

U.S. Naval War College

## U.S. Naval War College Digital Commons

---

Newport Papers

Special Collections

---

2022

### Deterrence: Selected Articles from the Naval War College Review

Robert C. Ayer  
*Editor*

Jack Raymond

Colin S. Gray

Donald M. Snow

Edward J. Ohlert

*See next page for additional authors*

Follow this and additional works at: <https://digital-commons.usnwc.edu/usnwc-newport-papers>

---

#### Recommended Citation

Ayer, Robert C.; Raymond, Jack; Gray, Colin S.; Snow, Donald M.; Ohlert, Edward J.; Burke, Jerome J.; Lindsey, George R.; Stires, Hunter; Goldsmith, Sam; Kline, Jeffrey E.; Hughes, Wayne P. Jr.; and Murray, William S., "Deterrence: Selected Articles from the Naval War College Review" (2022). Newport Papers. 46.

This Book is brought to you for free and open access by the Special Collections at U.S. Naval War College Digital Commons. It has been accepted for inclusion in Newport Papers by an authorized administrator of U.S. Naval War College Digital Commons. For more information, please contact [repository.inquiries@usnwc.edu](mailto:repository.inquiries@usnwc.edu).

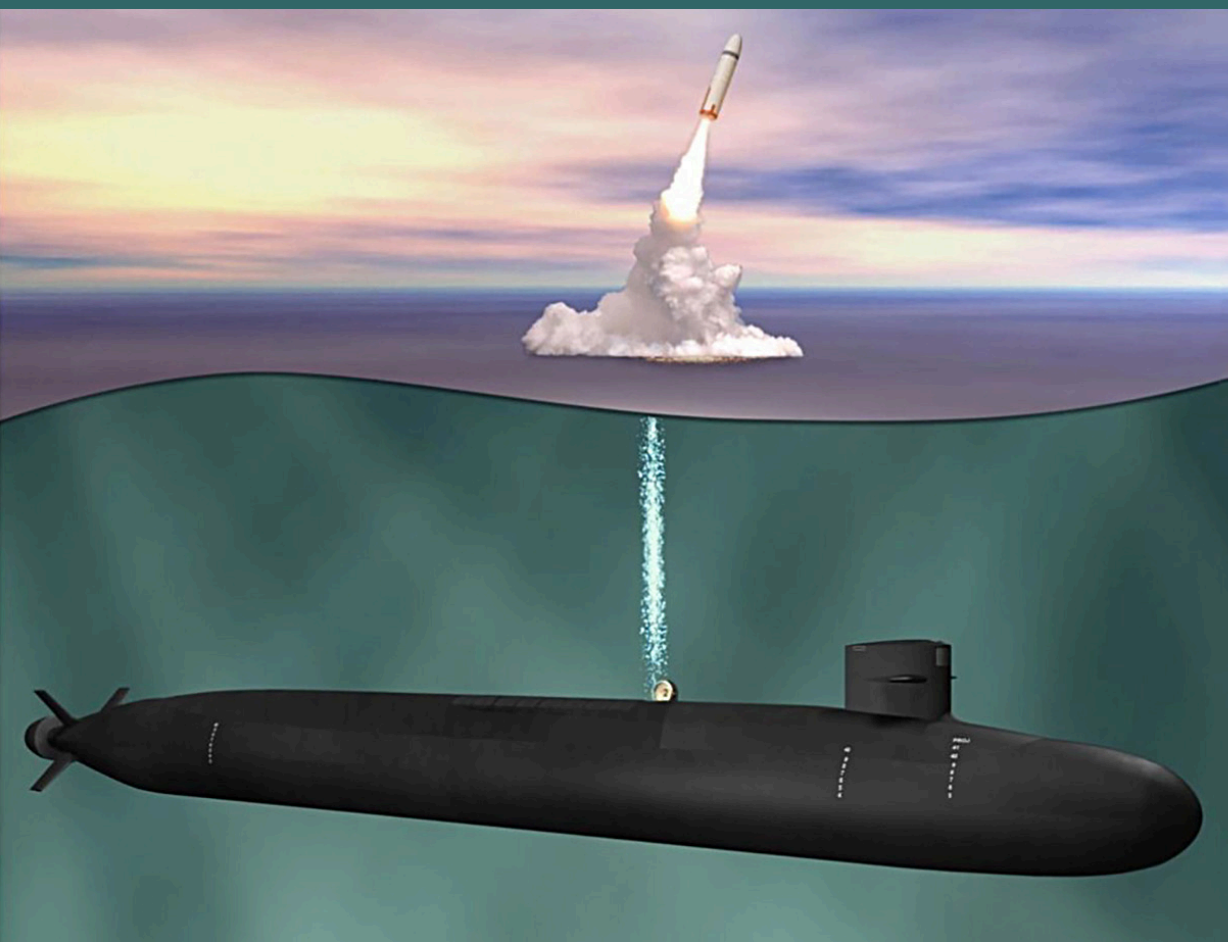
---

## Authors

Robert C. Ayer, Jack Raymond, Colin S. Gray, Donald M. Snow, Edward J. Ohlert, Jerome J. Burke, George R. Lindsey, Hunter Stires, Sam Goldsmith, Jeffrey E. Kline, Wayne P. Hughes Jr., and William S. Murray

## Deterrence

Selected Articles from the *Naval War College Review*



Robert C. Ayer, Editor  
with an introduction by Peter A. Dutton

## Cover

*The cover image is taken from a slideshow presented by Capt. William J. Brougham, USN, program manager of the Ohio replacement program, to the Navy Submarine League in 2012. The U.S. Navy's nuclear-powered ballistic-missile submarines (SSBNs) have been and remain a mainstay of U.S. and allied strategic deterrence.*

*Source: Naval Sea Systems Command, via the U.S. Naval Institute*



# Deterrence

## NEWPORT PAPER NO. 46

The Newport Papers are extended research projects that the Director, the Dean of Naval Warfare Studies, and the President of the Naval War College consider of particular interest to policy makers, scholars, and analysts.

The views expressed in the Newport Papers are those of the authors and do not necessarily reflect the opinions of the U.S. Naval War College or the Department of the Navy.

Correspondence concerning the Newport Papers may be addressed to the Director of the Naval War College Press. To request additional copies, back copies, or subscriptions to the series, please either write the President (Code 32S), U.S. Naval War College, 686 Cushing Road, Newport, RI 02841, or contact the Press staff at the telephone, fax, or e-mail addresses given.

