Chinese, interpretation of concepts, and other ways.

Transparency in Military Ties—A “Smiling Warning”

A recent opinion piece in *China Daily* by a researcher of the Second Artillery Corps, Yang Chengjun,³⁰ acknowledged the utility of foreign military ties to promote PLA transparency, which help project an “image of trustworthiness” throughout the international community, while also providing a “smiling warning” to countries that “play power politics”—an indirect reference to the United States. The author argued that military ties promote mutual trust and provide a better understanding of each side’s strategic intentions. But they also benefit the Chinese military by closing the gap with other countries through exposure to foreign military expertise, ideas, and technologies in areas such as nuclear strategy, military expenses, and organization. Military ties, he wrote, have enabled the Chinese Armed Force to upgrade its weaponry over the last decade, and the Chinese ability to conduct military ties reflects its self-confidence.³¹

Whatever steps the PLA in general, and the PLAN in particular, take to transform the officer and personnel management system, the process must conform to the Chinese military culture and operational system. Dramatic importation of foreign ideas into the PLAN may prove useful only if the PLAN can fully integrate and Sinicize these ideas with their own culture—civilian and military. Otherwise, foreign ideas that are not fully understood or integrated could become a liability, particularly as change accelerates and the force is subjected to routine and exceptional crises.

Conclusions—Will PLAN Personnel Transformation Work?

The PLAN has taken a number of positive steps to improve officer and enlisted leadership to support naval modernization. Among these, changes to the level of quality of accessions, development of an NCO corps throughout the navy, and improvements in training, particularly by enhancing the practical application of schoolhouse training, can raise the quality and depth of navy leadership at the operational level. The NCO corps can help stabilize the PLAN, achieve higher levels of expertise, and reduce the excessive dependency on 2-year recruits.

But the role of the Party Committee and Party corruption, as well as the continued operational dominance of the navy by the army, are countervailing conditions that work against personnel improvements. The goal to strengthen the Party Committee role, in particular, which was emphasized at the 17th Party Congress, may work against the enhancement of military capability. Raising the military competency of the Party when the PLAN does not

have enough resources to train its line officers and NCOs seems unrealistic for Party members. The development of the NCO corps and its relationship to the commissioned officer corps and the Party Committee is a work in progress, and problems between the two groups may emerge without resolution for some time as the navy transitions. For now, the development of both the NCO and commissioned officers corps is challenged by the need for more well-educated personnel at all levels, including junior enlisted ranks, to take better advantage of high-tech weapons and equipment. The 2-year conscription process will likely not meet the needs of the PLAN in the future, and it may shift to a more graduated personnel system that allows for long terms for enlisted sailors, as well as conscripts.

Notes

¹ Xinhua News Agency, accessed October 13, 2007, at <<http://www.dcfp.navy.mil/mc/articles/other/MingSub.htm>> while Hu was the Vice-Chairman of the Central Military Commission under Jiang Zemin.

² "Former Chinese Navy Deputy Commander Stripped of Parliamentary Post," posted June 29, 2006, by the Embassy of the People's Republic of China in the United States of America. Accessed October 13, 2007, at <<http://www.china-embassy.org/eng/gyzg/t260594.htm>>.

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⁴ Ted C. Fishman, "The Chinese Century," *The New York Times*, July 4, 2004, accessed October 13, 2007, at <<http://nytimes.com/2004/07/04/magazine/04CHINA.html>>. Also see, for example, Laurence J. Brahm, *China's Century: The Awakening of the Next Economic Powerhouse* (New York: John Wiley & Sons, 1991); and Oded Shenkar, *The Chinese Century: The Rising Chinese Economy and Its Impact on the Global Economy, The Balance of Power, and Your Job* (Upper Saddle River, NJ: Wharton School Pub., c2005).

⁵ Li Weixing: "Responsibility: A Submarine Captain's Number One Character Trait," *Jiefangjun Bao*, October 24, 2006, 7.

⁶ CPP2007102001 Beijing Jiefangjun Bao WWW-Text in English, October 19, 2007.

⁷ "Ming-class Submarine Incident Won't Stop Chinese Navy from 'Going Blue,'" *Washington Observer*, accessed October 13, 2007, at <<http://68.165.165/en/document.cfm?documentid=1&charid=3>>.

⁸ "Senior Naval Officers Punished for Submarine Accident," *People's Daily*, June 14, 2003, accessed October 13, 2007, at <<http://english.peopledaily.com>>.

⁹ Li, "Responsibility: A Submarine Captain's Number One Character Trait."

¹⁰ *Ibid.*

¹¹ *Ibid.*

¹² Mark O'Neill, "A Corruption Trail Leads to Jiang Zemin," *Asia Sentinel*, March 7, 2007. Accessed October 14, 2007, at <http://www.asiasentinel.com/index.php?option=com_content&task=view&id=409&Itemid=31>.

¹³ Xinhua News Agency, "Former Navy Deputy Commander Stripped of NPC Post," June 29, 2006. Accessed October 13, 2007, at <http://www.chinadaily.com.cn/china/2006-0/29/content_629565.htm>.

¹⁴ O'Neill.

¹⁵ Office of Naval Intelligence, "China's Navy 2007," 69. Available for download at numerous postings online, such as <militarytimes.com>. Accessed October 28, 2007.

¹⁶ *Ibid.*

¹⁷ *Ibid.*

¹⁸ Ibid. and Roy D. Kamphausen, "ROTC with Chinese Characteristics: Training the PLA in Civilian Universities," *China Brief, The Jamestown Foundation* 7, issue 6 (March 21, 2007).

¹⁹ Office of Naval Intelligence.

²⁰ "Slideshow: A University President's Military Dream," posted by Sophia Cao, September 3, 2007. Accessed October 29, 2007 at <<http://chinadigitaltimes.net/china/military-training/2007/>>.

²¹ "Military Training for College Students—20 Years On," accessed October 29, 2007, at <<http://www.china.org.cn/english/2005/Oct/144153.htm>>.

²² Office of Naval Intelligence, 73–74.

²³ Ibid.

²⁴ Ibid.

²⁵ Mikhail A. Klochko, *Soviet Scientists in Red China*, 178, quoted in Roderick MacFarquhar, *The Origins of the Cultural Revolution 2: The Great Leap Forward 1958–1960* (New York: Columbia University Press, 1983), 278–279.

²⁶ From records of meetings held between the Communist Party of the Soviet Union and the Chinese Communist Party in Moscow during the summer of 1963 before the split between the two countries occurred. Odd Arne Westad, ed., *Brothers in Arms: The Rise and Fall of the Sino-Soviet Alliance 1945–1963* (Washington, DC: Woodrow Wilson Center Press, 1998), 390.

²⁷ Bates Gill and Taeho Kim, *China's Arms Acquisitions from Abroad: A Quest for "Superb and Secret Weapons,"* SIPRI Research Report No. 11 (Oxford: Oxford University Press, 1995), 51.

²⁸ Ibid.

²⁹ While other countries not listed above also have naval attachés, these officers are predominately from their respective armies. Russia presently has an army general as its defense attaché, although this officer has been navy in the past. Military Attaché Corps, Beijing, People's Republic of China, accessed October 14, 2007, at <<http://www.bjmac.org>>.

³⁰ Yang Chengjun, "More Transparency Will Benefit the PLA," *China Daily*, July 27, 2007.

³¹ Ibid.

Chapter 8

The PLA Navy's Antiaccess Role in a Taiwan Contingency

Michael McDevitt

Introduction

“Antiaccess” and “area denial” are coined U.S. terms, first introduced into the official Defense Department lexicon in the 2001 Quadrennial Defense Review.¹ Both are now commonly used to characterize attempts to prevent the U.S. military from intervening should China elect to attack Taiwan. The basic idea is to prevent approaching U.S. Navy aircraft carrier strike groups from getting within tactical aircraft operating ranges. Or, as the Commander of the U.S. Pacific Command Admiral Robert Willard recently testified, “to challenge U.S. freedom of action in the region.”²

In Pentagon terminology “antiaccess” (A2 in Pentagonese) is often used synonymously with the term “area denial,” or AD. They are normally referred to together, as in antiaccess/area denial, or A2/AD. A very recent report by the influential research organization, The Center for Strategic and Budgetary Assessments (CSBA), differentiates between the two by equating *antiaccess* as the attempt to deny access to large fixed bases, such as Kadena Air Force base in Okinawa, so U.S. Air Force fighters cannot become involved in a cross-strait conflict.³ CSBA’s parsing now defines *area denial* as those capabilities intended to defeat mobile maritime forces. When this paper was originally drafted, antiaccess was most commonly used to characterize both A2 and AD which is, I believe, how most analysts still think about the issue. I will continue to use antiaccess as a generic term to capture the ideas resident in both A2 and AD.

It goes without saying that these are U.S. and not Chinese terms. They are useful characterizations because they describe the operational objective (or military effect) the People’s Liberation Army (PLA) is trying to accomplish if operations are successfully executed. The PLA does not use these terms—it speaks to “active defense.” A good discussion of the strategic concepts that underwrite the antiaccess concept is found in the PLA’s *Science of Military Strategy*: “Active defense is the essential feature of China’s military strategy and is the keystone of the theory of China’s strategic guidance.” The PLA argues that “active defense” is actually a “strategic counterattack,” because if an enemy

“offends our national interests, it means the enemy has already fired the first shot.” It is the mission of the PLA “to do all we can to dominate the enemy by striking first.” It goes on to instruct that “we should try our best to fight against the enemy as far away as possible, to lead the war to the enemy’s operational base . . . and to actively strike all the effective strength forming the enemy’s war system.”⁴

It is important to recognize that while the focus of this paper is the PLA Navy, China’s approach to antiaccess should in fact be considered a joint military operation—in that it involves more than one service. It involves the PLA Navy, PLA Air Force, and the Second Artillery. Even though most of the fighting would take place off China’s littoral at sea or on neighboring islands with U.S. bases, many of the most important capabilities that the PLA would employ are in the other PLA services and not the PLA Navy.

It is also important to recognize that from China’s perspective, an antiaccess campaign is inherently defensive; it is a responsive operational concept designed to react to the problems posed by U.S. forces close to or closing on the Chinese mainland. While it is being developed with a Taiwan contingency in mind, the concept itself has broader applicability than simply a Taiwan conflict scenario. This is a central point; these capabilities are important to China beyond a Taiwan contingency. The operational concept and attendant military capabilities resident in antiaccess are also very important to the defense of the Chinese mainland from attack from the sea, a vulnerability that has plagued China since the Opium War era. Thus, even if the prospect of conflict over Taiwan evaporates at some point in the future, the PLA capabilities associated with antiaccess will almost certainly not disappear.

This paper will attempt to put antiaccess into some historic context, and briefly discuss the similarities and differences between China’s current approach and what the Soviet Union had put in place to deal with a similar strategic vulnerability during the Cold War, namely, how to cope with the threat posed by U.S. Navy aircraft carrier task forces.

Finally, although Beijing’s wartime antiaccess strategy must take into account U.S. Air Force bases in Okinawa, Guam, and potentially South Korea, the operational aspects of dealing with this problem are straightforward. Conventionally armed ballistic missiles have been used to attack fixed land targets since 1944, without much strategic or operational success because of small conventional explosive payloads and missile inaccuracy. Today, this situation is very different. In the era of global positioning system (GPS)–enabled precision weapons, attacking fixed land bases with ballistic missiles is no longer operationally challenging because air bases do not move. There is a reasonable expectation that, after launching GPS-equipped ballistic missiles at a specific latitude and longitude, the missile will hit very close to the intended geographic aimpoint.

Because these missiles carry a relatively small amount of conventional explosive, the key to the successful use of ballistic missiles to put airfields out of commission is determined by missile accuracy and the number of missiles available to attack and reattack versus the adequacy of active missile defenses, the effectiveness of passive defenses such as hardened aircraft shelters, and the efficacy of rapid runway repair capabilities. To conduct a detailed examination of these factors is beyond the scope of this paper. Happily, recent testimony before the U.S.-China Economic and Security Review Commission by a RAND expert provides a useful summation:

RAND has looked at the effects of various TBM [theater ballistic missile] and cruise missile warheads against airbase targets, and numbers on the order of 30–50 TBM per base appear to be sufficient to overload and kill air defenses, cover all of the open parking areas with submunitions to destroy aircraft parked there, and crater runways such that aircraft cannot take off or land. If 30–50 cruise missiles were fired along with the TBMs, they would complicate the air defense problem and could also damage or destroy a squadron's worth of aircraft shelters. There would likely also be damage to other critical airbase systems such as fuel storage and handling or maintenance facilities and equipment. Following such an attack, U.S. forces would have to extinguish burning aircraft, clear the airfield of debris and unexploded ordnance, repair runway craters and fly in replacement aircraft and support equipment before the base could generate useful combat sorties.⁵

This statement should not be construed as suggesting the problem is hopeless. Countermeasures such as hardening against the small conventional warheads these missiles carry and improved techniques in rapid runway repair should not be dismissed out of hand.

The much more problematic issue for Beijing is in reaching a political decision to broaden the war by attacking U.S. facilities on the territory of Japan or South Korea.⁶ Would Beijing be willing to add to its enemies by attacking its neighbor's territory? Exploring this issue is also beyond the scope of this paper, but the problem should be kept in mind as yet another of the many difficult choices that the leadership of China will have to confront when determining whether or not to use force against Taiwan.

Historic Context—Finding and Attacking Ships at Sea Before Radar and Satellites

For most of recorded history, when ships went to sea and sailed beyond the sight of humans on the coast or on other ships—typically 12–18 nautical

miles depending on the height of eye of the observer above sea level—they “disappeared.” They were literally “over the horizon” and vanished from shore-based surveillance until they once more returned to within sight of land—often with little or no advanced warning. Officials responsible for the defense of their countries from enemies with navies had only one option in dealing with the surprise of warships suddenly showing up—build and man forts along vulnerable coastlines. As a result, over the millennia coastal defense fortifications were constructed to protect strategically important ports and cities.⁷

Wealthy countries were also able to build navies in the hopes they could seek out and defeat hostile navies before they could “materialize” off their coast. But before 20th century technology made it possible to search wide expanses of the ocean, finding a hostile fleet at sea was also very difficult. A classic example is the 4-month search by Lord Nelson in 1798 for the French fleet that eluded the British blockade and carried Napoleon’s army to Egypt.⁸ Nelson was eventually successful; he found and destroyed the French Fleet at Aboukir Bay, but not before Napoleon landed and successfully conquered Egypt.

Building forts and coastal fortifications to defend against hostile navies—especially those carrying invasion forces—is something that reached its apogee in World War II. In this great struggle, both the Germans and Japanese found that if you did not defeat the approaching naval force before it arrived at its objective area, it was virtually impossible to keep the invasion forces from coming ashore. Between late 1942 and the end of the war in 1945, neither the Germans nor the Japanese were able to either intercept or throw the invading force back into the sea. As the Japanese themselves demonstrated in their 1941–1942 campaigns throughout Southeast Asia, a powerful naval force that suddenly appeared in unexpected places could enable stunningly successful ground campaigns.

Thus the issue for any country worried about being attacked or invaded from the sea is finding a hostile naval force in the vastness of the open ocean so that the approaching navy could be attacked before it was too late. Clearly, reconnaissance by long-range patrol planes was used to find warships at sea with some success in World War II—the location and eventual sinking of the German battleship *Bismarck* being a classic example.⁹ There was also the intelligence practice of intercepting radio transmissions from naval forces at sea, a tactic practiced since World War I. Using the navigation technique of triangulation, a group of intercepting shore stations could develop the approximate location of the radio signal being sent from a ship at sea. Signal intercept is still in use by the PLA but it depends upon a “cooperative” enemy who is willing to actually use radios or in the modern era any electronic equipment that emits electronic signals that travel great distances, such as high-power radars. If the

naval force elected to remain “radio silent,” it still took the human eye or aircraft radar to find a naval force at sea.

Finding a force at sea is the basic problem, but determining what to do next is just as important. During World War II the German Navy combined the techniques of radio signal intercept, code-breaking, and aircraft surveillance to locate convoys sailing across the North Atlantic. They used centralized command from the shore to alert and position the submarines they had at sea. German U-boat commanders were directed by routine radio signals from U-boat headquarters where to go to intercept allied convoys.

In the early years of the war before radar was installed on allied aircraft and convoy escorts, the U-boats could surface and travel at a relatively high rate of speed to get into attack position. But once radar made the surface of the ocean inhospitable for surfaced U-boats, the inherent weakness of the slow submerged speed and limited battery life of diesel submarines greatly limited the effects the boats could achieve no matter how effective the shore-based command and control. It is worth wondering, and is strategically very relevant, why German U-boats were never able to intercept and interrupt any of the vast allied invasion fleets that landed armies successively in North Africa, Sicily, Italy, Normandy, and Southern France. The answer, I believe, is that they could not “find” them. Nonetheless, the techniques implemented by the Germans to command their submarine forces remain in use to this day, largely because the very nature of how a submarine operates limits its ability to develop a comprehensive surveillance picture of its ocean operating area.¹⁰

The Soviet Experience in Dealing with a Threat from the Sea

As the Cold War developed, the Soviets became increasingly concerned about their vulnerability to attack from the sea. They elected to pursue a defensive maritime strategy oriented to defeating sea-based strikes against the Soviet Union and its allies. Not that they feared an invasion by the North Atlantic Treaty Organization (NATO) or the United States acting alone—the 1940 Nazi invasion was simply the latest unhappy example of what happens to nations that try to invade Russia. Rather, what the Russians feared was U.S. aircraft carrier task forces with air groups trained to deliver nuclear weapons.

It is forgotten by most today, but in the 1950s the U.S. Navy made major investments to ensure that its carriers could employ nuclear weapons against the Soviet Union. The argument that was successfully made on Capitol Hill was that the mobility of carrier groups would pose key targeting problems for the Soviets and thereby increase deterrence. This was how the Navy continued to justify maintaining a carrier force structure in the face of U.S. Air Force arguments that bombers alone were sufficient.¹¹

It turns out the Navy arguments were correct. The problem of coping with aircraft carrier airwings carrying nuclear weapons made the Soviets realize they had to develop an ocean surveillance system (subsequently dubbed by U.S. intelligence as Soviet Ocean Surveillance System [SOSS]) in an attempt to keep track of U.S. carrier task forces. Over the years they built an elaborate global network of electronic intercept stations that attempted to track the electronic emissions of U.S. naval forces. Eventually, space-based satellites optimized to detect radar signals entered the SOSS inventory. The Soviets also commissioned a small fleet of purpose-built oceangoing surveillance auxiliaries especially equipped to locate and track U.S. carrier forces. Finally, the Soviet Navy developed a tactic that capitalized on the fact that in international waters any ship could sail in proximity to any other ship. They assigned selected surface combatants to essentially shadow U.S. carrier forces at sea, by staying within visual contact, and often actually “joining” the U.S. formation—known as “tattletales,” these surface combatants had the primary mission of reporting every few hours on the exact location of the U.S. carrier.¹²

The Soviets also realized that simply knowing the location of the carriers was not good enough; they also had to be able to deal with them if war broke out. The Soviets developed a defensive maritime strategy with thresholds established at various distances from the Soviet Union’s coasts. The first threshold was called the sea control zone, about 200 nautical miles from the coast. The second was the sea denial zone which reached some 1,250 nautical miles from the Soviet coast.¹³ The high point of the Soviet approach to maritime defense was realized by the mid 1980s when the Kremlin had in place a force structure of about 270 attack submarines, 280 major surface combatants, and over 1,300 naval aircraft allocated among the North Atlantic, eastern Mediterranean, and Pacific maritime approaches to the Soviet Union.¹⁴

The Soviet concept of the combination of open ocean surveillance, long-range land-based aircraft with cruise missiles, and nuclear-powered submarines with large loads of antiship cruise missiles formed an imposing antiaccess capability when the Cold War ended. Happily, the United States and the Soviet Union never had the opportunity to determine whether the antiaccess concept of operations would succeed or not. What is clear in retrospect is that it was a sensible way for the Soviets to plan on how to keep a threatening naval force at bay so it could never approach close enough to launch nuclear-equipped tactical aircraft against targets in the Soviet Union.

China, as a continental power that only recently is coming to grips with defending itself from a serious attack from the sea, has apparently made a series of sensible decisions to adopt an approach that is remarkably similar to what the Soviets did. This is not a surprise since the concept is at once

affordable and militarily practical. By affordable, I imply a cost comparison with trying to build a 21st century version of the Imperial Japanese Navy's balanced blue-water fighting force, which would be able to slug it out with the U.S. Navy in a battle for sea control of the Western Pacific. China is not pursuing that solution to the sea control problem, although what it is doing does not prejudice future attempts to replicate a capability similar to the one that Japan possessed between 1919 and 1944.

The discussion thus far has explored the concept of antiaccess specifically without regard to China's geostrategic situation, which is what generates the "demand signal" that creates the military requirement for "antiaccess" in the first place.

Why an Antiaccess Concept—The Geostrategic Context

Throughout China's long history, its strategic orientation could be categorized as continental and hence its strategic tradition—its way of thinking about and framing strategic issues—has been largely focused on land war. A PLAN Senior Captain writing in 2004 in the journal *China Military Science* characterized this land-based geostrategic perspective "from beginning to end" as emphasizing "land power at the expense of sea power."¹⁵ While this was historically accurate and probably was a widely held perspective among many PLA naval officers when written, the truth is that by 2004 the leadership of the PLA had long since recognized China's growing dependence on the sea and its historic vulnerability along its seaward approaches.

China's strategic situation began to change with the collapse of the Soviet Union. The risk of cross-border aggression moderated. The threat of invasion—the primary worry of Chinese or indeed most Eurasian strategists for many centuries—has all but disappeared. All the while, China's economic growth is dependent on trade, most of which is carried in containers loaded on ships. As a result, the importance of the maritime domain is a growing preoccupation for China.¹⁶

Specifically, the newfound interest in the maritime aspects of China's security can be dated to August 1985, when then-Central Military Commission Vice Chairman Yang Shangkun addressed an enlarged meeting of the PLA Navy Party Committee and directed that the concept of "offshore defense" become the strategic concept that should guide naval modernization. In effect, the PLAN was told to become more than merely a coastal defense force.¹⁷ As former Navy Commander Vice Admiral Shi Yunsheng put it, "Following the enlarged Central Military Commission meeting in 1985, we established the Navy's strategy of offshore defense . . . and defined the strategic mission of the Navy in the new period."¹⁸

One of the most important considerations that PLA Navy strategic planners faced was synchronization with top-level defense planning guidance, which is known as the “major strategic direction”—that is, the direction and nature of the primary threat.¹⁹ For the PLA the major strategic direction forms the basis for making operational plans and deciding what operational capabilities are required. In effect, this is the PLA’s approach to what in the United States is called threat-based planning. As *The Science of Military Strategy* makes clear, “the major strategic direction” forms the basis from which operational plans are then developed and appropriate forces are procured, postured, and trained.²⁰ It is “the focal point of the struggle of contradictions between ourselves and the enemy . . . in the overall strategic situation; it is the vital point of *greatest importance* [emphasis added].” *The Science of Military Strategy* goes on to say, “The major strategic direction is basically determined according to the national strategic interests and the fundamental international and domestic strategic situation.”²¹

In analyzing the “current international situation” from the perspective of Beijing, the news is mixed. Over the past 15 years China’s leaders and diplomats have secured the PRC’s land frontiers by resolving or mitigating territorial disputes with Russia, Vietnam, Kazakhstan, Kyrgyzstan, and India. They have also negotiated “strategic partnerships” with most of these countries, and in the case of the “stans” and Russia, have knitted them into the fabric of a regional security relationship called the Shanghai Cooperation Organization (SCO).²² As a result, the PRC does not face a credible military threat from its continental neighbors, nor does it have territorial disputes with them that could be the pretense for military action. Russia still possesses a substantial strategic nuclear force; however, that threat has been modulated by good political relations enshrined in the “Sino-Russian Good Neighborly Treaty of Friendship,” which went into effect on March 1, 2002.²³

While its land frontiers are stable, looking east from Beijing beyond its eastern seaboard the situation is more strategically problematic. China’s maritime approaches are replete with unresolved sovereignty issues and genuine vulnerabilities. Strategic vulnerability from the sea is not a new issue for China. Weakness along its long maritime frontier has been a problem for Beijing since at least 1842, when the Treaty of Nanking ended the first Opium War and ushered in the so-called “Century of Humiliation.” The repeated military and diplomatic humiliations and defeats that China suffered were inflicted by Western powers and Japan, and came mainly from the sea.²⁴

Today, China has the resources and skills necessary to address the strategic problem that the vast majority of China’s outstanding sovereignty claims and unresolved strategic issues are *maritime* in nature. Consider:

- Taiwan is an island. It is the combination of Taiwan's air defense and the threat of intervention by the U.S. military (primarily the U.S. Navy) that effectively keeps the Taiwan Strait a moat rather than a highway open to the PLA.
- Perhaps as strategically significant as Taiwan to a PLA planner is the geostrategic reality that the PRC's economic center of gravity is on its east coast, which, because it is a "seaboard," is extremely vulnerable to attack from the sea—a military task the United States is uniquely suited to execute.
- Territorial disputes with Japan over islands and seabed resources in the East China Sea have become more contentious, and represent a potential flash point between China and Japan, and potentially between China and the United States, because of the U.S. alliance with Tokyo. The entire issue is maritime in nature.²⁵
- Unsettled territorial disputes, and their concomitant resource issues, remain with respect to the Spratly Islands and the South China Sea. Again, this problem is maritime in nature.

Finally, Beijing's primary military competitor—the United States—maintains a significant naval presence on "China's doorstep." Should China elect to use force to resolve either reunification with Taiwan or outstanding maritime claims, the United States is the one country that could militarily deny success. Its air and naval presence in the region provides a counterbalance to the potential use of the PLA to settle these issues by *force majeure*. The United States is closely allied with China's "historic" antagonist Japan, which also has an excellent navy and a formidable maritime tradition.²⁶

The importance of unresolved maritime issues to China's leadership was highlighted by the December 2004 Chinese Defense White Paper, which swept aside assumptions regarding land-force preeminence when it stated that the PLA Navy, the PLA Air Force, and the ballistic missile force—the Second Artillery—are to receive priority in funding. Further, it explicitly lays out its ambitions for the PLA Navy, Air Force, and Second Artillery:

While continuing to attach importance to the building of the Army, the PLA gives priority to the building of the Navy, Air Force and Second Artillery force to seek balanced development of the combat force structure, *in order to strengthen the capabilities for winning both command of the sea and command of the air, and conducting strategic counter strikes* [emphasis added].²⁷

Figure 8-1. Soviet Concept for Sea Denial and Sea Control During the Cold War



Source: John B. Hattendorf, Jr., *The Evolution of the U.S. Navy's Maritime Strategy, 1977-1986*, Newport Paper 19 (Newport, RI: Center for Naval Warfare Studies, Naval War College, 2004), 170.

Figure 8–2. Chinese Concept for Offshore Defense: “Island Chains”



Source: Based on U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2010*.

PLA Approach to Implementing Command of the Sea and Command of the Air

It is not a coincidence that the PLA's concept of offshore defense seems to be based on how the Soviets thought about maritime strategy.²⁸ As previously discussed, the Soviets developed a defensive maritime strategy with thresholds established at various distances from the Soviet Union's coasts. These thresholds were de facto “lines-in-the-water.” The difference between the Soviets and China is that the PLA has elected to define distance-related thresholds in terms of “island chains.”²⁹

The Soviet template considered the waters closest to the mainland, out to approximately 200 nautical miles (nms), an area that Soviet naval forces and land-based air forces must be able to “control.” Beyond this threshold, moving farther to sea (to a range of about 1,200 nms), the Soviets strategy was to “deny or contest” those waters to the U.S. Navy. In other words, the military requirement is sea control close in and sea denial as the distances from the mainland increase.

For China the 200-nm sea control zone results in a requirement for the PLA Navy to “control” the Yellow Sea, much of the East China Sea, the Taiwan Strait, at a minimum the northern portion of the South China Sea, and the Tonkin Gulf. Not surprisingly, this sea control area also closely approximates the PRC’s exclusive economic zone (EEZ) and also generally follows the contour of the so-called “first island chain” that stretches southwest from Japan, through the Ryukyus, Taiwan, and the Pratas and Paracel Islands in the northern portion of the South China Sea.

If the entire South China Sea is included within the first island chain threshold, the “sea control” zone runs beyond 200 nautical miles in that one area. While this deviation makes it even harder to actually execute the mission of sea control because of the increase in water space, including the entirety of Beijing’s territorial claims in the South China Sea in the sea control zone makes sense. Plotting EEZ radius circles of 200 nms around each of the various islands and features makes it easy for the PLA to conclude the South China Sea belongs within the sea control area. It also creates a “requirement” to improve the military potential of disputed islands as bases or outposts in the South China Sea. For example, the airfield on Woody Island in the Paracel Group is an important contributor to the ability to execute a sea control mission in the South China Sea.

Beyond the first island chain threshold, the open ocean expanse extends to what the PLA terms the “second island chain.” This second threshold approximates the Soviet 1,200-nm “line in the water.” Except in China’s case, the line is probably closer to 2,400 kilometers or 1,300 nautical miles because this is the range the Chinese ascribe to Tomahawk cruise missiles.³⁰ This vast area between 200 and 1,300 nautical miles essentially encompasses the Philippine Sea. This is the area in which use of the seas would be “contested.” The PLA ambition is to win the contest for sea control and deny it to U.S. naval forces.

This discussion is not as arcane as it might seem. These thresholds establish requirements for specific PLA Navy capabilities and as such are a “driver” of what capabilities the PLA will seek in its weapons and platforms. By establishing specific distances and areas where certain “military effects” are desired, it becomes simpler to then define precise operational characteristics for specific weapons systems, and to determine how many ships, submarines, and aircraft are required to accomplish the intended missions. These thresholds create what could be termed a *layered defense*.

The first and most important requirement of a layered defense of the seaward approaches to China is an effective surveillance system that covers ocean approaches. Finding ships on the high seas is even today very difficult because of the vastness of the oceans. Also, determining the location of a ship

only once is not very helpful because ships move. Ships at sea travel around the clock, night and day, at relatively modest speeds when compared to land travel, but over a 24-hour period they travel a long way. One must keep track of moving ships by constantly updating the surveillance “plot.”

Without effective surveillance, it is impossible to position offensive weapons systems to intercept moving naval task forces. As discussed, the Soviets built an integrated surveillance system that was composed of radio-direction-finding, electronic “spy ships” that could locate electronic signals, and space-based satellites designed to detect either electronic or infrared emissions from ships. It is worth noting that surveillance satellites are in relatively low orbits around the earth, and therefore pass overhead quickly. Thus, to achieve constant, around-the-clock coverage of any geographic area requires a large constellation of satellites so that one is always positioned over the desired surveillance area. That is why high-altitude drone aircraft have become such important new surveillance tools: they can loiter over a specific area for a long time.

The second element in the Soviet approach to layered defense was land-based, long-range aircraft that could be employed en masse to fire long-range antiship cruise missiles. The Soviet tactic was to send raids composed of two regiments (perhaps 45 aircraft) against each carrier battle group, to ensure that enough bombers would survive the fighter aircraft’s defensive screens to get within range to launch ship-killing cruise missiles.

The third aspect of the Soviet layered strategy was the use of submarines that were directed to their targets in much the same way that German U-boats were sent toward transiting convoys: they were vectored by commands from shore, based on surveillance information. The PLA Navy is adapting this approach. It has focused on more modern, high-performance, conventionally propelled submarines, which, while lacking the time on station and submerged speed of nuclear-powered submarines, are much more difficult to detect. But, because conventionally powered submarines do not have sustained endurance, they are also more dependent on accurate surveillance to help them locate their intended targets.

The Soviets recognized the vulnerability of their surface ships to both U.S. submarines and U.S. carrier aircraft, both of which could attack the Soviet ships before they had closed U.S. ships to within cruise missile firing ranges. As a result, the Soviets intended to use surface ships in roles closer to shore, either to defend against air raids headed toward the Soviet mainland or as last-ditch defenses.

Today, PLA Navy surface combatants suffer from the same vulnerability. It is likely that the PLA Navy would opt for the same solution as the Soviets:

to wit, use surface warships closer to shore. In the PLA Navy's case, this would mean keeping them within the first island chain to serve as last-ditch defenders and to search for enemy submarines, or to fight the Taiwan navy if the scenario included an attack on Taiwan.³¹

Offshore Defense (Antiaccess) in a Taiwan Scenario

Anyone who interacts with Chinese from the PRC will almost inevitably, at some point, be informed about how important Taiwan is to China, because it is a matter of China's national sovereignty and territorial integrity.³² Taiwan is the remaining unresolved territorial issue from China's Century of Humiliation.

During much of the Cold War, when China's military potential was focused on a threat from the Soviet Union, or was consumed by the "Cultural Revolution," and remained wedded to a doctrine of "people's war," the PLA really did not have the means to surmount the barrier that the Taiwan Strait presented to the application of PLA power to Taiwan. During this time, when the PRC threatened Taiwan with military punishment, its threats were largely empty. The PRC was "a paper tiger."

In retrospect, after the 1950s this did not matter much. Mao could trigger a Cultural Revolution and Deng could focus on the Soviets because there was little threat that Taiwan would be permanently lost to China. The political leaders on both sides of the strait sought the same end: eventual reunification of the island and mainland. The argument was over what party would be in charge of the "uniting," not over whether to have one Taiwan and one China. For a long time Beijing displayed little urgency in improving its ability to either credibly deter Taiwan's independence or to field the means to capture it.³³

This changed during the early 1990s, when the advent of democracy and notions of a *de jure* independent Taiwanese state began to politically resonate in Taiwan. In turn, Beijing made policy pronouncements on the use of force to prevent the permanent separation of Taiwan from the mainland. Taiwan became an operational *idée fixe* for the PLA, which sought to field capabilities that would lend credibility to these pronouncements. In this process of fielding capabilities that could deter a declaration of independence by Taiwan, the PLA Navy has *not* played a central role.³⁴

The PLA's single-minded focus on the operational problem of Taiwan has resulted in weapons and military capabilities that allow the PLA to "reach out and touch" Taiwan in a way that in earlier decades was not possible. The PLA has focused on two areas: putting hundreds of ballistic missiles in the hands of the Second Artillery; and purchasing excellent Russian tactical aircraft, which have allowed the PLA to credibly begin to match Taiwan's heretofore qualitatively better aircraft. The two strands of development go hand in hand. The missiles will punish Taiwan, destroy its command and control,

and ground its air force, and the tactical aircraft will exploit this effort by seizing and sustaining air superiority (or “air control”) over the strait and perhaps Taiwan itself. Control of the air over the Taiwan Strait is the essential prerequisite for an invasion of Taiwan.³⁵

However, if the PRC wants to do more than merely punish Taiwan, if it wants to undertake a “regime change” operation, it must “put boots on the ground” and invade. This remains a very difficult proposition. In a campaign to invade Taiwan, the PLA Navy has two important missions, one offensive and one defensive. First, it is responsible for getting the army across the strait once air superiority has been achieved. It is also responsible for dealing with Taiwan’s small navy, either at sea or by sealing it into its naval bases by mining the entrances closed. The requirement to transport the army to Taiwan is a “driver” for one aspect of PLA Navy building, and has resulted in a steady growth of small, purpose-built amphibious warships. The PLA Navy also has at its disposal the substantial and modern Chinese merchant fleet and a mobilized fishing fleet.³⁶

But the PLA Navy can only be assured of fulfilling its mission if air superiority is achieved. Everything hinges on the Second Artillery and PLA Air Force’s ability to execute their missions. If they can achieve and sustain air superiority over the strait, getting the army to Taiwan would be within the capability of the PLA Navy.³⁷

Getting soldiers to Taiwan is not the most difficult problem for the PLA Navy. The PLAN’s most important and most difficult mission is to stop the U.S. Navy from intervening, and thwarting an invasion. The PLA Navy must deter or defeat approaching U.S. Navy carrier strike groups to keep them out of the fight long enough for the combined forces of the Second Artillery, the PLA Air Force, and the army to succeed. “Success” means creating the circumstances necessary to cross the strait (establishing air superiority), getting ashore and establishing a defensible foothold on Taiwan, and subsequently causing the government in Taipei to surrender or flee. Any one of these factors can be upset if the United States is able to effectively intervene. In other words, the PLA Navy has an important role in a joint “strategic” mission involved with keeping the most disruptive element of U.S. power at bay long enough for the actual assault to be effective. Doctrinally, this mission is what is envisioned under the rubric of “key point strikes.”³⁸

Assessing the PLA Capability to Deny Access

A successful antiaccess campaign rests on effective surveillance of the approaches to China. Surveillance is essential to posture submarines, cue and vector land-based air, and target antiship missiles. Without surveillance, the PLA’s ability to execute its antiaccess mission would be severely handicapped.

As the 2009 version of the Defense Department's annual report on China's military power says,

China is deploying advanced imagery, reconnaissance, and Earth resource systems with military applications. Examples include the Yaogan-1, -2, -3, -4, and -5, the Haiyang-1B, the CBERS-2 and -2B satellites, and the Huanjing disaster/environmental monitoring satellite constellation. China is planning eight satellites in the Huanjing program that are capable of visible, infrared, multi-spectral, and synthetic aperture radar imaging. In the next decade, as Beijing fields a more robust constellation of reconnaissance satellites, it probably will employ commercial satellite imagery to supplement existing coverage.³⁹

According to open sources, China currently has several satellites in orbit that can contribute to ocean surveillance. Significantly, in April 2006 Beijing launched its first radar satellite. It carries synthetic aperture radar, which is excellent for identifying ships and can probably observe a ship as small as 20 meters in length.⁴⁰

The land-based air component of the layered defense consists of both PLA Air Force and PLA Naval Air Force aircraft. China does not have anything equivalent to the Soviet Backfire bomber carrying long-range AS-4 antiship missiles and, as a result, this aspect of its layered defense is not yet especially capable. The closest things it has to the Backfire are the FB-7 fighter-bomber and the Chinese variant (B6H) of the venerable Soviet Badger bomber. Neither of these aircraft has the range of the Backfire or carries especially long-range cruise missiles, although according to the 2010 *Annual Report to Congress on Military and Security Developments Involving the People's Republic of China*, long-range cruise missiles are under development.⁴¹ Based on open-source information, the only PLA Air Force bombers with antiship missiles are a single regiment (about 20 aircraft) of the B6H bomber. These aircraft have been practicing over-water missions and antiship attacks since around 2002. The PLA Air Force also has one regiment of FB-7 fighter-bombers and two of the new Russian-built Su-30MKK multi-role regiments that could be used in antiship roles. PLA naval aviation has about 80 JH-7s (four regiments) capable of carrying the improved, 180-kilometer-range (97 nms) C-803K ASCM, and about 40 H-6Ds (Badger variant bombers). Most significantly, the PLAN Air Force has acquired a regiment of Su-30 MK2s armed with the supersonic Kh-31A (AS-17A) air-to-surface missile.⁴²

In sum, the PLA Air Force and Naval Aviation Force can field about 10 regiments of aircraft with cruise missiles to attack approaching warships—perhaps 200 aircraft. Based on a metric of two regiments per carrier battlegroup,

the PLA could muster enough aircraft to attack a three- or four-carrier force. But, as mentioned, the PLA has not yet fielded a long-range, air-launched cruise missile that would permit these aircraft to launch while remaining outside the surface-to-air missile envelope of U.S. warships. As a result, the aircraft would be vulnerable to fleet air defenses.