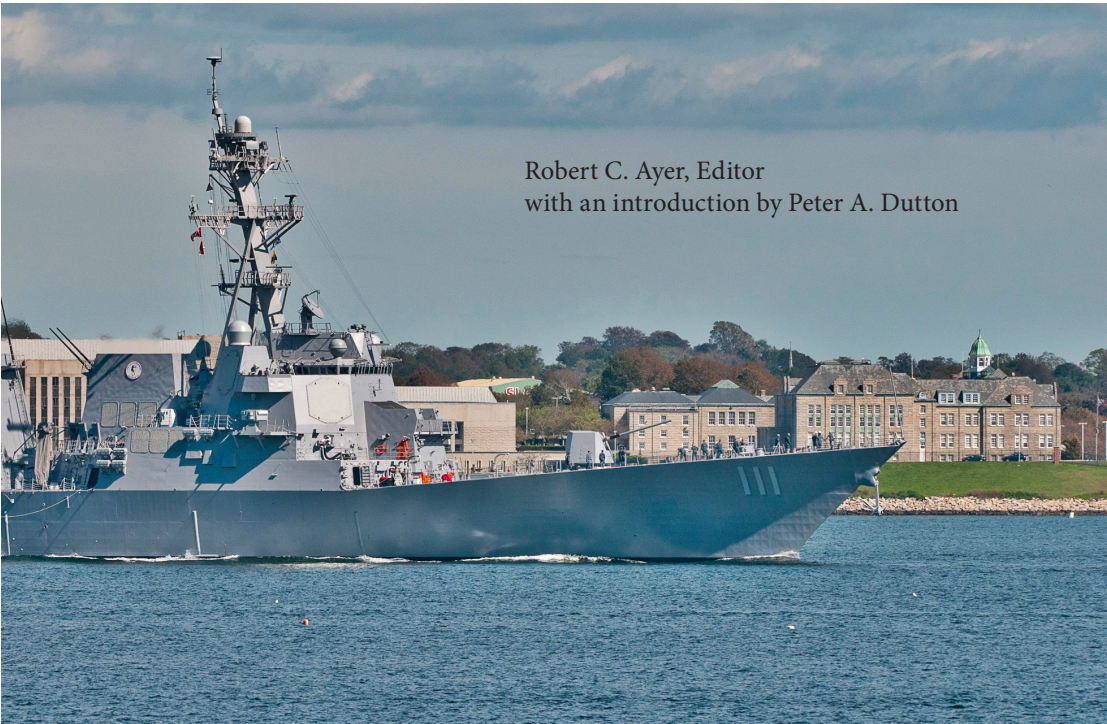


U.S. NAVAL WAR COLLEGE  
686 Cushing Road  
Newport, Rhode Island 02841  
<https://usnwc.edu>

# Deterrence

Selected Articles from the *Naval War College Review*

Robert C. Ayer, Editor  
with an introduction by Peter A. Dutton



NAVAL WAR COLLEGE PRESS

Naval War College Press  
Newport 02841  
Published 2021  
Printed in the United States of America

ISSN 1544-6824

ISBN 978-1-935352-78-5 (paperback)



The logo of the U.S. Naval War College authenticates Newport Paper No. 46, *Deterrence: Selected Articles from the Naval War College Review*, edited by Robert C. Ayer, with an introduction by Peter A. Dutton, ISBN 978-1-935352-78-5 (paperback), as the official U.S. Naval War College edition of this publication. Use of the U.S. Naval War College logo and ISBN 978-1-935352-78-5 is strictly prohibited without the express written permission of the Editor (or Editor's designee), Naval War College Press.

Reproduction and distribution are subject to the Copyright Act of 1976 and applicable treaties of the United States. Copies of all or any portion of this work must be clearly labeled as such, and are required to credit the author, series, full title, and the U.S. Naval War College. Contact the Naval War College Press regarding commercial use and copyrights.

Naval War College Press  
Code 32  
686 Cushing Road  
Newport, Rhode Island 02841

401.841.2236 telephone  
401.841.1071 fax  
DSN exchange: 841  
press@usnwc.edu

<https://usnwc.edu/nwcpress>

## Contents

Introduction, *by Peter A. Dutton* 1

---

### PART ONE: NUCLEAR AND CONVENTIONAL DETERRENCE

**CHAPTER ONE** The Influence of Nuclear Weapons on National Strategy and Policy: A Lecture to the Naval Command Course and the School of Naval Command and Staff on 7 September 1966  
*by Jack Raymond* 9

---

### PART TWO: THE ROLE OF NUCLEAR WEAPONS IN DETERRENCE

**CHAPTER TWO** Defense, War-Fighting and Deterrence  
*by Colin S. Gray* 25

**CHAPTER THREE** Strategic Uncertainty and Nuclear Deterrence  
*by Donald M. Snow* 33

**CHAPTER FOUR** Strategic Deterrence and the Cruise Missile  
*by Edward J. Ohlert* 51

**CHAPTER FIVE** “Analogous Response”: The Cruise-Missile Threat to CONUS  
*by Jerome J. Burke* 67

---

### PART THREE: CONVENTIONAL DETERRENCE

**CHAPTER SIX** The Place of Maritime Strength in the Strategy of Deterrence  
*by George R. Lindsey* 93

<b>CHAPTER SEVEN</b>	“They Were Playing Chicken”: The U.S. Asiatic Fleet’s Gray-Zone Deterrence Campaign against Japan, 1937–40 <i>by Hunter Stires</i>	103
----------------------	--	-----

---

PART FOUR: DETERRENCE IN THE TAIWAN STRAIT

<b>CHAPTER EIGHT</b>	U.S. Conventional Access Strategy: Denying China a Conventional First-Strike Capability <i>by Sam Goldsmith</i>	125
<b>CHAPTER NINE</b>	Between Peace and the Air-Sea Battle: A War-at-Sea Strategy <i>by Jeffrey E. Kline and Wayne P. Hughes Jr.</i>	155
<b>CHAPTER TEN</b>	Revisiting Taiwan’s Defense Strategy <i>by William S. Murray</i>	161
	About the Contributors	185
	The Newport Papers	187

# Introduction

PETER A. DUTTON

The subject of deterrence fell away from the forefront of American strategic thinking during the three decades following the fall of the Soviet Union. Our ability to deter much weaker states by denying them the ability to achieve their aims was long assumed. But today there is a new global security situation that makes it imperative for American military officers and security specialists to begin to relearn the fundamental tenets of this aspect of national security.

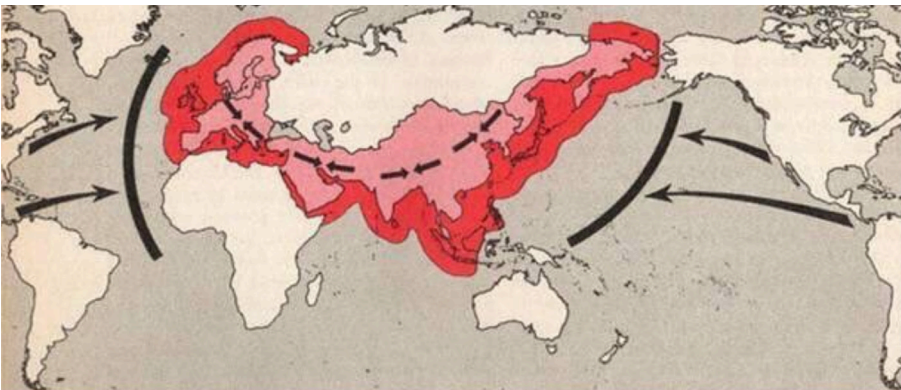
The purpose of this volume is to contribute to that campaign of learning by drawing on some of the excellent scholarship published in the *Naval War College Review* during the Cold War and the decades since. Some of the articles included here lay out a few of the fundamentals of the theories of deterrence. A notable aspect of these articles is how similar the challenges of deterring the Soviet Union were to the challenges of deterring China and Russia that we face now. A second purpose of this collection is to describe and assess some of the practical aspects of deterrence in East Asia and Europe today. But despite its scope, this volume only can begin to educate the reader about the complex and well-developed theories and practical requirements of deterrence. Accordingly, a third purpose of this volume is to whet the reader's appetite to learn more and, from a base of knowledge and in light of professional experience, to contribute new thinking to the literature on deterrence.

Indeed, more study will be needed if we are to perpetuate for another generation the freedom from direct attack by another country that the United States has enjoyed over the past seventy-six years. Our security since the end of the Second World War has been no accident. Well before the conclusion of that devastating conflict, American strategists were planning to win the peace. In the years just prior to the war, Nicholas J. Spykman, as chairman of Yale University's Department of International Relations and director of the Yale Institute of International Studies, developed the fundamental outlines of the system of American-led global security.<sup>1</sup> That system enabled an unparalleled period of global security and economic development and suppressed direct conflict between great powers.

Spykman developed his theories of security after watching two great powers—Germany and Japan—rise in Europe and Asia in the first half of the twentieth century and, in rising, initiate two global wars during which American soil was attacked and American lives were lost. Spykman’s system of security rested on the premise that the United States is most secure when no regional great power can consolidate a position of primacy in either Europe or Asia and by so doing project power outward to attack the United States or curtail American access to the trading system of Eurasia.

To ensure in each region of Eurasia that no country or combination of countries could threaten America and its interests, American power—resident in Europe and Asia—would maintain stability by entering into alliances with like-minded states.<sup>3</sup> These regional alliance systems would retain either a regional preponderance of power or at least a sufficient balance of power to deter conflict (see figure). In combination, these regional systems guaranteed that American power could underwrite global security. Further, maintaining resident forces in Europe or Asia required free access to the global commons to ensure that the United States could trade freely with Eurasian states and could deploy forces across the Atlantic and Pacific Oceans to shore up its forward-deployed forces as necessary.

Spykman’s premises informed America’s decision after World War II to remain engaged in the world rather than retreat to the isolation of the North American continent. The global strategic posture he outlined led to the formation of the North Atlantic Treaty Organization in Europe and to a system of bilateral alliances in East Asia with Japan, the Republic of Korea, Australia, the Philippines, and Thailand. American forces in the region built on these alliances to add a system of partnerships with other states interested in maintaining stability, free trade, and national development. Since 1950, defense of this system has been



Representation of the American approach to global security as an exterior strategy involving envelopment of the margins of Eurasia in a system of alliances and ensuring access throughout the global commons.

Source: Spykman, *The Geography of the Peace*, p. 58.



and remains the most important reason for the American policy of preventing mainland China from taking over Taiwan by force. Deterring a Chinese attack on Taiwan continues to be a central organizing purpose of U.S. forces in the Indo-Pacific region. The offshore alliances and partnerships that extend along the island chain from the Japanese islands through Taiwan and the Philippines to Australia enable American naval and air forces resident in Asia to ensure regional security and contribute to global stability.

Today, however, China's rise in Asia and its entente with Russia, which straddles Eurasia, threaten this American-led system of security. Russian naval developments pose a threat to the American homeland and endanger our ability to project forces across the Atlantic.<sup>3</sup> China's rapid and comprehensive military development is focused on bringing Taiwan under its control, severing the American geostrategic position in Asia, and enabling China to advance the People's Liberation Army (PLA) Navy's goal of global expansion with fewer limitations.<sup>4</sup> Disruptive actors in western Asia and the Middle East, such as Iran and Syria, also threaten stability there.

With these developments, America and its allies no longer enjoy military primacy in any key region of the world beyond the Western Hemisphere, and they struggle to retain a balance of power in Asia in particular. Since the American-led security system is global, fault lines in one region cause tremors across the entire system. Accordingly, successive American administrations have deterred China from using military force to attack Taiwan and thereby disrupt the order on which regional and global stability and American security depend.

However, memories of how best to deter a peer or near-peer competitor have dimmed since America and its allies undertook to deter aggression by the Soviet bloc. Deterrence is not simply a matter of "overmatch"—a term used too often in the Pentagon today. Of course, deterrence involves careful force structure and military planning, but it also involves a deep understanding of a potential adversary's motives, interests, and objectives. It can involve all elements of national power. It certainly involves careful political signaling, publicly and privately. And it involves the underappreciated factor of restraint and "off-ramps." Deterring a potential adversary requires the implicit reassurance that negative consequences will be avoided as long as key lines remain uncrossed. It may be enhanced by positive opportunities as well as negative guarantees. The chapters of this volume begin to address some of these attributes of nuclear and conventional deterrence.

The volume begins with Jack Raymond's lecture to the Naval War College's Naval Command Course, "The Influence of Nuclear Weapons on National Strategy and Policy." Raymond observes that "one of the recurrent national mistakes of the United States has been to underestimate the will and capacity of other countries to outperform it in industrial, technological, and scientific fields." Deterring our adversaries requires us to understand

them—words that seem all the more prescient today since Raymond was lecturing in 1966 about the inevitability of confrontation between the United States and China. He warns that in Asia, “deterrence and containment, in order to have any chance of being effective, [require] sizeable ground and naval forces as well as nuclear air power.” Raymond cautions against the dangers of neglect of the strength of conventional forces and too much reliance on nuclear deterrence, recalling how “Admiral Felt[,] taking command of the Pacific forces in 1958, just as the Taiwan crisis broke, [found] that he had only a limited supply of conventional explosives. In war, the Fleet would either have had to remain virtually inactive or attack with nuclear bombs.” Some theorize that this situation actually could serve to deter an opponent, since to defend its interests the United States would have no choice but to escalate. From our historical remove, however, that seems a dangerous assumption indeed.

The next several chapters pick up this thread of the role of nuclear weapons in deterrence. The eminent scholar Colin Gray, in “Defense, War-Fighting and Deterrence,” addresses the concept of *deterrence through denial*—that is, preventing an enemy from achieving its objective through the use of force. One Soviet theory of victory at the time anticipated that if through a nuclear exchange the Soviet Union could destroy the United States, it could eliminate its chief global rival and thus emerge damaged but victorious. Gray responds with the concept of *deterrence through resilience*—that is, America could win by surviving. But to deter nuclear conflict, the United States would need to commit to comprehensive resilience programs, including “civil defense, air defense, BMD [ballistic-missile defense], and offensive forces,” to ensure that the Soviet Union could not defeat it completely. While this may be a good strategy for homeland defense, Gray does not address how this strategy might apply to those allies whom we have pledged to defend from nuclear attack, a concept known as *extended deterrence*. Donald Snow, in “Strategic Uncertainty and Nuclear Deterrence,” answers Gray’s essay directly, arguing that nuclear wars are likely to destroy utterly all societies that engage in them. In Snow’s view, to ensure that nuclear wars never will be fought, they must be considered unwinnable. He argues in favor of a posture of mutually assured destruction so that if great-power rivals “know *with certainty* that an attack will result in a crushing counterattack, then neither can ever calculate advantage from initiating a nuclear war and both are deterred.”

Edward Ohlert, in an award-winning Naval War College student essay entitled “Strategic Deterrence and the Cruise Missile,” observes that in the face of “persistent pressure of a vigorous Soviet [nuclear] procurement program, U.S. perceptions of deterrence have evolved from ‘clear superiority’ through ‘mutual assured destruction’ to ‘flexible response options.’” But Ohlert offers that the Soviet Union pursued a “deterrent strategy based primarily upon demonstrated capability to reestablish strategic equivalence.” In other words, the Soviet goal was not mutually assured destruction but to “guarantee that, in postwar

conditions, the opponent does not have sufficient unopposed reserve nuclear forces to conquer the world,” so a situation of parity would resume. On the topic of parity, Jerome Burke, in “Analogous Response: The Cruise-Missile Threat to CONUS,” discusses how the Soviet Union’s failure to get American agreement to withdraw cruise missiles from Europe led it to develop advanced weapon systems, including submarines armed with nuclear or ballistic missiles, which the USSR positioned stealthily off the American East Coast. Burke argues that today “Putin has reasserted the Soviet strategic objective of holding the continental United States . . . at risk with now-combat-proven land-attack cruise missiles . . . and modern, difficult-to-detect submarines.” He concludes that a core part of Russia’s deterrence doctrine is to “hold the United States under a nuclear threat equal to that which the United States and NATO pose to Russia.”