As the antiaccess concept unfolds today, its submarine force is the most important PLAN capability. This makes sense, given the inherent difficulty in locating very quiet modern submarines. The PLAN gets a great deal of value from submarines in the sense that locating a submarine is perhaps the single most difficult operational task that any military faces, because water is not transparent. History has shown that in trying to search for submarines, the effort requires a great number of ship and aircraft resources. According to the Office of Naval Intelligence:

Chinese submarine procurement has focused on smaller numbers of modern, high-capability boats. Now there are fewer submarines in the PLA [Navy] inventory than there were at any point in the 1980s. Currently, the submarine force consists of six nuclear-powered attack submarines [SSNs], three nuclear-powered ballistic missile submarines [SSBNs], and 53 diesel-electric attack submarines [SSs]. Over the next 10 to 15 years, primarily due to the introduction of new diesel-electric and non-nuclear-powered air independent power (AIP) submarines, the force is expected to increase incrementally in size to approximately 75 submarines.⁴³

In the 10 years between 1995 and 2007, the PLA Navy commissioned 38 new submarines. As previously mentioned, because the vast majority of the PLA Navy submarine force is conventionally powered, it has one significant operational drawback—limited endurance and speed; this is why surveillance is so important to the correct positioning of submarines.⁴⁴ Nonetheless, today it is an imposing force, and there is every expectation that it will continue to improve and to add more nuclear-powered submarines that will have the speed and endurance necessary to overcome positioning errors.

According to a PLA open source assessment, the refueled combat radius of an F/A-18 is 1,200 nautical miles. Whether this is accurate is not the point. What is germane is that the article gives a hint at what range the PLAN starts to worry about an approaching aircraft carrier. It also suggests that this is how far from home they might elect to position submarines so they could concentrate and attack carrier forces before aircraft could be involved in an air battle over the Taiwan Strait.⁴⁵ If the intent is to delay the U.S. Navy, and perhaps even deter it from proceeding toward Taiwan, the PLA Navy will have to mass submarines in large numbers once carrier forces have been located in order to raise the risk to U.S. surface ships to the point where commanders might elect

to stay outside the denial area until it is clear of PLAN submarines. This may take as many as six or more submarines per approaching carrier strike group.

Assuming that three to four U.S. carriers would respond to an attack against Taiwan, the PLA Navy would need at least 18 to 24 submarines on station. Its ability to sustain that posture would be a function of how often submarines rotated home and how long it would take to transit between homeport and patrol station. If one assumes it takes three to keep one on station (one on station, one going home, one getting ready to go), somewhere between 60 to 75 modern submarines would be required to sustain an anti-carrier submarine force. In other words, it is reasonable to expect the PLA Navy to continue to grow a modern submarine force if it is to execute an antiaccess strategy with confidence.

The Antiship Ballistic Missile Problem

China has taken the Soviet antiaccess strategy one step further. The PLA has added a new and very threatening element to the layered defense that comprises antiaccess—one that is uniquely Chinese and uses one of the PLA's most effective capabilities. This new wrinkle is to use ballistic missiles to attack moving surface warships. Traditionally, ballistic missiles were considered a poor weapon to use against ships at sea: ships move, and once the missile is fired, the aim point of a ballistic trajectory, by definition, cannot be altered to account for target motion.

What the PLA is trying to do is place seekers in high-explosive missile warheads that will activate as the warhead descends into the target area, and then steer the warhead to the moving ship. This is a task that depends on accurate surveillance plus missile warhead maneuvering technology that can slow down the warhead when it reenters the atmosphere so the seekers are not burned up by the heat of reentry, and then guide the warhead to its target.⁴⁶

The Second Artillery is clearly working on this problem. In a paper published by the Second Artillery Engineering College, the authors conclude:

Providing terminal guidance to ballistic missiles is critical to the successful launch of a precision attack on a slow moving large target at sea. Based on the results from simulation, missiles with terminal guidance capability can have a relatively large range of maneuverability, which may be as large as 100 kilometers (53nms). . . . Large surface targets at sea, such as aircraft carriers, are relatively poor in maneuverability. It cannot effectively escape an attack within a short period of time. Therefore, a ballistic missile with terminal guidance capability . . . is fully capable of effectively attacking this type of target with high precision.⁴⁷

If the PLA can master and field this weapons system, it will be able to present as serious a challenge to the U.S. Navy as the one presented by Soviet Backfire-launched cruise missiles before the introduction of the Aegis radar system. Aside from the technical challenge associated with missile warhead design, the command and control problem of determining an accurate location of an aircraft carrier, getting that information to a missile firing unit in a timely fashion, and translating positional information into a guidance solution for the missile which has to include missile time of flight before the target ship moves beyond the terminal seeker's window—are also issues.⁴⁸ The central point is, however, that these all appear to be solvable problems. In this author's judgment, this capability, assuming that it is eventually successfully fielded, when combined with the PLAN's robust submarine force, presents the U.S. Navy with an operational challenge that is actually more difficult to surmount than the antiaccess capabilities it faced during the Cold War from the Soviet Union.

Translating Concept into Reality—Still a Way to Go

The preceding discussion about how the PLA Navy might execute an antiaccess operation in support of a Taiwan invasion scenario is not based on any special insight on my part into the PLA Navy's plans. Rather, it is based on a good understanding of how the Soviet Union thought through the very same operational problem—defense against attacking carrier forces.⁴⁹ It is also based on what the PLA is actually doing in terms of fielding new submarines, aircraft, and surveillance systems, and what PLA writers are writing about what they would like to be able to do in the future.

Clearly, the Department of Defense believes that the PLA is working to field an antiaccess operational concept based on open ocean surveillance, land-based, cruise-missile-firing aircraft, submarines, and maneuverable warhead ballistic missiles. In each of these areas, the PLA still has work to do before its antiaccess concept is fully operationally ready. As mentioned, the most dangerous future capability is the antiship ballistic missile (ASBM) problem; this is because defenses against ballistic missiles are inherently difficult owing to the fact that the target is so difficult to shoot down because it is traveling at such great speed.

Trying to “trick” missile seekers—both ballistic and cruise—into attacking a false target or simply missing is a tactic all navies have been working on since the introduction of the antiship cruise missile era in the 1960s. That obviously is something to continue to consider when thinking through operational and tactical problems presented by maneuvering warhead ballistic missiles.

While maneuvering ballistic missiles are a future problem, the most troublesome problem today is modern conventional-powered submarines because they are the most difficult to detect. During the Cold War, the United

States was able to track Soviet submarines because their machinery and propulsion systems made detectable noise.⁵⁰ Modern quiet submarines, be they conventional- or nuclear-powered, have greatly reduced or eliminated this tactical liability. As a result, locating them depends on the concept first introduced in World War I of sending a pulse of sound into the water and hoping it “bounces off” a submerged submarine to reveal its location.

If the PLA becomes serious about making major investments in the land-based aircraft portion of its antiaccess “weapons triad,” this will also become a matter of some concern. New generations of aircraft-launched cruise missiles that fly at very high speeds and incorporate “stealth” technology are available on the open market, and could be relatively quickly introduced into both the PLA Naval Air Force as well as the PLA Air Force.

Finally, without an effective open ocean surveillance system that can locate and then continuously track approaching warships, none of the hardware capabilities just discussed will be of great use. The ocean remains very large, and ships, even ones as large as an aircraft carrier, are very, very small compared to the vastness of the Pacific. Surveillance is the “brain” needed to make antiaccess a reality. It is also the central nervous system of an antiaccess warfighting capability, and if it can be disrupted, the entire antiaccess concept of operations can be degraded.

The history of 20th and 21st century warfare reveals that countries are in a constant competition that revolves around introducing a new capability, which is eventually addressed by a countercapability, which is eventually trumped once again by counter-countercapability. If the PLA succeeds in fielding a credible antiaccess strategy, it will almost certainly be addressed by the United States and its allies, otherwise America would not be a credible guarantor of the security of its friends and allies who find themselves either in or on the first island chain. Because a successful PLA antiaccess capability would render the United States unable to protect its vital interests in East Asia, it is reasonable to expect that the United States will keep a close watch on improving PLA capabilities in this area and not stand idly by.

The recently released Quadrennial Defense Review (QDR) is quite clear on this point, and highlights a new U.S. conceptual approach that is intended to deal with the antiaccess problem. This U.S. countercapability has been named Air Sea Battle (ASB). How this concept might take shape is outlined in the aforementioned CSBA report called *AirSea Battle*.⁵¹ The conclusion seems clear: Washington will do whatever it takes to make certain its capabilities in East Asia match or stay ahead of the PLA's in this vital area. Therefore, it is likely that the future of East Asia will witness a long, drawn-out competition of assured access versus antiaccess capabilities between the United States and China.

Notes

Author's Note: The paper represents the personal views of the author alone and should not be interpreted as representing the position of the Center for Naval Analyses (CNA) or the U.S. Navy. CNA is a private not-for-profit research center and does not speak for the U.S. Navy.

¹ U.S. Department of Defense, *Report of the 2001 Quadrennial Defense Review* (Washington, DC: U.S. Department of Defense, September 30, 2001), 25. The report speaks about antiaccess and area denial as they relate to one of America's fundamental strategic concepts—*detering forward*. Specifically, it goes on to say, "Deterrence in the future will continue to depend heavily upon the capability resident in forward stationed and forward deployed combat and expeditionary forces."

² Admiral Robert Willard, USN, Commander U.S. Pacific Command, Statement before the House Armed Services Committee on U.S. Pacific Command Posture, March 23, 2010, 12.

³ Jan van Tol et al., *AirSea Battle: A Point of Departure Operational Concept* (Center for Strategic and Budgetary Assessments, May 2010), 1, fn 1. Available at <http://www.csbaonline.org/4Publications/PubLibrary/R.20100518.Air_Sea_Battle_A_/R.20100518.Air_Sea_Battle_A_.pdf>.

⁴ Peng Guangqian and Yao Youzhi, eds., *The Science of Military Strategy* (Beijing: Military Science Publishing House, Academy of Military Science of the People's Liberation Army, 2005), 459–461.

⁵ Jeff Hagen, "Potential Effects of Chinese Aerospace Capabilities on U.S. Air Force Operations," Testimony presented before the U.S.–China Economic and Security Review Commission, May 20, 2010, 2–3. Available at <www.uscc.gov/hearings/2010hearings/written_testimonies/10_05_20_wrt/10_05_20_hagen_statement.pdf>.

⁶ David A Shlapak, David T. Orletsky, and Barry Wilson, *Dire Strait? Military Aspects of China-Taiwan Confrontation and Options for U.S. Policy* (Santa Monica, CA: RAND, National Security Division, 2000), 7–30.

⁷ For a fascinating discussion of how the U.S. military responded to this problem during the 19th century, see Brain McAllister Linn, *The Echo of Battle: The Army's Way of War* (Cambridge, MA: Harvard University Press, 2007), 11–39. The lessons of the Revolutionary War when the British captured New York, Newport, Charleston, and Philadelphia, and raided at will, and again during the War of 1812 when they burned Washington, DC, convinced planners that a chain of forts, a mobile commerce raiding navy, and a large militia were the only way to cope with the threat of an invading force that crossed the Atlantic to attack the United States.

⁸ See John Keegan, *Intelligence in War* (New York: Alfred A. Knopf, 2003), 26–65, for a detailed discussion of the difficulties associated with finding ships at sea in the days of sail.

⁹ The famous (or infamous, depending on your point of view) sinking of surrendered German battleships by Brigadier William "Billy" Mitchell in 1921 was intended to prove that bombers were better at finding and defeating approaching hostile naval forces than navies were. For a contemporary take on this debate, see for example, William Mitchell, "Air Power vs. Sea Power," *American Review of Reviews* 58 (March 1921), 273–277.

¹⁰ There are many fine studies of the Battle of the Atlantic and I have read most of them. In my judgment the best short summary of that campaign is Marc Milner, *Battle of the Atlantic* (St. Catherines, Ontario, Canada: Vanwell Publishing Limited, 2003).

¹¹ Jerry Miller, *Nuclear Weapons and Aircraft Carriers: "How the Bomb Saved Naval Aviation"* (Washington, DC: Smithsonian Institution Press, April 2001), *passim*.

¹² Author's personal experiences while on active duty during the Cold War.

¹³ Notions of sea control and sea denial date back to the writings of Alfred Thayer Mahan and his near-contemporary Julian Corbett, and stem from notions of "command of the sea." A search of their writings will yield often-contradictory definitions of these terms. My understanding is that "sea control" means having the capability to prevent an enemy from using some segment of maritime geography for as long as one wishes. In other words, one party can use the sea at its pleasure while an opponent cannot. *This is hard to accomplish in practice unless one also controls the air above the water in question.* "Sea denial," on the other hand, means temporarily controlling an area of water, with the recognition that control will be contested and that neither side has complete freedom to use the sea as it wishes. Many books talk about and around this topic. For the best extended discussion, see Colin S. Gray, *The Leverage of Sea Power: The Strategic Advantage of Navies in War* (New York: The Free Press, a Division of Macmillan, Inc., 1992), 19, 274.

¹⁴ This entire section is based upon the now declassified National Intelligence Estimate (NIE) 11-15-82D, *Soviet Naval Strategy and Programs Through the 1990's*, March 1983, which can be found in John B. Hattendorf, Jr., *The Evolution of the U.S. Navy's Maritime Strategy, 1977-1986*, Newport Paper 19 (Newport, RI: Center for Naval Warfare Studies, Naval War College, 2004).

¹⁵ Senior Captain Xu Qi, "Maritime Geostrategy and the Development of the Chinese Navy in the Early Twenty-First Century," *China Military Science*, 2004. Translated and published by Andrew Erickson and Lyle Goldstein in *Naval War College Review* 59, no. 4 (Autumn 2006), 51-63.

¹⁶ Peng and Yao, 3-13. These pages contain a very interesting and fulsome discussion of China's history of strategic thought.

¹⁷ Chiang Shang-chou, "China's Naval Development Strategy—Building an Offshore Defensive Naval Armed Force," *Kuang Chiao Ching*, December 16, 1998 (Foreign Broadcast Information Service). See also Paul H.B. Godwin, "Force Projection and China's Military Strategy," paper presented at the Sixth Annual Conference on the PLA at Coolfont, Virginia, June 1995, 4; Nan Li, "Reconceptualizing the PLA Navy in Post-Mao China: Functions, Warfare, Arms and Organization," Working Paper No. 30 (Singapore: Institute of Defense and Strategic Studies, August 2002), 6.

¹⁸ Chen Wanjun and Zhang Chunting, "Shouldering the Task of a Century-Straddling Voyage—Interviewing Newly Appointed Navy Commander Vice Admiral Shi Yunsheng," *Liaowang*, cited in David M. Finkelstein, "Reform and Modernization of the PLA Navy: From Marginalization to Major Importance" (CNA Corporation: April 2000).

¹⁹ This entire section is drawn largely from Peng and Yao, 230-234.

²⁰ *Ibid.*, 231.

²¹ *Ibid.*, 232.

²² This is my interpretation. For the latest official assessment, see *China's National Defense in 2006* (People's Republic of China White Paper on National Defense), available at <<http://www.opensource.ove/portal/server.pt/gateway/PTARGS>>. The opening section of the latest PRC Defense White Paper speaks to Beijing's assessment of the security environment.

²³ *People's Daily on Line*, available at <http://english.peoples.com.cn/200202/28/eng20020229_91188.html>.

²⁴ Dean Cheng, "Shedding the Century of Humiliation: China's Place in Asia," paper prepared for the Sino-Japan Strategic Rivalry Workshop, at Center for Naval Analyses headquarters, Alexandria, VA, April 2006.

²⁵ The Center for Naval Analyses has partnered with the Institute for Defense Analyses, National Defense University, and Pacific Forum/Center for Strategic and International Studies on an 8-month project that examines all aspects of the current state of Sino-Japanese relations. The study paid particular attention to the disputes in the East China Sea. A final report was completed in December of 2006, and is available from this author. See the *Japan Times* of September 10, 2005, "Chinese Warships Make Show of Force at Protested Gas Rig," available at <<http://search.japantimes.co.jp/print/nn20050910a1.html>>.

²⁶ An expression of PRC angst over the strengthening of the U.S.-Japan Alliance and Japan's evolution toward becoming a more normal major power is found in the 2006 PRC Defense White Paper in the first section of the paper that is dedicated to a discussion of "The Security Environment."

²⁷ PRC Defense White Paper, December 2004, Information Office of the State Council of the PRC, December 2004, Beijing, available at <<http://english.people.com.cn/whitepaper/defense2004>>.

²⁸ Bernard D. Cole, *The Great Wall at Sea: China's Navy Enters the Twenty-First Century* (Annapolis, MD: U.S. Naval Institute Press, 2001), 163-164. Dr. Cole makes the important point that PLAN Commander Liu Huaqing in the mid-1980s had been a student at the Voroshilov Naval Academy when Sergei Gorshcov, later leader of the Soviet Navy, was an instructor. See also an excellent discussion of Soviet influence in You Ji, "The Evolution of China's Maritime Combat Doctrines and Models: 1949-2001," Institute of Defense and Strategic Studies, Working Paper No. 22, Singapore, May 2002, 2-8.

²⁹ Senior Captain Xu Qi, in Erickson and Goldstein, *Naval War College Review*, 57.

³⁰ Li Xinqi, Tan Shoulin, and Li Hongxia, "Precaution Model and Simulation Actualization on Threat of Maneuver Target Group on the Sea" (The Second Artillery Engineering College, August 1, 2005), in author's possession.

³¹ John B. Hattendorf, Jr., *The Evolution of the U.S. Navy's Maritime Strategy, 1977–1986*, Newport Paper 19 (Newport, RI: Center for Naval Warfare Studies, Naval War College, 2004). On page 170, a map displays Soviet sea denial and sea control areas in the Pacific. This entire section on the Soviet approach to layered defense is also informed by the author's personal experience in the 1980s, when he spent 4 years conducting strategic studies and program assessments oriented toward understanding and defeating Soviet maritime strategy.

³² *PRC White Paper on National Defense 2006*, Electronic version in English available at <www.opensource.gov/portal/server.pt/gateway/PTARGS>.

³³ Harry Harding, "Speech before the Asian Affairs Committee of the Association of the Bar of New York on November 1, 2000," reprinted in the National Committee for U.S.–China Relations newsletter, March 2001.

³⁴ While Taiwan is a priority for campaign planning and is the PLA's most likely contingency, it would be a mistake to consider Taiwan as the only reason that the PLA is modernizing. See James Mulvenon and David Finkelstein, eds., *China's Revolution in Doctrinal Affairs: Emerging Trends in the Operational Art of the PLA*, Center for Naval Analyses (CNA) Conference Report (Washington, DC: CNA, December 2005), 12.

³⁵ U.S. Department of Defense, *Annual Report to Congress [on] Military Power of the People's Republic of China 2009* (Washington, DC: U.S. Department of Defense, 2009), 3–6, for a discussion of the forces postured opposite Taiwan. Available at <www.defense.gov?pubs/pdfs/China_military_power_report-2009.pdf>.

³⁶ *Ibid.*, 4 and 30 for a discussion of PLAN amphibious and expeditionary forces.

³⁷ David A. Shlapak, David T. Orlesky, Toy I. Reid, Murray Scott Tanner, and Barry Wilson, *A Question of Balance: Political Context and Military Aspects of the China-Taiwan Dispute* (Santa Monica, CA: RAND, National Security Division, 2009), 31–84. This is the most complete unclassified analysis of the issue of gaining air superiority over the Taiwan Strait; and it is not encouraging for Taiwan.

³⁸ "Key point strikes" calls for the concentration of the PLA's most powerful capabilities to destroy or degrade *the enemy's best capabilities* in order to (1) level the technological playing field at the inception of hostilities, and (2) disrupt the enemy's campaign before it can achieve operational momentum. The PLA's approach rests upon the correct selection of "enemy vital targets" and "key point application of force" against those targets. David Finkelstein, *Evolving Operational Concepts of the Chinese People's Liberation Army: A Preliminary Exploration* (Alexandria, VA: The CNA Corporation, 2001), *passim*.

³⁹ *Annual Report to Congress 2009*.

⁴⁰ Conversation with Mr. Dean Cheng, Center for Naval Analyses (CNA) China analyst and a leading expert on Chinese space activities. See also his Conference Report, *China's Space Program: Civilian, Commercial and Military Aspects* (Alexandria, VA: The CNA Corporation, May 2006).

⁴¹ Antiship cruise missile range is important if the attacker hopes to be successful. The ideal situation for an attacking aircraft is to be able to launch its cruise missiles before it enters the defensive umbrella of the surface ships, so the defender is confronted with having to shoot at cruise missiles—a difficult target. It is much easier for modern surface-to-air missiles to intercept aircraft. The colloquial characterization of this tactical problem is to "shoot the archer before he launches his arrows." U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2010*, available at <www.defense.gov/pubs/pdfs/2010_CMPR_final.pdf>, 4.

⁴² Roger Cliff, "The Development of China's Air Force Capabilities," RAND Document Testimony Before U.S.–China Economic and Security Review Commission, May 20, 2010. Available at <www.uscc.gov/hearings/2010hearings/written_testimonies/10_05_20_wrt/10_05_20_cliff_statement.pdf>.

⁴³ Office of Naval Intelligence, *The People's Liberation Army Navy: A Modern Navy with Chinese Characteristics* (Suitland, MD: Office of Naval Intelligence, August 2009), 21.

⁴⁴ Ronald O'Rourke, *China Naval Modernization: Implications for U.S. Navy Capabilities—Background and Issues for Congress*, Congressional Research Service Report RL33153: 8, updated December 23, 2009. This is the single best open-source compilation of information on the PLA Navy available to scholars and research specialists.

⁴⁵ Li Xinqi, Tan Shoulin, Li Hongxia, "Precaution Model and Simulation Actualization on Threat of Maneuver Target Group on the Sea" (The Second Artillery Engineering College, August 1, 2005), in author's possession. This assessment is based on the author's judgment and is not informed by any particular insight

into PLA Navy plans. The logic is straightforward: if the objective is to deny access, then it is important to keep sea-based airpower as far away as possible.

⁴⁶ DOD Annual Report to Congress, *Military Power of the People's Republic of China 2009*, 21. The report contains a diagram from a 2006 Second Artillery publication that illustrates this missile concept. Over the course of 2009 this issue of antiship ballistic missiles has received considerable attention. See for example, Michael S. Chase, Andrew S. Erickson, and Christopher Yeaw, "Chinese Theater and Strategic Missile Force Modernization and Its Implications for the United States," *The Journal of Strategic Studies* (February 2009), 67–114; Andrew S. Erickson and David D. Yang, "On the Verge of a Game-Changer," *U.S. Naval Institute Proceedings* (May 2009), 26–32; Andrew Erickson, "Facing A New Missile Threat From China: How The U.S. Should Respond To China's Development Of Anti-Ship Ballistic Missile Systems," *CBSNews.com*, May 28, 2009; Andrew S. Erickson and David D. Yang, "Using the Land to Control the Sea? Chinese Analysts Consider the Antiship Ballistic Missile," *Naval War College Review* 62, no. 4 (Autumn 2009), 53–86.

⁴⁷ Tan Shoulin and Zhang Daqiao (Second Artillery Engineering College), "Determination and Evaluation of Effective Homing Range for Ballistic Missile Attacking Aircraft Carrier," *Information Command and Control System and Simulation Technology* 28, no. 4 (August 2006), 6–9.

⁴⁸ This assessment is not based on any specific knowledge of how the PLA will attempt to accomplish this task, keeping in mind that these are the normal steps involved with employing most long-range weapons systems. For the best discussion directly related to an antiship ballistic missile, see Eric Hagt and Mathew Durwin, "China's Antiship Ballistic Missile: Developments and Missing Links," *Naval War College Review* 62 (Autumn 2009), 89. See also Office of Naval Intelligence, *The People's Liberation Army Navy: A Modern Navy with Chinese Characteristics*, 26–27.

⁴⁹ In the 1980s, the U.S. Navy developed a maritime strategy, which involved a 600-ship force, in order to defeat the Soviet strategy. See Hattendorf, *passim*.

⁵⁰ Office of Naval Intelligence, *The People's Liberation Army Navy: A Modern Navy with Chinese Characteristics*, 21–22, provides an interesting diagram that illustrates the relationship between radiated noise and relative detectability. See also, Owen Cote, Jr., "The Third Battle: Innovation in the US Navy's Silent Cold War Struggle with Soviet Submarines," March 2000, available at <www.navy.mil/navydata/cno/n87/history/cold-war-asw.html>, *passim*. For a more sensationalized treatment, see Sherry Sontag and Christopher Drew, *Blind Man's Bluff: The Untold Story of American Submarine Espionage* (New York: PublicAffairs, a Division of Perseus Books, 1998), *passim*.

⁵¹ U.S. Department of Defense, *Quadrennial Defense Review Report* (Washington, DC: U.S. Department of Defense, February 2010), 32. Available at <www.defense.gov/qdr/images/QDR_as_of_12Feb10_1000.pdf>. Jan van Tol et al., *AirSea Battle: A Point of Departure Operational Concept* (Center for Strategic and Budgetary Assessments, May 2010), *passim*. Available at <www.csbaonline.org/4Publications/PubLibrary/R.20100518.Air_Sea_Battle_A_/R.20100518.Air_Sea_Battle_A_.pdf>.

Chapter 9

The PLA Navy as an Instrument of Statecraft¹

Eric A. McVadon

The People's Liberation Army Navy (PLA Navy or PLAN) has, in the span of just 60 years, developed from an obscure adjunct to China's land army to a capable, modern force central to Beijing's national security strategy. In tandem with this transformation, China's political leaders have learned how to employ this navy as a potent tool to further China's increasingly extensive strategic objectives. China has primarily accomplished this in two broad ways: first, as a combat-capable navy that sometimes uses or threatens to use force and sometimes favors restraint, as Beijing elects. It has thereby been able to intimidate its neighbors or, conversely, to attempt to demonstrate its benign character. Second, the PLA Navy has also served as a means to represent China as a growing world power and boost Beijing's image around the globe. The combination of these two approaches has given Beijing a versatile means to project China's growing maritime influence and enhance its comprehensive national power.

Balancing Use and Nonuse of Force: A Naval Strategy with Chinese Characteristics

The Chinese government is employing its navy as an instrument of statecraft with considerable emphasis on the utility of that navy when *not* forcefully applied. In this regard, Beijing's policymakers have pointed to Zheng He,² the 15th-century Ming dynasty admiral, and his cruises around the Indian Ocean basin as the epitome of the peaceful use of a naval force; they have similarly touted their desire to emulate his example as they have modernized the PLA Navy. This example is, ironically, even more appropriate than Chinese propaganda portrays. Namely, just as the eunuch admiral's appearances at unexpected foreign ports with an imposing naval flotilla probably unnerved his hosts *regardless* of his supposedly benign intentions, many of China's neighbors likewise look uneasily toward the PLA Navy, regardless of how adamantly China claims it will be used for peaceful purposes.

By virtue of building and maintaining a standing navy as ambitiously as the Chinese have done in recent years, Beijing has thus acquired not only a potent naval combat force but also a valuable tool that can further extend its political and economic reach around the world *whether or not they use force*. As was the case with Zheng He, today's Chinese navy has become an invaluable

instrument of statecraft for the government that owns it. The Chinese have recognized the dual service that their navy can provide, and they have made clear their willingness to deviate from their preference for non-forceful use primarily *in specific, predictable situations*, notably Taiwan, offshore energy extraction, and intrusive foreign (U.S.) military operations near China—as will be elaborated in a subsequent section of this chapter.

Admiral Zheng He: Were His Port Calls Seen as Visits of Love Boats or Gun Boats?

Beijing's naval policy has emphasized its defensive strategy, even as it has developed a capable, modern force. This policy is said to be exemplified, in legend at least, by Zheng He, who eschewed the use of force and promoted trade and good relations without overtly posing a threat. The Chinese vice minister of communications said in 2004, "During the seven voyages, Zheng He did not occupy a single piece of land, establish any fortress, or seize any wealth. . . . He was welcomed and lauded by the people of various countries."³ Zheng's cruises are cited as a prime example of the non-forceful use of maritime power, and the Chinese today proudly hearken back to this golden age of supremacy at sea. When this author, in researching and preparing to write this chapter, approached the Chinese naval attaché in Washington for help, he immediately launched into the example of Zheng He as representative of today's use of the PLA Navy as an instrument of statecraft.

Recent scholarship, however, reveals that Zheng He's voyages may not have been as innocuous as the Chinese have portrayed. Even a cursory analysis of these voyages would lead one to surmise that Zheng's armada carried a clear message of Chinese maritime supremacy *regardless* of the admiral's supposed mission of goodwill. Hundreds of warships and tens of thousands of soldiers could not have been received as sanguinely by China's neighbors as the Chinese have suggested. One recent Western researcher even contends that "the ships [of these flotillas] were indeed gunboats, with perhaps 26,000 to 28,000 military men. . . . These missions were also intended to obtain control of ports and shipping lanes."⁴ Zheng's journeys, therefore, offer a vivid example of how China's neighbors are necessarily wary toward the PLA Navy.

Proclaiming a Policy of Preference for Peaceful Use—Where Considered Possible

As aforementioned, by virtue of building and maintaining a standing navy as energetically as the Chinese have done in recent years, Beijing has acquired a valuable tool that can further extend its political and economic reach around the world—*whether or not they forcefully use that tool*. The PLA

Navy has become an invaluable instrument of statecraft for the government that owns it, both when used as a military implement and when otherwise employed—whether sent on traditional naval missions and as a force in being, or representing the nation, delivering humanitarian aid, and symbolizing modern, capable, dynamic China.

China concluded, as have other nations, of course, that its interests are generally, but not always, better served by the use of means other than force. This preference for the nonuse of force was publicly proclaimed by Premier Li Peng and President Jiang Zemin in the mid-1990s (though it did not receive the attention it deserved at the time).⁵ Specifically, in August 1997, Premier Li described five proposals for promoting relations with Association of Southeast Asian Nations (ASEAN) countries: “respecting each other,” “treating each other as equals,” “strengthening dialogue,” “intensifying consultation,” and seeking common economic development.⁶ These might be seen as euphemisms directed toward those who, instead of snarling at China’s somewhat patronizing approach to South China Sea disputes, would shake the extended hand of big, smiling China and smile back. These euphemisms stood for “we will not sic our navy on you, we will talk rather than shoot, and we will pursue common economic endeavors rather than eject you from your footholds, even though we have the capability and the right.”

Similarly, President Jiang, just months later, in December 1997, proclaimed that “China will never seek hegemony” and “China will forever be a good neighbor, a good partner and a good friend with ASEAN countries,”⁷ thus reinforcing his premier’s commitment to largely eschew gunboat diplomacy vis-à-vis its relations with Southeast Asia. *Nonuse* became a primary element of China’s comprehensive national power; Beijing relied substantially upon *nonmilitary means*, including economic and diplomatic, to realize its strategic aims, as this author has argued for the past decade.⁸ Beijing clearly did not adopt pacifism when it embraced this policy of the nonuse of force, but it has shown a mature realization that a less threatening posture, backed with visible strong forces, has generally better served its security interests.

If Beijing is beginning to lean now, in 2010, in the opposite direction—toward a more threatening posture, as appears to many observers to be the case, is it because Chinese leaders felt that the less aggressive stance was not appreciated and reciprocated by Washington and China’s neighbors? Did the emphasis on nonuse not adequately accomplish their objectives, or have they concluded that wholly new circumstances demand they establish further exceptions or broaden and intensify the current exceptions where the use or demonstration of force is considered routinely appropriate? Are these possible new or expanded exceptions stemming from the Chinese perceptions that (1) a

somehow shifting South China Sea situation demands that Beijing reassert its claims to islands and other minor land features and intensify its rhetoric with respect to maritime rights, and (2) new Chinese naval capabilities now make it both possible and appropriate to show, even flaunt, that its antiaccess strategy has substance, as seems to have been done in April 2010 by an essentially unprecedented major naval exercise skimming Japan, stirring up the Japanese Maritime Self-Defense Forces, and reaching into the Western Pacific? These questions, raised here rhetorically, will be tackled at the end of this chapter, but first it is appropriate to examine more closely what has been the policy for more than a decade. That analysis may help determine whether and, if so, how Chinese behavior might best be influenced to bring about a return to, and possibly strengthening of, emphasis on the less threatening, more accommodating attitude—or some not-yet-contemplated alternative.

Two South China Sea scenarios offer evidence of China's preference for this policy of the nonuse of force. The last significant hostile naval action taken by the PLAN against a neighbor⁹ in the South China Sea was the occupation and fortification of Mischief Reef (*Meiji Jiao*, 美济礁) in February 1995—a decade and a half ago. On the one hand, Hanoi and Manila know without question that the PLA Navy could readily prevent their retaking of the Paracel Islands (*Xisha Qundao*, 西沙群岛) and Mischief Reef, respectively. On the other hand, Beijing knows that the use of force to grab another bit of territory in the Spratly Islands, for example, would be counterproductive, raising concerns about Chinese intentions in the region and making less effective the use of what Beijing calls its comprehensive national power—including “soft power.”¹⁰ The cautious policy in this instance is intended to minimize the image of China as a bully and a hegemon (in the pejorative sense) among countries that are, of course, much smaller and, with few exceptions, have navies not even comparable to the PLA Navy. This vividly illustrates that China has a strong enough navy to forcefully realize its diplomatic objectives; however, it also has for some years restrained itself from using that navy forcefully to assert its dominance in the South China Sea region, apparently assuming that it could better accomplish its goals when *not* threatening its neighbors.

Consider a more controversial, albeit hypothetical, example: China, were it to act even more expansively on its claim to ownership of most of the land features in the South China Sea, could have used an overwhelming combination of strategic and tactical surprise and its superior navy during a period of political or social turmoil in Indonesia to seize the gas fields in the vicinity of the Natuna Islands. These very productive wells are over 1,000 kilometers north of Jakarta—a distance that further diminishes Indonesia's ability to react effectively to a threat. The Natuna gas fields are a proven energy

resource in the South China Sea.¹¹ But, here again, Beijing has prudently concluded that fostering positive working relations with Southeast Asian nations trumps the crude, but available and tempting, alternative of forcefully grabbing another energy foothold in distant waters—an action that would, indeed, have alarmed ASEAN members; China had already sufficiently overpowered and alienated its neighbors when it unilaterally seized in 1974, 1988, and 1995 the Paracel Islands, Spratly Islands, and Mischief Reef, respectively.¹²

Thus, Beijing has shown that restraint in using the PLA Navy can also serve its purposes as much as a show of force. It would have been strange, indeed, had the South Sea Fleet seized another islet so soon after Premier Li and President Jiang highlighted their desire to emphasize economic means to further their diplomatic ends, which implicitly but undoubtedly included their preference for the nonuse of force.

The very existence of a modernized PLA Navy significantly influences the thinking and actions of neighboring countries, Taiwan, and the United States. To further elaborate this point and pin it down chronologically, China's employment of its navy, in many situations, has arguably been more effective when it has not been used to threaten or engage in hostile acts. For the past decade and a half, China has clearly pursued this preference for the use of means other than force. Its standing navy has earned its keep as a practical tool that can extend China's influence regionally and even globally—*whether or not it forcefully uses that tool*. Recent (summer 2010) developments alluded to above may portend less emphasis on conciliatory practices and more emphasis on threatening rhetoric, and this will be examined later in the chapter. For the most part, China has generally adhered to its preference for nonuse of force. If change is underway—as indicated by breaking news and harsh official rhetoric from Beijing and Washington—we may need to gently and subtly remind Beijing of the success of its nonuse practices. Furthermore, we will rely on a full understanding of that practice in order to understand better what is occurring now, to evaluate whether it is likely to be a temporary aberration or a permanent change of policy and attitude, to determine why it is happening now, and to influence the outcome—or cope with the consequences. These issues are considered in the concluding section of this chapter.

Case Studies: Deliberate Exceptions to Nonuse or Reversion to Gunboat Diplomacy?

Active use of the navy is often called “gunboat diplomacy.” Many have accused Beijing of regularly using its navy in an indiscriminate, irresponsible manner. But, as this section demonstrates, exceptions to China's general policy of nonuse of force lie in three key areas that Beijing considers of critical

importance to Chinese national security: Taiwan, energy resources, and national sovereignty. These exceptions contrast with a general preference for avoiding confrontation and provocation. The recent incidents, which are often construed as demonstrating China's growing belligerence, may instead reflect specific and enduring important Chinese concerns. This does not necessarily excuse Chinese actions: there have been clear examples where Beijing has used gunboat diplomacy (and more) to forcefully acquire what it wants. There is also no guarantee that China's restrained policy will continue; 2010 rumblings suggesting that China may be moving to a more aggressive, less constrained stance that could be tricky or impossible to reverse are a matter of serious concern. Nevertheless, it would be unfair and unwise to ignore China's general preference for the nonuse of force and fail to understand that the overt use of force has been applied only in certain key areas.

For example, there is no question that Beijing has deliberately excluded Taiwan from this policy of nonuse—China's leaders have openly and consistently threatened the use of force across the strait. Taiwan represents one area where China feels wholly justified in refusing to renounce the use of force. Yet, even with respect to Taiwan, there has been a measure of restraint in the overt use of force, for several compelling reasons. Beijing has hesitated to put at risk its deep economic interdependence with Taiwan—especially in trade, investment, and technological benefits. China has also generally sought to avoid an armed confrontation that might disrupt the stability upon which its own economic development so heavily depends. Finally, China has feared that conflict with Taiwan would besmirch its international reputation, and that it could otherwise badly embarrass—or be disastrous for—its untested and relatively combat-inexperienced military force if the United States intervenes.

Beijing has also more readily employed force in issues involving regional energy resources and defense of its territorial sovereignty as it defines it. The following examples illustrate these points.

Sovremenny-Led Task Group to Chunxiao Natural Gas Field (2005). China demonstrated its willingness to confront and provoke its neighbors in the critical area of energy extraction in 2005. That year, the Japanese Maritime Self-Defense Force recorded a confrontation near the oil and natural gas fields at Chunxiao (*Chun Xiao You Tian*, 春曉油田) in the East China Sea,¹³ as depicted in figure 9-1. China has been a net oil-importing nation since 1993. A shortage of oil and other energy resources could retard its economic growth, which is critical to the retention of power by the Chinese Communist Party. From Beijing's perspective, there was good reason to send combatant ships and then, as Beijing reported doing, form a permanent force in reserve dedicated to asserting Chinese rights to these seabed resources. The PLA Navy appears

to have thrown down the gauntlet by dispatching a potent naval force to affirm its claims to a regional energy source.

In January 2005, a Japanese Maritime Self-Defense Force (JMSDF) P-3C aircraft sighted a PLA Navy *Sovremenny*-class guided-missile destroyer (the top firepower platform in the PLAN) in the Chunxiao gas field area;¹⁴ in September 2005, China deployed five warships to the gas field.¹⁵ The PLAN task group, as reported by a Japanese maritime patrol P-3C aircraft, was composed of a 7,900-ton *Sovremenny*-class destroyer, two 1,700-ton *Jianghu I*-class guided-missile frigates, a 23,000-ton replenishment vessel, and a 6,000-ton missile observation support ship, which were maneuvering in the approaches to the gas field.¹⁶ According to one Japanese report, a PLAN frigate pointed its 100mm gun at a Japanese P-3.¹⁷ The Chinese thus deployed major surface combatants led by a *Sovremenny*-class guided missile destroyer armed with exceedingly lethal, supersonic antiship cruise missiles. If these unannounced deployments did not capture Japanese attention immediately, then the “locking-on” of a large caliber gun certainly would have. This deployment signaled that the Chinese would no longer shrink in the face of what had in earlier years been recognized as technically superior Japanese naval capabilities. Beijing has implicitly confirmed this newfound resolve with the establishment of a permanent naval squadron held in reserve in the East China Sea—a squadron undoubtedly assigned the task of responding specifically to challenges concerning energy extraction rights in Chunxiao and elsewhere.¹⁸ The message to the JMSDF was that “the PLAN is no longer intimidated by you; if you continue to press your unilateral claims to these fields in Chunxiao and deny the legitimacy of our claims, we will confront you with a combatant task force each time.”

Revealingly, the intensity of Chinese (and Japanese) interest in the Chunxiao gas and oil field in the East China Sea has surpassed that concerning the long and intensely disputed Senkaku Islands (*Diaoyutai Qundao*, 釣魚台群島). Concerns about energy security undoubtedly constituted the overriding rationale for such strong action at Chunxiao from the Chinese—more so, it seems, than their long-held animosity toward the Japanese. The PLA Navy clearly employed a version of “gunboat diplomacy” to stake out China’s claims at Chunxiao, revealing that energy is an area where restraint in China’s use of force will not be the dominant consideration.