Moving to essays about the utility of naval power to deter actions across the spectrum of conflict, we have George Lindsey’s chapter, “The Place of Maritime Strength in the Strategy of Deterrence,” in which he reminds us that strategic nuclear war is not the only deterrent object of military forces. Naval forces have a role in deterring the full range of conflict that includes tactical nuclear warfare, conventional war, and “situations less than war.” Picking up on this last concept, Hunter Stires, in “They Were Playing Chicken,” looks back in time at the activities of the U.S. Asiatic Fleet from 1937 to 1940. Japan and China were at war; the United States was neutral but had interests in the battle space. To secure American strategic objectives, a mission-command culture was fostered to encourage independent action and judgment at the tactical level. Stires relates this prewar period to the situation today in the South China Sea, noting that in the late 1930s such tactical deterrence was sufficient to achieve American strategic objectives without causing unwanted escalation. While this approach may have been effective before the introduction of nuclear weapons, it will be fair for readers to consider whether such mission command today could result in tactical brinkmanship that would lead to unwanted escalation.

The last three chapters in this volume address various aspects of conventional deterrence in relation to potential conflict across the Taiwan Strait. Sam Goldsmith, in “U.S. Conventional Access Strategy,” addresses the key question of the value of the object, asserting that China’s “leadership appears unconvinced that the United States would risk a conflict with China—one that could escalate to a nuclear war—over disputes concerning territories that geographically are distant from the U.S. mainland and seemingly are unrelated to core U.S. national security interests.” The word *seemingly* is key here. Has the United States clearly and effectively communicated the value of the object? Do Chinese leaders understand how, in American minds, Taiwan relates to the American-led global system of security and stability? Goldsmith concludes that “[w]ithout clear U.S. deterrence, the risk of miscalculation only will increase.” He then lays out the developments needed to enhance our regional

force posture to achieve assured conventional access to “return the China-U.S. strategic deterrence calculus to a more stable equilibrium.” More should be said, however, about how clearly American leaders communicate American interests in Taiwan’s status.

Like Goldsmith, Jeffrey Kline and Wayne Hughes, in “Between Peace and the Air-Sea Battle,” offer advice on how to deter China from initiating a cross-strait war. They argue that at least until necessary force-structure advances are made to achieve assured conventional access, a “war at sea” strategy can deter Chinese aggression; or, if deterrence fails, it can deny China use of the sea inside the first island chain while the United States and its allies execute a distant blockade. Finally, Naval War College professor William Murray places one additional piece in a conventional cross-strait deterrence puzzle in “Revisiting Taiwan’s Defense Strategy.” Whether the United States prepares to fight in close, as Goldsmith describes, or at a distance, as Kline and Hughes lay out, in either scenario deterrence is enhanced if Taiwan’s defenses prevent or delay PLA forces from establishing a lodgment on the island. Echoing Gray’s advocacy for the deterrent effect of resilience, Murray advises Taiwan to undertake a “porcupine defense” by hardening key facilities, building redundancies into critical infrastructure, stockpiling critical supplies, and undertaking other military and civilian programs to extend the time during which Taiwan can withstand a PLA onslaught until the United States and other like-minded states can come to the island’s aid.

These articles are brought together to help readers begin the campaign of relearning the fundamentals of deterrence in a world in which peer and near-peer competitors once again are key actors. Those whose ambition is to learn more deeply about deterrence might begin with classics such as Thomas C. Schelling’s *Arms and Influence* and *The Strategy of Conflict*, Richard K. Betts’s *Nuclear Blackmail and Nuclear Balance*, and Herman Kahn’s *On Escalation*. These readings will confirm that deterrence is a complex business. But if the United States and its allies are to avoid great-power conflict in this century and retain for another generation the global posture that has served our interests so well, we must commit to mastering the subject.

---

## Notes

1. Nicholas John Spykman, *The Geography of the Peace* (New York: Harcourt, Brace, 1944).
2. Nicholas J. Spykman, *America’s Strategy in World Politics: The United States and the Balance of Power* (New York: Harcourt, Brace, 1942; repr. Piscataway, NJ: Transaction, 2007).
3. James Foggo III [Vice Adm., USN] and Alarik Fritz, “The Fourth Battle of the Atlantic,” U.S. Naval Institute *Proceedings* 142/6/1,360 (June 2016).
4. U.S. Defense Dept., *Military and Security Developments Involving the People’s Republic of China 2021* (Washington, DC: Office of the Secretary of Defense, 3 November 2021), pp. 1, 36, 132, available at [media.defense.gov/](https://media.defense.gov/).

# **PART ONE**

---

Nuclear and Conventional Deterrence



## The Influence of Nuclear Weapons on National Strategy and Policy

A Lecture to the Naval Command Course and the School of Naval Command and Staff on 7 September 1966

JACK RAYMOND

The subject of my talk is “The Influence of Nuclear Weapons on National Strategy and Policy,” and I would like to begin with a couple of anecdotes. In 1956 I was a correspondent in Moscow. A delegation of 21 Chinese scientists was sent to the Soviet Union to participate in a research program in the Joint Institute for Nuclear Research at Dubna, and I did a story on it at the time. It didn’t stir much excitement.

China’s nuclear energy program, of course, antedated that story. It actually began in earnest in 1950 when the Institute of Atomic Energy of the Chinese Academy of Science was set up in Peking. But it was in 1956, apparently, that the Communist Chinese received their big atomic assist from Moscow. That year the Soviet Government helped the Peking Government undertake a vast training program in which 39 atomic centers were to be established on mainland China.

Some months later, in this country, I accompanied a group of Russians on a tour of the United States. In those days such tours received considerable publicity. I wrote daily stories about the Soviet visitors’ reactions to the places they visited. The tour included Disneyland—this was before the Khrushchev visit, and I have often wondered whether it was the report of my Russians that prompted Mr. Khrushchev’s desire, later frustrated, to visit Disneyland in 1958.

Among the other fascinating entertainments of Disneyland they have an exciting planetarium. One of the members of the group I accompanied, in November 1956, was a member of the Soviet Academy of Sciences. As we came out of the planetarium, this academician—a man of about 60—commented on the little show we had witnessed inside, a show in which with clever use of lights and sound the visitor is made to feel he is on a missile trip to the moon.

“My son is a jet engineer,” the Russian said, “and he thinks he is going to ride a rocket to the moon.” The Russian shook his head. “I just can’t get it into my head. Perhaps I am too old-fashioned, but my son thinks such space trips will come soon.”

That conversation took place just 11 months before the Russians launched Sputnik I.

The point of these anecdotes, as we take up our lecture subject, is to use them as a peg for the observation that one of the recurrent national mistakes of the United States has been to underestimate the will and capacity of other countries to outperform it in industrial, technological, and scientific fields. And even when we profess to appreciate the capacities of others—friends as well as foes—we give evidence of failing to act on that belief. Then we are shocked when Moscow launches a missile, or Peking—or even France—explodes an atomic bomb.

It is platitudinous, of course, to say that things are not always what they seem or what somebody says they are. Thucydides wrote at the beginning of his history of the Peloponnesian War that while the beginning of the war was alleged to have been based on the breaking of a treaty, “The real cause I consider to be the one which was formally most kept out of sight. The growth of the power of Athens, and the alarm which this inspired in Lacedaemon, made war inevitable.” And the point of this quotation is to use it as a peg for an observation on the war in Vietnam.

Many analysts manage to talk of the war in Vietnam without mentioning the growing power of Mainland China. Whether that makes war with Communist China inevitable, I reserve comment to the conclusion of this talk.

In this talk, prepared as part of a broad study of seapower, I have been asked to:

- a. review American strategy and foreign policy since World War II,
- b. offer a personal assessment of the effects of nuclear weapons on United States doctrine,
- c. note the importance of strong conventional forces in the light of the nuclear stalemate today, and
- d. comment on the impact of Communist China’s nuclear capability on United States foreign policy.

This is a large order, but nothing ventured, nothing gained.

Let us then, according to our given outline, review briefly certain aspects of U.S. national security policy since World War II. Despite a historical pattern of withdrawal from world affairs following war, the United States did adopt a national strategy of continued global involvement after World War II, even as it submitted to the reflex action of demobilizing



its forces. The new global strategy, enunciated in rhetoric condemning past isolationism, was encouraged to a large extent by the United States' unilateral possession of the atomic bomb.