Han-class Submarine Encounter (1994). China has demonstrated on more than one occasion that it is willing to risk serious confrontation to convey the point that it does not want the United States and other countries to conduct reconnaissance missions so near its coast. This is another area where China has shown that it is willing to set aside its general preference for nonuse of force—in defending its expansive interpretation of sovereign prerogatives and territorial rights. China does not want the United States to conduct intrusive military

Figure 9–1. Chinese Use of Force—Examples of Gunboat Diplomacy



Note: Locations are approximate

operations so close to its territory—and, in this early example involving a U.S. carrier and a *Han*-class submarine, threatened to “shoot down” a U.S. military plane to demonstrate this desire.

In 1994, the USS *Kitty Hawk* carrier battle group came upon a *Han*-class submarine from China’s North Sea Fleet as the old and noisy Chinese nuclear-propelled submarine was returning to port near Qingdao in Shandong Province. The *Han* was discovered close to its homeport, homeward bound, and apparently not engaged in shadowing the *Kitty Hawk* battle group—possibly even unaware of the significant American presence in the Yellow Sea before being detected.¹⁹

U.S. forces tracked (prosecuted in Navy parlance) the *Han* by dispatching antisubmarine aircraft from the carrier *Kitty Hawk*. Professor and retired U.S. Navy Captain Bernard (Bud) Cole, a recognized authority on the PLA Navy, writes:

Battle group aircraft began tracking the contact, which turned out to be a Chinese *Han*-class nuclear powered attack submarine (SSN) returning to its homeport in northern China. Neither the captain of the submarine nor, apparently, higher authorities ashore knew how to respond to the situation; what would have been an accepted practice between U.S. and Soviet naval forces during the Cold War was completely unfamiliar to the People’s Liberation Army Navy.²⁰

Indeed, the Chinese were incensed. They obviously were unaccustomed, or wished to take strong exception, to the routine prosecution of submarine contacts in international waters (which the author was involved in for three decades in the Cold War). The U.S. naval attaché in Beijing in 1994, Captain Jack Reddinger, was even told by a Chinese officer at a dinner party that a repeat of such a submarine prosecution would result in the shoot-down of the U.S. Navy aircraft involved. This incident foreshadowed continuing Chinese sensitivity concerning surveillance close to China. In retrospect, this incident represents an early instance of how Beijing would overreact to what it considered intrusive foreign operations.²¹ The incident revealed the PLA’s proclivity for overreaction (as perceived by the United States): China abhors the conduct of intrusive foreign military operations and intelligence collection activities close to its territory—and in this case was willing to threaten a shoot-down to demonstrate its concern.

F-8 and EP-3 Collision (2001). The most dramatic example of Chinese determination to curb what it perceived to be unwarranted, intrusive foreign intelligence-gathering operations near its shores (and its willingness to deviate from its preference for nonuse of force) occurred in 2001. On the first of April

that year, a PLA Navy fighter aircraft from the Lingshui Naval Air Station on Hainan Island and a U.S. Navy EP-3 reconnaissance aircraft collided over the South China Sea. It had become clear in the months leading up to this incident that the Chinese believed that U.S. reconnaissance missions in and over the waters off China had become more frequent and intrusive²²—sometimes intolerably so, as expressed by many in the PLA.²³

PLA officers had conveyed their objections to their U.S. counterparts, only to be rebuffed by their American interlocutors. They accused the United States of hegemonic behavior, abuse of its superpower status, and arrogance in employing advanced technological spying against poor, developing China. “What would the United States do if Chinese aircraft flew just off the U.S. coast?” they asked. Appearing on CNN television in Washington to discuss the incident, China’s ambassador compared the flights to a car obnoxiously passing in front of a private home repeatedly and making life miserable for the family in the house—even if the car remained on the public street. The United States, for its part, repeated its assertion that such intelligence-gathering missions were permissible in China’s exclusive economic zone, regardless of Chinese interpretations to the contrary, and, moreover, considered these flights as crucial so long as China continued to threaten Taiwan—without using these words. In countering Chinese demands for cessation of the flights, U.S. officials complained about the dangerously aggressive intercepts being undertaken by Chinese fighter pilots—a complaint apparently dismissed by the Chinese side.²⁴ This was the tense atmosphere as the pilots of Lingshui became more aggressive and—as it turned out—dangerous.²⁵

In a spiraling exacerbation of tension, the Chinese became increasingly reckless in their responses to American reconnaissance missions. PLA Navy Air Force (PLANAF) pilots began harassing American pilots, either as ordered from above or on their own volition, often employing alarming closure rates during intercepts and sometimes even pulling ahead of the larger aircraft and “thumping” it with engine afterburner exhaust.²⁶ Finally, on that fateful April Fools’ Day 2001, “hot-dogging” Lieutenant Commander Wang Wei captured the world’s attention when he struck a U.S. Navy VQ-1 EP-3E on his botched attempt at a third “join-up.” (A join-up is to approach and then fly closely alongside another aircraft—to fly in close formation.) The stunningly violent collision resulted in the loss of the Chinese pilot and his F-8II airplane, as well as in severe damage to the EP-3 (though the 21-member crew of the latter was uninjured). The pilot of the EP-3, young U.S. Navy Lieutenant Shane Osborn, recovered from a steep 8,000-foot uncontrolled dive and flew toward Lingshui on Hainan Island in his badly damaged aircraft.²⁷ Osborn made an engine-out, no-flap landing without an airspeed indicator at the PLA Navy airfield,

absent both the normal permission required from the PRC government and the normally mandatory clearance to land from the control tower (although a “May Day” emergency message had been sent on at least one international distress frequency).²⁸ The Chinese made an issue of the landing without permission—one has to surmise this was a further reflection of objections to intrusive activities and violation of sovereignty.

China clearly does not want the United States to conduct reconnaissance missions so near its coast. The EP-3 case demonstrates its willingness to risk serious confrontation to convey this point, counter to its general policy of nonuse of force. This incident further demonstrates the support for this type of activity—harassment and confrontation—possibly at all levels in the PRC, from senior policymakers to junior operational officers. It remains unknown whether the PLANAF pilots received either orders or encouragement from above during the EP-3 crisis. It is also noteworthy that Commander Zhao Yu, the flight leader of the two-aircraft flight, reportedly requested permission from his command at Lingshui to shoot down the EP-3²⁹—tantamount to commencing open hostilities with the United States.³⁰ Beijing prudently denied his request,³¹ but the message came through clearly: the Chinese were more than willing to risk a collision to shoo American intelligence-gathering activities from what it considers sovereign territory. The PLA Navy Air Force proved in this instance to be a questionable means to exercise statecraft, in contrast to the well orchestrated efforts employed by surface combatants of the South and East Sea Fleets—even considering the provocative gunpointing. Nevertheless, the Chinese commitment to make its intention to confront intruding American missions unmistakably clear was vividly demonstrated. Beijing wants Washington to stop collecting intelligence in and above the waters near China, and it has gone to great lengths—perhaps even overboard—in its reactions to these U.S. missions.

USNS Impeccable (2009). The most recent example of China’s determination to challenge the U.S. right to conduct intelligence operations near China is the March 2009 harassment incident of the U.S. acoustic surveillance ship *USNS Impeccable*. This confrontation, scores of miles from the coast, occurred well outside of China’s territorial waters (12 miles from the coast) but within its exclusive economic zone (EEZ—200 miles from the coast). It involved several Chinese government vessels, including at least one armed PRC ship (perhaps a patrol craft) and a PLAN maritime patrol aircraft.

Impeccable is a predominantly civilian-manned ocean surveillance vessel. However, it, along with several other ships, tows the sonar array system (SURTASS2) that performs acoustic collection surveillance, producing information used to detect, locate, identify, and, in wartime, attack submarines.

While these operations are routine peacetime activities, they would be applied to any future antisubmarine warfare (ASW) in times of crisis or conflict.³² The Chinese clearly did not feel comfortable with such “spy” ships operating so close to its newest nuclear-powered submarine base at Yalong Bay on Hainan Island—and in waters that it had begun to treat essentially as its territorial sea.³³

The harassment of the *Impeccable* became particularly intense on March 8. A Chinese radio call demanded that the American ship leave the area or “suffer the consequences”; later, a Chinese vessel impeded *Impeccable’s* passage by turning across the latter’s bow, stopping, and then placing obstacles in the water. Another Chinese ship—this time with guns—approached within 100 yards of the surveillance ship, and yet another came within 25 feet, even though the American crew attempted to repel it by spraying the Chinese crew with fire hoses. The latter responded by trying to snag the *Impeccable’s* cable towing its sonar array. There was obviously danger of collision and injury. The Chinese government ships blatantly violated the norms of good seamanship and safe maneuvering and the rules of the road—formally known as the International Regulations for Avoiding Collisions at Sea.

The issue underlying these incidents was, at least on the surface, the two countries’ differing interpretations and applications of international law to U.S. military activity in China’s EEZ: China interprets EEZ rules as requiring the coastal state’s approval for such activities; the United States disagrees. But, even if the EEZ concept did not exist, China would strongly object to what it considers to be intrusive operations so near its coast and so near a sensitive military facility. The harassment of the *Impeccable* transpired because of the Chinese desire to interfere with the surveillance ship’s acoustic signature collection operations—and to demand the cessation of all such activities in the future. This incident epitomizes Beijing’s willingness to use gunboat diplomacy to confront challenges to the “privacy” it seeks in its immediate coastal periphery.

During the Cold War, the Soviet Union frequently dispatched intelligence-collecting vessels to distant waters with the explicit purpose of harassing U.S. Navy ships. The Chinese have engaged in similar acts of harassment—but they have done so almost exclusively near home waters. The Chinese may have violated rules of the road as flagrantly as the Soviets did during these aforementioned incidents. However, the PLA Navy has predominantly harassed U.S. Navy vessels and those of other maritime nations in their littoral when they felt their “privacy” and security were threatened by intrusive intelligence-collection efforts. In sum, when the Chinese navy has employed gunboat diplomacy or the airborne equivalent thereof in recent years, its leaders have done so in an increasingly predictable manner, and have deviated from their declared preference for not using force in three key areas: in

confrontations related to Taiwan, energy extraction from the seabed, and what they consider intrusive foreign military operations near territorial waters.

Beijing has repeatedly and openly refused to renounce the use of force with respect to the “Taiwan problem,” and it has shown on several occasions its readiness to confront formidable Japanese naval forces in order to assert its perceived rights to the extraction of regional energy resources. The 1994 fury surrounding the *Han*-class submarine prosecuted by U.S. ASW forces also appears to have transpired primarily because of a hot-headed overreaction to perceived sovereignty issues more than a reversal of Beijing’s naval nonuse of force policy. The same can be said of the 2001 incident involving the downed USN EP-3 following a collision with a PLAN F-8II and the drama over the harassment of USNS *Impeccable* in 2009. The jury remains out about whether China will persist in its self-imposed limits on the overt use of force to further its strategic interests. At least until recently, however, the exceptions to China’s general preference not to employ force have involved the desire to intimidate Taiwan, to protect what it sees as vital offshore energy reserves, or to curb foreign military intrusions near its territory.

Beijing and the PLA Navy have been quite adept in this balancing of *nonuse* and *use* of combatant ships and aircraft and in adhering to this preference not to use force—a policy, of course, that China generally shares with many other responsible nations. There have been confrontations of varying intensity over certain issues that the Chinese consider to be “nonnegotiable,” but there are also examples of skillful avoidance of confrontation. Particular kudos should go to those who, for at least the past decade and a half, replaced an iron fist in the South China Sea with what might be termed a heavy hand with a gentle touch. Beijing’s refusal to renounce the use of force against Taiwan may be onerous to the people of Taiwan and to most Americans—but Beijing’s use of the PLA in cross-strait relations appears to be carefully calibrated to support its policy of intimidation without producing armed confrontations. Even the task groups sent to the East China Sea gas field managed generally to emphasize the seriousness of China’s position while avoiding a direct confrontation with the JMSDF. Thus, we might term the PLAN operations described above as carefully considered and demonstrably effective instruments of statecraft.

Conventional and Traditional Use of the PLAN as an Instrument of Statecraft

Beijing has also deployed its navy as an instrument of statecraft in traditional ways to represent China as a growing world power and boost Beijing’s image around the globe. The PLA Navy, historically, was slow to

employ such methods as port visits, combined exercises, operational forays, and senior officer exchanges—practices quite common among major navies. But it has made great strides in recent years to be more open concerning its navy and use its navy as other countries do—to express goodwill, display capability, and learn from other navies. And, for the most part, it appears to be doing just that—leaving the impression that China is both a capable and friendly maritime power.

Port Visits

China's navy only recently began making port visits to foreign countries. The PLAN conducted its first foreign port visit in 1985—almost four decades after its establishment—when it sent three ships on a coast-hugging cruise to Pakistan, Bangladesh, and Sri Lanka. Perhaps best illustrating the hesitancy and caution involved, PLAN ships did not visit the United States until 1989—a decade after the establishment of diplomatic relations, and that was the training ship *Zheng He* (named after the Ming-dynasty admiral). Subsequently, combatant ships visited the United States in 1997, 2000, and 2006. The PLAN mustered the courage to sail beyond the Pacific and Indian Oceans, journeying to the waters of Europe for the first time in 2001 when it visited France, Italy, Germany, and the UK. The following year, in 2002, it completed a round-the-world voyage—nearly one hundred years after the United States accomplished a similar feat with its famous Great White Fleet. The PLAN has, however, regularly conducted port calls over the past quarter century, to the tune of one or two each year since 1989.³⁴ This is far from a robust program, especially compared to the U.S. Navy. Nevertheless, it has become an increasingly conspicuous part of China's foreign policy toolkit.

China's port visits have been a component of larger diplomatic campaigns designed to reinforce China's stature worldwide and bolster its leverage on strategic and economic issues. For example, the PLA Navy undertook three voyages to Pakistan and India in an effort to display its “even-handed” disposition toward these South Asia rivals. (Recall that China conducts only one or two such cruises each year; expending three of them focused on balancing its South Asia coverage over the past dozen years clearly demonstrates Beijing's desire to avoid negative political fallout in the region.) China's visits to India are also noteworthy especially given the two countries' unresolved territorial disputes and historic enmity, evidenced most clearly during their 1962 border war in which the PLA humiliated the Indian Army.

Even more impressive than China's three visits to South Asia are its half-dozen voyages to Southeast Asia. The frequency of these visits to ASEAN nations reveals that, despite the long-standing territorial disputes and uneasiness in its relations with those countries, China has attempted to engage

its southern neighbors more than it has sought to confront them. Similarly, Beijing dispatched the destroyer *Shenzhen* to Europe in 2001 at least in part to influence the attitudes of European Union nations toward defense technology transfers. China for some time had sought to acquire various items from the Europeans in order to fill critical gaps in its military infrastructure, transactions to which the Americans strongly objected. Although the United Nations' post-Tiananmen sanctions against Beijing remain in place, this voyage was part of an effort to keep this issue alive in Europe (and to keep American statesmen on the edge of their seats). Finally, the PLA Navy also paid port visits to Japan twice in recent years, indicating China's desire to improve relations with Japan even as popular antagonism toward the Japanese reached a peak in the latter half of the 2000s.

PRC naval officers consulted by the author describe the purposes of PLAN visits to foreign ports as extending a friendly hand, showing goodwill, demonstrating an independent foreign policy of peace, showing a desire to work together with other countries and navies, and demonstrating the achievements in China's opening to the outside world and economic development. They contend that visits to other countries also show the spirit of the Chinese people: active, healthy, and engaged with the outside world. For the most part, Beijing appears to have become skilled in wielding its navy in this traditional way as an instrument of soft power.

Bilateral and Multilateral Exercises

Considering that China had been reluctant to participate in naval exercises with other countries until this past decade (because of a fear of embarrassment), the PLA Navy has advanced by leaps and bounds, thus providing China's political leaders with another asset that can be used to influence the country's standing abroad. Notably, in May 2007, a PLA Navy frigate participated in a Western Pacific Naval Symposium (WPNS)³⁵ exercise for the first time (even though China is a founding member of the two-decade-old U.S.- and Australia-inspired WPNS).³⁶ More than 20 warships from 12 countries, including the United States, France, and Australia, took part in the 6-day exercise. China's involvement in the exercise essentially equated to an imprimatur—a fuller acceptance into the community of Pacific Rim maritime powers. The PLAN's first-ever combined exercises with the Russian Navy in 2005 also significantly boosted the former's prestige, as did similar (though significantly less complex) exercises with the (vastly superior) U.S. Navy a year later.³⁷ The Russian exercises especially provided Beijing with a strategic boost: the Russians were now seen as highly likely to be a reliable provider of logistic and other support—almost certainly including specific missiles and spare parts for the key Russian weapons systems that China would employ in combat

with Taiwan and the United States. The scope and intensity of these exercises revealed just how credible the Chinese threat to Taiwan was and, ultimately, reinforced Beijing's stature as a budding global sea power.³⁸

Beijing's greater confidence in its navy—and in its navy's ability to engage the international maritime community—has given it an opportunity to extend its reach in parts of the world where China felt ignored. For example, in March 2007, a Chinese frigate commanded the 4-day sea phase of a combined exercise called "Peace-07" in the Arabian Sea—an exercise involving the navies of nine different nations—signifying China's "entrance" in the increasingly important Middle East.³⁹ The PLAN conducted its first combined exercises with the Pakistani and Indian navies in 2003; initially, such endeavors were limited to occasions tied to port visits, when two navies (Chinese and foreign) performed rudimentary drills together. However, more recently, the Chinese have begun to dispatch naval forces explicitly to participate in major international exercises. Now, modern Chinese combatant ships are a regular feature of complex multinational naval drills, and this newfound ability has given Beijing a seat at the table where serious maritime matters are debated.

China's International Fleet Review

In 2009, China received 21 ships from 14 countries in an international fleet review in Qingdao to recognize the 60th anniversary of the People's Liberation Army Navy. The message conveyed here was clear: not only did China feel sufficiently confident to send its maritime forces abroad, but it now had also acquired the poise to embrace the limelight and host an extravagant party in its own waters. U.S. Chief of Naval Operations (CNO) Admiral Gary Roughead led the U.S. delegation at the event—one also attended by representatives from 29 other nations, thus signifying that the U.S. Navy and other major maritime powers no longer considered the PLA Navy an inconsequential force.⁴⁰ China wanted the world to accept its navy as a potent and capable service that could command international attention and respect—a new situation for a fleet that just decades before could not have contemplated measuring up to such standards. This experience reaffirmed China's global maritime aspirations and served, essentially, as a proud "coming-out" party for a navy with grand ambitions.

Blue-water Forays

China has not routinely conducted naval operations (as opposed to simple oceanic transits to conduct port visits) far from its own shores. However, it has used occasional blue-water forays to demonstrate its intentions to be more than a littoral navy. Recent forays have offered us the first glimpses of what may become a routine practice of the PLA Navy. Through these cruises, Beijing has

essentially shown its willingness to assert its presence in distant waters—implicitly challenging the unspoken dominance of the U.S. Navy in the Western Pacific—and thereby furnish its political leaders with another potent means of one day securing its growing interests abroad. The following five examples illustrate this point:

Incursions of Chinese Survey Ships and Submarine into Japanese EEZ (Early 2000s). In 2001, China and Japan agreed to notify each other if either one of them planned to conduct maritime survey operations in disputed waters. Yet, according to a contemporary Japanese newspaper report,⁴¹ in 2003, Chinese survey ships conducted six such operations without notifying the Japanese; during just 7 months of 2004, Chinese survey ships made intrusions into the Japanese-claimed EEZ 25 times without prior consultations. Why did Beijing disregard an international agreement with a longtime antagonist so blatantly and send these survey vessels into waters near Japan without the latter's consent? The simplest explanation involves a confusing combination of what might be judged politico-military ineptitude and national arrogance, as many have been quick to argue. Alternatively—and more likely—Beijing used this method to stake out what it sees as its rights.

Both ineptitude in navigation and lapse of judgment seem unlikely explanations for such complex oceanographic operations, especially given their frequency. Neither reason has been offered as an excuse for these incursions. China sent these ships to locations of interest and ignored Japanese complaints to send two messages. First, Beijing signaled to the JMSDF and the U.S. Navy that it intends to be a major player in undersea warfare with an increasing area of influence—an area that may have suddenly grown larger with the advent of two new classes of Chinese nuclear-powered submarines with longer “legs” and greater endurance, the *Shang*-class SSN (attack submarine) and the *Jin*-class SSBN (ballistic-missile submarine). In other words, Beijing may have intended these incursions to serve as a subtle reminder of Beijing's commitment to its antiaccess strategy in the Western Pacific.⁴² Second, the survey ships serve to assert China's rights in the disputed waters, particularly to substantiate its claim that those disputed waters overlie China's continental shelf, which, they argue, is the defining parameter for the outer boundary of the EEZ. Such claims would theoretically extend China's EEZ well beyond the currently accepted 200 nautical miles from the domestic coastline or the median line between China and Japan—thereby creating a controversy with widespread implications.⁴³ Either way, Beijing appears to have used these quasi-naval operations to enhance its reach in the region and to demonstrate that it has “stood up” as a maritime equal to Japan—the country that 60 years before humiliated China and whose Imperial Navy scourged the Western Pacific.

Han-class Submarine Encounter (2004). The PLA Navy conveyed a stronger and more far-reaching signal when it deployed a fast-attack nuclear submarine—a combatant vessel—to circle Guam in 2004. As aforementioned, the Chinese have rarely embarked on such out-of-area sub-surface patrols—this latest saga was one of only three extended patrols conducted by the entire Chinese submarine force in 2004; no such patrols were conducted in 2005.⁴⁴ This cruise, however, was steeped in significant implications. The Chinese, undoubtedly, were well aware that the United States had been undertaking major military relocations to Guam. These newly deployed U.S. forces on Guam were generally known to be located beyond the range of China’s conventional-warhead missiles—and thus represented a heightened U.S. ability to cope with Northeast Asian contingencies. By sending a submarine on a long-distance patrol to the vicinity of the island, China dropped the first hint that the United States might not be able to act with impunity in the Western Pacific and was not entirely invulnerable to Chinese forces, despite the latter’s relative inferiority. China sought to prove to itself and the United States that it was not helpless in the face of the American buildup.

Perhaps more significant, however, was what happened toward the end of the cruise, when the submarine inexplicably violated Japanese territorial waters and was caught red-handed by JMSDF antisubmarine warfare aircraft and surface ships. Beijing may have gotten more diplomatic-message mileage out of this *Han* patrol than it intended. The author, experienced in antisubmarine warfare, found in his records the following observations he had made in 2004:

JMSDF destroyers and P-3C aircraft tracked *Han*-class nuclear attack submarine (SSN) number 405 for two or more hours during a surprising transit through Japanese territorial waters off Okinawa, followed by an unsatisfying apology from Beijing. Japanese observers interpreted this as a deliberate act, approved at the highest levels, to test the U.S. and Japanese ability to respond to foreign submarine operations near Guam and within Japanese waters. *The ease of Japanese detection of Han 405, some speculated, was because the Chinese intended to be detected, facilitated by U.S.-provided cueing.*

Thus, the Chinese could have deliberately used the *Han*-class submarine to demonstrate that it could offer protection to gas exploration activities in the East China Sea and that it could threaten U.S. forces en route to intervene in a Taiwan contingency. Of course, the detection may have been completely unintended—perhaps due to a lapse in seamanship attributable in part to the rarity of PLA Navy submarine patrols in distant, unfamiliar waters. In any event, this bumbling, inept performance hardly smacks of a professional submarine force. Moreover, the commanding officer of a *Han*-class SSN in 2004

is expected to be an elite submariner. However we explain the saga, it is unmistakably clear that Beijing delivered a strong diplomatic message—the PLA Navy showed that it could threaten an important distant U.S. military outpost and that it had, whether boldly or mistakenly, intruded in Japanese waters. The world awoke to the reality that the United States was not alone in extended nuclear submarine surveillance missions. China's maritime reach, although sporadic, now appeared greater than previously thought.

Song-class Submarine Encounter (2006). A Chinese *Song*-class diesel-electric submarine that had located and apparently been shadowing the USS *Kitty Hawk* surfaced approximately 5 miles away from the carrier, where it was spotted by one of the carrier's aircraft.⁴⁵ The much-publicized *Kitty Hawk*-*Song* event occurred during one of only two such patrols conducted in 2006. In contrast to the previously described 1994 *Kitty Hawk*-*Han* encounter, the *Song* was said to be shadowing the carrier strike group and was near Okinawa, considerably farther from the submarine's base than was the case with the *Han* in the Yellow Sea.⁴⁶

That act of surfacing near the U.S. ships (yet at a safe distance) has been the subject of considerable speculation.⁴⁷ It might have been a mistake.⁴⁸ Or, perhaps, as the *Song*'s surfacing appeared to be prolonged (rather than a brief broaching), a casualty may have forced the submarine to surface. The casualty scenario makes much more sense considering that Admiral Gary Roughead, then commander of the U.S. Pacific Fleet, had been in Beijing at the time. Would Beijing audaciously approve the stalking of *Kitty Hawk*, much less the surfacing, while meeting with a very senior U.S. Navy officer? Or was Beijing unaware, forgetful, or insensitive? Might someone have directed that the *Song* press on with pursuit of the U.S. strike group, despite Roughead's visit? Once more, questions arise as to the operational savvy and politico-military astuteness of the Chinese leaders involved—as with the previously discussed threat to shoot down ASW airplanes, the frigate gun-pointing, and the dangerous intercepts of reconnaissance aircraft. But, whether or not such ineptitude or questionable judgment was a factor, the *Song* submarine's actions ultimately became an instrument of statecraft. While these cruises did not represent overt rehearsals of naval operations directed against U.S. intervention (and such submarine patrols have been few), Beijing demonstrated that the large and modernized PLAN submarine force increasingly can threaten the ability of U.S. carrier strike groups (CSGs) to intervene promptly and effectively in a Taiwan crisis.⁴⁹

International Anti-piracy Operations (2009–Present). China made a surprising decision in December 2008 when it sent three PLA Navy ships to the Gulf of Aden. Chinese leaders have been careful to justify this deployment based on United Nations Security Council approval—an operation, they

have argued, undertaken primarily to protect Chinese shipping from Somali pirates.⁵⁰ This deployment marks the first time since the establishment of the PLA Navy that a force has been sent to conduct combat-like operations beyond Chinese littoral waters (and in a foreign nation's EEZ). China may not have followed in the wake of the U.S. Navy and established a standing naval presence in distant waters through this deployment—it has no bases abroad to support such an endeavor, and its presence in the Gulf of Aden has been moderate, usually consisting of two combatant ships and a replenishment vessel.⁵¹ However, this deployment marks a strategic turning point in how Beijing has used the PLA Navy—it demonstrates that China now appears ready to assume a greater role on the high seas, at least in providing sea-lane security in the Middle East. It sends a signal to those who might be tempted to disrupt the flow of shipping to China that the PLA Navy must be taken seriously.

Surface Action Group in the Western Pacific (2010). In April 2010, the PLA Navy put to sea a task group (reportedly composed of eight surface combatants, including destroyers and frigates, and two submarines) that proceeded from the East China Sea into the Western Pacific. When accosted by JMSDF ships and aircraft as the task group skirted Japanese waters, the Chinese launched a helicopter that “buzzed” one of the Japanese warships and then circled it twice. The PRC defense ministry defended the deployment and asserted that it had posed no threat to Japan or others. Additionally, other surface and air units of the PLA Navy conducted missions farther east than is routinely done. These deployments and operations represent the first time a large Chinese surface action group supported by submarines (as opposed to a solitary submarine or a noncombatant survey ship fleet) headed for the blue waters where Japan and the United States have long dominated. It might be said that April 2010 was the advent of China's blue-water navy. This surface action group might be seen as the initial instance of China truly exercising its surface combatant force in a scenario that approximates in location and scale part of what the PLA Navy might do if U.S. forces were en route to intervene in a cross-strait conflict or other crisis.

These several forays provide good evidence that Beijing allows the PLAN to exercise in the waters where it may have to confront the oncoming U.S. Navy. This may become a routine practice of the PLA Navy. Through these cruises, Beijing has essentially shown its willingness to assert its presence in distant waters—implicitly challenging the dominance of the U.S. Navy in the Western Pacific.

Senior Officer Exchanges

The commander of the PLA Navy generally makes one trip abroad each year, though he does not strictly adhere to this pattern. Admiral Shi

Yunsheng, for example, managed to visit 11 countries in his annual trips from 1997 to 2002, but no such trips took place from 2003 to 2006.⁵² Consequently, the PLA Navy commander generally interacts with his foreign counterparts when they visit Beijing rather than on his own travels abroad. Nevertheless, China has been using these visits as an instrument of statecraft, even if only to a limited degree.

Maritime Cooperation and Humanitarian Assistance and Disaster Relief

Beijing has given only lip service to cooperative maritime security initiatives like the U.S. Navy's Global Maritime Partnership (originally dubbed the Thousand Ship Navy) and has resisted an active role in support of the Proliferation Security Initiative. Unfortunately, neither Beijing nor Washington has taken advantage of the opportunity to undertake humanitarian assistance and disaster relief operations as a team. Although PLA soldiers take pride in assistance missions at home and abroad, the PLA Navy has also largely ignored engaging in humanitarian assistance and disaster relief (HA/DR) operations—areas that the Chinese government has not pursued despite the inherent value such operations would offer in boosting Beijing's image abroad.⁵³

China's less-than-enthusiastic disposition or disinterest toward participation in multinational initiatives has been disappointing—even in initiatives that focus on such nonsensitive areas as oceanography, pollution control, fisheries enforcement, maritime safety, tsunami detection and warning, antiproliferation, and smuggling. The United States has been similarly culpable. China is wary of what it might be asked to do and how much it might be asked to contribute—it fears becoming entangled and surprised in operations it might oppose in principle. Similarly, the PLA Navy's longstanding fears of embarrassment also appear more than anything else to have stifled Beijing's zeal for participating alongside the U.S. Navy and others in HA/DR. Nevertheless, given China's latest naval modernization program and its emergence on the global stage, we can hope that the PLA Navy becomes more involved in such initiatives as it comes to appreciate more fully its own abilities and the value that such operations offer for its international reputation. We can also hope that the United States will also seek ways to get past the admitted awkwardness that stems from a relationship where both sides seek to establish cooperation but also have to be ready to undertake combat operations against each other.

Beijing has deployed its navy as an instrument of statecraft by employing such methods as port visits, exercises with the navies of other nations, extended-range operational sorties, and senior officer exchanges. Potential maritime cooperative efforts with other countries, especially the United States, have not been exploited. China has made great inroads in the past several years toward establishing its credibility worldwide, demonstrating more openness to share its navy,

and engaging in activities to show that it can use its navy as other countries do—to express goodwill, display capability, and learn from other navies. Port visits have become a prominent part of China's foreign policy toolkit while simultaneously displaying a friendly face. Similarly, China's willingness to participate more frequently in exercises with other nations also has served to boost its navy's credibility abroad. The PLA Navy's sporadic blue-water forays have demonstrated Beijing's growing confidence to challenge other navies distant from Chinese shores and furnish China's political leaders with another potent means of one day securing its growing interests abroad. For the most part, these practices, even given relative neglect of such areas as humanitarian assistance and disaster relief, have given Beijing greater leverage in its foreign policy, demonstrating the effectiveness of the PLAN as an instrument of statecraft.

The PLA Navy as an Instrument of Statecraft: In Its Own Words

To paraphrase what Mark Twain said about Richard Wagner's music, Chinese propaganda concerning the use of the PLA Navy as an instrument of statecraft is not as bad as it sounds. Propitiously, for the original work on this chapter, *The People's Liberation Army Daily* newspaper published an article in October 2007 entitled "An all-directional, multi-tiered and wide-ranging pattern of military diplomacy created."⁵⁴ The first subheading reads: "Enhancing trust and dispelling suspicion." The article is written in the familiar flowery propagandistic style. By removing that verbiage, the following pertinent points remain:

- The PLA has established defense and security consultation mechanisms with the United States, Russia, Japan, Australia, UK, France, and Germany, and such mechanisms have also gradually been established with surrounding countries, such as Pakistan, Mongolia, and Vietnam, and even with South Africa. Through dialogue on defense and security affairs, the military channel of mutual trust has been established and expanded.
- The PLA has opened wider to the outside world, as evidenced by its constant increase in "going global" and "inviting in."
- Chinese servicemen focus on how to absorb useful management experience and operational and training concepts of foreign troops when they "go global."
- The PLA has held joint antiterrorism military exercises and exercises dealing with nontraditional security menaces with the armed forces of

the relevant countries, and explored new methods for cracking down on international terrorism.

- The PLA has participated in 17 UN peacekeeping actions.
- It has also taken an active part in international disaster rescue and relief operations and helped the peoples of disaster-hit countries to rebuild their homes, faithfully fulfilling the commitment made by the Chinese government to the international community.
- “Mutual respect, consultation on equal footing, mutual benefit and win-win cooperation” is the way adopted by China to handle international relations, and it is also the code adopted by the PLA in its military diplomacy.

To put the use of the PLAN as an instrument of statecraft in a broader perspective, the following is helpful. The 2007 U.S. Office of Naval Intelligence publication on the PLAN provided an analysis based on the PRC’s five defense white papers and PLA writings and arrived at a list of five goals of the PLA’s foreign exchange program:⁵⁵

- shape the international security environment to support key national security objectives
- improve political and military relations with foreign countries
- provide military assistance to developing countries
- enhance China’s military and defense industry modernization by acquiring technology and advancing key research and development programs through foreign assistance
- help China’s military leaders, younger officers, and civilian cadre acquire modern military knowledge, especially from the developed world, in doctrine, operations, training, military medicine, administration, and a host of noncombat-related areas.

It seems that the PLAN has earned a better-than-passing grade in contributing to these goals through its interaction with other navies.

On balance, it serves the interests of those who want China to live up fully to its aspiration to be a constructive member of the community of nations and a “responsible stakeholder” to encourage and reinforce the positive aspects of Beijing’s employment of its navy as an instrument of statecraft, just as we wish to discourage and weaken the obsessive focus on threatening and intimidating Taiwan and the occasional penchant for reckless and irresponsible conduct.

Conclusion: Whither Chinese (and American) Statecraft?

China employs the PLA Navy as an instrument of statecraft in a wide variety of straightforward and complex (sometimes enigmatic) ways to send messages, protect claims, assert rights, intimidate, coerce, cajole, convey conciliation, and accomplish other goals. China, of course, also employs the PLAN in more conventional ways—port visits, exercises with other navies, operational forays, and senior-level visits—as an instrument of statecraft. Through these practices, Beijing has facilitated larger diplomatic efforts to achieve its strategic objectives abroad and largely succeeded in boosting its image around the globe. The PLA Navy has become an invaluable instrument to policymakers in furthering China's growing interests and enhancing its international reputation.

A variety of events in 2010 raise questions about whether the fundamental approach to the employment of the PLAN as an instrument of statecraft described in this chapter is now in question, and maybe even in jeopardy. The Chinese or at least some of the loudest voices (such as those of retired Rear Admiral Yang Yi and Major General Luo Yuan) are more firmly entrenched in harsh rhetoric concerning the United States than this author can recall during the last decade or more. Beijing has stridently disrupted PRC-U.S. military relations, made disturbing statements about its interests in the South China Sea (including senior diplomat Dai Bingguo's unfortunate assertion that it is a Chinese *core interest*, causing consternation in Washington and Beijing), reiterated its profound concerns about U.S. arms sales to Taiwan and reconnaissance missions near China, and reacted strongly to U.S. Navy–Republic of Korea Navy exercises in the Yellow Sea—exercises aimed at Pyongyang, not Beijing. Washington faces a tremendous challenge as it seeks to understand why Beijing has acted with increasing aggressiveness over the past year and to change favorably that trajectory for the relationship.

Has China become less attached to a preference for the *nonuse* of force as its confidence has expanded—a new confidence reinforced by perceptions of a weakened U.S. economy and the conclusion that democracy and capitalism are being discredited following the recent global financial crisis? Or has a hard-liner faction within the PLA leadership captured the ear of China's president? Is Beijing now determined and resolute in its efforts to stop U.S. arms sales to Taiwan, press claims in the South China Sea and possibly even complicate free use of those waters, halt U.S. intelligence collection missions near China, keep U.S. aircraft carriers out of China's littoral—and maybe more? Has President Hu Jintao proven to be a weak leader, thereby encouraging “cowboys” to ride off in different directions? Will a new president more effectively keep the herd together and the cowboys reined in?

The combination of a more aggressive approach and the possession of a much more capable navy (and air and missile forces) could affect Beijing's policies on the use of the PLA Navy (and the PLA overall) as an instrument of statecraft—as described (or at least alluded to) in this chapter. Nonuse of force, for example, loses its “romantic” cachet in the hands of a government that cares little about offending its neighbors and expects the equivalent of tributes based on its raw economic and military power. China is unlikely to switch horses in mid-stream, to pursue the cowboy analogy one more time, and become expansionist, but it can clearly be obnoxious well short of shooting up the town in the form of invasion or land-grabs.

Beijing's actions may eventually reveal whether China has fundamentally changed direction, allowing assessments of whether it is likely to stay the new course—if, indeed, change is brewing. It is risky now to speculate on the outcome when we do not fully grasp the motivation or cause. This is true even when contemplating the less profound aspects of Chinese policy, such as whether Beijing reneges on its “peace agenda” and resorts more frequently to gunboat diplomacy or re-dons its white hat and resumes a more conciliatory role.

These developments have caused some to ask if the nationalistic noises are signs of internal weakness, a Chinese Communist Party that is seeking to bolster its legitimacy and regain support from its populace by pointing to the threat of an aggressive United States. The Party retains legitimacy from its success in sustaining China's economic growth, a record some suggest may be coming to an end. The odds seem low for a crisis for China's ruling regime, but there is evidence of domestic stress and internal weakness. For example, the much-cited figures for incidents of social unrest in China have received renewed attention. An August 2010 American Enterprise Institute report described the situation and stated:

And these concerns have been mounting. In 1993, there were 8,700 instances of social unrest in China. This number rose to 40,000 in 2000, to 87,000 in 2005, and to 230,000 in 2009. Social unrest in 2005 may have involved as many as 5 million participants; 40 to 50 percent of the incidents in 2005 occurred in the countryside, the spawning ground of the last Chinese revolution.⁵⁶

What if earthshaking change is underway in China, from which we are feeling only the first minor tremors? It would indeed be foolhardy to prognosticate about the weightier prospects—an emerged and prosperous China that, contrary to what this author thinks serves China's best interests, becomes a more aggressive and dangerous China. If we are witnessing a major national development, might it produce fissures stemming from the domestic economic and social problems often cited today as China's most pressing national

concern? Could the Chinese Communist Party be seriously challenged? One could offer little more than idle speculation about how the navy and other armed services might be employed in a fragmented China. Would the factions harden and gaps grow as these factions support or oppose aggressive adventures in economic, social, political, foreign policy, and military areas? However, we will have at least been alerted to the prospects of a chaotic China with unpredictable consequences. We can thereby have a better chance to detect these developments, understand what is occurring, strive to help if so inclined, and look out for U.S. interests.

The more likely scenario is that, when the lid is lifted on this steaming pot, we will find only burbles rather than its being on the brink of boiling over. In any case, the U.S. response to these ongoing developments in China—where major shifts have not yet occurred—should consist of efforts to encourage the use of the PLA Navy and PLA in constructive forms of statecraft and discourage their employment as means to threaten, coerce, and intimidate. We should focus on establishing a forward-looking cooperative maritime relationship. We should encourage the Chinese to join in cooperative roles in providing sea-lane security, in delivering humanitarian assistance and disaster relief, and ultimately—as habits of cooperation build a foundation of bilateral trust and confidence—in becoming partners on the high seas. All this may go nowhere, and even be embarrassing if our efforts are rebuffed. Nevertheless, we should try. At the same time, we also must keep our powder dry.