We often associate the policy of massive retaliation with John Foster Dulles and the Eisenhower Administration of the 1950s. But it was Gen. Omar N. Bradley, Chairman of the Joint Chiefs of Staff during the Truman Administration, and who later stated the case for "limited war" in Korea, who said in 1949: "Our greatest strength lies in the threat of quick retaliation (with strategic bombers) in the event we are attacked." And it was Adm. Arthur Radford, Chair of the Joint Chiefs of Staff in the Eisenhower Administration and a renowned advocate of massive retaliation policies, who said in 1954: "I believe that this nation could be a prisoner of its own military posture if it had no capability, other than the one to deliver a massive atomic attack."

I suppose both of these military professionals, like any other professionals, can explain how what they said was perfectly sound in the context of their basic policy positions—just as we journalists also prove ourselves consistent when old columns are read to us. (Former Pentagon Controller Charles Hitch, when he testified on his nomination and was asked to explain some of the things he said in his book, quoted Job 31:35, "Oh . . . that mine adversary had written a book.")

The United States' reliance upon its nuclear advantage can be illustrated in many ways, but for this audience, perhaps, the most pertinent example is the virulent struggle within the Armed Forces. To justify ambitious budgets in the face of shrinking appropriations, each service sought to demonstrate its capability for delivery of the superweapon.

In 1947 a classified memorandum by Rear Adm. Daniel Gallery, a young naval aviator, recommended that the major mission of the Navy should be the delivery of atomic attack from aircraft carriers and that the mission of controlling the seas should be relegated to a secondary position. The existence of the memorandum was leaked during the Air Force–Navy controversy over roles and missions. The consequent uproar forced Admiral Gallery's superiors to disavow his position, but they nevertheless argued that carrier-borne aircraft could deliver strategic bombs with precision, whereas highflying B-36 bombers were directed to the wholesale destruction of cities.

Two decades later, as Adm. John D. Hayes points out in his seapower commentary in this year's *Naval Review*, much of the Gallery memorandum has been put in effect, only with the nuclear delivery mission assigned to the Polaris submarines rather than aircraft carriers. And it is the Air Force, with its land-based missiles and aircraft, that insists upon precision, assailing the Polaris missiles as city destroyers.

The point of all this is that the services felt they could exist only insofar as they satisfied the requirements of nuclear weapons policy. In the characteristic American way, the B-36

controversy was waged virtually in the open, and the press could cover it blow by blow. Since then the internal documentary record has provided further evidence of the United States' early adoption of a policy of deterrence. The State Department's June 1948 policy paper, based on the famous "containment" dispatch filed from Moscow by George Kennan, noted that war with the Soviet Union was "always a possibility." The Armed Forces, it continued, must not only give support to United States diplomacy but they must be strong enough to serve as a "deterrent" to Soviet efforts to fill every available power vacuum.

Professor Samuel P. Huntington has described that paper as a "landmark in the evolution of American strategic thought from the old strategy of mobilization for general war to a new strategy of deterrence." Significantly, he adds, it was produced by the State Department, not by the Joint Chiefs of Staff.

The policy of deterrence and containment, in order to have any chance of being effective, required sizeable ground and naval forces as well as nuclear air power. But it is a fact of national life that policy and strategy are not always supported substantively. As noted earlier, we do not always act on our professed beliefs. We did not bolster our land and naval forces to any significant extent until the outbreak of the Korean war. Our chief deterrent force consisted of nuclear bombs, and we did not have many of these. Nor did we build as many strategic bombers as military strategists advocated. Nor did we press forward with rockets and missile development. The country learned soon enough that the nuclear advantage—and by 1949 it was no longer a monopoly—was an insufficient deterrent anyway.

The Soviet Union seized Eastern Europe and challenged the United States directly with the blockade of Berlin. Stalin, clearly, was not awed. When he *really* was afraid, of the Germans in 1934 to 1940, he behaved differently. Nor did the United States' nuclear advantage deter the North Koreans from invading South Korea. There were many other incidents in the postwar years, and in many cases the aggressive forces did not have their way—as in Iran and Greece. It is possible that fear of atomic retaliation spoiled the Communist Chinese appetite for Quemoy and Matsu. But it is also clear that even as the United States finally developed in the late 1950s a stupendous arsenal of nuclear bombers and smaller tactical nuclear weapons for ground and naval forces, aggressive acts in Europe or Asia did not cease. The United States' nuclear advantage may well have prompted Communist leaders to formulate a strategy and doctrine for wars of national liberation, consisting of ambiguous aggression through insurgency, for their already existing efforts to take over revolutionary forces around the world.

The Soviet Union stunned the world, including America, with its own missile and space feats. And this did as much as the reasoned analyses of the military strategists to reduce

American self-delusion over the all-purpose qualities of the nuclear arsenal. That is not to say that the threat of a nuclear strike went entirely unheeded then or is unheeded now. United States concern over the establishment of Soviet missile bases in Cuba and nearly abject Soviet withdrawal, when faced with a direct threat of retaliation, demonstrated only too well the readiness of nations to use nuclear weapons—for blackmail or survival.

But the Cuba crisis of 1962 also exemplified the mutual nuclear deterrence that had developed between the two nuclear powers. Some have called it a balance of terror. The nuclear test-ban treaty was signed in an effort to keep that balance. The arms race goes on, of course, but it is now a qualitative one, a race being run in laboratories. A breakthrough may result that could once again panic us all. For the time being, the two major nuclear powers have been persuaded that not even a surprise attack would pay off.

Secretary McNamara has pointed out that if the Soviet Union pulled a surprise attack upon the United States a very large portion of American missiles would survive and even if one-fifth of the surprise weapons delivered their payloads, the Soviet Union would lose one-third of its population and half of its industrial capacity. Yet, lest any American hawks be tempted, Mr. McNamara also has pointed out that even if the United States were to strike an initial preemptive blow against the Soviet Union, Moscow's surviving nuclear weapons in retaliation could kill at least 90 to 95 million Americans.

Long before Mr. McNamara gave us these estimates early this year, the United States had adopted a policy based on the premise that so-called limited wars, where the threshold of aggression or its location made nuclear retaliation out of the question, were more likely to occur than wars for which nuclear retaliation was a credible threat. Yet, just because limited conflicts were more likely, and indeed were occurring with increasing frequency and danger, thermonuclear wars could not be ruled out. Nations might become too fearful or too cautious to use their ultimate weapons, but they had by no means become so wise as to eliminate those fateful situations when fear, caution, or reason did not prevail.

The current United States policy, therefore, is one of "flexible response," with each planned retaliatory action suited to the style and potential consequence of the provocation. This country has raised annual defense spending from more than \$40 billion to more than \$60 billion a year in order to pay for that policy. Yet there are those who claim that our forces are inadequate, nevertheless, that our resources are being stretched thin, that we are overcommitted. Once more the voice of withdrawal is being heard in our land. A prevailing attitude seems to be: "Let's pour it on, get this war in Vietnam over with, then let's not get involved anymore."

To summarize, then, the United States has had a tendency through the years to meet its international problems on a contingency basis, mobilizing and expanding its military forces only when under direct threat. This tendency, rooted deep in an American

tradition that is suspicious of the influence of large military forces in peacetime, has been reinforced by a national ego that rarely credits foes with having the capacity to defeat us.

In the post–World War II period, however, the United States *did* undertake to remain involved in global affairs. But the United States possession of a nuclear advantage created a false belief in its all-purpose deterrent capacity. So-called limited aggressions continued. The United States, at the outset, was inhibited from nuclear retaliation because the provocations never seemed to justify it—they were “below the threshold,” as it is said. The United States subsequently was further inhibited by the Soviet weapons advances that balanced the terror. Now, the United States having adopted a strategy of flexible response, the cost and strain are prompting popular demands for actions to put a quick end to our troubles through a massive effort and thus permit a return to isolationism.