One more thought: as we reflect on China's statecraft, we should also look in the mirror and see how the United States is employing the forces of the world's only superpower as instruments of statecraft—especially in our critical relations with a China that may or may not be changing its attitude. We must exercise care in the use of U.S. Armed Forces, and especially with respect to the force closest to, most respected, and most feared by the Chinese. I mean, of course, the U.S. Navy—smaller now, yet daunting even in comparison with the mighty fleets of Admiral Zheng He. We already know and have applied well the lesson the Chinese associate with Zheng He and that they may now be forgetting or ignoring: A powerful Navy is often most effective as an instrument of statecraft when it is *not* used to threaten or to employ force. The U.S. Navy has great combat power, but also serves admirably as a force to deter, assist, protect, and cooperate. These habits have been nurtured since the Cold War—using these capabilities inherent in our navy to avoid or make unnecessary the use of its combat power. As Sun Tzu came close to writing, the war we will most surely win is the one we do not have to fight.

Notes

¹This chapter has been extensively revised and updated and is based only in part on the paper of similar name prepared for the international conference on PLA affairs held by the Chinese Council on Advanced Policy Studies, RAND Corporation, the Carnegie Endowment for International Peace, and the National Defense University, on “The Chinese Navy: Expanding Capabilities, Evolving Roles?” in Taipei, Taiwan, November 29–December 1, 2007.

²“*Cheng Ho*” under the Wade-Giles system of romanization of Chinese; simplified characters 郑和; traditional characters 鄭和.

³Geoffrey Wade, “The Zheng He Voyages: A Reassessment,” *ARI Working Paper 31* (Singapore: Asia Research Institute, National University of Singapore, October 2004), 1.

⁴*Ibid.*, 18.

⁵This author called attention to the first glimmer of what might be a significant change in policy in the use of force in the South China Sea. The citations from Li and Jiang are drawn from the author’s paper prepared for a PLA conference at Wye Plantation, Maryland, in 1998 that then became a chapter entitled “The Chinese Military and the Peripheral States in the 21st Century: A Security *Tour d’Horizon*” in the book *The Chinese Armed Forces in the 21st Century*, Larry M. Wortzel, ed. (Carlisle, PA: Strategic Studies Institute, U.S. Army War College, 1999). It was not suggested then (nor is it now) that China is altogether benign or benevolent, but rather that China concluded that its interests are generally better served by the use of means other than force. Regardless of how one views the prospects of China’s adhering to this position, we should encourage Beijing to repeat it until it believes its own rhetoric.

⁶Reuters, Christina Toh-Pantin, Kuala Lumpur, August 22, 1997.

⁷Reuters, “China Will Never Seek Hegemony—Jiang,” *Hong Kong Standard*, December 16, 1997.

⁸Ambassador James Lilley emphasized this point in his introduction to the book *The Chinese Armed Forces in the 21st Century*, where he wrote: “McVadon raises another issue that will echo in the other chapters of this book—the centrality of economic factors. . . . He reminds us that for Beijing, economics is the ‘most important component of China’s comprehensive national power.’”

⁹The harassment of U.S. acoustic intelligence collection ships near Hainan Island in the spring of 2009 and the collision of a Chinese naval fighter aircraft and a U.S. naval reconnaissance aircraft in 2001 were not directed at one of China’s neighbors but rather at the United States, based on Chinese displeasure with the American intrusions near China—one of the explicit exceptions to Beijing’s preference for the nonuse of force, as this author sees Beijing’s policy.

¹⁰Soft power, as used here, is intended to encompass economic means as well as cultural aspects and a general ability to influence by attraction rather than coercion. Joseph Nye, father of the term *soft power*, originally excluded economic means. Interestingly, in July 2010, Prof. Nye was on a panel at the Woodrow Wilson Center; one of his fellow panelists several times referred to *soft power*, crediting Nye with coining the term, but obviously was including economic power in the concept. Nye did not rise to the bait, and it was left to this author, in the audience that day, to mention the matter—at which time Prof. Nye reaffirmed his adherence to the original definition.

¹¹Natuna D-Alpha, which is about 1,100 kilometers (680 miles) north of Jakarta and 200 kilometers east of the West Natuna fields that feed gas to Singapore, holds 46 trillion cubic feet of recoverable natural gas reserves, according to Oilwatch Southeast Asia, September 25, 2007; available at <<http://oilwatch-sea.org/content/view/150/1/>>. A January 16, 2009, Reuters report confirmed this earlier estimate. The report read in part: “The Natuna D-Alpha block in the South China Sea has around 222 trillion cubic feet (tcf) of gas reserves. About 46 tcf of these are thought to be commercially recoverable, accounting for roughly a quarter of Indonesia’s total commercially recoverable gas reserves.” Available at <<http://www.reuters.com/article/idUSJAK37482620090116>>.

¹²James Holmes, “China’s Creeping Expansion in the South China Sea,” *American Thinker*, June 7, 2004; available at <http://www.americanthinker.com/2004/06/chinas_creeping_expansion_in_t.html>. Holmes wrote: “In recent decades China has acted at opportune moments to acquire strategic outposts. . . . In 1974 Chinese forces wrested the Paracel Islands from a teetering South Vietnam. In 1988, taking advantage of united Vietnam’s pariah status, the Chinese navy pummeled a Vietnamese flotilla and occupied several of the strategically placed Spratly Islands. In 1995, following the U.S. withdrawal from the Philippine

Islands, Beijing capitalized on American inattention and Filipino weakness to seize control of Mischief Reef, an islet located within the 200-mile exclusive economic zone of the Philippines.”

¹³China claims the area as within its exclusive economic zone (EEZ), asserting that this area is a natural extension of China’s continental shelf. Japan, taking a different legal slant, claims the disputed territory as part of its EEZ, since it is within 200 nautical miles of the adjacent Japanese coastline.

¹⁴Richard Fisher, Jr., “Growing Asymmetries in the China-Japan Naval Balance,” International Assessment and Strategy Center, November 22, 2005, at <http://www.strategycenter.net/research/pubID.83/pub_detail.asp>; Fisher cites the following: “PLA Navy Destroyers Spotted Near Chunxiao Gas Fields in East China Sea,” *Tokyo Sekai no Kansen*, April 5, 2005, 6–7.

¹⁵Arthur S. Ding, “China’s Energy Security Demands and the East China Sea: A Growing Likelihood of Conflict in East Asia?” *The China and Eurasia Forum Quarterly* 3, no. 3 (November 2005), 36, available at <http://www.silkroadstudies.org/new/docs/CEF/CEF_Quarterly_November_2005.pdf>.

¹⁶*Ibid.*, 36.

¹⁷Fisher. He attributes news of this alarming gun-pointing to a report from a news service, Kyodo, October 1, 2005.

¹⁸“China Sends Warships to East China Sea,” *DefenseNews.com*, September 29, 2005.

¹⁹Though the Chinese did not say so publicly, every bit of circumstantial evidence indicated that the submarine was unaware that it was the subject of U.S. antisubmarine warfare search. If it had indeed been aware of the battle group, odds are that it would have been attempting to track it clandestinely, as one might expect a submarine near a carrier battle group to have done. But according to reliable contacts it seems clear that it was not doing any such shadowing; the *Han* was proceeding routinely toward its home port, maintaining normal course and speed, when it was detected.

²⁰Bernard D. Cole, “Beijing’s Strategy of Sea Denial,” *China Brief* 6, issue 23 (November 22, 2006). Published on line by Jamestown Foundation, available at <http://www.jamestown.org/china_brief/article.php?articleid=2373240&printthis=1>.

²¹The United States imparted the following implicit message to the Chinese in response to this saga: “Get used to it; if you are to send your submarines on frequent ‘out-of-area’ patrols, you should expect to be detected and tracked. You, China, will be imparting the message of an expanding undersea threat to be taken into account; we, the West, will be both learning and practicing to ensure that PLA Navy submarines may be handled readily in times of crisis or conflict.” This response represents the position that the United States has consistently taken with regard to such operations in international waters—a position that the Chinese likely will continue to contest and one that ultimately will lead to other such confrontations.

²²This author learned of the nature and intensity of Chinese consternation concerning the reconnaissance missions as a result of extensive consultations with various Chinese and Americans behind the scenes both before and during the crisis. He participated in dozens of radio and television interviews throughout the saga and offered constructive advice and suggestions to both sides. He had been sought out by Chinese officials and international media because he was a former defense and naval attaché at the U.S. embassy in Beijing, a P-3 (the ASW and patrol version, not EP-3 electronic reconnaissance version) pilot from 1960 to 1989 as well as commanding officer of a P-3C squadron, commander of the U.S. and NATO maritime operations from Iceland, and a consultant on the PLA and East Asia security affairs.

²³One PLAN officer even implied after the collision that PLAN exercises in the past had been disrupted by intruding aircraft; the exercise commanders on the scene felt uncomfortable continuing exercise operations in the presence of prying eyes.

²⁴U.S. Pacific Command Commander, Admiral Dennis Blair, described American complaints about Chinese aggressiveness: “I must tell you though that the intercepts by Chinese fighters over the past couple months have become more aggressive to the point we felt they were endangering the safety of Chinese and American aircraft. And we launched a protest at the working level. This is not a big deal, but we went to the Chinese and said, ‘Your aircraft are not intercepting in a professional manner. There is a safety issue here.’” *Cooperative Research History Commons*, available at <http://www.cooperativeresearch.org/topic.jsp?topic=topic_weapons_and_equipment>.

²⁵The F-8II squadron assigned to conduct these intercepts belonged to the 8th PLA Naval Air Force Wing’s 22^d Regiment, by one account, or the 25th Regiment of the 9th Division of the People’s Liberation Army Navy Air Force, by another account. During these often risky operations, two-plane flights of PLAN F-8II jet fighters were guided by ground radar to intercept and identify the sporadic American flights as they flew past Hainan.

²⁶Apparently, the Chinese also used other angry gestures (such as the “finger”) and abrupt maneuvers to annoy and even frighten the U.S. Navy EP-3 crews.

²⁷For aviators and others interested in the details, the EP-3 suffered from the following damage: #1 propeller decoupled and windmilling, producing enormous asymmetric drag and a violent initial left yaw; port aileron pierced by the F-8’s vertical stabilizer, causing an initial steep left bank (exacerbated by the yaw); nose radome and Pitot tube carried away, creating great noise and eliminating both cabin pressurization and crucial airspeed indication; and the prospect of unseen and possibly progressive further damage.

²⁸Two days later, Brigadier General Neal Sealock, the U.S. defense attaché in Beijing, had a 40-minute meeting with the crew of the EP-3 at the facility where they were housed in Haikou, Hainan’s capital—across the island from Lingshui. The Chinese have since told the author that both the reconnaissance and interceptor flights were resumed after a recess and that the Americans are less intrusive and the Chinese less aggressive. Americans who know what the situation is now are not at liberty to give their version.

²⁹Commander Zhao may have witnessed the sharp left bank and yaw that resulted from the collision and thought the EP-3 had intentionally turned into Wang. This could have led to his feeling justified in asking permission to fire on the unarmed reconnaissance aircraft.

³⁰Author’s conversation around 2004 with a senior PLA Navy officer who said he was present at the Navy headquarters in Beijing when the request to fire on the EP-3 was received and denied.

³¹Zhao, following the rejection, landed his intact aircraft at Lingshui 10 minutes ahead of the crippled EP-3.

³²The author has been questioned by other Americans who doubt whether the Chinese knew the nature of the acoustic collection and assume the mission was sensitive and highly classified. The following surprisingly forthright description of the T-AGOS ships and their mission is taken from the Navy (OPNAV 80) publication *Vision... Presence... Power: A Program Guide to the U.S. Navy—2002 Edition*, available at <<http://www.navy.mil/navydata/policy/vision/vis02/vpp02-ch3j.htm>>: “T-AGOS ocean surveillance ships are small, civilian-manned surveillance vessels that play a prominent role in the Navy’s overall anti-submarine warfare and maritime domain awareness capability. T-AGOS ships provide a platform for the Surveillance Towed Array Sensor System (AN/UQQ-2 SURTASS). T-AGOS is the Navy’s premier long-range, mobile, surface ASW platform capable of detecting modern submarine targets. Although these ships are part of the Military Sealift Command’s Naval Fleet Auxiliary Force (NFAF), they come under the operational control of fleet commanders. There are nine ships in four classes: a three-ship monohull *Stalwart* (T-AGOS-1) class, a four-ship twin-hull *Victorious* (T-AGOS-19) class, (a Small Waterplane Area Twin-Hull [SWATH] design that enables the ships to operate in relatively high seas), a single large (5,500-ton) SWATH ship, USNS *Impeccable* (T-AGOS-23), designed as a platform for SURTASS towed array and Low Frequency Active (LFA), and a single leased vessel, the *R/V Cory Chouest*.” A U.S. Navy PowerPoint presentation entitled *Naval Oceanography R&D Needs Presentation to CEROS Industry Day October 2008*—authored by James Rigney, Naval Oceanographic Office, Chief Scientist (OTT), and Steve Lingsch, Naval Meteorology and Oceanography Command Assistant Chief of Staff Technology Transition and Integration (N9)—is available at <http://www.ceros.org/documents/CEROS%20NAVMETOC%20Reqs-PPT_Version2.pdf>. It has a slide featuring the T-AGOS ships and states colorfully: “• 24/7/365 Acoustic surveillance of threat submarines and other contacts of interest • Positional information to Theater ASW Commanders and tactical forces • Persistent, fixed and mobile, long-range active and passive acoustic systems with key node redundancy and reach-back capability WE PUT THE CROSSHAIRS ON THREAT SUBMARINES!”

³³Andrew S. Erickson and Michael Chase, “An Undersea Deterrent?” U.S. Naval Institute *Proceedings* 135 (June 2009), 276, available at <<http://www.usni.org/magazines/proceedings/2009-06/undersea-deterrent>>, states: “Increasingly aggressive Chinese harassment of U.S. survey vessels came to a head on 8 March when five Chinese ships surrounded the ocean surveillance ship USNS *Impeccable* (T-AGOS-23).... The *Impeccable* was operating in international waters 75 miles south of China’s new Yalong Bay submarine base on Hainan Island, prompting speculation that the Chinese actions represented a coordinated effort to dissuade the United States from monitoring China’s latest nuclear-powered submarines and their area of operations. According to Xiamen University South China Sea expert Li Jinming, ‘It is well known that the submarine base was established [at Hainan], so it is unacceptable for China to have the U.S. Navy snooping around so close.’ This incident suggests that Beijing may be particularly sensitive about U.S. activities in this region, in part because it appears poised to become the home base of China’s second generation of nuclear-powered ballistic-missile submarines (SSBNs), the Type 094, or *Jin*-class.”

³⁴The following report from the *PLA Daily* on the PLAN’s visits to foreign ports reflects emphasis on the goal of presenting China to Europe in a favorable light. The destroyer *Guangzhou* and replenishment

ship *Weishanhu* returned to China in October 2007 from the PLAN's third European voyage. Here is an exuberant, unedited extract from that homecoming report: "During its 86-day-long voyage, the task force sailed across three oceans and five sea areas and through 16 channels and canals, covering a total distance of 22,968 nautical miles. During the tour, the task force paid friendly visits to Russia, Britain, Spain and France, participated in the activities for the 'Year of China' in Russia and successfully conducted joint military exercises with the British, Spanish and French naval forces. This is a new voyage of great historical significance, as it is the first time for the Chinese naval vessel task force to enter the Baltic Sea, the first time to visit Saint Petersburg Port, Port of Cadiz and Port of Toulon, the first time to take part in the activities for the 'Year of China' in Russia on behalf of China, the first time to conduct the joint military exercises with the British, Spanish and French naval forces in the Atlantic Ocean and the Mediterranean Sea, the first time to carry out joint military exercise with an aircraft carrier, the first time to stage aerial defense operation map exercise with foreign troops and the first time to let multi-type foreign helicopters to take off and land on the Chinese ship. Through these seven 'first times,' the Chinese Navy has rewritten the history of its naval vessel task force's foreign visit and long-voyage training, and presented a munificent gift to the 17th CPC National Congress." Qian Xiaohu and Zhu Guangyao, "Chinese Naval Vessels Wrap Up European Visit and Long-voyage Training," *PLA Daily*, October 19, 2007, available at <www.english.chinamil.com.cn>.

³⁵The Western Pacific Naval Symposium is an undertaking initiated in 1988 for naval professionals and aims to increase naval cooperation in the Western Pacific by providing a forum for discussion of professional issues, generating a flow of information and opinion leading to common understanding.

³⁶Lu Desheng and Li Gencheng, "'Xiangfan' Returns in Triumph After Joining Maritime Exercise of WPNS," *PLA Daily* (in English), May 24, 2007, available at <http://english.pladaily.com.cn/site2/news-channels/2007-05/24/content_825510.htm>.

³⁷The first of two exercises that took place in 2006 coincided with the visit of a PLAN destroyer and oiler to Pearl Harbor and San Diego. This initial phase consisted of rudimentary communications and passing exercises off Hawaii, and a search and rescue exercise off Southern California. The second phase took place near China during the late 2006 visit there of U.S. Admiral Gary Roughead, who, at the time, commanded the U.S. Pacific Fleet and now heads the U.S. Navy as Chief of Naval Operations. "U.S. Pacific Fleet Commander Visits China," Story Number: NNS061113-20, U.S. Pacific Fleet Public Affairs Navy Newsstand, November 13, 2006. Available at <http://www.news.navy.mil/search/display.asp?story_id=26570>.

³⁸Foreign Broadcast Information Service (FBIS), "China-Russia: PRC Media on Sino-Russian Military Exercises Project Image of Converging Interests in Asia," FEA20050831007588—FBIS Feature—1304 GMT 31 Aug 05. FBIS published this analysis of the August 2005 Russian-Chinese exercise. It quotes the principal Chinese and Russian generals involved as saying the exercise represented "a major strategic decision of the Russian and Chinese leaders" aimed at deepening "strategic cooperative partnership," said by the FBIS analyst as the phrase normally used to describe bilateral relations.

³⁹This particular exercise included ships from the navies of Bangladesh, China, France, Italy, Malaysia, Pakistan, Turkey, the United Kingdom, and the United States. "Sea Phase of 'Peace-07' Exercises Ends," *Xinhuanet*, March 12, 2007, available at <<http://big5.cctv.com/english/20070312/101407.shtml>>.

⁴⁰U.S. Pacific Command Blog, April 21, 2009, available at <<http://us-pacific-command.blogspot.com/2009/04/us-navy-ship-joins-chinas-international.html>>.

⁴¹Toshu Noguchi, "PRC Navy's Survey Operations Around Okinotori Island Increase by More Than Four Fold Over Last Year," *Sankei Shimbun*, July 22, 2004.

⁴²Surveys include such activities as bathymetry, charting bottom features, and measuring the temperature structure of the water. For example, models of the water column in operating areas can aid in forecasting sonar performance and knowing in advance how to achieve detection of other submarines and to avoid being detected through positioning one's own submarine with respect to layers of water of different temperatures that cause sound waves to refract. The importance of such data can be appreciated more fully when it is realized that the most prominent existing threat to carrier strike groups intervening in an attack on Taiwan is the PLAN submarine force.

⁴³James Boutillier, "Great Nations, Great Navies: Looking for Sea Room in Asia," paper presented at the Conference "NATO-Russia Council: From Vladivostok to Vancouver" in Vladivostok, May 11, 2006, 14; available at <<http://www.nato.int/docu/other/ru/2006/060511/Presentation-by-Mr-Boutillier.pdf>>. Dr. Boutillier is Special Advisor (Policy) in Canadian Maritime Forces Pacific Headquarters. Incidentally, reflecting on the title of the paper on which this chapter is based (a title assigned by the PLA conference organizers), the following sentence was discovered by the author as he was researching the Boutillier paper: "Increasingly, the Chinese came to appreciate the value of their navy as a highly flexible and mobile instrument of statecraft."

⁴⁴Declassified information obtained by the Federation of American Scientists (FAS) under the Freedom of Information Act (FOIA). “China’s Submarine Fleet Continues Low Patrol Rate,” *Strategic Security Blog*, available at <http://www.fas.org/blog/ssp/2007/02/post_2.php>.

⁴⁵Cole, “Beijing’s Strategy of Sea Denial?”

⁴⁶For a submarine with the speed limitations inherent in diesel-electric or other nonnuclear submarine propulsion, the intercept is a challenge. The location of the carrier strike group (CSG) must be ascertained, and the submarine must then cope with the CSG’s course changes and potential to proceed at speeds well in excess of that possible for the submarine. And that is even harder to do quietly on battery power, without snorkeling or running on the surface using the noisy diesel engines to go faster. But this type of submarine in all modes is far slower than the roughly 30 knots the carrier may do to provide adequate wind over the deck for the launch of aircraft at heavy weights (full ordnance and fuel loads). It could have been luck, but the *Song* intercepted and remained unnoticed before surfacing about 5 miles away. Regardless of whether the *Song* intended to do so, it is a significant development for the PLAN to have a diesel-electric submarine make an undetected approach, although the carrier and its accompanying ships were reportedly not employing their submarine detection sensors (sonars on ship and submarine hulls or towed arrays, helicopters with dipping sonars, and aircraft dropping sonobuoy fields).

⁴⁷It is also noteworthy to point out that there were a total of only five significant PLAN submarine patrols in the 3-year period between 2004 and 2006, and two of them surfaced. Forty percent of the PLAN submarine out-of-area patrols ended with a surfaced submarine and much visibility—not a record to brag about.

⁴⁸For example, in the experience of the author, Soviet submarines often had difficulty with depth control and would broach—providing a remarkable photo-op for a P-3 aircrew that may have spent up to 8 hours tracking the phantom sounds of a propeller, a generator, or a noisy pump through a seemingly empty ocean.

⁴⁹It should also be mentioned that, although several classes of PLAN submarines pose this sort of threat, the *Song* ranks behind only the eight new quiet and capable *Kilos* obtained around 2005 from the Russians. These *Kilos* came complete with submerged-launch, supersonic, lethal, and evasive SS-N-27B Sizzler antiship cruise missiles with a maximum range of over 100 nautical miles. The message intended by the rapid acquisition of eight such highly capable *Kilos* seems to the author a muscular statement delivered without having to effect a clandestine rendezvous and surprise surfacing with a U.S. Navy carrier strike group. Nevertheless, perhaps some sort of *Kilo* saga similar to the *Song-Kitty Hawk* encounter is a chapter later to be added to this chronicle of PLAN submarine incidents.

⁵⁰These ships have yet to join Task Force 151—an international flotilla that includes the United States, several European countries, and, later, the Republic of Korea and Japan—as full-fledged participants, though they have regularly communicated their actions with the task force. In May of 2011, the PRC naval attaché told this author that China disagreed with the Task Force tactic or practice of setting up a corridor in which ships would sail and expect not to be accosted by pirates. The PLA force preferred to escort ships through the area of danger from pirates. He accepted the author’s suggestion, using a sports analogy, that the Task Force employed zone coverage while the PLAN played man-to-man.

⁵¹A former PRC naval attaché in Washington once told this author that, despite speculation, there will be no foreign bases. They are too costly and do not work to protect the SLOCs (sea lines of communications). China, he said, seeks no long-range capability for its military. He opined that the only way to protect the sea lines is “international cooperation.” Additionally, Rear Admiral Yang Yi, formerly director of the PLA National Defense University’s Institute of Strategic Studies, told a U.S. Naval War College conference that China had “no bases and no places”—borrowing the expression from the U.S. Pacific Command in conveying that, unlike the United States, China did not intend to develop an overseas base structure or even have minor support facilities abroad.

⁵²Office of [U.S.] Naval Intelligence, *China’s Navy 2007*, 112, available at <<http://militarytimes.com/static/projects/pages/20070313dnplanavy.pdf>>.

⁵³This author has opined on numerous occasions that neither Beijing nor Washington has adequately pursued maritime cooperation efforts, even though such undertakings could help overcome bilateral tension and establish trust and confidence. For example, the author delivered a speech to a distinguished Beijing audience as recently as November 2009 advocating U.S.-China maritime cooperation with emphasis on combined humanitarian assistance and disaster relief (HA/DR) operations. Given the frequency with which the Asia-Pacific region has experienced large-scale natural disasters, this is an opportunity to provide aid to victims and build better relations between the two navies—and other regional navies. This author’s speech

in Beijing entitled “The Promising Path of China-U.S. Maritime Cooperation: Inherently Valuable, Potentially Invaluable,” was delivered during the opening plenary session at the Eighth International Symposium on Sun Tzu’s *Art of War*. The full text of the speech is available from the author upon request. The speech was warmly received by foreigners in the audience but coolly by the Chinese, including senior PLA officers, pointing up the lack of trust and confidence in bilateral military relations. The author has also, directly and indirectly, urged U.S. Pacific Commanders over the last several years to pursue HA/DR exercises with the PLAN so that the Chinese will be comfortable in being part of a team with the U.S. Navy for a real HA/DR operation. The goals would be both to aid victims and build trust and confidence between the two navies—establish habits of cooperation, as Admiral Blair termed it when he was Pacific Commander. With respect to U.S.-China naval and maritime cooperation, see Eric A. McVadon, “China and the United States on the High Seas,” *China Security*, Autumn 2007, available at <www.worldsecurityinstitute.org>. On HA/DR, see Eric A. McVadon, “Humanitarian Operations and U.S.-China Naval Cooperation: Prospects and Problems,” in Andrew Erickson, Lyle Goldstein, and Nan Li, eds., *Defining a Maritime Security Partnership with China* (Annapolis, MD: Naval Institute Press, 2010); and also the *Nelson Report* of August 25, 2010, available from the author or from Chris Nelson at <cnelson@samuelsinternational.com>.

⁵⁴Li Donghan, *PLA Daily*, October 9, 2007, available at <www.english.chinamil.com.cn>.

⁵⁵Office of [U.S.] Naval Intelligence, *China’s Navy 2007*, 113–117, available at <<http://militarytimes.com/static/projects/pages/20070313dnplanavy.pdf>>. This document cites the following sources used in analysis: 1998, 2000, 2002, and 2004 PRC Defense White Papers; and interviews and various *PLA Daily* articles.

⁵⁶Michael Mazza, “Chess on the High Seas: Dangerous Times for U.S.-China Relations,” *AEI Outlook Series*, no. 3 (August 2010), available at <<http://www.aei.org/outlook/10098>>. Mazza cites several sources on China’s internal stresses and weakness: Albert Keidel, “The Economic Basis for Social Unrest in China” (paper, Third European-American Dialogue on China, George Washington University, May 26, 2005), 1; Thomas Lum, *Social Unrest in China* (Washington, DC: Congressional Research Service, May 8, 2006), 1, accessed August 17, 2010, available at <www.fas.org/sgp/crs/row/RL33416.pdf>; Perry Link, “Waiting for Wikileaks: Beijing’s Seven Secrets,” *New York Review of Books*, August 19, 2010, accessed August 20, 2010, at <www.nybooks.com/blogs/nyrblog/2010/aug/19/waiting-wikileaks-beijings-seven-secrets>; and Kathy Le Mons Walker, “From Covert to Overt: Everyday Peasant Politics in China and the Implications for Transnational Agrarian Movements,” *Journal of Agrarian Change* 8, nos. 2 and 3 (April and July 2008), 467.

Chapter 10

Informatization and the Chinese People's Liberation Army Navy

Andrew S. Erickson and Michael S. Chase

Introduction

In recent years, the modernization of the PLA Navy (PLAN) has become a very high priority for China. Senior Chinese Communist Party (CCP) leaders and high-ranking military officers have emphasized the importance of naval modernization. Most prominently, CCP General Secretary, President, and Central Military Commission (CMC) Chairman Hu Jintao in a December 2006 speech to PLAN officers underscored the need to “endeavor to build a powerful People’s navy that can adapt to its historical mission during a new century and a new period.”¹ Similarly, PLAN Commander Wu Shengli and PLAN Political Commissar Hu Yanlin promoted the importance of naval modernization in an article that appeared subsequently in the authoritative CCP journal *Seeking Truth* (求事). According to Wu and Hu, “Since the reform and open door policy, along with the consistent increase of overall national strength, the oceanic awareness and national defense awareness of the Chinese people have been raised and the desire to build a powerful navy, strengthen the modern national defense and realize the great revitalization of China has become stronger than at any other time.”² Moreover, Wu and Hu contend, “To build a powerful navy is the practical need for maintaining the safety of the national sovereignty and maritime rights.”³ High-level statements such as these appear intended to underscore the importance that China’s civilian and military leaders attach to the modernization of the PLAN.

This growing sense of urgency about naval modernization appears to be a function of increasing concern about maritime security issues, particularly Taiwan’s status, maritime resources, and energy security, with the most rapidly developing, high-intensity capabilities focused on the “Near Seas” (the Yellow, East China, and South China Seas), and their immediate approaches. Chinese naval modernization is focused partially, but by no means exclusively, on Taiwan. Most of the platforms China is acquiring are multimission platforms, and the PLAN is investing in capabilities like large amphibious ships and aircraft carriers, which are clearly much more relevant to other missions.

Moreover, the comments of senior PLAN officers underscore the diversity of missions the PLAN must be ready to execute. For example, Wu and Hu emphasize that the PLAN must be prepared for a potential conflict over Taiwan.⁴ At the same time, however, they point out that the PLAN must be prepared for a wider range of missions, including the protection of maritime resources and energy security issues.⁵ This reflects Hu Jintao's concept of the Chinese military's "New Historic Missions," which was introduced at an expanded CMC conference on December 24, 2004.⁶ In an attempt to transform Hu's general guidance into more specific policy, articles in state and military media have argued that to safeguard China's economic growth, the PLA must go beyond its previous mission of safeguarding national "survival interests" (生存利益) to protecting national "development interests" (发展利益).⁷

Hu has also stated specifically that the PLA must prepare for "military operations other than war" (MOOTW), such as peacekeeping, humanitarian assistance and disaster relief, and noncombatant evacuation operations (NEOs). As Hu stated in December 2008, "As we strengthen our ability to fight and win limited wars under informatized conditions, we have to pay even more attention to improving noncombat military operations capabilities."⁸ The PLAN's participation in antipiracy operations in the Gulf of Aden since December 2008, its dispatch of a hospital ship to the Indian Ocean in summer 2010, and its involvement in the evacuation of Chinese citizens from Libya in February 2011 underscore its importance in fulfilling the "New Historic Missions."

Indeed, these expanding combat operations and MOOTW missions drive the PLAN's requirements, not only for the new platforms China is putting into service with the PLAN, but also for command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) capabilities to support their use in monitoring and—in a worst case scenario—targeting foreign platforms on, under, and above the sea.

Within this context, enhancing the PLAN's information technology (IT) and communications capabilities is seen as critical to the success of China's overall naval modernization program. According to one recent article on the future of the PLAN, "The informatization of the shipboard weapons and equipment is the core of maritime joint combat . . . the Chinese Navy should vigorously build the data links for maritime military actions and fundamentally change the way to carry out tasks in the future."⁹ The ultimate goal is operations carried out by a "networked fleet."¹⁰ Reaching this goal means narrowing the gap between the PLA and the world's most advanced militaries through the development, acquisition, and integration of advanced information technology, which is one of the major goals of contemporary Chinese military reforms.

Central to this effort is the process of informatization (信息化), which is often billed as crucial to the modernization of the Chinese military. This emphasis on informatization derives from the expectation that the PLA must strengthen its preparation for local wars under informatized conditions. As part of China's broader strategy of active defense, the PLA is "enhancing in an all-round way its capabilities of defensive operations under conditions of informatization" to make sure "that it is well prepared for military struggle" and capable of "winning local wars under conditions of informatization."¹¹ This applies with particular force to the navy. According to the authors of the above-mentioned article on the future of Chinese maritime power, "Informatized warfare is the mainstream trend in the development of future maritime wars."¹²

PLA modernization is critical to China's military competitiveness, and "informatization" is central to the PLA's modernization. An explicit goal of the 2006 Defense White Paper was to build informatized armed forces capable of winning informatized wars. In the view of the PLA, China has yet to fully exploit mechanized warfare, while it is now having to transform to the follow-on era of informatization. According to Beijing's 2006 Defense White Paper, "China pursues a three-step development strategy in modernizing its national defense and armed forces, in accordance with the state's overall plan to realize modernization. The first step is to lay a solid foundation by 2010, the second is to make major progress around 2020, and the third is to basically reach the strategic goal of building informationized armed forces and being capable of winning informationized wars by the mid-21st century."¹³ At the 17th Party Congress in October 2007, Chinese President Hu Jintao declared, "To attain the strategic objective of building computerized armed forces and winning IT-based warfare, we will accelerate composite development of mechanization and computerization, carry out military training under IT-based conditions, modernize every aspect of logistics, intensify our efforts to train a new type of high-caliber military personnel in large numbers and change the mode of generating combat capabilities." The PLAN is at the center of this effort to achieve the informatization of the Chinese military. It "has published an entirely new set of revised guidance documents since the end of the 9th Five-Year Plan (1996–2000)."¹⁴ Since the beginning of this decade, the "Two Transformations" program has sought to implement this guidance by using informatization and mechanization to transform the PLAN, along with the rest of China's military, from a posture that is personnel-intensive to one that is technology-intensive.¹⁵

This chapter explores PLAN informatization and its implications for command and control (C2) and joint operations. Drawing on a variety of Chinese-language publications, it attempts to address the following key questions:

- How does the PLA define the concept of *informatization*, what does this mean for the PLAN, and how does it relate to the modernization of PLAN C2?
- How well can the PLAN currently connect sensors, C2, and weapons to get a clear picture of the battlefield and execute combat operations?
- What is the PLAN's ability to conduct joint operations with other services?
- What technical improvements is China's navy likely to make over the next decade (e.g., space-based ocean surveillance, use of unmanned aerial vehicles, and better communications) and which capabilities would make the most difference for combat effectiveness?
- Where does the PLAN currently fit in the spectrum between the U.S. and Russian C2 models?

The remainder of this chapter is organized as follows. The first section surveys how the concept of “informatization” is defined in naval terms and how it relates to the modernization of PLAN C2. The second examines the PLAN's current ability to connect sensors, C2, and weapons to get a clear picture of the battlefield and execute combat operations, as well as its ability to conduct joint operations with other services. The third section addresses the technical improvements likely to materialize over the next decade and the capabilities that would make the most difference for combat effectiveness. The fourth examines the training and education issues that are integral to PLAN informatization. The fifth section assesses the PLAN's position on the spectrum between the U.S. and Soviet models of C2. The final section summarizes the key findings and highlights some possible areas for further research on naval informatization.

PLAN “Informatization”

The PLAN is modernizing to undertake an expanded set of missions in support of China's national security interests. It is undergoing an impressive transformation from what was essentially a coastal defense force to a more offensively oriented force capable of executing a variety of regional missions. As part of this impressive modernization program, a number of new surface ships and submarines have entered service in recent years. China's new surface ships include Russian-built *Sovremenny* guided-missile destroyers (DDGs) and indigenously developed *Luzhou* and *Luyang* I and II¹⁶ DDGs as well as *Jiangkai* I and II guided missile frigates (FFGs), in addition to *Houbei*-class wave-piercing missile catamarans. Among the PLAN's new submarines are

Kilo-class submarines acquired from Russia and the domestically developed *Shang* nuclear-powered and *Song* and *Yuan* conventional attack submarines. With the addition of these new platforms, the PLAN is improving its surface warfare, undersea warfare, and air defense capabilities. The PLAN also appears poised to become an increasingly important part of China's nuclear deterrence posture with the addition of several Type-094 nuclear-powered ballistic missile submarines (SSBNs), which will be armed with JL-2 submarine-launched ballistic missiles (SLBMs). According to China's 2006 Defense White Paper, the PLAN "aims at gradual extension of the strategic depth for offshore defensive operations and enhancing its capabilities in integrated maritime operations and nuclear counterattacks."¹⁷

China's leaders perceive their nation to be confronting a strategic environment in which "Military competition based on informatization is intensifying."¹⁸ This view both highlights the growing importance of information technology in military modernization and places a heavy premium on striving for information dominance in any future conflict, especially one with a technologically advanced adversary. Some Chinese analysts write about the role of information in a style reminiscent of U.S. publications that emphasize information superiority and extol the virtues of "network-centric warfare."¹⁹ For example, according to one recent article by three researchers affiliated with the PLAN's Dalian Ship Academy, "In the information age, information has become one of the main sources of combat power."²⁰ Consequently, as the authors of the 2006 version of *Science of Campaigns* emphasize, informatization permeates PLA doctrinal reform: "advancement of military 'informatization' construction and development of battle theories based on 'informatization' are currently the primary topics of discussion for national military construction and battle preparations."²¹

The term "informatization" contains many concepts that are familiar both across Chinese writings and to similar Western characterizations:

- information superiority
- reconnaissance and counter-reconnaissance
- jamming and antijamming
- networking and platform integration
- space operations
- joint operations and joint integration
- sensor-to-shooter connectivity
- electronic attack

- autonomous operations
- notions of speed, accuracy, security, and continuity of communications.

Although many PLA publications emphasize the importance of informatization, the term is not always defined explicitly and Chinese press coverage is sometimes vague.²² This complicates efforts to understand exactly what PLA authors mean when they use the term, and to determine how it applies to the modernization of the PLAN.

Fortunately, some Chinese authors do provide explicit definitions of informatization in their published work. For example, in a recent article, three researchers at the Dalian Ship Academy offer the following definition of *naval informatization*:

The informatization of naval equipment refers to using information technology as the impetus, information networks as the foundation, and command automation as the core, effectively developing information resources, carrying out information transformation of every aspect and every link of naval equipment, and continuously promoting the “informatization ability” and “informatization level” of naval weaponry and equipment.²³

This definition of naval informatization stresses hardware development and equipment modernization, but PLA writers conceive of naval informatization as a larger process that involves training and education as well as upgrading C4ISR systems and related military hardware. According to one recent article, “The Chinese Navy must establish the guiding principles to build digital troops and prepare for informatized combat, which is extremely important. In the crucial period of the military reform, what plays an effective role oftentimes is not technologies, but thinking and concepts. He who first understands is clear-sighted and he who moves ahead of others is in an advantageous position.”²⁴ Nonetheless, from the perspective of many Chinese military authors, upgrading C4ISR hardware capabilities is clearly an essential component of narrowing the gap that separates the PLA from the world’s most technologically advanced militaries.

PLAN C4ISR Systems

This section provides an overview of the PLAN’s current communications and ISR capabilities and offers some preliminary judgments about its ability to connect sensors and weapons. It also discusses some Chinese C4ISR and space systems developments that, while not PLAN-specific, have implications for maritime security and naval missions.