We come now to some personal observations on nuclear weapons strategies. I have covered military affairs long enough to know that strategy is only a plan for doing things, and it must never become too theoretical or dogmatic. If events disprove the premises upon which the strategy was adopted, that does not mean the plan was all bad or must be retained at all costs. But there must be a plan to provide coherence to strategic action. While the United States adopted a policy of deterrence to which it gave voice in the Truman Doctrine and Marshall Plan, its failure to support that policy adequately reduced its effectiveness. Without adequate military support at the outset, the United States began solving its problems pragmatically, “on their merits,” so to speak, as one analyst put it.

Thus the United States began to distinguish among various power vacuums. It put its finger in the dike in Greece and Turkey but left Korea out of its Pacific defense perimeter. Also, when a policy allows special cases, the deterrent effect is not relevant from one case to another. The U.S. nuclear advantage was relevant to a possible Soviet attack upon Western Europe but not the suppression of Hungarian liberation. It was relevant to the crisis in Cuba in 1962 but not to insurgency in Vietnam. It might have been relevant in Korea, but widespread doubts paralyzed action.

Erratic response of this kind has a certain superficial benefit, if the aim is to keep the enemy guessing. But it is also dangerous. If a strategy is to serve as a deterrent, it must be understood and perhaps exemplified. That is why, no doubt, in contrast with the Korean war, the United States has made many efforts to warn Peking of its determination to use nuclear weapons in the event of a direct Communist Chinese intervention in the war in Vietnam. It has done this by example. It has bombed the “sanctuary” of North Vietnam. It has also conveyed this message through all conceivable diplomatic channels.

But these and other instances reflect the tendency to treat national security problems as a series of isolated crises, making move and countermove with no apparent long-range strategy in fulfillment of national interests. It is as though the existence of nuclear weapons in the world, instead of providing a sober motivation for long-range security planning, has inhibited planning that would lend purpose and direction to foreign policy.

No doubt the failure of the United Nations to prevent or control the Cold War contributed to the United States' flailing about in a series of sporadic, defensive actions. The United States could not, like some aggressive totalitarian power, map out a rigid doctrine of foreign policy aims. It should not have been impossible, however, to establish a more coherent view than is evident of where American national security requirements—in weaponry as well as geography—begin and end.

That is, it should have been possible—if it had been possible—to place greater reliance upon the nuclear weapons arsenal. One can only shake one's head in dismay upon hearing, now, of how inadequate was the early stockpile of atomic bombs; how crude and unreliable were the liquid-fuel Atlas missiles; how terrifyingly swift was the command system that could trigger a nuclear strike without opportunity for reflection. "General," said a visitor to Strategic Air Command Headquarters, "you don't have a war plan. You have some sort of horrible spasm."

The nuclear arsenal's combination of clumsy superweapons and barely controllable command system has been matched at times by a general lack of discrimination in the distribution of many of the weapons. I remember breaking the story, denied at the time, of Admiral Felt taking command of the Pacific forces in 1958, just as the Taiwan crisis broke, only to find that he had only a limited supply of conventional explosives. In war, the Fleet would either have had to remain virtually inactive or attack with nuclear bombs.

And in another incident in the early stage of the crisis in Lebanon in 1958, the Pentagon had to rush conventional ammunition to the Sixth Fleet in response to an urgent bid by its commander, Vice Admiral Brown. It was subsequently revealed that during the landing the United States had an Honest John rocket afloat off Beirut but was not allowed to land it because it could fire an atomic warhead as well as a conventional one. Although the threat of using nuclear weapons was proclaimed policy, the policy was not sustained in this instance.

One can only guess what exciting examples will be disclosed to us in the future of the crazy-quilt complications inherent in our possession of what obviously must be too many and too many kinds of nuclear weapons. Nor should we forget that while there can be no question about the destructiveness of nuclear weapons, there is still considerable doubt about their efficiency. The debate over the nuclear test-ban treaty focused attention on these uncertainties. We only know by theory the results that might be derived from most

of the warheads in the arsenal. Each series of nuclear tests has produced a considerable number of unexpected phenomena.

Secretary McNamara has said the United States possessed “tens of thousands” of nuclear warheads.

On top of all this there is evidence of too big a building in our nuclear arsenal, as each service has justified the creation of its own contribution to the deterrent. According to one estimate in an article in *NATO's 15 Nations*, June–July 1966, more than 7,000 nuclear warheads are carried by the long-range missiles and aircraft of our strategic forces. In addition there are more than 25,000 tactical nuclear warheads encased in the weaponry of Naval and Air Force planes, short-range missiles, and guns—ground-to-ground, ground-to-air, air-to-air, air-to-ground. In order to refute arguments that NATO forces are being weakened, Secretary McNamara has claimed that the number of warheads in Europe have been increased.

One does not need a computer to work out the total megatonnage in nuclear explosive power that is represented by these weapons. I'll spare you the arithmetic, but according to one table in the article, U.S. Armed Forces, including close to 3,500 strategic delivery vehicles, could launch some 19,000 million tons of TNT equivalent. By comparison, with some 580 strategic nuclear weapons, the Soviets could launch some 9,000 million tons of TNT equivalent. And for my purpose the interesting thing about this comparison is not that we have outmatched the Russians, but that they, too, have more of these weapons than they can efficiently use.

If this sounds to you that I subscribe to the notion that there is such a thing as having too much nuclear weaponry, you are right. I don't want to get into the semantics of “overkill,” a very dramatic word, but it seems logical to me that if Secretary McNamara's estimates of the probable casualties in a nuclear exchange with the Soviet Union were only half those cited, their deterrent factor would remain unchanged. A national leadership willing to accept a toll of 50 million dead would not be dissuaded if he were advised that, in truth, the toll will be 100 million. The respective costs of the difference in the nuclear forces needed would, of course, be tremendous, and the difference in complications involved in perfecting a large or *larger* nuclear establishment are beyond description in this treatise—not only in cold cash, but in manpower, technical training, diversion of industrial facilities. Every arm of the military establishment has felt the squeeze in money and talent.

Those considerations should give pause to any small country with nuclear pretensions. Not only is it expensive, it may be self-defeating. For no Big Power today will sit idly by and permit a small country to employ nuclear weapons except as it suits the Big Power. Besides inviting interference even from its ally, it may well invite inclusion in the target system of a Big Power that is not its ally. For the danger of use of nuclear weapons by

small countries, regardless against whom ostensibly aimed, impairs the security of the Big Powers.

Finally, related to these nuclear questions are the concomitant questions about the military efficacy of a *hidden* deterrent. Missiles, whether aboard submarines or in underground silos, can hardly be expected to impress a foe who cannot see them. There is something tangible about the warning posed by troops on a border, warships outside a harbor, or aircraft thundering across the sky.

The strategy of “flexible response” recognizes the validity of the theory that non-nuclear wars are more likely than nuclear wars, but that the nation must be ready to meet all contingencies. Yet covering all military bets is a very complicated task, and some questions have been raised whether the nation’s political leadership can cope with the ever-widening gap between the intricacy of the weaponry and the almost metaphysical nature of the strategy-making process. Professor Kissinger, who has served at the White House, reports:

Inevitable problems of confidence and competence between the technical and political levels of domestic decision-making may make it difficult to implement a strategic doctrine. Architects of strategy need a continual awareness that their audience is not a group of colleagues of similar technical competence but of hard-pressed individuals for whom strategy can be but one of a number of concerns. Thus excessive complexity may lead to paralysis.