Given the Chinese military's C4ISR shortcomings in the 1980s and 1990s, the PLAN's informatization drive started from a relatively weak position. For many years, the entire PLA, including the PLAN, faced major shortcomings in its C4ISR capabilities. As Mulvenon and Bickford observed in the late 1990s, the PLA had traditionally relied upon a telecommunications infrastructure that was "inadequate" and "outdated." This weakness "severely limited the military's ability to transmit and process large amounts of information or coordinate activities between the various Military Regions, thereby reducing military effectiveness."²⁵ The PLA also faced challenges when it came to modernizing its ISR architecture. Although China was capable of launching photoreconnaissance satellites, Chinese satellite imagery technology was "outdated by Western standards."²⁶ Moreover, the PLA's situational awareness was hindered by China's lack of a real-time photoreconnaissance capability.²⁷ As of the late 1990s, therefore, C4ISR remained an area of substantial weakness for the PLA. As a U.S. Department of Defense (DOD) report published in 2000 pointed out, the PLA's C2 capabilities were not capable of effectively supporting joint service operations.²⁸

Despite these modest beginnings, Chinese C4ISR modernization has taken off since the late 1990s, when the PLA embarked on a massive effort to modernize, upgrade, and expand its communications infrastructure. This ambitious project was bolstered by the rapid development of the civilian information technology and telecommunications industries in China. One of the key results of the communications upgrade was the construction of a national fiber-optic communications network that provided the PLA with much greater communications capacity, higher reliability, and improved communications security.²⁹

Near-real-time C4ISR is facilitated increasingly by China's integrated *Qu Dian* military C4ISR system, which enables civilian and military leaders to communicate with forces in theater using secure fiber-optic cables, high frequency (HF) and very high frequency (VHF) communications and microwave systems, as well as related wireless networks and data links. According to China's 2010 Defense White Paper, "The total length of the national defense optical fiber communication network has increased by a large margin, forming a new generation information transmission network with optical fiber communication as the mainstay and satellite and short-wave communications as assistance."³⁰ This system is regarded by some as the equivalent of the U.S. Joint Tactical Information Distribution System (JTIDS); China has developed, and possibly deployed, a related Triservice Tactical Information Distributed Network (三军战术数据分发系统).³¹

The PLA is likewise making major strides in the development of its communications networks more generally. Indeed, the expansion of military

communications networks is a particularly noteworthy aspect of Chinese military modernization and one that has major implications for the informatization of the PLAN. The PLA reportedly has accelerated the development of its nationwide communications capabilities in recent years, devoting particular attention to diversifying the means of communication and enhancing security and antijamming capabilities.³² According to one source, “Firstly, in the coastal military commands, a gigantic optic-cable communication network has been set up, which guarantees the optic-cable communication among the headquarters of each military command. Meanwhile, satellite communication has been applied more widely, which ensures smooth communication between the top commanding organ and the headquarters at different levels of the military commands.”³³ Chinese research institutes have also “developed a VSAT [very small aperture terminal] communication system consisting of mobile vehicle-borne components” as well as new microwave and troposcatter communication systems, and China is also upgrading some of its traditional HF, VHF, and ultra high frequency (UHF) communication systems.³⁴

Improving military computer networks and making them available to more and more units have been a particular priority for the PLA as it expands its communications networks, another key “informatization” development that has major implications for the PLAN. Indeed, recent reports indicate that all PLAN units at the division level and above are now connected to military computer networks, and that current plans focus on extending coverage to lower-level units.³⁵

This appears to be the case throughout the PLAN. One recent article highlights the extent to which various PLAN units in the South Sea Fleet are being connected to the military’s computer networks: “. . . 100% of the divisions, brigades, and regiments under the South Sea Fleet aviation corps have successfully established their LANs [local area networks], while 92% of its companies have been connected to the military network. . . . all of the study rooms of units above regiment level have been connected to the comprehensive information network of the People’s Liberation Army [全军综合信息网].”³⁶

In addition, the PLAN is improving the capabilities of its ocean survey vessels and reconnaissance ships, which are responsible for a number of tasks, such as surveying, gathering meteorological and hydrographic information, laying and repairing undersea cable, and collecting various types of intelligence. For example, one article on the South Sea Fleet’s survey and reconnaissance ships states that they have “continually raised the level of unit informatization building and brought about an historic leap forward in informatized support capabilities including electronic reconnaissance, sea survey, and cable laying on the sea floor.”³⁷ More specifics are offered by another article

on reconnaissance ships subordinate to the North Sea Fleet, which in recent years have “successively introduced advanced equipment such as fathometers, monitoring and scanning sonar, and gravity and magnetic surveying devices, transforming traditional manual survey operations . . . enhancing the accuracy and effectiveness of surveys, and reducing the cycle of data processing and chart creation.”³⁸

Finally, PLAN researchers believe that refitting older weaponry and equipment with modern information technology greatly increases its combat effectiveness. Among the benefits of this approach are that it is quick and relatively inexpensive.³⁹ For example, the PLAN apparently views minesweepers equipped with “torpedo” mines as a viable ASW platform that illustrates the potential for “old equipment + networks + talent” to “thoroughly convince” those who believe that “it is not possible to establish a platform for informatized exercises on old equipment.”⁴⁰ On the other hand, this approach could risk a situation in which the PLAN ends up with a hodgepodge of equipment, some of which does not suit its requirements.

To improve both its nonterrestrial networks and the data available on all networks, Beijing has also intensified its efforts to improve its space-based C4ISR capabilities. Indeed, China began an ambitious manned space program, started participating in a variety of international space partnerships, and moved forward with several military space programs.⁴¹

Space-based ISR and communications capabilities have been at the forefront of this transformation of the PLA's C4ISR architecture. Chinese military strategists view space operations as vital components of joint campaigns in informatized local wars.⁴² For the PLA, as Dean Cheng points out, space is “as vital a battlefield as any on earth.”⁴³ According to the authors of *The Science of Campaigns*,

Future anti-air raid campaigns will be conducted with highly informatized weapons and equipment. The information system, as a main body of an integrated C4ISR system and an important information source and information channel, plays a decisive role in confrontations in the information sphere. Information confrontational activities for seizing information superiority, such as reconnaissance and anti-reconnaissance, jamming and anti-jamming, destruction and anti-destruction, will penetrate through the entire process of operations and become important contents of anti-air raid campaigns.⁴⁴

Consequently, according to DOD, “China has accorded building a modern ISR architecture a high priority in its comprehensive military modernization, in particular the development of advanced space-based C4ISR

and targeting capabilities.⁴⁵ China is developing space-based ISR systems such as remote-sensing satellites, advanced imagery satellites, and electronic intelligence (ELINT) and signals intelligence (SIGINT) satellites.⁴⁶ China can also purchase commercial imagery products to supplement its current reconnaissance capabilities.⁴⁷

The PLA is leveraging the PRC's dynamic commercial information technology (IT) sector to accelerate the modernization of its C4ISR capabilities. According to a recent RAND study, China's IT sector is likely "the most organizationally innovative and economically dynamic producer of equipment for China's military."⁴⁸ Even though Chinese IT companies are oriented mainly toward domestic and international commercial IT markets, "the PLA has been able to effectively leverage certain IT products to improve the military's command, control, communications, computers, and intelligence (C4I) capabilities—a critical element of the PLA's modernization efforts."⁴⁹

Space-based C4ISR developments are particularly crucial for naval informatization, especially given the PLAN's evolving missions. Indeed, an increase in Chinese naval capability from antiaccess/antiarea denial (A2/AD) in the Near Seas to regional blue-water operations and power projection in the Far Seas will hinge in part on improvements in aerospace capabilities, especially air/space-based platforms and C4ISR. Despite major imbalances in its development, by the end of the Cold War China had become the first developing country to achieve comprehensive aerospace capabilities. While China still suffers from some challenges, particularly in its aviation sector, it appears to be making rapid, comprehensive progress in producing advanced aerospace platforms. This in turn affords China an increasing range of military operational possibilities.

China has developed a full range of military, civilian, and dual-use satellites of various mission areas and sizes. Remote-sensing satellites include the *Fengyun-1D* and *-3A* weather satellites, with their visible, IR, and microwave imaging. Advanced imagery satellites include the *Yaogan 2-11* high resolution synthetic-aperture radar (SAR) and electro-optical military satellites. The *CBERS-2* and *-2B* near real-time electro-optical satellites, with 2.7-meter resolution, are also used for military observation. China possesses dedicated ELINT and SIGINT satellites.⁵⁰ An independent global positioning system and data relay satellites are essential components of a robust ISR system. According to Chinese media, the PLA is now using such satellites as *Beidou-4* and *Tianlian-1* for, respectively, positioning and data relay (transmission of inputs from sensors beyond line-of-sight from Chinese ground stations).⁵¹ Other *Beidou* navigation satellites and space remote-sensing technologies also enhance precision strike capabilities, with the General Armament Department's (GAD's) Survey and Mapping Bureau given particular credit.⁵²

The *Fenghuo-1* communications satellite and its identically-named follow-on may likewise support military operations.⁵³ China's approximately 15 reconnaissance-capable satellites include electro-optical, multi- and hyper-spectral, and radar, especially synthetic-aperture radar.

Navigation and positioning has been a major area of emphasis with implications for military modernization and the informatization of the PLAN. Satellite navigation facilitates the monitoring of friendly forces and the targeting of enemy forces by offering reliable positioning signals. It supports C2 by providing basic communications functions. At present, China uses the U.S. GPS and Russia's GLONASS satellite navigation systems as well as its own indigenous *Beidou* satellite navigation system.⁵⁴ Beijing has had only limited access to receiver technology and was denied access to the military mode of Europe's nascent Galileo system, apparently intensifying existing Chinese efforts to develop *Beidou* further.⁵⁵ Unlike those of GPS, *Beidou* users receive signals from broadcasts from a ground station, not directly from the satellites.⁵⁶

China deployed its own three-satellite *Beidou-1* navigation constellation in 2007, but it is limited to providing service from 70 to 140 degrees east longitude and from 5 to 55 degrees north latitude and navigation coverage accurate to within ~20 meters. This enables *Beidou-1* to support operations on China's immediate maritime Near Seas, but not farther afield. To ensure reliable independent access in the future, and to support broader operations, China is deploying a 35-satellite (5 geostationary, 30 medium earth orbit) constellation—called *Beidou-2/Compass* (北斗卫星导航定位系统)—that would provide much-improved accuracy, with regional navigation and communications coverage anticipated by 2011 and global navigation and communications coverage by 2015–2020.⁵⁷ Eight satellites have been launched thus far; five remain fully operational.

Maritime observation satellites are another area of particular interest from the perspective of naval informatization. China's first series of dedicated maritime monitoring satellites is administered by the State Oceanic Administration (SOA). China launched its first maritime observation satellite, *Haiyang-1A*, on May 15, 2002. This satellite, which monitored ocean water color and temperature, had military applications; an official publication states that 12 percent of *Haiyang-1A*'s 2003 "satellite data distribution" was "military."⁵⁸ *Haiyang* (HY)–1B was launched in April 2007 to survey the Near Seas. Fully operational versions are scheduled to follow: HY–1C, –1D, and –2A in 2011, and HY–3 in 2012.⁵⁹ A total of 15 further *Haiyang* ocean monitoring satellites are planned in three sets.

Likewise relevant to maritime surveillance will be China's *Huanjing* disaster/environmental monitoring constellation, envisioned to contain 11

satellites capable of visible, IR, multi-spectral, and SAR imaging. Two initial satellites in the series, *Huanjing-1A* and *-1B*, provide real time multi- and hyper-spectral imaging respectively, to a resolution of 30 meters. *Huanjing-1C* and *-1D* are reportedly scheduled for launch in 2011.

China uses a variety of other satellites to link these sensors to shooters, and to support related network functions in real time. Its first data relay satellite, *Tianlian-1*, facilitates near-real-time communication between satellites and ground control, complementing China's more than 10 ground stations and 4 operating *Yuanwang* space event support ships. *Tianlian-2* will reportedly be launched in June 2011.

Satellite surveying and mapping are close to real time in capability. This is being exploited by a variety of services, including the PLAN. One South Sea Fleet unit developed a reportedly combat-relevant "Stipulated Technical Procedure for Maritime Terrain Digitized Satellite Surveying and Mapping."⁶⁰

Trends in C4ISR Research and Development

This section addresses technical improvements that are likely over the next decade and assesses their potential implications for PLAN operations.

"China has the most active land-based ballistic and cruise missile program in the world,"⁶¹ the 2010 DOD report emphasizes. As part of this larger missile-centric approach, China has been developing the capability to target U.S. ships with ballistic missiles based on the DF-21D medium-range anti-ship ballistic missile (ASBM). Top U.S. Navy officials state that China's ASBM has reached the equivalent of initial operational capability (IOC). While the exact details remain uncertain, both U.S. officials and the director-general of Taiwan's National Security Bureau state that China has already begun to deploy the DF-21D.⁶²

If supplied with accurate real-time target data, China's growing family of radar reconnaissance and electro-optical surveillance satellites, terminal radar seekers, and maneuvering warheads could enable Chinese ballistic missiles to complicate or negate U.S. ballistic missile defense efforts and seriously threaten targets such as airbases and aircraft carriers. If these Chinese systems work effectively in practice as a "system of systems," they would be extraordinarily difficult to defend against.

Chinese researchers emphasize the importance of linking platforms together into an integrated whole, suggesting that this will continue to be a major focus of defense research and development (R&D) programs. This is considered particularly important for the PLAN. According to one recent article, "A platform-centric navy cannot bring into full play the potentials of its sensors and weapons," but "effective networks formed with multiple platforms

and multiple sensors can enable the resources of military strength to grow steadily” and “resource sharing among various platforms and coordinated allocation of the resources of all operational forces can enable the currently available resources of military strength to be fully utilized.”⁶³ According to another technical journal article, “In order to effectively fuse all C4ISR system elements and achieve a seamless connection from sensors to shooters it is necessary to solve the problems of data integration.”⁶⁴ Publications such as these suggest that networking sensors and data fusion are two topics of particular interest to Chinese researchers and are likely to enjoy high priority in the next few years.

Unmanned reconnaissance systems are another area of strong emphasis in Chinese C4ISR-related research and development. Indeed, recent technical journal publications indicate that Chinese scientists and engineers are conducting research on various types of unmanned aerial vehicles (UAVs).⁶⁵ China is purchasing foreign models, transforming former piloted aircraft into unmanned combat aerial vehicles (UCAVs), and developing indigenous variants. This is an area of particular emphasis and investment for China; more than 25 UAV prototypes or models were on display at Airshow China 2010 in Zhuhai, up from 12 in 2008. Chinese researchers are also working on unmanned underwater vehicles (UUVs). For example, one recent article by PLAN researchers addresses the sonar capabilities of remotely operated vehicles (ROVs).⁶⁶ Such vehicles could have applications in ISR and a number of other maritime warfare mission areas.

Digitization of sea charts has also been emphasized.⁶⁷ The National Institute for South China Sea Studies, for instance, has produced China’s first “Digital South China Sea” chart. Extensively tested, it reportedly brings the PLAN’s charts to international standards and will support its voyages.⁶⁸

PLAN Training and Education: Preparing for Informatized War at Sea

Chinese planners realize that rapid improvements in the PLAN’s hardware will not be fully effective without corresponding increases in the ability of its personnel to operate it under realistic combat conditions.⁶⁹ This requires the PLAN to make corresponding improvements in training and education.⁷⁰ In keeping with recent PLA-wide guidance from the General Staff Department that stresses making exercises more realistic and challenging, the PLAN has emphasized making sure that training approximates the actual battlefield environment as much as possible. Official sources indicate that the PLAN has made a considerable amount of progress in making training more rigorous.⁷¹

Citing President Hu Jintao’s instructions that military training “must be raised to a new level through making innovations,” a recent article in *People’s Navy* (人民海军), the PLAN’s official newspaper, elaborates, “We should more

intensively and extensively carry out battle training, and take battle training in an authentic environment and in a complicated battlefield situation as a basic form of conducting campaign and tactical exercises so as to enhance the naval units' adaptability in sea battles under the condition of informatization."⁷² Similarly, China's 2006 National Defense White Paper states: "The PLA conducts training in strict accordance with the requirements for winning local wars under conditions of informatization" and "takes vigorous steps to accelerate the transition from military training under conditions of mechanization to military training under conditions of informatization."⁷³ Some of these steps include training to fight in an electronic warfare (EW) environment, conducting more realistic opposing forces training, increasing the use of modeling and simulation, and training for joint operations.

Chinese sources frequently highlight the importance of conducting training under "complex electromagnetic conditions" so that Chinese forces will be prepared to conduct operations in an environment characterized by jamming and electronic attacks. For example, a January 2007 press report states: "Starting this year, units from across the entire Army have brought military training in a complex electromagnetic environment into line with the military training outline to ensure that it becomes a part of training and educational practices and making it required training, learning, and testing content during the units' training and in the education of the academies and schools."⁷⁴ In September 2007, for example, *North Sword 0709* involved 2,000 soldiers equipped with electronic devices that beamed real-time battlefield data back to headquarters.⁷⁵ The PLAN is also implementing this guidance, as highlighted by recent articles in *People's Navy*.⁷⁶

Training to conduct operations in a complex electromagnetic environment includes a variety of topics, such as jamming, electronic attacks, reconnaissance, and electronic deception. For example, a June 2007 North Sea Fleet (NSF) exercise reportedly incorporated several of these subjects.⁷⁷ The PLAN is also conducting opposing forces training featuring "Blue Force" detachments playing the role of enemy units as part of its drive to improve training for future informatized conflicts.⁷⁸ The PLAN is also making extensive use of modeling and simulation to enhance training. As one recent article put it, "We should use computer networks, simulation, and virtual reality technology extensively to develop advanced training means and to promote simulation, base, and network training."⁷⁹ Indeed, the PLA's official newspapers are replete with articles that highlight the employment of modeling and simulation in PLAN exercises. For example, a recent *Liberation Army Daily* article highlights the PLAN's use of simulation to improve surface warfare training.⁸⁰ In addition, the PLAN is using simulations to enhance submarine force training.⁸¹ The use of simulations reportedly allows units to increase their training efficiency.⁸²

Another area of emphasis for the PLAN is joint training. This reflects the conclusion that the Chinese military will have to fight jointly in future conflicts. According to one recent article in the PLAN's official newspaper, "As profound changes take place in the form of war, future warfare will be integrated joint operations under informatized conditions. Training is the rehearsal for war, and what kind of a war we fight determines what kind of training we should conduct."⁸³ Numerous recently published articles highlight the PLAN's joint training activities.⁸⁴ Some of these joint exercises have focused specifically on communications capabilities.⁸⁵

The PLAN's participation in joint exercises like these depends on military computer networks that connect all of the services. Another article in the PLAN newspaper relates the details of a March 2006 "online joint training" exercise: "Yesterday morning, a group of commanders and staff officers gathered at the operation command center of a certain group army of the Guangzhou Military Region. Through computers, they synchronized their actions with commanders of numerous navy, army, and air force units several hundreds of kilometers away. . . ."⁸⁶

Personnel

"In the course of promoting the change of the Navy's military training system from a condition of mechanization to a condition of informatization," a major PLAN directive emphasizes, "a critically important factor . . . is the quality of our personnel."⁸⁷ In order to make "training more technology-intensive and innovative,"⁸⁸ therefore, the PLAN is making substantial efforts to better manage and educate existing personnel and recruit new ones with improved skills. This requires the PLAN "to adopt a set of standards and mechanisms for selecting, promoting, training, using, appraising, awarding, and punishing staff personnel in the light of the informatization requirements. . . ."⁸⁹ Across the PLA, China's 2010 Defense White Paper maintains,

strategic planning, leadership and management of informatization have been strengthened, and relevant laws, regulations, standards, policies and systems further improved. A range of measures, such as assembly training and long-distance education, have been taken to disseminate knowledge on information and skills in applying it. Notable achievements have been made in the training of commanding officers for joint operations, management personnel for informatization, personnel specialized in information technology, and personnel for the operation and maintenance of new equipment. The complement of new-mode and high-caliber military personnel who can meet the needs of informatization have been steadily enlarged.⁹⁰

Nevertheless, there is reason to believe that this remains a difficult challenge.

Major efforts are underway to ensure that PLAN personnel are able to operate their increasingly sophisticated equipment effectively. To address discrepancies between the technical specialties of its personnel and the new demands to which they are subjected operationally, a South Sea Fleet Reconnaissance Ship Group “arranged for concerned specialists to go to scientific research organizations for study and development.” Each year, the group “earmarks nearly 100,000 Yuan for ‘major rewards’ to personnel for outstanding accomplishments in scientific research and military training. It also allocated 200,000 Yuan to set up an ‘on-the-job personnel development fund’ to pay tuition and travel expenses for officers and soldiers engaged in self-study and examinations.”⁹¹ To facilitate training involving increasingly complex missiles, torpedoes, and sea mines, a South Sea Fleet base brought skilled civilians from their factories of origin to help “guide and assist.”⁹² The PLAN strives to improve informatization training even for crews of its older platforms, such as East Sea Fleet *Jianghu*-class frigate *Wuxi* (Hull 512).⁹³ A new Ship Captain Training Center at Lushun Naval Base, which trains captains of minesweepers and other smaller vessels, is emphasizing training in “informatization, networking [网络化], and integration...”⁹⁴

As for recruitment, the PLAN, as “one of the high-tech-intensive military services . . . urgently needs a large number of high-quality non-commissioned officers with modern science and technology backgrounds and with the ability to skillfully operate modern weapons and armaments.”⁹⁵ The PLA’s Strategic Project for Talented People, implemented by the Central Military Commission in 2003, seeks to prepare future PLA officers and the forces under their command for informatized war.⁹⁶ According to a Taiwanese report, since 1999 this program has “given scholarships of 5,000 Yuan per year [\$625 at 2007 exchange rates] to outstanding students in information engineering related programs at Qinghua and Beijing Universities.” Following graduation, the students reportedly serve at an “All-Army Network Technology Research Center” (全军网络技术研究中心). During winter break in 2000, apparently, more than 40 scholarship recipients practiced at the Research Center and over 300 “network assassins” currently work there.⁹⁷

Education

As part of a project for establishing key military educational institutions during the 11th Five-Year Plan period, the PLAN “continues to focus efforts on building a number of institutions and research centers for disciplines and specialties that are important in building an informationized military and winning informationized wars.”⁹⁸ Transformation of teaching materials has reportedly

become the “top priority of all priorities” for many of these institutions. In this regard, the PLAN Command Academy has “actively made explorations and fruitful experiments, continuously updated the contents of the teaching materials, improved the teaching material system, and enhanced the level of teaching material development.”⁹⁹ In addition to these high-level initiatives, a variety of measures are afoot to ensure that more PLAN personnel are provided with opportunities for further education through everything from special classes to libraries and local area networks with educational materials.

Remaining Challenges

Despite the aforementioned improvements, according to Rear Admiral Yang Yi, “The Chinese military has still not completely achieved mechanization, and we are even farther from establishing an informatized force.”¹⁰⁰ According to a major PLAN commentary,

At present, the simulation devices used by naval units in their military training on the whole cannot satisfy the actual military training needs and still lag behind the development of armament. The insufficiency of simulation training devices has become a major “bottleneck” that restrains efforts to build fighting capacity in naval units. In practical training, it is hard for us to simulate a strong “blue force,” but things may be completely different on the network platforms. The attacks there seem to be more authentic.¹⁰¹

The use of local area networks in naval education, for instance, has been impeded by lack of familiarity with the demands of informatization, challenges of network management and maintenance, concerns regarding information security, and the desire of some higher-ranking officers to monopolize access to information.¹⁰² According to Ren Xiao, associate dean of the Institute of International Studies at Fudan University, “although rapid progress is being made in various aspects of the PLA building, because of the comparatively weak foundation and low starting point for modernization and the incomplete condition of mechanization, the process of informatization in the PLA remains at an initial stage, and the modernization level still lags substantially behind that of the world’s military powers.”¹⁰³ Articles in *People’s Navy* also acknowledge that the ability of PLAN personnel to implement reforms effectively remains a major constraint on informatization efforts.¹⁰⁴ It is important to recognize, however, that *People’s Navy* often serves a didactic function to call attention to areas that need improvement. This in no way constitutes a self-assessment by the PLAN that implies despair at improving the situation. Indeed, there have been great improvements in recent years, albeit from a relatively low baseline by Western standards.

Implications for Joint Operations and C2

This section analyzes the implications of PLAN informatization. The first part of the section addresses the implications for the PLAN's ability to conduct joint operations. The second focuses on the implications for the C2 system.

Naval Informatization and Joint Operations

Numerous recent PLA publications emphasize the importance of joint campaigns and joint operations.¹⁰⁵ In *The Science of Campaigns*, for example, the authors describe joint campaigns as “the primary form of future warfare.”¹⁰⁶ PLAN publications also consistently emphasize the growing importance of joint operations, which many authors connect to the challenges of informatized operations in a complex battlefield environment. According to one article on the modernization of Chinese naval power, “under informatized conditions the structure of the equipment for the ships has been changed and the electronic systems have become a main component for the weapons and equipment. . . . the battlefield environment has changed, and operation assurance is facing the challenge of the complex electro-magnetic environment. . . . integrated joint operations have become the main operational pattern.”¹⁰⁷

Chinese military authors define joint campaigns as campaigns that involve the participation of two or more services, and in which all participating forces operate under the direction of a joint campaign command. According to *The Science of Military Strategy*, for instance, “The strategic coordination refers to the coordinated and concerted actions taken according to the tasks, space and time by different strategic groups and different services and arms carrying out strategic tasks so as to realize the overall strategic aim.” Strategic coordination of this type is the responsibility of the strategic command authorities.¹⁰⁸ The writings on joint campaigns imply the equivalence of all of the participating services. This is potentially controversial in a military traditionally dominated by the ground forces. In Dean Cheng's words, this emphasis on the equality of the services in joint campaigns marks a “fundamental and major shift in PLA culture.”¹⁰⁹

Joint operations and informatization are expected to play a prominent role in a variety of campaigns in which the PLAN might be called to participate. Chapter 12 of *The Science of Campaigns*, “Joint Blockade Campaign,” for instance, emphasizes the need to achieve objectives rapidly in a complex battle environment by jointly implementing an air, maritime, and information blockade.¹¹⁰ The last entails “actively destroy[ing] the enemy's important ground information installations, disrupt[ing] the enemy's satellite and radio channels, cut[ting] off the enemy's submarine cables and cable channels . . . [and] smashing the enemy's information warfare capability.”¹¹¹ In an anti-air raid campaign, it is also thought necessary to “apply all kinds of information attack operational weapons and

equipment to jam, suppress, damage, and destroy the enemy air raid information system.”¹¹² In “Offensive Campaigns Against Coral Island Reefs,”

It is essential to synthesize the use of the various means of reconnaissance, and establish a perfected intelligence and reconnaissance architecture [情报侦察体系] in order to provide real-time intelligence [实时情报] for campaign operational activities. Furthermore, it is essential to: synthesize the use of multiple signals connectivity measures; establish a single organic vessel-, aircraft-, island- and shore signals network body; hold in reserve signals troops as well as a specified quantity of spare signals materials parts; and safeguard the speed, accuracy, secrecy and continuity of campaign communications.¹¹³

Joint campaigns require joint campaign command structures, which are responsible for coordinating service activities in pursuit of the overall campaign objectives. According to Dean Cheng, the chief roles of the joint campaign command are “resolving issues of timing, phasing, and various other aspects of coordination.”¹¹⁴ According to the *Science of Military Strategy*, the command and communications systems of troops under the same command or participating in coordinated operations must be interoperable.¹¹⁵ Technical interoperability of C4ISR assets is a necessary, but not sufficient, condition for the development of joint operational capabilities.

The PLA is clearly striving to develop the capability to plan and conduct joint campaigns, but Chinese authors suggest that it is still in the preliminary stages of “jointness.” Dean Cheng highlights a 2002 *Liberation Army Daily* article in which the author characterizes the achievement of a true joint operations capability as a three-stage process. In the first stage, considered preliminary joint training, there are three unbroken eggs in a bowl. In the second stage, which is characterized as limited joint training, the three eggs are broken. It is only in the third stage, however, that the eggs are mixed together and all-around joint training is achieved. The article implies that the PLA is still relatively early in this process, though it aspires to move forward so that it will ultimately be able to conduct the more sophisticated types of joint training and operations.¹¹⁶ Nonetheless, it is important to highlight that Chinese writings on joint campaigns focus on achieving jointness at the operational level, rather than jointness at the tactical level as practiced by U.S. forces. Furthermore, as ONI noted in its 2009 report on Chinese naval modernization, “Emphasis on jointness has been noted in exercises, professional education, and logistical planning, yet significant challenges still exist. Progress continues to be hampered by a decades-old domination of the Chinese military by the army, which remains at many levels.”¹¹⁷

The PLA still faces several potential problems, many of them bureaucratic and institutional. Perhaps the most important of these is a highly

centralized and hierarchical command structure and organizational culture that is averse to delegating decisionmaking authority to lower levels, much less junior officers and NCOs. Another potential roadblock is institutional resistance and bureaucratic opposition resulting from the tendency of joint campaigns to emphasize the importance of the PLAN, PLA Air Force (PLAAF), and Second Artillery and to downplay the traditional dominance of the army. The Chinese military has recognized that organizational reforms and changes in command structure are required to support the conduct of joint operations. Achieving these changes will require overcoming institutional resistance. Developing a manual (*gangyao*¹¹⁸) for joint operations, an accomplishment almost 10 years in the making, was just the beginning of what will probably be a long and difficult process of reorganization and institutional change.

Still another challenge is the PLA's almost total lack of real experience conducting joint operations (the only historical example being the relatively small-scale Yijiangshan campaign in 1955; the rest of the PLA's warfighting experiences were at most combined arms campaigns).¹¹⁹ As the 2006 DOD report on Chinese military power points out, "Although the PLA has devoted considerable effort to developing joint capabilities, it faces a persistent lack of interservice cooperation and a lack of actual experience in joint operations."¹²⁰ Finally, the PLA faces the challenges of undertaking so many major changes simultaneously.¹²¹ In short, the PLA will likely encounter a variety of challenges as it moves forward with the development of joint operations capabilities.¹²² Nevertheless, the PLA has already made considerable progress and is clearly determined to further enhance its ability to conduct joint operations.

Recent publications suggest that at least some in the PLA believe China will eventually need to reach a level of integration comparable to the level of "jointness" in the U.S. military. According to one article by a student at the PLA's National Defense University, "All of the ground, air, naval, space, electromagnetic and other forces must be blended together and this system must be organized by tasks, not by services or space. The combat forces of the various services and branches must be mixed together to a high degree."¹²³ Such a level of integration would require an interoperable communications system that links the ground forces, PLAAF, PLAN, Second Artillery,¹²⁴ and a "continuous command decision-making process" [连续的指挥决策过程], rather than a "coordinated joint operations command process based on running around in circles" [循环往复的协同性联合作战指挥过程].¹²⁵

Naval Informatization and the C2 System

In addition to informatization's effect on the PLAN's ability to conduct joint operations with the other services, the introduction and integration of advanced information technology is also likely to influence the PLAN's approach

to command and control (C2). The PLA has a tradition of highly centralized command. This tradition derives from a variety of sources, including the political system, institutional culture, and organizational structure.

Chinese scholars argue that the PLA's general staff organizational structure is conducive to centralized C2. According to Peng Guangqian and Yao Youzhi, two major generals with significant ability to shape PLA strategy as advisers to China's powerful Central Military Commission (CMC) and Politburo Standing Committee, "The form of general staff is beneficial to the centralized command and control of the troops."¹²⁶ Moreover, for the PLA, unity of command historically has meant centralization of command. Mao emphasized centralizing the decisionmaking responsibility in the hands of a small number of senior leaders or even one person.¹²⁷ This tradition appears to have considerable staying power. According to Peng and Yao, for example, "All the decision-making power and command authority on issues concerning the overall war situation should be centralized to the strategic commander and the strategic commanding authorities."¹²⁸ Moreover, they write, "No services and arms or units shall be allowed to change the operational objectives and operational plans specified by the strategic commander and the strategic commanding authorities without authorization."¹²⁹

Given the PLA's long tradition of centralized command, it seems entirely possible that China will choose to use its improved C4ISR capabilities to make centralized command function more efficiently and effectively. Chinese authors have certainly recognized the potential of enhanced communications capabilities to enable higher-echelon decisionmakers to function more effectively. For example, Peng and Yao argue that advances in information and communications technology have "significantly enhanced the efficiency of strategic command."¹³⁰

High-bandwidth secure communications, for instance, allow strategic leaders to transmit plans and other operational documents electronically in real-time and hold videoconferences with their subordinates instead of traveling to the front for face-to-face meetings. According to Peng and Yao: "Under high-tech conditions and with the aid of the strategic command automation system, the form of assigning strategic tasks orally, realized only face to face in the past, can now be actualized between different places, and assigning strategic tasks in the past by written operations documents can now be completed through computer network in real time."¹³¹ Specifically, they add, "Practices [have] proved that the very strict system of reports and requests for instructions was a very effective method of the PLA to conduct strategic supervision and inspection."¹³² "Under modern conditions," therefore, "special attention should be paid to making use of the high-tech strategic command automation system to conduct the supervision and inspection."¹³³

Supervision and inspection are not supposed to degenerate into meddling for its own sake, however. The purpose of supervision and inspection activities is to make sure that the actions of the PLA's combat units accord with the commander's strategic intent. "It can be said that conducting strict and scientific supervision is one of the good traditions of the PLA in its strategic command. And this good tradition is still of great significance to the strategic command under high-tech conditions."¹³⁴

There are also strong incentives to consider decentralizing authority, at least to some extent. Indeed, notwithstanding the strong emphasis on the role of the strategic commander and the centralized command system, PLA writers suggest that strategic decisionmakers should not attempt to micromanage activities at the tactical and operational levels. According to Peng and Yao, "The strategic commander has command and control authority over all military troops up from the strategic operational groups down to the units and elements. However, due to the high level of strategic command, it is neither necessary nor possible for the strategic commander to closely command and control all the details of all the armed forces' operations."¹³⁵

Having more information at higher echelons is not necessarily better; huge amounts of data may simply overwhelm strategic commanders. As Peng and Yao write: "Under the high-tech conditions, the glut and overload of strategic information have increased to a large extent the difficulties of strategic judgment . . . it's not an easy job to retrieve and pick out valuable strategic information when the total sum of strategic information has greatly increased." Furthermore,

the high-tech means of reconnaissance, intelligence and communication can blow away to a certain extent the traditional "fog of war," but at the same time they can change the manifestation of uncertainty in war, thus adding a new "fog of war." Therefore, under the high-tech conditions, making sound strategic judgment demands dealing effectively with the information overflow, and processing and utilizing the information in a scientific way.¹³⁶

Centralized command does not mean that strategic commanders should micromanage operations or that lower-level commanders should never take the initiative in response to a rapidly evolving situation on the battlefield. As Peng and Yao put it:

Emphasizing the centralized unity of command does not necessarily mean that the strategic commander and the commanding authorities can interfere in and even run the whole show of his subordinates' command. In the course of conducting the strategic command, the strategic

commander and his commanding authorities should permit and encourage, under the prerequisite of not infringing the overall strategic intention, the junior commanders to give full play to their subjective initiative and creatively fulfill their operations tasks.¹³⁷

Moreover, “If flexibility is pursued without due consideration for the overall situation or each goes his own way on the pretext of flexibility, the cooperation and coordination of the overall strategic situation shall be affected, and the smooth realization of the whole strategic plan shall be affected and even undermined. Therefore, to conduct highly efficient strategic command, high unity of the initiative, the flexibility and the planning must be persisted in.”¹³⁸

Wartime emergencies may result in extreme centralization of command, or devolution of authority to commanders at lower levels, depending on the circumstances.

Certainly, major doctrinal writings stress the importance of the strategic commander being able to handle all foreseeable contingencies:

After the commencement of war, the strategic commander regulates the operations of his subordinates through his strategic determination and strategic plan. In the course of war, many unpredictable things often come about with the changes of the battlefield situation, and the strategic commander must make a correct assessment of the situation, make timely adjustments to the strategic plan, address different situations flexibly and hold firm the helm of command to lead the war to victory.¹³⁹

Also, “Under emergencies, the junior commander should be given the authority to make prompt decisions and act according to circumstances.”¹⁴⁰

But Chinese texts also indicate that decisionmakers at the General Staff Department (GSD) or CMC level may directly exercise command over lower-echelon units under emergency circumstances. According to Peng and Yao, in wartime emergencies, “the supreme headquarters can bypass the immediate leadership to exercise its command.”¹⁴¹

More broadly, PLA writers appear to be engaging in a debate about the advantages and disadvantages of centralized and decentralized command systems. Some PLA authors argue that conducting complex joint firepower strikes requires centralized command. They contend that there must be centralized and unified planning, organization, control, and coordination to conduct high-efficiency integrated firepower strikes. They point out that participating forces belong to different services and branches, so command relationships are complex and carrying out operational tasks will require temporary partnerships, which means that organization will be difficult. Consequently, there must be centralized control of all of the services’ and

branches' firepower strike forces to assure the timeliness, continuity, and coordination of firepower strike operations.¹⁴²

Other PLA writers appear to favor a C2 system that gives greater autonomy to junior leaders on a more routine basis, not just under emergency conditions that impede communications with higher-level commanders.

Chinese analysts recognize that there are inherent trade-offs between centralized and decentralized command systems.¹⁴³ Indeed, PLA officers are engaging in debates about command relationships and organizational culture. Some parts of this debate have taken place indirectly through the PLA's analysis of U.S. military operations. For example, the PLA's official history of the Gulf War, produced by the PLA's Academy of Military Science (AMS), credits "flexible command" with enhancing the combat effectiveness of coalition forces.¹⁴⁴ According to the Military History Research Department of the AMS, which edited the volume, "In the Gulf War ground campaign, in order to bring into play the initiative and creativity of lower-ranking commanders the U.S. military widely adopted a style of command that placed responsibility in their hands."¹⁴⁵ Higher-level planners indicated the tasks that had to be completed, but substantial autonomy and responsibility were delegated to lower-level commanders to determine how best to complete the assigned tasks. The editors' evaluation of this style of command is clearly highly favorable. They assess that the "task-oriented style of command" was one of the main reasons that U.S. forces won the war so quickly. They also note with approval that "the flexibility of this type of command was reflected in the ability of commanders to rapidly reach new judgments and change their original decisions in response to changes in the battlefield situation."¹⁴⁶

In contrast to the flexible approach of U.S. and coalition forces, Iraq's command arrangements were outdated and further diminished its chances of winning the conflict. On the Iraqi side, "command authority was excessively centralized, limiting the initiative of lower-level commanders."¹⁴⁷ The overcentralization of authority also meant that when Iraqi forces in the field lost contact with higher-level commanders, they were unable to respond to changing situations with any flexibility. Although the authors of the volume do not apply this analysis explicitly to command in the Chinese military, their assessment seems to convey some implicit criticism of the PLA's own traditional, highly-centralized style of command, and to suggest that more autonomy should be devolved to commanders at lower levels.

The informatization of the PLAN, especially advances in ISR and communications capabilities, may offer China the opportunity to employ a more flexible and responsive C2 system that relies on "directive control" and "mission type orders" to meet the challenges of joint operations in high-tech

regional wars. The terms “directive control” and “mission type orders” derive from the German concept of *Auftragstaktik*, which calls for general guidance rather than highly centralized oversight of operations. This decentralized approach is considered a central element of C2 for modern joint operations.¹⁴⁸ It is associated with individual initiative and independent decisionmaking at relatively low levels. Senior commanders tell junior commanders what objectives to accomplish, but allow their subordinates to determine how best to accomplish the mission. According to Keithly and Ferris, “Skillful commanders, guided by doctrine, should be able to develop and exercise suitable tactical moves in an operation on their own initiative, achieving mission objectives in accordance with theater operational and strategic goals. Directive control allows commanders to adapt to changing circumstances, exercise flexibility, demonstrate initiative, anticipate events, and thereby gain tactical and operational advantage.”¹⁴⁹ Although adopting such an approach would appear to offer significant operational advantages to the Chinese military and to complement the PLA’s evolving doctrine, a number of obstacles would potentially stand in the way of such a dramatic transformation. The most important of these obstacles are the PLA’s tradition of highly centralized C2 and an organizational culture that does not appear to encourage junior officers to take the initiative. If these hurdles could be overcome, successful implementation of a more flexible C2 system would require providing training and education aimed at developing junior leaders capable of taking the initiative and seizing fleeting opportunities on the battlefield.

To be sure, modern military commanders have not always used advances in technology to support the delegation of authority to lower echelons. On the contrary, in many cases, they have sought to use technology to improve the efficiency and effectiveness of centralized C2. As Keithly and Ferris point out, “technology can be a two-edged sword, especially when developments lend themselves to ever-greater centralization of execution, and in extreme cases to battlefield micromanagement.”¹⁵⁰ It is entirely plausible that the PLA will pursue this well trodden path instead of exploiting technological advances to implement a “directive control” or “mission type orders” system, especially given its institutional predispositions. Indeed, it remains to be seen how the PLA will adapt its command style to changes in doctrine and improvements in information and communications technology. Enhanced IT and C4ISR systems capabilities could permit the PLA to give greater decisionmaking authority to lower-level commanders. At the same time, however, the modernization of the communications infrastructure could just as easily reinforce strong organizational tendencies to favor highly centralized C2 arrangements, as seems to have happened in some recent U.S. military operations.

These are challenges that the entire PLA must confront, but there are also several service-specific issues that PLAN commanders will need to resolve in the coming years. First, C2 of PLAN assets is somewhat complicated due to the organizational structure of the PLA. The commanders of the PLAN's three fleets answer both to PLAN Headquarters and to regional military commanders. As Peng and Yao point out:

The command departments of the military area commands shall be directly responsible for the command of the joint services and combined arms operations within their respective military areas in wartime. The PLA has adopted a dual command system for the Navy and Air Force troops. When the Navy or Air Force troops carry out operational tasks alone or as the main force, the supreme headquarters administers its command through the command departments of the Navy or Air Force; when the Navy or Air Force carry out operational tasks in cooperation with other services, they are under the command of the command department of the corresponding military area command.¹⁵¹

Second, the deployment of SSBNs will present the supreme command and the PLAN with special challenges. The supreme headquarters exercises direct C2 over China's strategic missile forces through the Second Artillery Corps.¹⁵² Presumably, the supreme headquarters would also exercise direct C2 over deployed SSBNs through the GSD or PLAN Headquarters.

Centralization is essential for SSBN C2, particularly in the highly centralized PLA. Insights into C2 are extremely difficult to obtain, but recent research relevant to China's submarine force offers preliminary suggestions. According to John Wilson Lewis and Xue Litai, China's SSBN force, like all other nuclear units, is overseen by the Strategic Forces Bureau. This is intended to ensure that "Only the [Central Military Commission] Chairman . . . has the authority to launch any nuclear weapons after getting the concurrence of the Politburo Standing Committee and the [Central Military Commission]."¹⁵³

The PLAN has been working to achieve secure, reliable SSBN communications for more than two decades.¹⁵⁴ However, it remains unclear to what extent centralized SSBN command, control, and communication (C3) is possible for China across the range of nuclear scenarios. "At present China's communications infrastructure is vulnerable to a first strike," Garth Hekler, Ed Francis, and James Mulvenon contend.¹⁵⁵ This points to another critical problem for the PLAN: ensuring the ability to communicate with SSBNs in an environment in which its C2 system has been degraded.¹⁵⁶

Conclusion

Enhancing China's naval capabilities is a key component of China's military transformation, as reflected by several recent leadership statements on the importance of naval modernization and the development of several new classes of surface ships and submarines in recent years. Moreover, informatization is clearly a central aspect of PLAN modernization, and naval C4ISR modernization will have important implications in areas such as joint operations and command and control. Chinese C4ISR modernization has become a top priority, and PLAN informatization appears to have made some impressive progress in recent years.¹⁵⁷ "In line with [the PLA's] strategic objective of building informationized armed forces and winning informationized wars," China's 2010 Defense White Paper maintains,

Significant progress has been made in building information systems for reconnaissance and intelligence, command and control, and battlefield environment awareness. Information systems have been widely applied in logistics and equipment support. A preliminary level has been achieved in interoperability among command and control systems, combat forces, and support systems, making transmission of orders, intelligence distribution, command and guidance more efficient and rapid.¹⁵⁸

Indeed, there appears to be tangible evidence of Chinese efforts to achieve all of the abstract concepts reflected in Chinese writings:

- The PLAN appears to be pursuing a full range of sensors across the radio frequency (RF) and acoustic spectrums.
- New PLAN weapons reflect efforts to increase speed (and thus decrease enemy reaction time), reduce signature and thus observability (again, decreasing enemy reaction time), and increase the sophistication of seekers.
- The PLAN is pursuing new communications capabilities across the RF spectrum.
- In C2, the PLAN is seeking increased automation and data links.
- The PLAN is fielding a broad range of new space systems for navigation, sensing, and communications, as well as antisatellite capabilities.
- The PLAN is seeking sophisticated capabilities for computer network attack and exploitation.
- The PLAN is pursuing kinetic information warfare and signal jamming capabilities.

For nearly every operational concept, one can see tangible evidence of systems development, and perhaps even more so than China's military competitors in the area of information denial. Clearly, the PLAN is serious about the hardware aspects of naval informatization. At the same time, however, at least three broader and no less important questions remain unanswered.

How Unique Are Chinese Concepts of Informatization?

The first unanswered question is whether there is anything in the Chinese concept of informatization that is radically different from Western characterizations of the role of information and information and communications technology in modern warfare. It is not evident from the Chinese sources that there is anything truly unique about how Chinese strategists view the importance of information and information superiority. Some of the Chinese writings are undoubtedly attempts to assimilate and repackage ideas that are very familiar to readers of U.S. and Western writings on "network centric warfare," information dominance, and related concepts. It is possible that these similarities are an artifact of a translation process that seeks to fit uniquely Chinese concepts into more familiar U.S. and Western terminology. But it seems more likely that these are more or less universal conceptions of the role of information in modern warfare that are quite consistent with U.S. and Western thinking. Open source writings offer good insight into Chinese thinking with respect to information in warfare, but Chinese thinking is still evolving and Chinese theorists seem to be in roughly the same position as U.S. proponents of network centric warfare with respect to connecting abstract concepts to operational practice. Indeed, the actual connection between abstract theory and practice remains unclear and the question of how long it will take to go from theory to practice remains unanswered. Nevertheless, if the PLAN conception is very different from that of the U.S. Navy, the latter might be surprised by how close the PLAN is to making the conceptual transition.¹⁵⁹ Consequently, it will be important to watch the trends in both PLAN writings and practice to see how these developments play out in both the short and long term. Of perhaps most critical concern would be any evidence of radically different, asymmetric approaches to informatization and the attainment and exploitation of information dominance that could offer China military capabilities a relative level of power that is now unforeseen.

How Informatized Does the PLAN Really Need to Be?

The second of these broader questions centers on how close the Chinese are to achieving the so-called "informatized force." The PRC's 2006 Defense White Paper established a goal of being able to fight and win informatized wars by the mid-21st century. This reflects a perceived relative and persistent gap

between the Chinese armed forces and the world's most advanced militaries that Chinese writers often suggest will take decades to overcome. But it also raises the issue of distinguishing between the "ideal" capability the Chinese military seeks to establish in the long term and that which might simply prove "good enough" in the relatively near term.

For the most part, Chinese analysts tend to overestimate U.S. and Western capabilities and portray themselves as backward by comparison. Certainly many Western observers continue to denigrate PLA capabilities and note that even some of the Chinese military's recent achievements are relatively simplistic by U.S. standards. These limitations certainly merit examination: perhaps China's greatest C4ISR challenge is "bureaucratic data fusion," as different organizations control different elements of sensor architecture yet lack joint operational experience, control of some space assets changes from peacetime to wartime, and a robust interservice struggle is underway for overall control, the outcome of which remains unclear.

But one should ask how often U.S. forces actually implement such a complex "system of systems" in practice themselves. A relatively simple system of deconfliction by time or geographic area with disparate platforms might actually be "good enough" to allow the PLA to achieve its objectives under most circumstances.

The most common criticism of Chinese capabilities is the apparent lack of a sophisticated sensor-to-shooter data fusion capability for utilizing long-range, precision-strike weapons. This may be a valid critique, but the need for a complex C4ISR system should not be overstated. This is the case for three reasons. First, much of the need for sophisticated target data fusion can be mitigated by building smarter missile seekers that perform target discrimination that is good enough for a given missile inventory. The United States still maintains a man-in-the-loop to prevent collateral damage and fratricide. The Chinese might have fewer qualms about such occurrences and thus leave much more of the targeting "decision" to the missile itself. Second, the Chinese certainly put a premium on missile speed to rapidly exploit often-fleeting data on mobile targets and reduce the need for target tracking. For instance, a typical short-range ballistic missile flight time to maximum range is on the order of 6–7 minutes, that of a medium-range ballistic missile 10–11 minutes. Third, numbers matter. The notion of "one weapon, one target" may not be applicable to the Chinese military. At some point, the cost of discriminating targets from nontargets exceeds the cost of destroying all possible targets. A low concern for collateral damage and fratricide makes classification by destruction an attractive option. China is fielding land attack and antiship missiles in numbers that reach well into the thousands.

In short, the PLAN might have a very different metric for integrated C4ISR than that of the U.S. Navy. The U.S. concept emphasizes having “one weapon, one target” on the battlefield and minimizing collateral damage. The PLAN could mitigate many of the sensor and fusion problems with a large arsenal and classifying “by destruction,” particularly if collateral damage is not much of a concern. The Chinese notion of C4ISR requirements might differ from that of the U.S. Navy, and the PLAN might achieve an employable capability with surprising rapidity, especially if it pursues one that is relatively crude by U.S. standards, but that is nonetheless “good enough” to meet operational objectives.¹⁶⁰

How Will the PLAN Resolve Two Critical Informatization Debates?

Perhaps most interesting in the Chinese writings examined are the ongoing debates arising from increased informatization. These will be very insightful to watch as the PLA struggles with some of the same basic issues that are being debated in the U.S. and Western militaries. Two major debates merit elaboration here.

The first concerns the offense-defense balance in information warfare, that is, the issue of information assurance versus information denial. The conceptual goal is obviously full information assurance for one's own forces and complete information denial to the enemy's forces. More likely this is some type of balance depending upon capabilities and geography. One could posit that information assurance tends to favor short-range operations close to home (where one can rely on land lines and high power line-of-sight communications), i.e., in the Near Seas; while information denial might predominate at long range away from home, i.e., in the Far Seas (where one becomes reliant on satellite communications and long-range RF signals that might be jammed or geolocated). It will be interesting to see how this debate progresses in Chinese writings, especially as strides are made in perhaps creating a regional blue-water navy.

A related question that remains unanswered is whether the PLAN will develop unrealistic expectations about the potential of informatization. In the United States and other countries, some observers have gone so far as to suggest that the widespread employment of advanced information technology will dramatically reduce or perhaps even eliminate much of the confusion and uncertainty of the battlefield. Recent military operations have shown the value of advanced information and communications technology, but have also demonstrated some of its vulnerabilities and limitations. Advances in informatization will dramatically improve the Chinese military's situational awareness and communications capabilities, but these changes will not eliminate the problems of friction and the fog of war for the PLA any more than they have for any other modern military. As Keithly and Ferris warn, “A grave

contemporary mistake is to regard technological advances in communications as a means finally to overcome the fog and friction of war.¹⁶¹ It remains to be seen whether the PLA will heed this warning.

In this vein, a key possibility that Chinese planners must consider is that the PLAN's continuing development of modern C4ISR capabilities will not only enhance its ability to operate effectively, but also increase its vulnerability to C2 warfare. As the PLAN becomes more reliant on high-tech C4ISR systems, it will need to be prepared to contend with electronic, computer network, and kinetic attacks designed to disrupt or deny its ability to use these new capabilities. Indeed, the PLAN—along with the rest of the Chinese military—will likely need to devote just as much attention to protecting its own C4ISR capabilities as it will to degrading or destroying those of its potential adversaries. Here PLAN writings do not yet seem to offer a definitive conclusion with respect to the offense-defense balance. The Chinese appear to be pursuing both efforts with equal vigor, both practically and theoretically. One could conclude that for short-range C2, where nodes can be connected by land lines, connectivity will generally trump efforts to deny it, but for long range C2, where nodes must be connected by RF signals, interruption will generally trump efforts to maintain connectivity. PLAN writings do not yet offer a definitive assessment of this problem, but it would seem to be quite important for future Chinese naval operations, including the prospects of PLAN power projection beyond areas in which China can rely on “using the land to control the sea” (以陆制海).¹⁶²

The second debate concerns the appropriate balance between centralization and decentralization. The conceptual goal for most militaries is centralized planning and decentralized execution—that is, empowering the lowest levels with information so that they can leverage superior tactical training and initiative. Certainly the practical experience in the West does not always match this conceptual goal. Indeed, many times the reality is that “commanders who can control, do control.” This is certainly an issue that has been raised in Chinese writings—with the so-called “10,000 mile screwdriver” as evident to them as it is to us. The issue of decentralized operations will likely be a more difficult issue for the PLA, which is not known for valuing and cultivating battlefield initiative in the high-technology operations called for in modern war. In particular, Chinese writings seem to reflect the opposite view, that informatization should offer the provision of decentralization in emergencies. Indeed, one could conclude that some of their key efforts at informatization are intended to increase rather than decrease centralized control.

Nonetheless, PLAN “connectivity” theories and efforts do appear to have provoked a debate between advocates of centralization and proponents of decentralization. The historical experiences of other navies

suggest that centralization tends to win out if connectivity can be maintained (e.g., commanders “will command what they can command”). If connectivity is denied, however, then forces have tended to fall back on decentralized execution, with tactical training generally carrying the day. It is possible that China will seek to mitigate relative tactical training deficiencies by “taking the man out of the loop” at the tactical level. Depending upon the offense-defense balance, the PLAN might become very good at short-range operations, but face serious problems at long range where RF sensor-to-shooter links might be effectively denied.

On a more concrete level, it remains to be seen whether the PLAN will use its enhanced C4ISR capabilities to push information down to lower levels and empower junior commanders to make decisions, or instead attempt to leverage new ISR capabilities and growing communications capacity to further strengthen centralized C2 at higher echelons, which would probably be more consistent with the Chinese military’s present approach to C2. Although hardware modernization garners much of the attention from outside observers, there is a strong case to be made for devoting more attention to some of the less readily quantifiable factors such as “software” reforms and the organizational culture of the PLAN, which will likely prove to be equally important determinants of the extent to which naval informatization will translate into greater combat effectiveness and an improved ability to conduct joint operations.

The overall implication could be that China is on a path to conduct highly effective centralized operations close to China itself. This may be useful in an access denial role, but might also be an effective limitation on China’s future power projection in which information assurance decreases with distance. Clearly, the evolution of the theory and practice of naval informatization will merit careful observation.

Notes

¹ For more on Hu’s speech, see David Lague, “China Airs Ambitions to Beef Up Naval Power,” *International Herald Tribune*, December 28, 2006, available at <<http://www.iht.com/articles/2006/12/28/news/china.php>>.

² Wu Shengli, Commander of the Navy, and Hu Yanlin, Political Commissar of the Navy; edited by Wang Chuanzhi [吴胜利, 胡彦林], “Building a Powerful People’s Navy That Meets the Requirements of the Historical Mission for Our Army [锻造适应我军历史使命要求的强大人民海军],” *Seeking Truth* [求事], no. 14 (July 16, 2007), available at <<http://www.qsjournal.com.cn/qs/20070716/GB/qs^459^0^10.htm>>.

³ Ibid.

⁴ Ibid. According to Wu and Hu, “The Taiwan issue involves our national security and development—the full unification of our nation. It is also the key interest of the Chinese nation and one of the three important historical missions for our Party. To ensure the unification of our nation is the holy mission of our army. A powerful navy is a key force that can shock the ‘Taiwan independence’ separatists, and defend the unification of our nation.”

⁵ Ibid. As Wu and Hu elaborate, “In order to protect normal fishing, oceanic resource development, oceanic investigation and scientific tests, to maintain the safety of the oceanic transportation and the strategic passageway for energy and resources, to ensure the jurisdiction of our nation to neighboring areas, continental shelf, and exclusive economic zones, and to safeguard our national maritime rights effectively, we must build a powerful navy.”

⁶ The policy defined four missions of the PLA: first, to serve as an “important source of strength” for the Chinese Communist Party (CCP) to “consolidate its ruling position”; second, to “provide a solid security guarantee for sustaining the important period of strategic opportunity for national development”; third, to “provide a strong strategic support for safeguarding national interests”; and fourth, to “play an important role in maintaining world peace and promoting common development.” The last two missions truly reflect new emphases for the PLA, and the fourth is unprecedented. See “Earnestly Step Up Ability Building within CCP Organizations of Armed Forces,” *Liberation Army Daily* [解放军报], December 13, 2004, available at <www.chinamil.com.cn>.

⁷ Maj. Gen. Tian Bingren [田秉仁], “The Scientific Development of the Historical Mission of Our Army in the New Phase of the New Century” [新世纪阶段我军历史使命的科学拓展], *China Military Science* [中国军事科学], October 2007, 21–27.

⁸ Shen Jinlong [沈金龙], “Naval Non-combat Military Operations—Challenges Faced and Countermeasures” [海军非战争军事行动—面临的挑战及对策], *People’s Navy* [人民海军], December 1, 2008, 4.

⁹ Liu Jiangping and Zhui Yue, “How to Reform the Navy in Order to Execute China’s Maritime Strategy in the 21st Century: Management of the Sea in the 21st Century. Whither the Chinese Navy?” *Modern Navy* [当代海jun] (June 2007), 6–9.

¹⁰ Ibid.

¹¹ See “China’s National Defense in 2006,” Information Office of the State Council, People’s Republic of China, December 29, 2006, available at <<http://www.fas.org/nuke/guide/china/doctrine/wp2006.html>>.

¹² Liu and Zhui, 6–9.

¹³ “China’s National Defense in 2006.”

¹⁴ Office of Naval Intelligence, *Handbook on China’s Navy 2007*, 24, 27.

¹⁵ Ibid.

¹⁶ An article that seems to refer to the *Luyang II* describes this “new generation of ‘flagship’ on the sea” as “a model for informatization of the navy.” See Jiang Yi, Zhao Dong, and Wu Chao [姜毅, 赵东, 吴超], “Constructing a ‘Flagship’—On-the-Spot Report on Construction of New Type of Guided Missile Destroyer Supervised by One of the Naval Equipment Technical Department’s Representative Offices in Shanghai” [铸就“旗舰” 啸海疆—海装驻上海某军事代表室监造某新型导弹驱逐舰舰实], *People’s Navy* [人民海军], November 1, 2006, 1–2.

¹⁷ “China’s National Defense in 2006.”

¹⁸ Ibid.

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²⁰ Ji Chengxin, Li Xiangyang, and Wan Yongfeng, “Some Ideas of Naval Service Equipment Information Modification” [对海军现役装备信息化改装的几点思考], *Journal of the Academy of Equipment Command and Technology* [装备指挥技术学院学报] 17, no. 1 (February 2006), 10. The authors are affiliated with the Scientific Research Department at the PLAN Dalian Ship Academy (海军大连舰艇学院) in Dalian, China.

²¹ Zhanyixue [The Science of Campaigns], 2006, Introduction, 10.

²² Zhang Wenxin [张文新], “PLAN Draws Up ‘Road Map’ for Informatization Development” [海军设计信息化建设路线图], *People’s Navy* [人民海军], May 10, 2006, 1. Military press coverage of an April 26, 2006 PLAN “Forum on the Informatization Development of the Navy,” for instance, has not offered the contents of what were undoubtedly instructive speeches by PLAN Chief of Staff Sun Jianguo, Jiang

Zhijun, director of the Expert Consultation Committee on the Informatization of the Navy and of the PLAN Armament Research Institute, and other experts, as well as the forum's compendium of 107 selected articles on the subject.

²³ Ji, Li, and Wan, 10.

²⁴ Liu Jiangping and Zhui Yue, "Management of the Sea in the 21st Century: Whither the Chinese Navy?" *Modern Navy [Dangdai Haijun]*, (June 2007), 6–9.

²⁵ See James Mulvenon and Thomas J. Bickford, "The PLA and the Telecommunications Industry in China," in James C. Mulvenon and Richard H. Yang, eds., *The PLA in the Information Age* (Santa Monica, CA: RAND, 1999), 245–257.

²⁶ Office of the Secretary of Defense [hereafter, DOD], *Annual Report on the Military Power of the People's Republic of China 2000*, 12.

²⁷ *Ibid.*, 12–14.

²⁸ *Ibid.*, 21. The report declared that the PLA's ability to "effectively command and control its forces—particularly in a joint service environment—is practically non-existent."

²⁹ *Ibid.*

³⁰ "China's National Defense in 2010," Information Office of the State Council, People's Republic of China, March 31, 2011, available at <http://news.xinhuanet.com/english2010/china/2011-03/31/c_13806851_8.htm>.

³¹ Kevin Pollpeter, "Towards an Integrative C4ISR System: Informationalization and Joint Operations in the People's Liberation Army," in Roy Kamphausen and David Lai, eds., *The PLA at Home and Abroad—Assessing the Operational Capabilities of China's Military* (Carlisle, PA: U.S. Army War College and National Bureau of Asian Research, 2010), 204.

³² See "China Reinforces Construction of National C3I System," *Kanwa Defense Review*, April 1, 2005, 18–19.

³³ *Ibid.*

³⁴ *Ibid.*

³⁵ Wang Feng and Yang Yuwen [王锋, 杨玉文], "The Navy's Comprehensive Military Information Network Is Officially Established, Indicating a Significant New Step Forward in the Navy's Network Building Effort" [海军军事综合信息网正式开通, 标示着海军网络建设迈上新台阶], *People's Navy [人民海军]*, August 28, 2006, 1.

³⁶ Kou Yongqiang and Chen Jing [寇永强, 陈静], "Lofty Mountains and Islands Connected by Electronic Networks: 92 Percent of South Sea Fleet's Companies Are Now Connected to Military Network" [高山海岛e网通: 南航部队92%的连队接通军网], *People's Navy [人民海军]*, November 29, 2006, 1.

³⁷ Lu Daoquan, Liang Qingcai, and Li Gencheng [吕道全, 梁庆才, 李根成], "Enhancing Information Support Capability at Sea—A Certain South Sea Fleet Vessel Dadui Is Devoted to Building 'Digitized Battlefields'" [提升海上信息支援能力--南海舰队某舰船大队倾心建造 数字战场], *People's Navy [人民海军]*, September 1, 2005, 1. According to the article, "In a limited maritime war under high-technology conditions, information support is of the utmost importance. Maritime training operations such as ships setting sail, submarines remaining concealed, missile launches, and torpedo attacks all require sea survey forces providing accurate information."

³⁸ Wang Tingjun and Zhang Gang, "Reconnaissance Ship Group Provides Precise Battlefield Information for Warships" [某侦察船大队为战舰提供精确战场信息], *People's Navy [人民海军]*, December 8, 2005, 1.

³⁹ Ji, Li, and Wan.

⁴⁰ Sun Tao, Qiao Yanfei, and Wu Chao [孙涛, 乔燕飞, 吴超], "Set the Sail Right and You Can Travel for a Thousand Leagues—A Certain Minesweeper Unit's Experience in Carrying Out Informatization Construction/A String of Puzzles: How Did the Minesweeper Capture So Many First Places?/Unraveling the Puzzles: They Had the Help of Informatization/Behind the Puzzles: Informatization Makes Its Landing On Old Equipment" [帆正自可行千里--某扫雷舰大队推进信息化建设的一段经历/谜提一串: 扫雷舰咋拿了那么多第一-/谜底揭开: 原来他们有信息化帮忙/ 谜的背后: 信息化老装备上'着陆'], *People's Navy [人民海军]*, November 1, 2003, 2.

⁴¹ *Ibid.*, 12–14.

⁴² Zhang Yuliang, "Chapter 14—Anti Air Raid Campaign," *The Science of Campaigns* (Beijing: National Defense University Press, 2006), 9.

⁴³ Dean Cheng, "Zhanyixue and Joint Campaigns," 114; Zhang Yuliang, 10–11.

⁴⁴ Zhang, "Chapter 14: Anti-Air Raid Campaign," *The Science of Campaigns*, 10.

⁴⁵ DOD (2006), 31.

⁴⁶ Richard P. Lawless, "Statement Before the Senate Foreign Relations Committee, Subcommittee on East Asian and Pacific Affairs," April 23, 2004.

⁴⁷ DOD (2006), 33.

⁴⁸ Evan S. Medeiros, Roger Cliff, Keith Crane, and James Mulvenon, *A New Direction for China's Defense Industry* (Santa Monica, CA: RAND, 2005), 205–251.

⁴⁹ Ibid.

⁵⁰ Lawless.

⁵¹ Chen Quanyu and Chen Huijun [陈全育, 陈会君], *China Space News* [中国航天报], December 4, 2008, available at <<http://www.wforum.com/gbindex.html>>.

⁵² Liu Jihong and Li Peigong [刘继红, 李沛功], "PLA Employs Beidou and Space Remote Sensing Technology to Raise Precision Strike Capability" [解放军利用北斗及航天遥感技术提升精确打击能力], *Liberation Army Daily* [解放军报], May 9, 2010, available at <<http://i.ifeng.com/mil/china/news?aid=3898051>>.

⁵³ "FengHuo 1 (ChinaSat 22/A) Tactical Communications Satellite," *China Defense Today*, available at <<http://www.sinodefence.com/space/spacecraft/fenghuo1.asp>>; "China: Military Programs," available at <<http://cns.miis.edu/research/space/china/mil.htm>>.

⁵⁴ *Military and Security Developments Involving the People's Republic of China 2010* [hereafter, DOD (2010)], Annual Report to Congress (Washington, DC: Office of the Secretary of Defense, August 16, 2010), 36.

⁵⁵ Peter B. de Selding, "European Officials Poised to Remove Chinese Payloads from Galileo Sats," March 12, 2010, available at <<http://www.spacenews.com/policy/100312-officials-poised-remove-chinese-payloads-galileo.html>>.

⁵⁶ "Strategic Weapon System, China," *Janes's Sentinel Security Assessment—China and Northeast Asia*, January 17, 2011, available at <www.janes.com>.

⁵⁷ DOD (2010), 36.

⁵⁸ Sun Zhihui, ed., *China Ocean Yearbook 2004* (Beijing: Ocean Press, 2005), 569.

⁵⁹ For all launch schedule predictions, see "Chinese Launch Record," available at <<http://www.sworld.com.au/steven/space/china-rec.txt>; www.forum.nasaspaceflight.com>.

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⁶⁴ See, for example, Li Qiang, Zhao Xin-guo, and Li Peng, "Research on Data Integration of C4ISR System" [C4ISR系统数据集成研究], *Command Control & Simulation* [指挥控制与仿真] 28, no. 4 (August 2006), 29–32.

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¹¹⁴ *Ibid.*, 107.

¹¹⁵ Peng Guangqian and Yao Youzhi, ed., *The Science of Military Strategy* (Beijing: Military Science Publishing House, 2005), 265.

¹¹⁶ *Ibid.*, 115.

¹¹⁷ See ONI, *The People’s Liberation Army Navy: A Modern Navy with Chinese Characteristics*, Suitland, MD, April 2009, 34.

¹¹⁸ Also translated as “outline,” “compendium,” or “doctrine.”

¹¹⁹ *Joint campaigns* involve the participation of forces from more than one service, while *combined arms campaigns* involve the participation of multiple branches from a single service. For full definitions of

these terms, see *Joint Publication 1-02, Department of Defense Dictionary of Military and Associated Terms*, Washington, DC: U.S. Department of Defense, April 12, 2001 (as amended through September 17, 2006), available at <<http://www.dtic.mil/doctrine/jel/doddict/index.html>>.

¹²⁰ DOD (2006), 16.

¹²¹ Cheng, “*Zhanyixue* and Joint Campaigns,” 115–117.

¹²² In joint blockade campaigns [联合封锁战役], for instance, “. . . there is widespread use of highly-technical weapons; there is a complex electromagnetic environment; offensive operations are intertwined with defensive operations; and there are rapid changes in the battlefield situation. All this results in an expansion of the difficulty in commanding and coordinating the campaign, thus requiring that [those who provide] campaign guidance be adept at judging the timing and sizing up the situation, adapting themselves to changing situations, and making resolute decisions.” Zhang Yulang, et al., “Chapter XII—The Joint Blockade Campaign,” 3.

¹²³ Zhang Shuhui [张书晖], “Revelation to Weapon Equipment Construction Based on Integrative Joint Firepower Strike” [一体化联合火力打击对武器装备建设的启示], *Journal of the Institute of Command and Technology* [装备指挥技术学院学报], 2007, 2. Zhang is a graduate student at the National Defense University, where he is conducting research on joint campaigns.

¹²⁴ Zhang Yuliang et al., “Chapter XIV—Anti-Air Raid Campaign.”

¹²⁵ Zhang Shuhui, 2.

¹²⁶ Peng and Yao, 253.

¹²⁷ *Ibid.*, 267–268.

¹²⁸ *Ibid.*, 268.

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¹³¹ *Ibid.*, 262.

¹³² *Ibid.*, 265.

¹³³ *Ibid.*, 264.

¹³⁴ *Ibid.*, 265.

¹³⁵ *Ibid.*, 255.

¹³⁶ *Ibid.*, 268–269.

¹³⁷ *Ibid.*, 258–259.

¹³⁸ *Ibid.*, 272.

¹³⁹ *Ibid.*, 252.

¹⁴⁰ *Ibid.*, 258–259.

¹⁴¹ *Ibid.*, 256.

¹⁴² Zhang Shuhui, 2.

¹⁴³ Zhang Yan, Feng Shuxing, and Lu Hongbing, “Research on the Time Effectiveness of Aerospace Command Modes in Future Operations” [浅探未来作战中航天指挥方式的时效性], *Journal of the Academy of Equipment Command & Technology* [装备指挥技术学院学报] 18, no. 2 (April 2007), 55–59. This article compares centralized, decentralized, and skip echelon command systems.

¹⁴⁴ Academy of Military Science, Military History Research Department, *Haiwan zhanzheng quan-shi* [The Complete History of the Gulf War] (Beijing: Liberation Army Press [Jiefangjun chubanshe], 2001), 413.

¹⁴⁵ *Ibid.*

¹⁴⁶ *Ibid.*, 414.

¹⁴⁷ *Ibid.*, 417.

¹⁴⁸ See David M. Keithly and Stephen P. Ferris, “*Auftragstaktik*, or Directive Control, in Joint and Combined Operations,” *Parameters* (Autumn 1999), 118–133.

¹⁴⁹ *Ibid.*

¹⁵⁰ Ibid.

¹⁵¹ Peng and Yao, 255.

¹⁵² Ibid., 255–256. According to Peng and Yao, “The operations of PLA strategic missile force come under direct command and control of the supreme headquarters, and the command department of the Second Artillery Corps is responsible for the specific command work.”

¹⁵³ John Wilson Lewis and Xue Litai, *Imagined Enemies: China Prepares for Uncertain War* (Stanford, CA: Stanford University Press, 2006), 120.

¹⁵⁴ For a Chinese evaluation of foreign submarine communications systems, see Wang Xiaofei, ed. [王小非], *Network Warfare at Sea* [海上网络战] (Beijing: National Defense Industry Press, 2006), 379–382.

¹⁵⁵ Garth Hekler, Ed Francis, and James Mulvenon, “C3 in the Chinese Submarine Fleet,” in Andrew Erickson, Lyle Goldstein, William Murray, and Andrew Wilson, eds., *China’s Future Nuclear Submarine Force* (Annapolis, MD: Naval Institute Press, 2007), 198.

¹⁵⁶ The authors wish to thank William Murray for raising this point.

¹⁵⁷ See, for example, Wu and Hu, “Building a Powerful People’s Navy That Meets the Requirements of the Historical Mission for Our Army.” According to Wu and Hu, “along with accelerating the development of informatized equipment, the Navy has been using information technology to integrate and upgrade its existing equipment, and to strive to realize the long-range and precision capabilities of the main combat weapons as well as inter-communication, inter-connection and inter-operation capabilities of various combat platforms, which has greatly increased the level of the informatization of weapons and armaments.”

¹⁵⁸ “China’s National Defense in 2010.”

¹⁵⁹ The authors are indebted to Jim Fitzsimonds for the insights contained in this paragraph.

¹⁶⁰ The authors are indebted to Jim Fitzsimonds for the ideas contained in this and the previous paragraph.

¹⁶¹ See Keithly and Ferris, 118–133.

¹⁶² The authors are indebted to Jim Fitzsimonds for the insights contained in this paragraph.

Conclusion

Phillip C. Saunders and Christopher D. Yung

The chapters in this volume highlight the considerable progress made by the People's Liberation Army Navy (PLAN) in developing a more modern force capable of operating in waters near China, within the broader Asian region, and (for some missions) in extraregional deployments. The hardware dimension is the most obvious area of improvement. Purchases of advanced Russian submarines, destroyers, and antiship cruise missiles have given the PLAN experience in operating modern weapons systems. China's own defense industries have begun to produce much more capable surface combatants, submarines, and cruise missiles than in the past, and are developing new systems such as antiship ballistic missiles and aircraft carriers. These hardware improvements have the potential to remedy historical PLAN weaknesses such as air defense and limited communications capabilities. At the same time, high-quality personnel, integrated sensors and command and control systems, and military doctrine and training regimes are required to maximize the potential capabilities of modern military hardware. The PLAN has devoted significant effort to these areas, including a new emphasis on joint operations, but its ability to fight and win in combat against a modern opponent remains unproven.¹

One key insight from the Taipei conference upon which this book is based is that the PLA Navy is developing forces and training for a range of different missions. Preparing for a Taiwan contingency in which the PLAN might confront the U.S. Navy is the most urgent and operationally demanding mission, but other tasks such as military diplomacy, nontraditional security missions like the counterpiracy deployment to the Gulf of Aden, and defense of China's maritime claims and interests require different forces and operating concepts and are not merely "lesser-included cases" of a Taiwan contingency. This perspective helps explain otherwise puzzling choices such as the PLAN's interest in acquiring an aircraft carrier that would be highly vulnerable to attack by more advanced military forces and its relative neglect of underway replenishment and antisubmarine warfare (ASW) capabilities necessary for out-of-area deployments in a combat environment. These vulnerabilities are much less salient when performing peacetime missions or operating in a permissive or cooperative environment. This observation raises the intriguing possibility that different communities within the PLA Navy and other Chinese advocates of naval power are lobbying for different capabilities and missions. It also suggests that the PLA Navy may be pursuing a "hedging" strategy

of developing capabilities for multiple potential missions in an uncertain future, including hedging against the prospect that the Taiwan contingency may no longer serve as a budget justification.²

Another important conclusion is that although China is a factor in regional naval modernization (especially for Japan and possibly for India), it is not necessarily the main driver. For many states, other issues such as sovereignty enforcement, economic interests, and local security concerns are “more crucial.” Richard Bitzinger argues that changes under way in East Asia are promoting “arms competitions, not arms races.” To the extent that countries are concerned with China’s rise, most regional states count on the U.S. Navy to balance the PLAN’s growing power. However, in light of the fact that many states see China’s expanding naval capabilities as a factor but not the sole cause of their naval modernization efforts, the possibility also exists for increased maritime security cooperation between China and other Asian states. China has repeatedly proclaimed its interest in expanding cooperation on nontraditional security issues, including maritime security issues such as counterpiracy missions.

Long-standing Chinese concerns over Taiwan, territorial sovereignty in the South and East China Seas, and defense of China’s coast remain “crucially important” missions for the PLA Navy. However, consistent with Hu Jintao’s 2004 proclamation of “new historic missions” for the PLA as a whole and the subsequent emphasis on the PLA’s ability to accomplish “diverse military tasks,” the PLAN now sees a broader set of roles and missions where naval power can play a useful role.³ The PLAN routinely conducts important peacetime missions such as coastal defense, deterrence, protection of China’s sovereignty claims, and military diplomacy activities including port visits and exercises with other navies. Rear Admiral (Ret.) Eric McVadon’s chapter highlights how the PLAN’s employment as an instrument of statecraft in “military operations other than war” has become more important in recent years as part of a Chinese strategy that emphasizes achieving security without the use of force (although Beijing still uses shows of force or direct threats when necessary).

As the chapters by M. Taylor Fravel and Alex Liebman and by Frederic Vellucci and Daniel Hartnett demonstrate, the PLAN is also increasingly “casting itself as the protector of China’s economy” in arguing for more resources for naval modernization. This accords with the call in the new historic missions for the PLA to “provide a strong security guarantee for safeguarding the important strategic opportunity period in national development” and to safeguard national interests. Energy and resource security figure prominently in these arguments, which are not only advanced by PLA Navy officers but also by a wider Chinese “naval lobby” that includes the defense industry,

civilian officials with responsibilities for maritime issues, academics, retired officers, and press commentators. The Gulf of Aden deployments have frequently been justified within the Chinese press and by PLA Navy commentators as missions supporting China's overseas economic interests. The potential utility and role of aircraft carriers in securing China's sea lines of communications (SLOCs) and protecting its economic interests are also a prominent part of this discourse.

Despite considerable progress in modernization, the PLAN still faces a number of major problems. These include improving but still inadequate C4ISR (command, control, communications, computers, intelligence, surveillance, and reconnaissance), lack of integration of the different branches of the PLAN and limited joint operations with the other services, personnel and leadership deficiencies, limited logistical capabilities, and the uncertain quality of indigenous equipment. Despite growing capabilities, the PLAN cannot yet reliably perform an antiaccess mission against the U.S. Navy, with limited detection and targeting capabilities being a particular shortcoming. Participants at the Taipei conference debated the timeline and circumstances under which improved capabilities might allow the PLAN to perform this mission effectively in a Taiwan contingency, concluding that this will depend on the pace of improvements in key PLA capabilities and the success of U.S. countermeasures. However, the United States cannot ignore even a rudimentary PLA capability to locate and strike U.S. naval forces. As Rear Admiral (Ret.) Michael McDevitt notes in chapter 8, the PLAN's pursuit of antiaccess capabilities clashes with a U.S. strategy centered on access to Asia.

Even as the PLA Navy improves its ability to deny access in the Western Pacific, it must also improve its ability to ensure its own access to the South China Sea, the Indian Ocean, and beyond in order to safeguard Chinese overseas economic interests, perform a military diplomacy role, and contribute to maritime security efforts. Such tasks require enhanced capability to project and sustain naval power at farther distances from China's coast. How demanding these missions are depends on the specific characteristics of each type of out-of-area deployment, combined with the five factors (distance, duration, capacity, complexity of coordination, and hostility of environment) that have traditionally challenged navies attempting to operate at distances far from home ports.⁴ How the PLA Navy manages the balancing act between antiaccess missions that involve potential combat against the United States and power projection missions in a permissive environment or against less capable navies should be a major focus of attention for the U.S. intelligence and China-watching communities for decades to come.

Finally, a number of developments have taken place since the Taipei conference. Most have been addressed in the process of updating the conference

papers for publication, but they also deserve attention here. One such item is the PLAN's December 2008 deployment on counterpiracy missions to the Gulf of Aden. The initial deployment has been followed by seven additional deployments so far, including the first deployment of a landing platform dock (LPD) out of the Pacific area. The counterpiracy deployments have spurred talk and articles in the Chinese press of the necessity of access to naval bases and logistics facilities. The most noteworthy of these follow-on articles came from Rear Admiral Yin Zhuo, who stated that the difficulties experienced by the initial ships deploying to the Gulf of Aden could have been resolved or mitigated had China possessed an overseas naval base or facility. Such a facility would have facilitated access to medical care, and would have improved communications, ability to repair and maintain the ships of the task force, and ability to provide fresh fruits, vegetables, and assured access to potable drinking water.⁵ The call for a PLAN overseas naval facility flies in the face of past Chinese pronouncements about Chinese troops on foreign soil, and past Chinese statements emphasizing that China has no overseas military bases or facilities. Although Rear Admiral Yin subsequently retracted his call for overseas bases, the fact that an active duty PLA Navy Rear Admiral, in a position to feel out the views of his fellow PLA flag and general officers, would publicly advocate such a policy shift suggests that the issue is worth watching very closely.

A second major development is the continued expansion and increased activity of the PLAN submarine force, including the reported establishment of a major new submarine base near Hainan Island. The PLAN has inducted new *Yuan*-class attack submarines (SSs) and *Jin*-class nuclear-powered ballistic missile submarines (SSBNs) into its force, and reportedly plans to build as many as five *Jin*-class submarines as the naval component of China's nuclear deterrent. However, there have been persistent problems in the flight testing of the JL-2 sea-launched ballistic missile that the *Jin* SSBN will carry; the latest Department of Defense report states that it is unclear when the *Jin* and its JL-2 missiles will be fully operational.⁶ The delay highlights the Chinese defense industry's continuing difficulty in producing a reliable nuclear-powered ballistic missile submarine and sea-launched ballistic missiles that would make the naval arm of China's nuclear deterrent effective.