The strategists must at every stage ask of the decision-maker: Does he understand the doctrine? Does he believe in it? Will the doctrine meet emergencies or provide an excuse for inaction? Does it instill a sense of mastery or produce a feeling of impotence? What does the decision-maker really mean when he accepts a strategy? Does he accept it with the notion, “In prescribed circumstances, this is what I will do?” Or does he have the *arrière-pensée*, “If this is all I can do, I will do nothing?”

This fascinating insight into the doubts that assail a White House Adviser reinforce certain conclusions, herewith summarized, on the future effects of nuclear weapons on American strategic doctrine. We have not developed the nuclear arsenal rationally. We exaggerated the destructive potentiality and flexibility of the earlier type weapons, perhaps fooling ourselves more than our enemy. We hastened pell-mell to produce too many and too great a variety of bombs in our arsenal. We thus have overloaded our Armed Forces with the paraphernalia of nuclear weapons to the extent that at times we have been in danger of loosing a barrage before taking a chance to reconsider; other times we have been encumbered by such weapons when we did not need them.

I cannot know to what extent these observations hold true today, although I suspect that they do. It would be negligent of American security not to have a basic arsenal, probably much smaller than exists today, one which is capable of wreaking substantial damage upon an attacker. We must keep in mind, however, that our very possession of too many of these complicated weapons systems may limit rather than enhance our choices.

The oversophistication of military equipment, as a matter of fact, plagues the non-nuclear forces. Take the case of the Navy diver who was wearing some \$1,000 worth of special equipment, and he was diving off the Vietnamese shore in the China Sea; walking the ocean, feeling comfortable with his artificial lungs, his oxygen tank and mask, his flippers, rubber suit—the whole bit—when he noticed just a few feet away from him on the ocean floor a man in bathing trunks. That's all. No mask, no tank. So our sailor paddled over to this other man and took out his pad and pen—one that could write under water—about \$200 worth of equipment right there—and he wrote, “How can you manage to stay under water so long?” And he handed it over and the other fellow took the pad and pencil and wrote, “I am drowning!”

Having thus criticized overreliance upon nuclear forces—and I guess I should, for the record, distinguish between nuclear energy for propulsion which, of course, I endorse wholeheartedly—I come now to a statement on the importance of strong conventional forces, with emphasis on naval power, of course.

I will not, however, follow the stereotype. I dare say you have heard enough about the glories and effectiveness of seapower, how the United States must keep the sea-lanes open; must be capable of exerting pressure along troublesome coastal areas; must be capable of landing troops, if necessary; must be capable of transporting men and supplies; must be capable of mounting aerial attacks from floating airfields; must be capable of lurking beneath the seas in submarines designed to attack other submarines or add to the nuclear retaliatory force with missiles; must support great merchant fleets. These are some of the elements of modern American seapower and you have already heard much about them.

I would like, however, with a concrete example, to discuss seapower as an element of our future in Asia, relating it to the concluding portion of this talk, the problem of Communist China. For the war in Vietnam—remember my quotation from Thucydides—is only a symptom of the larger challenge to the United States (indeed all of the West) in Asia. For two centuries there was a power vacuum on the eastern portion of the Eurasian continent, and foreign powers could move in and out of it—fight over it—as though the sleeping giant did not exist. Napoleon warned not to wake that giant. He did not, Patrick Gordon Walker cogently pointed out recently, indicate how to keep it asleep.

China is awake and coming out of her lethargy and this is something that would cause a major reaction regardless of what regime was in power. That does not mean it makes no difference that the Chinese mainland is Communist, but what is significant in terms of national strategy is less the form of government than its objectives. Any Chinese regime would seek to recapture for the proud Chinese people the dominance of Asia that China once enjoyed.



There are other considerations. Mainland China represents, even among many Asians who fear her, the resurrection of Asia against the West. To many Asians, communism in China is not a bogey but is studied as a possible panacea, in “local” form, of course. At the same time, Communist China does represent a new imperialism even for the little nations around her that secretly admire her. In many respects, the feeling is like that of the Balkan countries in Europe in their attitude toward Russia.

North Vietnam unquestionably would like to dominate all of Indochina. Thailand is afraid of a possible North Vietnamese–Laotian combination and thus is staunch in its association with the United States. Cambodia is worried about Thailand and Vietnam—North *and* South—and thus hopes by a “little brother” friendship with China to escape their threat.

Sukarno had hoped to replace Nehru as the voice of emergent nationalism. Political developments are still unclear in his regime, but one thing is clear in Pacific strategy: Indonesia is an obvious mark for China’s southward extension of influence and power. The only thing left out of the jigsaw puzzle is Japan. In fact, it is precisely because Japan has conscientiously pursued a policy of extreme pacifism that it has created a power vacuum off Communist China’s flank that permitted Peking to accelerate her aggressive revival.

Now where does America come in? The United States probably would be involved in Indochina even if the French had not been ousted and the British were not currently leaving the scene. The United States not only is a world power, it is a Pacific power. And we can no more remain immune to the aspirations of men and nations in the Far East than we could remain immune to them in Europe—or Africa—or Latin America—or anywhere in the world.

With that in mind, there is no question that we have a future in Asia. But there is also no question that we have no future there as a land power. We cannot stay there to keep the peace forever by force of arms—nuclear or otherwise. We cannot stay there as the supporters of one or more Asian countries against one or more other Asian countries—regardless of how we define our purposes.

The West—the United States in particular—has responsibilities in Asia, but only because there is at present no balancing force for the military power on Mainland China. We remained in Europe after the war—as a balancing force against the Soviet Union. The time is perhaps not far off—but not yet—when we will no longer need to keep sizeable military forces there. The time has not come when the other chief powers of Asia—India, Indonesia, Taiwan, Japan, Korea—are in a position to assert themselves. It is only a natural extension of our wartime obligations to preserve the equilibrium.

However, the United States, even as it carries on the fight in Vietnam, must be ready to withdraw—not suddenly, of course. Not during the struggle, to be sure. But withdraw

nevertheless. There is a limit to the time allotted us in the psychology of the people of Asia between recognition as allies and branding as colonial occupiers. Not only the United States, but Britain as well, must eventually withdraw from Asia. Hong Kong is a delight to us all, but it is an anachronism and surely will be dealt with by a forceful China when the time comes—Communist China or otherwise—even if it now serves as a useful conduit for Western money. And Russia, too, will someday have to withdraw from Asian lands that were seized by the Czar in China's dormancy.

Withdrawal does not mean abandonment. The United States and other Western Powers—and the Soviet Union—must find in the local powers of Asia replacements for themselves as obstacles to Chinese aggressive domination. And the Western Powers, while withdrawing from Asian lands, can continue to help maintain what has been aptly called a “balance of prudence” by exerting and demonstrating great military and economic power in the background. We would be the guarantors of the Asian peace, but guarantors not on land, guarantors with our powerful sea and air striking forces and with our huge economic resources. Here, in the Pacific, is the role for conventional seapower. And many of the countries we help build up to contain and “balance” China would be maritime nations.

This is not to say that we abandon Polaris submarines. Indeed the Fleet ballistic missiles may well prove the most useful of deterrents, because of their relative immunity to a first strike attack. Nor am I advocating the elimination of all nuclear weaponry. What I am saying is that we must not have too much of a good thing. Warships with guns, aircraft that can fire at targets they can see, and swift ships that can support operations far from home are what may well spell the difference between credibility and insensibility in the crises to come.

There's a flavor of the 19th century in the military pressure I assign to the United States, but it would have no colonial objectives. On the contrary, it would be openly designed to help the countries of Asia establish their own detente. The war in Vietnam is a terrible thing, but in the perspective of world affairs it is still a small war, engaging relatively small numbers of people. It has not forced either side to make the total commitment of fighting men and equipment, of national manpower reserves and other resources that occurs when nations are forced by great hostilities to forsake all else and fight like maniacs to preserve themselves. And we must keep this war from becoming just such an all-out war.