A third development involves Chinese efforts to develop an antiship ballistic missile with the capability to target U.S. aircraft carriers.⁷ In the past, ballistic missiles have not been considered ideal weapons to use against ships at sea because once the missile was fired its trajectory could not be altered to take into account target movement. As McDevitt notes in chapter 8, the PLA is trying to place seekers in high-explosive missile warheads that would activate once the warhead descends into the target area, and then steer the

warhead to the moving ship. As McDevitt points out, such a capability would require accurate surveillance, plus missile warhead maneuvering technology that can guide the warhead to its target when the missile reenters the atmosphere.⁸ In a December 2010 interview, U.S. Pacific Command Commander, Admiral Robert Willard, suggested that the Chinese antiship ballistic missile system may have reached initial operational capability even though the system has not been tested over water.⁹

A fourth development has been increased Chinese activities and efforts to defend China's maritime territorial claims. In early 2009, Japan accused China of violating a 2008 agreement permitting joint exploration of oil and gas in disputed areas of the East China Sea by unilaterally drilling beneath the demarcation line and extracting natural gas reserves from the Japanese side. In 2009 China protested claims by Malaysia, Indonesia, and Vietnam in the South China Sea and reiterated its sovereignty claims over islands there. A Chinese official's claim (later retracted as a "misunderstanding") that the South China Sea represented a Chinese "core interest" received widespread attention in the media and within the region. Chinese actions such as harassment of U.S. naval ships operating within China's exclusive economic zone, the April 2010 sailing of a 10-ship PLAN task force through the Miyako Strait, and China's use of economic intimidation during a 2010 controversy over the Japanese arrest of a Chinese fishing vessel captain for fishing in disputed waters reinforced regional concerns about how China may use its growing naval power. These developments suggest that maritime territorial disputes will remain a key regional security issue, and that many countries will be keeping a closer eye on PLAN modernization and activities.

Finally, although rumors of an aircraft carrier have long been in circulation, China will soon deploy a carrier based on the rebuilt *Varyag*, an ex-Soviet carrier purchased from Ukraine in 1992.¹⁰ It is unclear whether the *Varyag*, which will reportedly be named *Shi Lang*, will be for training purposes or have a fully operational role.¹¹ A number of high-ranking PLA officers have publicly discussed rationales for an aircraft carrier, and a 2010 report by the PRC State Oceanic Administration alluded to a decision to construct a carrier.¹² General Chen Bingde, Chief of the PLA's General Staff, also recently confirmed that an aircraft carrier is under construction.¹³ Pictures of the J-15, the aircraft that the PLA plans to fly off of the carrier, have been appearing on the Internet for over a year now.¹⁴ Open talk about a Chinese aircraft carrier is probably intended to get the region used to the idea in order to minimize negative reactions once an official announcement is made. However, a Chinese carrier capability is likely to have a significant impact on the naval programs of some other countries, most notably Japan, the Republic

of Korea, and India. Chinese military officers have discussed a range of potential missions for a carrier, but Western analysts disagree about whether acquisition of a carrier signals a shift toward building a blue-water PLAN centered on aircraft carriers or a more limited power projection capability.¹⁵ An operational aircraft carrier would have wide-ranging implications for the kinds of missions the Chinese would be able to conduct, including greater ability to assert its maritime claims over the Spratlys, the Paracels, and the Diaoyu/Senkakus. At the same time, any Chinese carrier program would require years of development, experimentation, training, and the procurement of hundreds of different additional pieces of equipment before it becomes operational, especially in a potential combat setting.

As the chapters in this volume indicate, Chinese naval power continues to develop, expand, and mature. Rationales for naval modernization have expanded beyond concerns about coastal defense and Taiwan to include enhancing China's ability to pursue its maritime territorial claims, military diplomacy, security cooperation, and protection of its economic interests abroad. As Peter Swartz's review of the history of other rising powers attests, development of advanced naval capabilities is a natural companion to China's emergence as a regional and global power. The PLA Navy still confronts some significant obstacles and is faced with serious shortfalls in its operational effectiveness. These shortcomings will require a sustained investment in technologies, personnel, equipment, and doctrinal development if the PLA Navy hopes to become an effective regional and global naval power. Given regional suspicions about China's long-term ambitions, the ultimate impact of a stronger PLA Navy on regional and global stability will depend heavily on whether Chinese leaders direct their newfound naval power toward cooperative or coercive ends.

Notes

¹ For another assessment by a knowledgeable observer, see Bernard D. Cole, *The Great Wall at Sea: China's Navy in the Twenty-First Century*, 2^d ed. (Annapolis, MD: Naval Institute Press, 2010).

² See Roy Kamphausen, David Lai, and Andrew Scobell, eds., *Beyond the Strait: PLA Missions Other Than Taiwan* (Carlisle, PA: Strategic Studies Institute, U.S. Army War College, 2008); and Michael A. Glosny, *Getting Beyond Taiwan? Chinese Foreign Policy and PLA Modernization*, Institute for National Strategic Studies Strategic Forum No. 261 (Washington, DC: NDU Press, January 2011), available at <<https://digitalndulibrary.ndu.edu/cdm4/document.php?CISOROOT=/ndupress&CISOPTR=43221&REC=1>>.

³ See James Mulvenon, "Chairman Hu and the PLA's 'New Historic Missions,'" *China Leadership Monitor* 27 (Winter 2009), available at <<http://media.hoover.org/sites/default/files/documents/CLM-27JM.pdf>>; and Cortez A. Cooper, "The PLA Navy's 'New Historic Missions': Expanding Capabilities for a Re-emergent Maritime Power," Testimony presented before the U.S.-China Economic and Security Review Commission on June 11, 2009, available at <http://www.rand.org/content/dam/rand/pubs/testimonies/2009/RAND_CT332.pdf>.

⁴ Christopher Yung and Ross Rustici with Isaac Kardon and Joshua Wiseman, *China's Out of Area Naval Operations: Case Studies, Trajectories, Obstacles, and Potential Solutions*, Institute for National

Strategic Studies China Strategic Perspectives No. 3 (Washington, DC: National Defense University Press, December 2010), 1, available at <<http://www.ndu.edu/inss/docUploaded/ChinaStrategicPerspectives3.pdf>>.

⁵“Yin Zhuo: The PLAN should build a long-term supply base in Djibouti” [尹卓：中国海军应在吉布提建立长期补给基地], accessed at <http://cn.china.cn/article/n494656,fe393f,d2477_12053.html>.

⁶Office of the Secretary of Defense, *Military and Security Developments Involving the People's Republic of China*, Annual Report to Congress (Washington, DC: Office of the Secretary of Defense, 2010), 34.

⁷Andrew Erickson and David Yang, “On the Verge of a Game-Changer: A Chinese Antiship Ballistic Missile Could Alter the Rules in the Pacific and Place U.S. Navy Carrier Strike Groups in Jeopardy,” *U.S. Naval Institute Proceedings* 135, no. 3 (May 2009), 26–32; and Andrew Erickson and David Yang, “Using the Land to Control the Sea? Chinese Analysts Consider the Anti-Ship Ballistic Missile,” *Naval War College Review* 62, no. 4 (Autumn 2009), 53–86.

⁸McDevitt's chapter notes that the obvious U.S. Navy response to this development is to “trick” missile seekers into attacking false targets or simply missing their intended targets.

⁹Yoichi Kato, “U.S. Commander Says China Aims to Be a ‘Global Military’ Power,” *Asahi Shimbun*, December 28, 2010, available at <<http://www.asahi.com/english/TKY201012270241.html>>.

¹⁰Nan Li and Chris Weuve, “China's Aircraft Carrier Ambitions: An Update,” *Naval War College Review* 63, no. 1 (Winter 2010).

¹¹“China's First Aircraft Carrier to be Completed Soon: Reports,” *China Post*, April 7, 2011.

¹²Gao Zhiguo et al., eds., *China's Ocean Development Report* [*Zhongguo haiyang fazhan baogao*, 中国海洋发展报告] (Beijing: Maritime Publishing House, May 2010).

¹³“Zhongguo hangmu zaijian buhui shiru taguo” [Chinese aircraft carrier under construction, will not drive through other countries], *Xianggang Shangbao* [*Hong Kong Commercial Times*], June 7, 2011, available at <http://www.hkcd.com.hk/content/2011-06/07/content_2751772.htm>; Liu Chang, “PLA Chief Confirms Vessel Is ‘Under Construction,’” *Global Times*, June 8, 2011, available at <<http://military.global-times.cn/china/2011-06/662887.html>>.

¹⁴Gabriel Collins and Andrew Erickson, “Flying Shark’ Gaining Altitude: How Might New J-15 Strike Fighter Improve China's Maritime Warfare Ability?” *China SignPost*, June 8, 2011.

¹⁵See Robert S. Ross, “China's Naval Nationalism: Sources, Prospects, and the U.S. Response,” *International Security* 34, no. 2 (Fall 2009), 46–81; and the response by Michael A. Glosny and Phillip C. Saunders, “Correspondence: Debating China's Naval Nationalism,” *International Security* 35, no. 2 (Fall 2010), 161–169.

Index

- A2/AD (antiaccess/area denial), 191. *See also* antiaccess
- Academy of Military Science (AMS)
Military History Research Department, 270
War Theories and Strategic Studies Department
(*See* War Theories and Strategic Studies Department)
- active defense. *See also* near-seas active defense
PLA on, 191–192
- Aden, Gulf of. *See* Africa, Horn of
- Admiral Gorshkov* (Kiev-class aircraft carrier), 32–33
- advanced trainer aircraft, Malaysia's acquisition of, 35
- Aegis combat system, U.S., 27
- aerospace platforms, China's, 256
- Africa
exploration and colonization of, 2–3, 4, 5
Horn of, antipiracy operations near, 101–102, 108n102, 233–234, 245n50, 289
- air-cushioned landing craft (LCAC), 24, 30
- air warfare destroyers (AWD), for Royal Australian Navy, 27
- airborne warning and control systems (AWACS), Chinese development of, 128
- aircraft. *See also* specific types of aircraft
Australian, short takeoff and vertical landing, 27
for China's aircraft carriers, 152–153
Chinese acquisition of (2000–2008), 24
Chinese reports of Indian navy's building of, 70
high-altitude drone, for surveillance, 203
India's Tejas Light Combat, 33
Japanese maritime patrol aircraft (P-X), 29
land-based, long-range, in Soviet layered defense, 203
Malaysia's airborne early warning, 35
maritime patrol, Indonesia's and Thailand's, 35
in PLAN's force structure, 160–162
Soviet, during Cold War, 196
Vietnam's acquisition of, 36
- aircraft carriers
aircraft range from, PLAN's antiaccess campaign and, 207–208, 213–214n45
for China's far-seas operations, 134–135
China's military modernization and, 24, 143, 291–292
for China's near-seas active defense, 119
China's *Varyag*, 149–153, 162, 171n38, 291–292
constraints on Liu Huaqing's plans for, 126
India's use of, 32–33
protecting Chinese sea lines of communications with, 289
Thailand's *Chakri Naruebet*, 35–36
U.S., potential Chinese antiaccess strategies against, 167
U.S., Soviet's defensive strategy during Cold War against, 196
vulnerable to attack, China's acquisition of, 287
- AirSea Battle*, 210
- Airshow China 2010, 259
- al Qaeda, *PLA Daily* reports on ships of, 65
- All-Army Network Technology Research Center, 262
- alliances. *See also* North Atlantic Treaty Organization
British navy's use of, 6
rising naval powers and, 15–16
- American Enterprise Institute, 239
- amphibious warships, 28, 30–31, 32, 158–160. *See also* LPD amphibious warfare ships
- Andaman Islands, Chinese reports of Indian naval base in, 70–71
- Annual Report to Congress on Military and Security Developments Involving the People's Republic of China* (2010), 206
- antiaccess (A2)
antiship ballistic missiles for, 208–209
assessing PLA's capability for, 205–208
China's potential use of, 166–168, 169–170n5
Chinese offshore defense as, 201–204
Chinese survey ships and submarine in Japan's EEZ and, 231
geostrategic context for, 197–199
PLAN's limitations against U.S. Navy for, 289
before radar and satellites, 193–195
Soviet maritime defense strategy as, 195–197, 200 (map)
Soviet vs. Chinese, 142
Taiwan contingency role of, 191–193, 204–205
work left to do for PLA for, 209–210
- antiship ballistic missiles (ASBMs)
China's development of, 290–291
China's DF-21D medium-range, 258
McDevitt on countering attacks by, 293n8
with seekers, in China's antiaccess strategy, 208–209, 214n45, 214n48
- antiship cruise missiles (ASCMs)
China's antiaccess campaign and, 206–207, 210, 213n41
Harpoon-type, for KDX-II ships, 31
for Indonesia, 34

- for Singapore's frigates, 34
- for South Korea's *Dokdo*-class vessels, 31
- antisubmarine warfare (ASW), China's, 120, 287
- Arabian Sea, Peace-07 exercise in (2007), 230, 244n39
- area denial (AD), 191. *See also* antiaccess
- arms races
 - factors contributing to, 19
 - international law and, 58
 - naval expansion in Asia-Pacific and, 26, 37, 39n7, 288
 - rising powers vs. other strong powers and, 14
- ASC Shipyards, Adelaide, Australia, 27
- ASEAN Regional Forum (ARF), 65
- ASEAN states
 - China's relations with, 219
 - India's relations with, 69, 71
 - Li Peng's proposals for promoting relations with, 217
 - navies of, debate on increasing China's cooperation with, 96
 - navies of, in Chinese coastal waters, 132
 - PLAN's port visits to, 228–229
 - policy of balance in foreign diplomacy by, 67
 - Taiwan's independence and Japan's engagement of, 51
- Asia. *See also* Southeast Asia
 - European colonization of, 3, 5
- Asia-Pacific
 - China's military leadership in, military modernization and, 143
 - fisheries areas and quotas in, disputes over, 86
 - implications of expanded maritime combat capabilities in, 36–38
 - maritime combat buildup in, factors for, 24–26
 - recent naval developments in, 26–36
- Association of Southeast Asian Nations. *See* ASEAN states
- Aster–15 air defense missile, Singapore's, 34
- Atlantic Ocean, 3
- Auftragstaktik* concept, 271
- Australia, 23, 26, 27–28, 186
- Australian Defense Force (ADF), 27–28
- Aviation Engineering Academy, China, 182
- Axis alliance (1940), 10

- Backfire bomber, Soviet, 206, 209
- ballistic missiles. *See also* antiship ballistic missiles; nuclear-powered ballistic missile submarines
 - theater-range (TBMs), 142, 169n3
- Bangladesh, PLAN's port visits to, 228
- battle groups. *See* small battle groups
- Beidou-2*/Compass satellites, China's, 257
- Beidou-4* global positioning satellites, China's, 256, 257
- Beijing Attaché Corps, foreign naval officer representation within, 186, 189n29
- B6H bomber, 206
- Bi Yurong, 73
- Bickford, Thomas J., 253
- bilateral exercises, PLAN's engagement in, 229–230, 288
- Bismarck*, sinking of, 194
- Bitzinger, Richard, 288
- Black Sea, 7
- blockades
 - in China's near-seas active defense, 118, 119
 - joint, 264–265, 285n122
 - by U.S. of Malacca Strait, Japan and South Korea and, 72–73
- blue-water navies
 - France's, 5
 - India's, 26
 - Japan's, 9–10, 26
 - Malaysia's, 35
 - Netherlands', 5
 - PLAN's capabilities as, 101, 119–120, 129–135, 230–234
 - Portugal's, 2, 3
 - South Korea's, 26, 30–32
 - Soviet, 122–123
 - Spain's, 4
 - Thailand's, 35
- Bohai, Strait of, 111
- Borneo, 116
- Boutilier, James, 244n43
- Boxer rebellion (1900), 11, 16, 138n54
- Brazil, as Portuguese colony, 2
- Britain. *See also* United Kingdom
 - arms race with Germany of, 14
 - China on regional defensive and offensive navy of, 139n66
 - Dutch navy and, 4, 5
 - economic and naval power of, 13
 - French navy and, 5, 14
 - geopolitical consequences for naval modernization by, 17
 - German navy as challenge to, 8, 9
 - invading forces attacking U.S. by, 211n7
 - Japan's alliance with, 10

- Japan's navy vs. navy of, 28
 as previous rising naval power, 1, 5–7
 U.S. Navy and, 11, 12, 16
- Brunei, territorial disputes and naval expansion by, 25–26
- budgets. *See* funding
- Burma, planned Chinese naval base in, 140n87
- Canberra*-class amphibious power projection ships, 27
- Cao Gangchuan, 184
- catamaran-hull missile fast attack craft, Chinese, 24, 157–158
- Center for Naval Analyses, 212n25
- Center for Strategic and Budgetary Assessments (CSBA), 191, 210
- Central Military Commission (CMC), China, 48, 177, 262, 269, 272
- centralized SSBN command, control, and communication (C3), 272
- Century of Humiliation, China's, 198, 204
- Changchun University of Science and Technology, 180–181
- Chen Bingde, 291
- Chen Lu, 91
- Chen Shui-bian, 45
- Chen Xianfeng, 177
- Cheng, Dean, 255, 264, 265
- Cheng Ho. *See* Zheng He
- China. *See also* economy, China's; oil resources; People's Liberation Army Navy; territorial disputes
 domestic laws on territorial waters, EEZ, and continental shelf of, 74
 economic center of, as vulnerable to sea attacks, 199
 foreign suppliers for, 169n2
 international fleet review, Qingdao (2009), 230
 maritime disputes of, 86
 merchant fleet of, 131, 139n74
 naval expansion by, 23, 25–26
 as previous rising naval power, 19–20, 21n2
 Soviet's maritime defensive strategy lessons for, 196–197
- China Daily*, 101–102
- China Military Science (Zhongguo Junshi Kexue)*, 44, 59, 73–74, 197
- China Seas, 2, 132. *See also* East China Sea; South China Sea; Yellow Sea
- China Ship Scientific Research Center, 170n19
- China Youth Daily*, 181
- China's National Defense in 2006. See* Defense White Paper (2006), Beijing's
- Chinese citizens, sea consciousness of, 82, 88–89, 91, 124
- Chinese Defense White Paper (2004). *See* Defense White Paper (2006), Beijing's
- Chinese Embassy, Washington, DC, naval officers serving in, 186
- Chunxiao oil and natural gas field, 220–221, 222 (map), 242n13
- C4ISR combat systems
 centralized command and control and, 267
 Chinese vs. U.S. deconfliction for implementation of, 275–276
 directive control or mission type orders and, 271
 of Japan's Maritime Self-Defense Force (MSDF), 28
 PLAN's current capabilities for, 252–258, 289
 PLAN's development of and vulnerability to C2 warfare, 277–278
 for South Korea's *Dokdo*-class vessels, 31
 transformation of militaries with, 37
 trends in Chinese research and development of, 258–259
- civilian authors, military authors vs., on China and international law, 95–96
- civilian leadership. *See also* Communist Party, China
 changes in naval strategy and, 110
 near-seas active defense and, 124
- coast guard, China's, 54, 76
- coastal defense. *See also* antiaccess
 before radar and satellites, 194–195
- code-breaking, 195
- Cole, Bernard (Bud), 223
- college students, PLAN commissioned officer programs for, 180–181
- combat. *See also* hostilities
 active, Liu Huaqing on, 138n47
 maritime buildup in Asia-Pacific for, 24–26
 rising powers with rising navies in, 13–14
- combined arms campaigns, joint campaigns vs., 284–285n119
- Combined Forces Command, Korean Peninsula, 30
- Command Academy, PLAN's, 263
- command and control (C2)
 directive control or mission type orders and, 271
 naval informatization and, 266–272
 PLAN informatization and, 249–250
 satellite navigation facilities and, 257

- SSBN deployment and, 272
- vulnerability to, PLAN's development of C4ISR capabilities and, 277–278
- command of the sea
- Chinese on sea power theory and, 83
- sea control and sea denial concepts and, 211n13
- sea power vs., 105n13
- use of term, 104n8
- command structure. *See also* C4ISR combat systems; command and control
- naval information and joint operations and, 265–266
- communications
- China's centralized C2 and networks for, 267–268
- China's joint training exercises on, 261
- China's SSBN deployment and, 272
- Chinese military networks for, 253–254
- for Chinese survey and reconnaissance, 254–255, 280n37
- command in joint operations and, 265
- fiber-optic, in 1990s China, 253
- Communist Party, China. *See also* *People's Daily*; *PLA Daily*; Politburo Standing Committee
- economic growth as key element for, 220–221, 222 (map)
- military personnel choices of, 176
- on naval modernization, 247
- PLAN as instrument of statecraft and challenges to, 239–240
- PLAN's personnel and, 183–184
- on sea consciousness, 82
- complex electromagnetic conditions, 260, 264, 282n76, 285n122
- comprehensive barrier removal, for China's near-seas active defense, 119
- comprehensive maritime security strategy, 82, 92, 93–94, 103
- Contemporary International Relations*, 72–73
- continental shelf. *See also* EEZs
- China's maritime rights and interests in, 90
- Chinese survey ships in Japan's EEZ and, 231, 242n13
- Law of China's EEZ and Continental Shelf (1998), 74
- PLAN's operational role to borders of, 57, 59, 82, 98
- UNCLOS on maritime national territory and, 99
- Corbett, Julian, 211n13
- corvettes
- Indonesia's procurement of, 34
- Vietnam's acquisition of, 36
- counter-amphibious-landing operations. *See also* antiaccess
- in Deng's people's war against Soviets, 112–113
- cruise missiles. *See* antiship cruise missiles; land-attack cruise missiles
- Cuban Missile Crisis (1962), 14
- Da Wei, 87, 93
- Dai Xu, 101
- Dalian Vessel Academy, 100, 182. *See also* *Journal of Political Work*; Lu Rude
- Dangdai Haijun*. *See* *Modern Navy*
- declining powers, previously rising powers as, 16
- Defense White Paper (2004), China's, 186
- Defense White Paper (2006), China's
- on funding for PLAN, 199
- on informatization, 249
- on informatization and interoperability, 272
- on informatization and personnel recruitment and training, 261–262
- on Joint Maritime Exercises with foreign navies, 186
- on national defense optical fiber communication network, 253
- on strategic depth for offshore defensive operations, 251
- three-step development strategy outlined in, 107–108n95
- Deng Xiaoping, 51, 112, 116, 124, 125
- destroyers. *See also* guided-missile destroyers
- Indian navy's procurement of, 33
- Japanese, 28, 29
- Korean KDX program, 31
- detering forward strategy, of USDOD, 211n2
- DF–21D medium-range antiship ballistic missiles, 258
- Diaoyu Islands, 86, 292. *See also* Senkaku Islands
- Ding Yiping, 177, 178
- diplomacy. *See also* gunboat diplomacy; international cooperation; political power; statecraft
- budgeting for PLAN's mission and reach of, 76
- increased PLAN cooperation with regional navies as, 97
- potential Chinese antiaccess strategies against U.S. using, 168
- for protecting China SLOCs, 73–74
- vs. force as Chinese naval strategy, 217, 287
- directive control, PLAN's informatization and, 270–271

- disaster relief, 37, 168, 235, 236, 245–246n53, 248
 Duan Yanzhi, 73, 78n31, 80n73
- East China Sea. *See also* China Seas
 China's near-seas active defense and, 116
 China's offshore defense strategy for, 202
 China's territorial disputes in, 199, 212n25, 288
 Chunxiao natural gas field dispute (2005),
 220–221
 first and second island chains in, 88 (map)
 Senkaku Islands as protective screen for, 54
- East Indies, 2, 4–5
- East Sea Fleet, PLAN's, 111, 113
- economic power. *See also* EEZs
 force as Chinese naval strategy *vs.*, 217, 241n8
 free trade as protection for SLOCs and, 71–73
 Japanese arrest of Chinese fishing vessel captain
 and, 291
 naval power and, 12–13
 Nye on soft power and, 241n10
- economy, China's
 Chinese naval development in 1980s and, 125
 expanding overseas interests for, increasing
 Chinese sea power and, 87, 131, 140n79
 foreign trade growth and, 139n73
 growth of, far-seas operations and, 132–133
 growth of, increased defense spending
 and, 127
 maritime, growth of, 131, 140n77
 maritime, territorial disputes and, 85–86
 maritime security strategy and, 103
 as percentage of world's total GDP, 140n82
 PLAN as instrument of statecraft and, 238
 PLAN as protector and contributor to growth of,
 74–77, 288–289
 world's economy and, 131
- education and training, PLAN's
 for an informatized military, 259–263
 improvement of, military modernization and,
 141
 programs for, 180–181
- EEZs (exclusive economic zones). *See also* conti-
 nental shelf
 in Asia-Pacific, 34
 China's, F-8 and EP-3 collision (2001) over,
 223–225
 China's, *Impeccable* harassed in, 225–227,
 243n32–33, 291
 China's, islands in South China Sea claimed
 for, 50
- China's, potential oil and natural gas deposits
 in, 131
- China's, questioning innocent passage through,
 59–61
- China's, UNCLOS and protection of, 59
- China's offshore defense strategy for, 202
- China's or Japan's, Chunxiao oil and natural gas
 field in, 242n13
- Japan's, Chinese survey ships and submarine in,
 231, 244n42
- PLAN's case for protection of, 57–58
- PLAN's operational range and control of, 98–99
- PLAN's operational role to borders of, 82
- Thailand's protection of, 35
- Vietnam's protection of, 36
- 8th Army, U.S., headquarters relocated from Seoul
 to Hawaii for, 30
- electronic warfare, training for, 260
- energy needs. *See also* oil resources
 budgeting for PLAN's mission and
 development of, 288–289
 China's increased demand for, 54–57
 security for natural resources *vs.*, 60–62
- EP-3 and F-8 collision (2001), 60, 223–225, 227,
 241n9, 242–243n22–32
- Europe. *See also* specific countries in
 PLAN's port visits to, 228, 229, 243–244n34
 Spanish control in, 3
- external security environment, perception of,
 changes in naval strategy and, 110
- F-35 Joint Strike Fighter (JSF), 27, 39n13
- Fang Yonggang, 184
- far-seas operations, China's
 capabilities for, 289
 as China's goal, 139n66
 development of, 134
 evolution of, 109–110
 factors for change in strategy to, 131–133
 lacking concrete objectives, 134
 as naval strategy for 21st century, 117 (map),
 129–130, 135n6, 140n85
 space-based C4ISR and, 256
- fast-attack craft, in PLAN's force structure,
 157–158
- fast-attack craft patrol vessels, Vietnam's *Svetlyak*-
 class, 36
- FB-7 fighter-bombers, 206
- Feng Liang, 73, 78n31, 80n73, 92, 95
- Fenghuo*-1 communications satellite, 257
- Fengyun*-1D and -3A weather satellites, 256

- Ferris, Stephen P., 271, 276–277
- fiber-optic communications, in China, 253
- fighter-bombers. *See also* long-range strategic bombers
- in China's layered defense, 203, 206–207
 - Chinese acquisition of (2000–2008), 24
 - Malaysia's acquisition of, 35
 - Mitchell's sinking of German surrendered battleships with, 211n9
 - in PLAN's force structure, 161–162
- fighting aircraft carrier battle groups. *See* aircraft carriers
- finance. *See* funding
- Fisher, Richard, 170n5
- fog of war, decentralized command and control and, 268
- Force* (Indian magazine), 159
- force structure, PLAN's
- aircraft carriers in, 149–153
 - amphibious ships in, 158–160
 - changes to non-force structure vs., 141
 - destroyers, frigates, and fast attack craft in, 153–158
 - fast-attack craft in, 157–158
 - interservice coordination issues and, 163–164
 - maritime relevant changes outside the navy and, 141–142
 - mine countermeasures (MCM) ships in, 160
 - naval aircraft in, 160–162
 - near-term and broader or longer-term goals and, 142–144
 - open-source projections of, 162–163
 - potential use in antiaccess strategies of, 166–168
 - potential use in Taiwan contingencies for, 164–166
 - potential use supporting broader or longer-term goals of, 168–169
 - submarines in, 144–149
- Foreign Military Sales (FMS) program, U.S., 185
- France
- British navy and, 6, 14, 194
 - China on regional defensive and offensive navy of, 139n66
 - Dutch navy and, 4
 - economic and naval power of, 13
 - Joint Maritime Search and Rescue exercises with China and, 186
 - military budget in, 26
 - PLAN's port visits to, 228
 - as previous rising naval power, 1, 5
 - Spanish navy and, 3
- Francis, Ed, 272
- Fravel, M. Taylor, 288
- free trade. *See also* economic power as protection for SLOCs, 71–73
- frigates. *See also* guided-missile frigates
- Chinese building of, 24
 - Chinese indigenously-built classes of, 156–157
 - Indian navy's procurement of, 33
 - Japanese, 28
 - Malaysia's acquisition of, 35
 - Singapore navy's procurement of, 34
 - Thailand's acquisition of, 35
- Fuchi*-class underway replenishment ships, 152
- funding
- availability of, changes in naval strategy and, 110, 127
 - China's naval expansion in Asia-Pacific and, 26
 - China's transformation to far-seas operations and, 134
 - English navy's techniques for, 6
 - increased, for PLAN, 74–77
- Gao Xincheng, 91, 95, 96
- General Armament Department's (GAD's) Survey and Mapping Bureau, 256
- General Staff Department (GSD), PLA, 269, 272
- Germany
- arms race with Britain and, 14
 - British navy and, 6
 - China on regional defensive and offensive navy of, 139n66
 - economy of, 21n3
 - geopolitical consequences for naval modernization by, 18
 - PLAN's port visits to, 228
 - as previous rising naval power, 1, 8–9
 - World War II naval strategy of, 194
- global positioning system (GPS)-enabled precision weapons, 192–193
- Global Times* (*Huanqiu Shibao*), 101
- globalization, post-modern navy and, 38
- GlobalSecurity.org, 163
- Gorshkov, Sergei, 122–123, 138n45, 212n25
- Great Leap Forward, China's, 115
- Great Power System, European-centered, 11
- Gu Zuhua, 92–93, 96
- Guam, 192, 232–233
- Guangxi Normal University, 180–181
- guided-missile destroyers (DDGs)
- China's deployment of, 140n86

- China's naval modernization and, 24, 153–156, 250
- China's near-coast defense and, 114–115
- China's near-seas active defense and, 120–122, 124, 126, 127
- displacement of, 136n18, 137n35, 137n37
- guided-missile frigates (FFGs)
- China's naval modernization and, 156–157, 250
 - in China's near-coast defense strategy, 114–115
 - in China's near-seas active defense, 120, 121–122, 128
 - displacement of, 137n35, 137n37
- Gulf War, PLA on centralized vs. decentralized command in, 270
- gunboat diplomacy
- China's nonuse of force policy and, 219–220
 - F–8 and EP–3 collision (2001), 223–225
 - Han*-class submarine encounter (1994), 221, 223, 242n19, 242n21
 - map of, 222
 - Sino-Japanese confrontation at Chunxiao natural gas field in (2005), 220–221
 - USNS *Impeccable* harassment (2009), 225–227, 243n32–33
- Guofang*. *See* *National Defense*
- Guojia Anquan Zhanlue Lilun* (*Theory of National Security Strategy*) (2006), 100
- haifang* (China's maritime defense), 42, 43–44, 45
- Hainan Island, 111, 225–227, 241n9, 243n32–33
- Haiyang* ocean monitoring satellites, China's, 257
- haiyang quanyi* or *haiquan* (China's maritime rights and interests). *See also* People's Liberation Army Navy
- changing definitions of, 41–42
 - lack of coordinated security strategy for, 102
 - navy-centric security strategy for protection of, 92–93
 - scope of, 90
 - sources for studying, 43–44
- Han*-class nuclear-powered attack submarines (SSNs), China's
- displacement of, 136n18
 - Guam patrol by (2004), 232–233
 - Kitty Hawk* carrier battle group and, 221, 222 (map), 223, 227, 242n19, 242n21
 - modernization of, 170n15
 - of 1980s, 124
 - of 1970s, 114, 115
 - Shang*-class submarines vs., 145
- HARPY unmanned combat aerial vehicles, Israeli, 162
- Hartnett, Daniel, 288
- H–6D fighter-bombers, 206
- Hekler, Garth, 272
- helicopter destroyers (DDH), Japanese *Hyuga*-class, 28–29
- helicopters
- China's ASW-type, 120
 - for China's Type-071 LPD amphibious warfare ship, 24
 - Indian navy's procurement of, 33
 - PLAN's ship-based, 162
 - Royal Australian Navy's, 27
 - South Korea's *Dokdo*-class amphibious assault vessels and, 30
 - Thailand's, 35
- Henry VIII, king of England, 6
- Herberg, Mikkal E., 72
- Honeywell MK46 Mod.2 antisubmarine torpedoes, 185
- Hormuz Strait, 70
- hostilities. *See also* combat
- free trade as protection for SLOCs and avoidance of, 73
- Houbei*-class fast-attack craft, China's, 157–158, 250
- hovercraft transports, Japanese, 28
- Hu Jintao
- on far-seas operations, 129
 - on informatization, 249
 - on the Malacca Dilemma, 63
 - on military safety, 177
 - on military training, 259–260
 - on naval modernization, 247, 288
 - PLAN as instrument of statecraft and, 238
- Hu Yanlin, 247, 248, 278n4, 279n5
- Huanjing* disaster/environmental monitoring constellation satellites, 257–258
- Huanqiu Shibao* (*Global Times*), 101
- humanitarian relief, 168, 235, 236, 245–246n53, 248. *See also* disaster relief
- Impeccable*, USS, 225–227, 243n32–33, 291
- India
- China on subregional navy of, 139n66
 - China's protection of SLOCs and, 67
 - China's treaty solving border dispute with, 198
 - Chinese aircraft carrier and naval program of, 292
 - Chinese border dispute with, 125
 - debate on increasing China's cooperation with navy of, 96

- Indian Ocean control and, 132
- Joint Maritime Exercises with China and, 186
- military budget in, 26
- naval expansion by, 23
- naval modernization by, 32–33, 288
- as naval threat, Chinese media on, 67–69
- PLAN's engagement in bilateral exercises with, 230
- PLAN's port visits to, 228
- as rising naval power, historical experience and, 19–20
- Indian Ocean
- China on India's capabilities in, 69–70
- Dutch naval power in, 4
- Indian navy's constabulary role in, 32
- Portuguese competition with Arab and Indian dominance of, 2
- as SLOC for China, 67, 289
- Indigenous Aircraft Carrier (IAC), of Indian navy, 33
- Indonesia, 25–26, 34–35, 218–219, 291
- The Influence of Sea Power Upon History, 1660–1783* (Mahan), 89, 123.
- See also Mahan, Alfred Thayer
- information technologies (IT). See also technology
- China's commercial sector for, military modernization and, 256
- India's military use of, 32
- PLAN's command structure and, 271
- retrofitting older Chinese minesweepers with, 255
- informatization, PLAN's
- C2 system and, 266–272
- centralization-decentralization balance and, 277–278
- C4ISR R&D trends, 258–259
- C4ISR systems for, 252–258
- as critical to modernization, 248–250
- ideal vs. good enough capability for, 274–276
- as key component of military transformation, 273–274, 286n157
- modernization and, 247–248, 279n16
- naval information and joint operations, 264–266
- resolving offense-defense balance in, 276–277
- training and education for, 259–263
- U.S. Navy's network centric warfare concept compared with, 274
- use of term, 250–252
- infrastructure, for China's far-seas operations, 130
- Institute for Defense Analyses, 212n25
- intelligence, surveillance, and reconnaissance (ISR)
- China's far-seas operations and, 130, 134
- China's force structure and, 169
- China's near-seas active defense and, 119–120, 121
- PLAN's informatization and, 270–271
- international cooperation. See also diplomacy; political power; statecraft
- China's maritime security strategy and, 82, 94
- increasing China's reliance on, 96–97
- international fleet review, Qingdao (2009), 230
- international law. See also United Nations Convention on the Law of the Sea
- China's claim in South China Sea under, 51
- China's defense of maritime rights under, 43
- China's increasing reliance on, 94–97
- China's maritime security strategy and, 82, 94
- naval blockade of Taiwan and, 119
- International Regulations for Avoiding Collisions at Sea, 226
- interoperability
- China's Defense White Paper (2006) on, 272
- naval expansion in Asia-Pacific and, 37–38
- of ROK and U.S. military forces, 30
- U.S. military and, 25
- Iraq during Gulf War, centralized command of, 270
- island chains. See also East China Sea; South China Sea; specific islands
- China's far-seas operations and, 129
- China's offshore defense and, 201–202
- first and second, 88 (map)
- in near-seas active defense, 116, 117 (map), 123
- PLAN's operational role beyond, 82, 99–102
- Israeli HARPY unmanned combat aerial vehicles, 162, 173n70
- Italy, 21n2, 21n6, 139n66, 228
- J–10 fighter-bombers, PLAN's, 161
- J–15 aircraft, PLA's, 291
- Jane's Fighting Ships*
- on China's air force, 161–162
- on China's aircraft carrier *Varyag*, 150–151, 171n38
- on China's incremental shipbuilding, 172n43
- on China's indigenously-built frigate classes, 157
- on China's submarines, 149
- on PLAN's mine countermeasures (MCM) ships, 160
- on PLAN's Type 071 amphibious ships, 158–159

- on PLAN's Type 081 amphibious ships, 159–160
- weapons for, 171n25, 171n26
- Japan
 - blockade of Malacca Strait and, 72
 - British navy and, 6
 - China and naval modernization of, 288
 - China on fisheries areas and quotas of, 86
 - China on India's cooperation with, 69
 - China on internationalizing South China Sea disputes by, 51
 - China on regional defensive and offensive navy of, 139n66
 - China's aircraft carrier and naval program of, 291–292
 - China's protection of SLOCs and, 67
 - China's territorial disputes with, 199, 291
 - Chinese survey ships and submarine in EEZ of, 231, 232–233, 244n42
 - debate on increasing China's cooperation with navy of, 96
 - economic downturn in, 21n4
 - geopolitical consequences for naval modernization by, 18
 - military budget in, 26
 - Modern Navy* on piracy response by, 66
 - naval expansion by, 23, 28–30
 - PLAN's surface action group in Western Pacific and, 234
 - as previous rising naval power, 1, 9–10
 - Senkaku Islands dispute between China and, 52–54, 78n17
 - territorial disputes and naval expansion by, 25–26
 - U.S. Navy and, 11–12
 - World War II naval strategy of, 194
- Japanese Maritime Self-Defense Force (JMSDF), 220–221, 222 (map)
- Japanese Navy, in Chinese coastal waters, 132
- JH-7 fighter-bombers, PLAN's, 162, 206
- Jiang Zemin
 - on far-seas operations, 129, 133
 - on PLA mechanization, 140n85
 - preference for nonuse of force by, 217, 219, 241n4
 - on sea consciousness, 82, 91
 - Wang Shouye and, 178
- Jiang Zhijun, 48
- Jianghu*-class guided-missile frigates (FFGs), China's, 114–115, 120, 262
- Jiangkai*-class guided-missile frigates (FFGs), China's, 121, 137n37, 172n54, 250
- Jiangnan Shipyard, 146
- Jiangwei I*-class and *Jiangwei II*-class frigates, China's, 157
- Jiefangjun Bao*. *See* *PLA Daily*
- Jin Canrong, 101–102
- Jin*-class submarines, China's
 - commissioning of, 148 (table), 170n10, 171n33
 - description and armaments of, 122, 144–145
 - displacement of, 137n41
 - in Japan's EEZ, 231
 - naval modernization and, 290
- Jin Yanan, 54
- JL-2 submarine-launched ballistic missiles (SLBMs), 144–145, 170n12, 251, 290
- joint campaigns, combined arms campaigns vs., 284–285n119
- Joint Maritime Exercises, with China and various countries, 186, 288
- joint operations, Chinese
 - Auftragstaktik* on general guidance for, 271
 - dual command structure and, 272
 - lack of military integration for, 289
 - naval information and, 264–266, 285n122
 - near-seas active defense and, 118
 - PLAN's participation in training for, 260
 - PLA's command and control in, 253, 280n28
- joint operations manual, China's, 266
- Journal of Political Work (Zhengong Xuekan)*, 90
- Junshi Jingji Yanjiu (Military Economic Research)*, 87
- Junzhong Zhanlue Xue (Science of Service Strategy)*, 101
- Kazakhstan, China's treaty solving border dispute with, 198
- KDX (Korean Destroyer Experimental) ships, 31
- Keithly, David M., 271, 276–277
- key point strikes, 205, 213n38
- Kilo*-class submarines
 - China's, 24, 127, 137n38, 146
 - China's naval modernization and, 148 (table), 171n30, 171n33, 251
 - Vietnam's, 36
 - weapons for, 171n24
- Kitty Hawk*, USS
 - Han*-class submarine encounter with, 222 (map), 223, 232–233, 242n19, 242n21
 - Song*-class submarine encounter with, 233, 245n46–49
- Korea. *See also* North Korea

- Japanese control of, 10
 Republic of (*See* South Korea)
- Kuomintang (KMT) forces, 86, 111. *See also* Taiwan
- Kurile Islands, 116
- Kyrgyzstan, China's treaty solving border dispute with, 198
- land-attack cruise missiles (LACM), South Korea's *Hyunmoo IIIC*, 31
- landing ships. *See also* LPD amphibious warfare ships
 Singapore's *Endurance*-class, 34
- Law of China's EEZ and Continental Shelf (1998), 74
- Law of China's Territorial Waters and Contiguous Zone (1992), 74
- layered defense. *See also* near-seas active defense; offshore defense
 China's, 202–204, 206–207
 Soviet approach to, 203–204, 213n31
- Lee Teng-hui, 47–48
- Lewis, John Wilson, 272
- Li Peng, 217, 219, 241n4
- Liaowang (Outlook)*, 93
- Liberation Army Daily*, 260, 265
- Liebman, Alex, 288
- Lijphart, Arend, 110
- Liu Huaqing
 on active combat, 138n47
 on China's nuclear capabilities (1989), 116
 civilian leadership and near-seas active defense by, 124
 constraints on change in strategy and change in capabilities for, 124–126
 on far-seas operations, 129
 Gorshkov and, 138n45, 212n28
 on incremental naval development, 138n63
 Mahan and, 138n45
 near-seas active defense and, 116, 119, 122–123, 136n24, 136–137n25
- Liu Shuiming, 91, 97
- Liu Xinhua, 83, 87, 99–100
- Liu Xuxian, 57
- Liu Yijian, 87, 99, 100, 107–108n95
- Liu Zhenhuan, 57, 58, 59, 92
- Liu Zhongmin, 83
- Logistics Academy, China, 182
- long-range strategic bombers, China's, 99, 100, 115, 132, 134. *See also* fighter-bombers
- LPD (landing platform dock) amphibious warfare ships
 China's deployment in Gulf of Aden of, 290
 Chinese launching of, 24
 Indonesia's procurement of, 34
 Lu Rude, 83–84, 85, 93, 95
Luhai-class destroyers, China's, 120, 126, 154–155
Luhu-class destroyers
 China's, foreign technology and, 126, 138n54
 China's construction of, 154–155
 China's near-seas active defense and, 120, 124
 displacement of, 137n35
 U.S. restrictions on engines for, 172n43
 Luo Xianlin, 57, 91
 Luo Yuan, 238
 Luo Yuru, 91, 92, 98, 106n54
 Lushun Naval Base, Ship Captain Training Center at, 262
Luyang I-class and *Luyang* II-class guided-missile frigates (FFGs), China's
 armaments and features of, 154–156
 China's naval modernization and, 152, 250, 279n16
 China's near-seas active defense and, 121, 122, 128
 displacement of, 137n37
Luzhou-class guided-missile destroyers (DDGs), China's, 121, 137n37, 152, 154, 156, 250
- Ma Lixin, 177–178
- Ma Yingjeou, 138n59
- Macao, 3
- Mahan, Alfred Thayer
 on battleships and sea power, 19
 China's near-seas active defense and, 123, 138n45
 Chinese on sea power theory of, 83
 as product of U.S., 11
 on sea consciousness, 89
 sea control and sea denial concepts and, 211n13
 major strategic direction, of PLA, 198
- Malabar Exercises (2007), 69
- Malacca Strait
 Chinese concerns on Indian control of, 70
 Chinese concerns on piracy as excuse for foreign naval operations in, 65, 66
 Chinese concerns on security in, 63–64, 87
 free trade as protection for, 72
 U.S. on control of (1986), 67
- Malaysia, 25–26, 35, 291
- Malaysian Maritime Enforcement Agency (MMEA), 35
- Mandab Strait, 70

- Mao Zedong, 1, 111–112, 115–116, 267
- Maritime Patrol Detachment, China, 54
- maritime rights and interests. *See haiyang quanyi* or *haiquan*
- Maritime Safety Agency, China, 54
- maritime security strategy. *See also* naval strategy
international law and cooperation roles in, 94–97
lessons learned from Chinese writings on, 102–104
navy-centric vs. comprehensive, 92–94
PLAN's operational range and, 97–102
scope of research on, 104n5
sea consciousness and, 88–91
sea power with Chinese characteristics as, 83–88
themes of Chinese writings on, 81–82
- Maritime Self-Defense Force (MSDF), Japan, 28, 29–30, 38
- McDevitt, Michael, 289, 290–291
- McVadon, Eric, 288
- Mediterranean Sea, 3, 7, 8
- Melbourne*, HMAS, China's purchase of, 150
- Middle East. *See also* Africa, Horn of;
Malacca Strait
China's protection of shipping lanes for oil from, 43
PLAN's role in sea-lane security in, 101–102, 108n102, 233–234
- MiG-29 series fighters, 33
- military academies, Chinese, 181
- military authors, civilian authors vs., on China and international law, 95–96
- military communications networks. *See* communications
- Military Economic Research (Junshi Jingji Yanjiu)*, 87
- Military History Research Department, Academy of Military Science (AMS), 270
- military operations other than war (MOOTW), 248
- minesweepers
China's naval modernization and, 160
for China's near-coast defense, 113
for China's near-coast in 1950s and 1960s, 114–115
older Chinese versions of, refitting with modern information technology, 255
- Ming*-class submarines, China's, 120–121, 127, 137n34, 137n36, 147, 148 (table)
- Ming* Submarine No. 361 accident (2003), 175, 176–177
- Ministry of Foreign Affairs (MFA), China, 53
- Mischief Reef, Chinese occupation and fortification of (1995), 218, 219, 241–242n12
- missiles. *See also* surface-to-air missiles
conventional systems for, Chinese building or acquisition of, 24
Japan's national defense system using, 29
Singapore navy's procurement of, 34
Standard SM-3 Block IA, Japan and U.S. development of, 29
- mission type orders, PLAN's informatization and, 270–271
- Mitchell, William “Billy,” 211n9
- Miyako Strait, PLAN task force sailing through (2010), 291
- modeling, of complex electromagnetic conditions, 260
- Modern Navy (Dangdai Haijun)*. *See also* Gu Zuhua
on China's claims to Senkakus, 52
on China's claims to Spratlys, 48, 50–51
on China's sea power, 85
on energy security vs. resource security, 60–62
on free trade and protection for SLOCs, 71–73
on Indian naval base in Andaman Islands, 70–71
on Indian navy, 67–69
on maritime resources, 55–57
on piracy potential in the Malacca Strait, 64–65
on PLAN's operational range, 98–99
on sea lane security, 63–64
on Senkakus' strategic value, 53–54
for studying PLAN's evolving interests and potential influence, 44
on Taiwan's role as China's gate to the Pacific, 48
on Taiwan's sovereignty, 45, 47
on UNCLOS effect on China's maritime interests, 59
- Molniya*-class fast aircraft, Russian Project 12421, China's acquisition of, 158
- Mullen, Mike, 38
- multilateral exercises, PLAN's engagement in, 229–230, 288
- Mulvenon, James, 253, 272
- Nanking, Treaty of (1842), 198
- Napoleon, 5, 194
- National Defense (Guofang)*
on energy security vs. resource security, 60–62
on increased naval budget and economic development, 74–75
on Indian navy, 67–68, 70

- on maritime resources, 55, 56
- on sea lane security, 63–64
- on Senkakus' strategic value, 53
- for studying PLAN's evolving interests and potential influence, 44
- National Defense Student Program, China, 180
- National Defense University, 212n25
- National Defense White Paper (2004), 186
- National Defense White Paper (2006). *See* Defense White Paper (2006), China's
- National Institute for South China Sea Studies, 259
- Natuna Islands gas fields, 218–219, 241n11
- natural resources. *See also* oil resources
 - budgeting for PLAN's mission and development of, 75–76, 288–289
 - importance to Chinese national security of, 220
 - maritime, PLAN's case for, 57–58
 - offshore, China's increased demand and, 55
 - PLAN's focus on China's increased demand for, 54–57
 - security for energy resources *vs.*, 60–62
- naval blockade. *See* blockades
- Naval Command Academy, 96. *See also* Feng Liang; Zhang Xiaolin
- Naval Engineering University, China, 182
- naval information, joint operations and, 264–266
- Naval Military Art Research Institute, China's, 126, 131
- naval objectives, of rising naval powers, 15
- naval policy and doctrine, rising naval powers and, 15
- naval power. *See also* rising powers
 - alliances due to, 15–16
 - arguments and objectives for development of, 17
 - arms races and, 14
 - combat and, 13–14
 - economic wealth and, 13
 - geopolitical consequences for modernization of, 17–19
 - political, military, and economic powers and, 12
 - technology and, 14–15
 - views and uses of by rising powers, 16–17
- naval research, naval strategy changes and institutionalization of, 110
- naval strategy. *See also* antiaccess; maritime security strategy
 - changes in China's type of, 109–110
 - for China's far-seas operations, 129–133
 - for China's near-coast defense, 111–116
 - for China's near-seas active defense, 116–129
 - implications for China's shifts in, 133–135
 - before radar and satellites, 193–195
 - variables or factors for changes in, 110
- navy-centric security strategy
 - case for, 92–93
 - comprehensive maritime security strategy *vs.*, 82, 103
- navy cities, for China's far-seas operations, 130
- NCO School, Bengbu, Anhui Province, China, 182
- near-coast defense, China's
 - accounting for change in capabilities in 1970s and, 115–116
 - battlespace constraints on, 132
 - evolution of, 109–110
 - naval capabilities for, 114–115, 136n16, 136n19
 - as naval strategy, 111–114, 135n6
- near-seas active defense, China's
 - accounting for change in capabilities to, 122–126
 - change in naval capabilities for, 120–122
 - changing strategy effect on changing capabilities for, 126–129
 - evolution of, 109–110
 - naval modernization and, 134, 247
 - as naval strategy, 116, 117 (map), 118–120
- Nelson, Horatio, 5, 194
- Netherlands, 1, 2, 3, 4–5, 6, 13
- network centric warfare, U.S. writings on, 251, 274, 279n19
- New Historic Missions, for modernized Chinese navy, 248, 279n6
- Ni Lexiong, 97
- Niu Baocheng, 41
- noise issues
 - for conventional-powered submarines, 209–210
 - for guided-missile destroyers, 154–155
 - for guided-missile frigates, 127
 - for *Ming*-class submarines, 120
 - for nuclear-powered attack submarines, 170–171n19
- noncombatant evacuation operations (NEOs), PLA preparation for, 248
- noncommissioned officers, PLAN's, 180–183
- North America, European colonialism in, 3, 5, 211n7
- North Atlantic Treaty Organization (NATO)
 - British and, 7
 - Dutch and, 5
 - French navy and, 5
 - Portugal and, 3
 - Spain and, 4
 - U.S. and, 12

- West German navy and, 9
- North Korea, 86
- North Sea Fleet, PLAN's, 111, 113
- North Sword 0709* exercise, 260
- nuclear-powered attack submarines (SSNs)
- China's military modernization and, 143
 - China's near-coast defense and, 114, 115
 - China's near-seas active defense and, 122, 124
 - displacement of, 136n18, 137n40
 - noise reduction for, 170n19
 - in PLAN's force structure, 144, 145–146, 148 (table)
 - Soviet, during Cold War, 196
- nuclear-powered ballistic missile submarines (SSBNs). *See also* *jin*-class submarines
- China's, 115–116, 120
 - China's command structure for deployment of, 272, 286n152
 - Type 094, China's naval modernization and, 251
- nuclear submarines, for Indian navy, 33
- Nye, Joseph, 241n10
- ocean survey vessels, Chinese, 231, 244n42, 254, 280n37
- Oceania, Spanish control of, 3
- offshore defense, Chinese policy of, 197–199, 201 (map)
- offshore patrol vessels
- Malaysia's, 35
 - Thailand's, 35
- oil resources. *See also* natural resources
- China's increased demand for, 55
 - confrontation at Chunxiao natural gas field over, 220–221, 222 (map)
 - imported, China's dependence on, 131, 139–140n75
 - protecting SLOCs for delivery to China of, 62, 63, 67, 71–73
- Okinawa, 192
- operational art and tactics, rising naval powers and, 15
- Opium War, first, 198
- organization culture, PLA's, 265–266, 271
- Osborn, Shane, 223–224
- Ottoman Empire, 1, 21n2
- Outlook (Liaowang)*, 93
- overseas Chinese, increased sea power for protection of, 87–88, 131
- Pacific Forum/Center for Strategic and International Studies, 212n25
- Pacific Ocean, 3, 7, 143–144, 210. *See also* Asia-Pacific
- Pakistan, 140n87, 186, 228, 230
- Palk Strait, 70
- Pan Shiyang, 51
- Paracel Islands
- China's and Vietnam's claims to, 48
 - China's seizure in 1974 of, 136n15, 219, 241n12
 - Chinese aircraft carrier and claims to, 292
 - Chinese naval base on, 140n87
 - disputes over, 25, 86
 - Filipino and Vietnamese vs. Chinese claims to, 218
 - Woody Island airfield in, China's offshore defense strategy and, 202
- P-3C long-range maritime patrol aircraft, 33, 221
- Peace-07 exercise (2007), 230, 244n39
- peacekeeping, 37, 248, 279n5
- Peng Guangqian, 267, 268–269, 272. *See also* *The Science of Military Strategy*
- People's Daily (Renmin Ribao)*
- on China's claims to Senkakus, 52–54
 - on China's claims to Spratlys, 48–50
 - on China's maritime resources, 55, 56
 - on energy security vs. resource security, 60–62
 - on Indian navy, 67–68
 - on piracy potential in the Malacca Strait, 64–65
 - on sea lane security, 63–64
 - for studying PLAN's evolving interests and potential influence, 44
 - Taiwan dispute in, 46, 47–48
- People's Liberation Army Air Force (PLAAF), 141–142, 192, 199, 205, 206–207
- People's Liberation Army Navy Air Force (PLANAF), 152, 206–207, 224–225, 242–243n22–32
- People's Liberation Army Navy Party Committee, 197
- People's Liberation Army Navy (PLAN). *See also* far-seas operations; force structure; informatization; near-coast defense; near-seas active defense; personnel; statecraft
- antiaccess role for, 192
 - changing definition of *haiyang quanyi* and *haifang* and, 41–42
 - Chunxiao natural gas field confrontation with Japanese and, 220–221, 222 (map)
 - comprehensive maritime security strategy vs. security strategy centered on, 82, 92–94
 - Deng's people's war against Soviets and, 112–113
 - economic development and, 74–77

- evolving interests and potential influence of, 41–77
- funding for, 26, 199
- limited joint operations with other services by, 289
- Mao's people's war against Soviets and, 111–112
- maritime combat buildup by, 24
- on maritime rights and resource security, 54–62
- on maritime sovereignty disputes, 44–54
- McVadon on maritime cooperation with U.S. and, 245–246n53
- modernization of, 247–248, 279n5, 287
- modernized, nonuse of force by, 219
- operational range of, 82, 97–102, 103, 129
- overseas bases for, call for, 99, 101–102, 108n102, 290
- overseas bases for, China's rise as peaceful power and, 134–135
- overseas bases for, denial of, 245n51
- overseas bases for, reports of, 140n87
- on protecting sea lines of communications, 62–74
- role of, debate on, 82
- scope of research on, 42–43
- sea power definition debated for, 81–82
- sources for studying policies of, 43–44
- SSBN deployment and, 272
- People's Liberation Army (PLA). *See also* *PLA Daily*
 - on active defense, 191–192
 - centralized vs. decentralized command debate in, 269–270, 285n143
 - changing role and responsibility of, 41
 - downsizing of, 127, 138n49, 138n60
 - organization culture of, 265–266, 271
 - sources for studying policies of, 43–44
- People's Liberation Army Second Artillery, 192, 199, 204, 208
- People's Navy*, 259–260, 263, 282n74
- Perry, Matthew, 9
- personnel, PLAN's
 - Communist Party and, 183–184
 - economic corruption by, 178–179
 - foreign influence on navy modernization and, 184–186
 - improvement of, 141, 187–188
 - informatization and training and education for, 259–263
 - leadership development for, 179–181
 - operational changes for, 181–183
 - operational deficiencies of, 176–178
 - preparation for high-tech war and, 175–176
 - recruitment and education of, 261–262
 - transparency issues for foreign military ties of, 187
- Peter the Great, 7, 18
- Philippines, 25–26, 86, 116, 218
- piracy
 - budgeting for PLAN's mission and deterrence of, 75–76
 - China's economic interests and, 289
 - China's energy needs and, 73
 - China's surface ships as escorts of merchant ships targets for, 168–169
 - joint exercises (2001 and 2004) for curbing, 69
 - in the Malacca Strait, 64–67
 - naval expansion in Asia-Pacific and deterrence of, 37
 - PLAN's participation in Horn of Africa operations against, 101–102, 108n102, 233–234, 245n50, 287
 - Task Force 151 and, 245n50
- PLA Daily* (*Jiefangjun Bao*)
 - on China's claims to Senkakus, 52–54
 - on China's claims to Spratlys, 48–50
 - on European port visits, 243–244n34
 - on Indian navy, 67–68, 70
 - Ma Lixin interview on *Ming* accident in, 177–178
 - on piracy potential in the Malacca Strait, 64–65
 - PLAN and PLA discussions of Taiwan in, 45–48
 - on PLAN as an instrument of statecraft, 236–237
 - on sea lane security, 63–64
 - for studying PLAN's evolving interests and potential influence, 44
- Politburo Standing Committee, China, SSBN deployment and, 272
- political power. *See also* diplomacy; international cooperation; statecraft
 - naval power and, 12–13
 - potential Chinese antiaccess strategies against U.S. using, 168
 - for protecting China SLOCs, 73–74
- port visits, by PLAN ships, 168, 228–229, 243–244n34, 288
- Portugal, 2–3, 6, 13, 16
- post-modern navy concept, 38
- press, Chinese, on naval informatization, 252, 279–280n23
- Project 12421 *Molniya*-class fast aircraft, Russian, 158
- Qing Dynasty, 1, 132

- Qingdao's 4808 Factory, 170n19
- Qiongzhou, Strait of, 111
- Qiu Xin*-class fast-attack craft, China's, 157–158
- Qu Dian* military C4ISR system, 253
- Quadrennial Defense Review (QDR), 210
- radars, high-powered, 194–195
- radio signal intercept, 194–195
- RAND, 166–168, 193
- reconnaissance ships, Chinese, communications capabilities of, 254–255, 280n37
- Reddinger, Jack, 223
- regional economic interests, increasing Chinese sea power and protection of, 85–88
- Remin University, China, 180–181
- remotely operated vehicles (ROVs), China's, 259
- Ren Xiao, 263
- Renmin Ribao*. *See People's Daily*
- Republic of Korea. *See* South Korea
- Republic of Korea Navy (ROKN), 30
- Republic of Singapore Navy (RSN), 34
- Research Center for Evaluating Naval Equipment, China's, 126
- residual navies, of previously rising powers, 16
- revolution in military affairs (RMA), China's far-seas operations and, 133
- Revolutionary War, British invasions and, 211n7
- Richelieu, Cardinal, 5
- rising powers
- observations, comparisons, and conclusions on, 12–16
 - previous, review of, 1–12
 - questions regarding, 16–20
- Romeo*-class submarines, China's, 114–115, 136n17, 147
- Roughead, Gary, 230, 233, 244n37
- Royal Australian Air Force, 27
- Royal Australian Navy (RAN), 27
- Royal Malaysian Navy (RMN), 35
- Royal Thai Navy (RTN), 35–36
- Russia. *See also* Soviet Union
- aircraft carrier transferred to India by, 32–33
 - British navy and, 6
 - China on regional defensive and offensive navy of, 139n66
 - China's negotiations on naval fighters from, 160
 - China's treaty solving border dispute with, 131, 198
 - Chinese military modernization and, 184–185
 - geopolitical consequences for naval modernization by, 18
 - GLONASS satellite navigation system, China's use of, 257
 - military budget in, 26
 - Pacific Fleet of, in Chinese coastal waters, 132
 - PLAN's bilateral exercises with, 229–230, 244n38
 - as previous rising naval power, 1, 7–8
- Ryukyu Islands, 116
- Sanjiang University, China, 180–181
- satellites
- Chinese, 253, 254, 256–258
 - coastal defense before radar and, 193–195
- The Science of Campaigns (Zhanyi Xue)*
- for studying PLAN's evolving interests and potential influence, 44
 - piracy deterrence not mentioned in, 65
 - on attacks against coral islands and reefs, 50, 53
 - on informatization, 251
 - on integrated C4ISR systems, 255
 - on joint blockade campaigns, 264–265
- The Science of Military Strategy* (Peng Guangqian and Yao Youzhi), 191–192, 198, 264, 265
- The Science of Service Strategy (Junzhong Zhanlue Xue)*, 101
- sea consciousness, 82, 88–89, 90, 124
- sea control zone, Soviet, 196, 200 (map), 201–202
- sea denial. *See* antiaccess
- sea denial zone, Soviet, 196, 200 (map), 201, 202–204
- sea lane security, media coverage in China on, 63
- sea lines of communication (SLOCs)
- around Singapore, 34
 - budgeting for PLAN's mission and protection of, 75–76
 - China's near-seas active defense and, 118
 - China's protection of, 42, 43
 - Chinese concerns on Indian control of, 70
 - disputes over Paracel and Spratly island chains and, 25–26
 - diversity of opinions on protection of, 62–64
 - foreign bases for China and protection of, 245n51
 - free trade as protection for, 71–73
 - imported oil to China through, 131
 - Japanese navy's protection of, 28
 - politics as protection of, 73–74
 - protection of, China's military modernization and, 143
 - Soviet navy's protection of, 7–8, 15
 - stronger Chinese navy as protection for, 74

- sea power
 command of the sea vs., 105n13
 extent of, 84–85
 increasing, arguments for, 85–88
 range of definitions for, 81–82, 83–84
- sealift ships, Japanese high-speed, 28
- Sealock, Neal, 243n28
- search and annihilation, for China's near-seas active defense, 119
- security and stabilization operations, naval expansion in Asia-Pacific and, 37
- security threats, traditional, increasing Chinese sea power due to, 86–87
- Self-Defense Force (SDF), Japan, 28
- senior officer exchanges, PLAN's, 234–235
- Senkaku Islands
 China's focus on sovereignty of, 45
 Chinese aircraft carrier and claims to, 292
 Chinese fisherman arrested by Japanese Coast Guard and, 78n17, 291
 disputes over, 86
 importance of Chunxiao oil and natural gas field vs., 221
 PLA media coverage of China's dispute with Japan over, 48, 52–54
- Service Arms Command Academy, China, 182
- severe acute respiratory syndrome (SARS) epidemic, 176–177
- Shandong University of Science and Technology, 180–181
- Shang*-class (Type 093) nuclear-power attack submarines, China's
 commissioning of, 148 (table), 171n33
 displacement of, 137n40
 in Japan's EEZ, 231
 naval modernization and, 144, 145–146, 251
 near-seas active defense and, 122
 noise issues for, 170–171n19
 production of, 170n17
- Shanghai Cooperation Organization (SCO), 198
- Shenzhen* destroyer, European port visits by, 229
- Shi Lang*. *See Varyag* aircraft carrier
- Shi Yunsheng, 197, 234–235
- shipbuilding industry, China, civil-military integration of, 128–129
- short takeoff and vertical landing (STOVL) aircraft, 27, 39n13
- simulation, of complex electromagnetic conditions, 260
- Singapore, 25–26, 34
- Sino-Japanese War (1894), 14, 132
- Sino-Russian Good Neighborly Treaty of Friendship (2002), 198
- slavery, Dutch navy and, 4
- SLOCs. *See* sea lines of communication
- small battle groups, China's far-seas operations and, 130, 139n70
- SMD (Seabased Midcourse Defense), 27, 29
- soft power, China's use of, 218, 229, 241n10
- Song*-class submarines
 China's commissioning of, 148 (table), 171n33
 China's naval modernization and, 122, 137n39, 144, 147, 251
 shadowing USS *Kitty Hawk* (2006), 233, 245n46–49
Yuan-class submarines and, 146
- Soryu*-class diesel-electric submarines, Japanese, 29
- South America, European colonialism in, 3, 5
- South Atlantic Ocean, Portuguese dominance of, 2
- South China Sea. *See also* China Seas
 China's claimed territory in, 89 (map), 288
 China's claims to Spratlys in, 48–51, 199
 China's near-seas active defense and, 116
 China's offshore defense strategy for, 202
 as Chinese core interest, 238, 289, 291
 digital chart of, 259
 F–8 and EP–3 collision (2001) over, 60, 223–225, 242–243n22–32
 first and second island chains in, 88 (map)
 as historical Chinese waters, Chinese government on, 76
 as historical Chinese waters, UNCLOS and, 51
- South Korea
 blockade of Malacca Strait effects on, 72
 China's disputes over fisheries areas and quotas of, 86
 Chinese aircraft carrier and naval program of, 291–292
 military budget in, 26
 recent naval developments in, 30–32
 territorial disputes and naval expansion by, 25–26
 U.S. Air Force bases in, 192
- South Sea Fleet, PLAN's, 111
- Southeast Asia. *See also* ASEAN states; Asia-Pacific
 naval expansion in, 23
 recent naval developments in, 34–36
- sovereignty disputes. *See* territorial disputes
- Soviet Ocean Surveillance System (SOSS), 196, 203
- Soviet Union. *See also* Russia
 Chinese border dispute with, 125
 Chinese military modernization and, 185

- Cold War maritime defensive strategy of, 142, 195–196, 200 (map), 201
- Deng's people's war against, 112–113
- intelligence-collecting vessels sent to distant waters by, 226
- Liu Huaqing on incremental naval development by, 138n63
- Mao's people's war against, 111–112
- nuclear deterrent forces of, 14
- PLAN's near-coast defense against, 113–114
- Victor III*-class SSNs, 145
- Sovremenny*-class guided-missile destroyers (DDGs)
- China's naval modernization and, 24, 121–122, 127, 153, 250
- in Chunxiao gas field area (2005), 220–221, 222 (map)
- displacement of, 137n37
- space-based C4ISR, Chinese improvement of, 255–256
- Spain, 1, 3–4, 6, 13, 16
- Spratly Islands
- China's focus on sovereignty of, 45
- China's seizure in 1988 of, 219, 241n12
- Chinese aircraft carrier and claims to, 292
- Chinese naval development in 1980s and dispute over, 125
- Chinese occupation and fortification of Mischief Reef in (1995), 218
- disputes over, 25, 86, 199
- PLA media coverage of China's claims to, 48–51
- Vietnam and, 36
- Sri Lanka, 228
- Stalin, Josef, 7
- State Oceanic Administration (SOA), China, 257
- statecraft
- conventional and traditional use of PLAN as instrument of, 227–236
- future prospects for Chinese and American, 238–240
- gunboat diplomacy in place of, 219–227
- PLAN as instrument of, 236–237
- proclaiming preference for, 216–219
- Zheng He's nonuse of maritime power force for, 215, 216
- Stipulated Technical Procedure for Maritime Terrain Digitized Satellite Surveying and Mapping, 258
- Strategic Forces Bureau, China's SSBN force and, 272
- Strategic Project for Talented People, PLA's, 262
- Su-33 Flanker D naval fighters, 161
- Su-30 Flanker naval fighters, Malaysia's, 26
- Su-33 Flanker naval fighters, 149, 171n38
- Su-30 MKK 2 Flanker land-based fighters, 161–162, 206
- Submarine Academy, China, 182
- submarines. *See also* nuclear-powered attack submarines; nuclear-powered ballistic missile submarines; nuclear submarines; specific classes of
- China's, ambush and sabotage by, 135n10
- China's, characteristics of, 144
- China's acquisition and building of, 121–122
- China's antiaccess campaign and, 207–208
- China's commissioning of, 147–148, 148 (table)
- China's nuclear-powered vs. conventional, 148–149
- Chinese simulations for training in, 260, 282n81
- conventional-powered, quietness of, 209–210
- increases in, for Republic of Korea Navy, 31–32
- of Indian navy, 33
- Japanese, 28, 29
- in layered defense, 203
- Malaysia's acquisition of, 35
- of Royal Australian Navy, 28
- Singapore navy's procurement of, 34
- Sunda Strait, 70
- supervision and inspection, high-bandwidth secure communications and, 267–268
- suppression of outlying islands, for China's near-seas active defense, 118–119
- surface action group, PLAN's, in Western Pacific (2010), 234
- surface combatants, in layered defense, 203–204
- surface-to-air missiles
- SM-2 Block IIIA, for KDX-II ships, 31
- SM-2 Standard, for Royal Australian Navy, 27
- surveillance
- for China's antiaccess campaign, 205–206
- China's conventionally-powered submarines and, 207
- of ocean approaches to China, 202–203
- Swartz, Peter, 292
- T-AGOS ocean surveillance ships, U.S., 243n32
- Taiwan. *See also* antiaccess; Taiwan contingency
- abandonment of independence efforts by, 138n59
- assertiveness of, PLAN's budget and, 76
- China's concerns on U.S. arms sales to, 238
- China's far-seas operations and, 131
- China's focus on sovereignty of, 43, 45, 47–48, 77n3

- China's naval modernization and, 247–248, 278n4
- China's near-seas active defense and, 116, 118–119, 127
- China's offshore defense strategy and independence declaration by, 204–205
- China's potential military options regarding, 173n76, 173n77
- Chinese gunboat diplomacy and, 227
- Chinese national security and, 220
- Chinese naval development in 1980s and dispute over, 125
- dispute over, as reason for increasing Chinese sea power, 86
- dispute over, China's military modernization and, 143
- as disputed island, 199
- disputes over and naval expansion by, 25–26
- Dutch occupation of, 4
- Japanese control of, 10, 14
- maritime security strategy and issue of, 103–104
- National Security Bureau of, on China's DF–21D ASBMs, 258
- PLAN's bilateral exercises with Russia as threat to, 229–230
- Portugal and, 2
- Taiwan contingency. *See also* antiaccess
- China's naval modernization and, 287–288
- China's potential military options for, 164–166, 205, 289
- Han*-class submarine encounter (2004) and, 232–233
- military conflict potential over, 127, 131
- Taiwan Expedition (by Japan, 1874), 9
- Taiwan Strait, 111, 118, 141, 202, 204–205
- Taiwanese independence forces. *See* Kuomintang (KMT) forces
- Taiwanese Navy, 132
- Tang Fuquan, 59, 60, 74
- Task Force 151, 245n50
- task-oriented command style, PLA on, 270
- technology. *See also* information technologies
- availability of, changes in naval strategy and, 110, 127–129, 138n64
- centralized command and control and, 267
- China's transformation to far-seas operations and, 134
- English navy's investment in, 6
- foreign, Liu's construction and deployment of *Luhus* and, 126, 138n54
- mineral resources for, in oceans near China, 131, 140n76
- naval development in 1980s and, 125
- naval superiority and flow of, 14–15
- neutrality of, 38
- for nuclear submarines, Mao on national identity and, 115–116
- professional education and training in China on, 180–181
- territorial disputes
- China's borders with various countries as, 86, 125
- China's potential force structure options in, 168
- Chinese national security and, 220
- Chinese ships in Japan's EEZ and, 231
- islands offshore China including Taiwan and, 43
- maritime, China's military modernization and, 143, 288, 291
- naval expansion in Asia-Pacific and, 25–26, 37
- over borders, China's resolution of, 131, 197, 198
- over Taiwan, South China Sea, and East China Sea, 44–54
- PLA Daily* on EP–3 incident (2001) as, 60
- war between India and China over (1962), 228
- territorial integrity, 86
- territorial waters. *See also* EEZs
- definition of, 104n9
- innocent passage through, China's questioning of, 59–60
- islands in South China Sea as China's claim for, 50
- terrorism, 64, 66–67, 73
- Thailand, 35–36, 186
- theater-range ballistic missiles (TBMs), 142, 169n3
- Theory of National Security Strategy (Guojia Anquan Zhanlue Lilun)* (2006), 100
- Thousand-Ship Navy, Mullen's proposal for, 38
- threat-based planning, Chinese equivalent of, 198
- threats, to rising naval powers, 15
- Tiananmen Square incident (1989), 172n43, 180, 185, 229
- Tianlian* data relay satellites, China's, 256, 258
- Tibet, China and ethnic unrest in, 135
- Till, Geoffrey, 38
- TNI (Indonesian armed forces), 34–35
- Tonkin Gulf, China's offshore defense strategy for, 202
- torpedo, gun, and missile boats, for China's near-coast defense, 113, 114–115
- Triservice Tactical Information Distributed Network, Chinese, 253
- Turkey, 21n2, 21n6
- two state theory (*liangguo lun*), *PLA Daily* criticism of, 47–48
- Two Transformations program, informatization and, 249

- Type 071 amphibious ships, PLAN's, 158–159
- Type 081 amphibious ships, PLAN's potential, 159–160
- U-boats, German, 194–195
- underway replenishment ships, 152, 287
- United Kingdom, 26, 186, 228. *See also* Britain
- United Nations Convention on the Law of the Sea (UNCLOS). *See also* international law
- China's claim of historical waters in South China Sea under, 51
- and China's increased demand for natural resources, 58–60
- China's maritime sovereignty rights under, 45
- dissatisfaction in China with elements of, 76
- on maritime national territory scope, 98, 99
- vague areas in, domestic Chinese laws to supplement, 74
- United Nations (UN) Command, Korean Peninsula and, 30
- United States. *See also* United States Department of Defense; United States Navy
- British navy and, 6–7, 16
- China on view of South China Sea disputes by, 50–51
- China's claims to Senkakus and, 54
- China's concern on India's cooperation with, 69
- China's military modernization and denying access to, 142
- China's protection of SLOCs and, 62–63, 67
- China's territorial disputes with Japan and, 199
- Chinese military modernization and, 185–186
- declaration to control world's 16 key straits by (1986), 67
- declining and redefined military role on Korean Peninsula of, 30
- Dutch navy and, 5
- French navy and, 5
- geopolitical consequences for naval modernization by, 18
- Han*-class submarine encounter with *Kitty Hawk* of, 221, 223, 242n19, 242n21
- Japan's alliance with, 10
- Joint Maritime Search and Rescue exercises with China and, 186
- Liu Huaqing on incremental naval development by, 138n63
- military conflict potential over Taiwan and, 127, 131
- military forces used as instrument of statecraft by, 240
- missile defense coverage for Japan by, 29
- Modern Navy* on terrorism response by, 66–67
- navies of formerly rising powers allied with, 16
- as nonsignatory to UNCLOS, 59
- nuclear deterrent forces of, 14
- potential Chinese antiaccess strategies against, 166–168
- potential Chinese invasion of Taiwan and, 205
- as previous rising naval power, 1, 10–12
- reduction in Asia-Pacific military interest and presence by, 24–25
- Statement of Principles signed with Royal Australian Navy, 27–28
- task-oriented command style in Gulf War of, 270
- technology needs of fueling economic growth of, 75
- United States Air Force, 195
- United States Department of Defense (DOD)
- on amphibious operations, 173n76
- on antiaccess and area denial, 191
- on China's experience in joint operations, 266
- on China's *jin*-class submarines, 145
- on China's JL-2 sea-launched ballistic missile, 290
- on China's land-based ballistic missile and cruise missile program, 258
- on China's move toward maritime antiaccess force, 142
- on China's potential military options in Taiwan contingencies, 164–166
- on China's *Shang*-class SSNs, 145
- on China's space-based C4ISR and targeting capabilities, 255–256
- on PLA's 1990's telecommunications infrastructure, 253
- United States GPS satellite navigation system, China's use of, 257
- United States Joint Tactical Information Distribution System (JTIDS), 253
- United States Navy. *See also* *Impeccable*; *Kitty Hawk*; United States Office of Naval Intelligence
- China's offshore defense strategy as challenge for, 209
- Cooperative Engagement Capability (CEC) of, 37–38
- debate on increasing China's cooperation with, 96
- EP-3 collision with PLAN fighter aircraft (2001), 222 (map), 223–225
- far-oceans offensive operations of, China on, 139n66
- Global Maritime Partnership, PLAN and, 235
- maritime strategy to defeat Soviet strategy of 1980s of, 214n49

- McVadon on maritime cooperation with China and, 245–246n53
- PLAN's engagement in bilateral exercises with, 229, 244n37
- Proliferation Security Initiative, PLAN and, 235
- 7th Fleet of, deployed in China Seas, 132
- targeting Soviets during Cold War, 195–197
- Whidbey Island/Harpers Ferry*-class amphibious ships of, 158
- United States Office of Naval Intelligence (ONI), 144, 145, 207, 237, 265
- unmanned aerial vehicles (UAVs), PLAN's, 162, 259
- unmanned combat aerial vehicles (UCAVs), PLAN's, 162, 259
- U.S.-China Economic and Security Review Commission, 193
- Varyag* aircraft carrier, China's, 149–153, 162, 171n38, 291–292
- Vellucci, Frederic, 288
- Vietnam
- China's territorial disputes with, 291
 - China's treaty solving border dispute with, 131, 198
 - Chinese border dispute with, 86, 125
 - Paracels claimed by China and, 48
 - recent naval developments in, 36
 - Spratly Islands claimed by China and, 218
 - territorial disputes and naval expansion by, 25–26
- VMAF21 (Versatile Malaysian Armed Forces of the 21st Century), 35
- VSAT communications system, Chinese, 254
- Wang Shouye, 175, 178–179
- Wang Shumei, 74, 76
- Wang Wei, 223, 243n29
- Wang Zhiyuan, 150, 151, 152
- War of 1812, British invasion and, 211n7
- War Theories and Strategic Studies Department (AMS), 84, 86, 93, 100
- Warsaw Pact, 8, 9
- Washington Treaty (1922), 10
- Wen Yufu, 91
- Western Pacific Naval Symposium (WPNS), 229, 244n35
- Wilhelm II, emperor of Germany, 8
- Willard, Robert, 191, 291
- Wochi*-class mine countermeasures (MCM) ships, PLAN's, 160
- World War II, naval strategy in, 194, 211n10
- Wozang*-class mine countermeasures (MCM) ships, PLAN's, 160
- Wu Shengli, 140n84, 247, 248, 278n4, 279n5
- Wuhan Shipbuilding Industry Co., 146
- Xia*-class submarines, China's, 120–121, 137n34
- Xian Aircraft, 162
- Xinjiang region, China, ethnic unrest in, 135
- Xiu Bin, 95
- Xu Lifan, 88
- Xu Qiyu, 85
- Xu Xuehou, 59
- Xue Litai, 272
- Yang Chengjun, 187
- Yang Huaqing, 85
- Yang Shangkun, 197
- Yang Yi, 238, 245n51, 263
- Yao Wenhui, 74–75, 76, 85
- Yao Youzhi, 267, 268–269, 272
- Yaogan 2–11* synthetic-aperture radar (SAR), 256
- Ye Zicheng, 83, 85, 93, 97
- Yellow Sea, 116, 202, 238. *See also* China Seas
- Yi Jianshan Islands, controlled by KMT forces, China's capture of, 135n8
- Yin Zhuo, 101, 102, 290
- Yuan*-class submarines
- China's commissioning of, 148 (table), 171n26
 - China's naval modernization and, 24, 121, 122, 144, 146, 251, 290
 - as surprise for intelligence community, 171n25
- Yubei*-class landing craft, PLAN's (LCUs), 160
- Yunshu*-class landing ships, PLAN's (LSMs), 160
- Yuting I*-class landing ships, PLAN's (LSTHs), 160
- Yuting II*-class landing ships, PLAN's (LSTs), 160
- Zhai Kun, 97
- Zhang Dengyi, 91, 94–95
- Zhang Dingfa, 133, 140n84
- Zhang Gang, 65, 67, 70
- Zhang Shiping, 58
- Zhang Wenmu, 83, 84–85, 87–88
- Zhang Xiaolin, 95
- Zhang Zhaozhong, 50, 51
- Zhao Hongtu, 72–73
- Zhao Yu, 225, 243n29, 243n31
- Zhejiang University, 180–181
- Zheng He, 215, 240
- Zheng He* training ship visit to U.S., 228
- Zhenggong Xuekan* (*Journal of Political Work*), 90
- Zhongguo Junshi Kexue*, 44. *See also* China Military Science

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