How? This is the point in the lecture where I remind you I am an observer, not a doer. Nevertheless let us review, as we consider the spectre of Communist China, some of the theses I have set forth: first, that nuclear weaponry is often a hindrance; second, that we must have a simple, coherent, understandable strategic policy. That policy must be projected for the long pull, not merely constitute a catch-as-catch-can defensive

operation against insurgency in Vietnam, or Thailand, or elsewhere. It must recognize that China will inevitably be a Big Power. It must recognize that other countries in Asia must be helped to grow big, too. It must recognize that the United States, although it must withdraw from the mainland of Asia, can never withdraw from the environs of Asia. We cannot indulge in a big nuclear slam-bang against the North Vietnamese and go home. We must stay to trade and give aid and assist in keeping a “balance of prudence.”

For the national security interests of the United States are not limited to its own shores, nor to its own survival alone. We must show the flag everywhere we can, not as a threat but as a symbol of our global interests. For that purpose, open demonstration of American naval power is ideal: but it must not depend chiefly on the threat of nuclear annihilation. And it cannot substitute for the political and economic talents of the people it is designed to protect.

The demonstration by China that she can manufacture a nuclear weapon puts us on the alert as no meeting of technicians in Moscow ten years ago could have done. Peking must be deterred. But Peking will not be deterred by threats of preemptive strikes against her nuclear installations. Like Stalin, Mao surely knows that the American temperament simply will not countenance that form of aggression by us. Insofar as the Communist Chinese threaten an attack with their nuclear weapon, there is, of course, but one answer. But most evidence points to Peking’s development of the bomb not as a threat, but as a Gaullist-like symbol of China’s own grandeur.

In this connection I found pertinent yesterday’s column by David Lawrence, one of the conservative commentators on the American scene. He is also the publisher of *U.S. News & World Report*. Mr. Lawrence wrote (and I quote it at great length):

To put the Vietnam war into perspective, however, it is necessary to put Red China’s relationship to the conflict in Southeast Asia in perspective, too. This is the root of the matter, and until a clearer idea is formed of what contingencies any American step toward peace may bring, no progress will be made.

The United States has told the world it is protecting South Vietnam at the request of its government, and obviously the protection is against a Communist takeover. Yet if the United States and Red China achieved some kind of truce, the friction in Vietnam would be regarded by Peking as hardly worth bothering about.

This is why again and again in discussions of the Vietnam problem the handwriting on the wall says that the relations of the mainland of China to the rest of the world need prime attention. In this week’s issue of *U.S. News & World Report* there’s a significant interview on this subject. It was conducted in Vienna between the magazine’s staff reporter there—Alex Kucherov, an American citizen of Russian birth—and Dr. Hugo Portisch, editor-in-chief of the Vienna *Kurier*, who had just returned from a trip to Red China, where he had talked at length with the leaders there. Dr. Portisch said:

Marshal Chen Yi, the Vice Premier and Foreign Minister, with whom I had a long talk, told me they will need at least 20 years for the whole of China—a huge country—to reach the industrial level of present-day England . . .

The Chinese, by tradition, are not invaders . . . and when you bring up Vietnam, they make a point that their troops aren't there. . . . At one point he (Marshal Chen Yi) said to me:

Look, everybody's afraid of China. Well, look at our Army. It's a huge Army. It's a land Army with conventional weapons. Of course, if we sent 3 million men into Southeast Asia, we certainly could kick the Americans out of there, easily. But we know perfectly well that, if we kick the Americans out of there, the Americans wouldn't take that defeat. What would they do? They would attack us with superior means.

Dr. Portisch said he understood this meant nuclear weapons. He added that the Red Chinese leader also was sure the Americans wouldn't invade Red China. So the Viennese editor concluded: The Chinese Communists talk belligerently, but they act cautiously—in Vietnam and everywhere else.

The foregoing puts Red China in perspective and points the way not just to diplomatic dialogues on troop withdrawal but to an international plan that could promote Asia's economic development. This offers the real hope. For if the leaders in Peking were persuaded that it is not a temporary device but a long-range formula, a solution to the internal as well as external problems of Mainland China would emerge. Once conferences on economic development and assistance are started and progress is made in this field, the Vietnam problem would naturally adjust itself.

In the final analysis, Peking will be contained only insofar as the nations around her succeed in demonstrating their will and capacity for freedom. Peking will be deterred not by Americans or Russians but by Asians who make themselves strong. China, of course, supports the Communist insurgency in Vietnam; of course, she supports the similar insurgency in Thailand; of course she wants to subvert other governments to her power bloc. But China has been painstaking in its avoidance of any provocation that would result in a retaliatory strike by United States military forces. China cannot want to take on the United States.

Secretary McNamara has said that the full implications of the Communist Chinese threat are far from clear, and the question of what our nuclear posture in the Far East should be in the future will require continuing study. In this connection, however, since I agree with his point, I would like to quote the Secretary further as follows:

There is one lesson that we can draw from our experience in Europe, and that is to avoid a strategy which relies almost wholly on the use of tactical nuclear weapons to cope with (China's massive ground forces).

This statement was made after China detonated her second nuclear device.

## **PART TWO**

---

The Role of Nuclear Weapons in Deterrence



## Defense, War-Fighting and Deterrence

COLIN S. GRAY

Having been in retreat through most of the 1970s, the advocates of a mutual assured destruction approach to nuclear deterrence and force planning are staging something of a comeback. Many aspects of the real world have altered, but not, seemingly, the arguments of people who believe that deterrence is best secured via the mutual threat to wholly vulnerable civilian populations. Wolfgang Panofsky, for a prominent example, published an article very recently which was a fairly direct restatement of an article that he published back in 1974. He argues as follows:

What is clear above all is that the profusion of proposed NUTS (Nuclear Utilization Target Selection) approaches has not offered an escape from the MAD world, but rather constitutes a major danger in encouraging the illusion that limited or controlled nuclear war can be waged free from the grim realities of a MAD world.<sup>1</sup>

It is my contention that defense planning which provides for the selective and controlled employment of nuclear weapons constitutes no danger to peace, and that there are no good reasons why such planning should encourage any illusions. No one who opposes MAD reasoning is guaranteeing that the firing of nuclear weapons would be controllable, that nuclear weapons can, for certain, be employed to secure political objectives, or that damage to Western homelands can be limited.

If nuclear weapons genuinely are unusable by a democracy, because they are not politically or socially acceptable, then the United States and Nato have serious problems. Aside from the fact that nuclear weapons are the key to Nato's concept of flexible response, the potential enemy happens to be heavily armed with such weapons and is not constrained by the political pressures which hamper rational defense planning in democracies.

It is sensible to be skeptical about the feasibility of controlling a nuclear war, and particularly a protracted nuclear war. One can envisage circumstances where the United States has a surviving force of SSBNs at sea and ICBMs buried deep underground, but where those forces have no access to anything resembling a National Command Authority

(NCA). One cannot be certain that nuclear war would be controllable, but there should be no doubt as to why it is important that we strive to provide for such control. A defeatist, or fatalistic, attitude towards control virtually guarantees that if deterrence ever fails, it fails deadly. Control would be very difficult to sustain, but very difficult is not synonymous with impossible.<sup>2</sup>

For the United States to invest heavily in the ability to control the employment of its nuclear weapons, and in some substantial capability to enforce damage limitation (through counterforce attacks and active and passive defenses), is both important for deterrence and is essential as the responsibility of today's policy makers to the past and to the future.

Active and passive defenses, in the forms of air and missile defense, should be integral to the concept of deterrence. The concepts of protracted war and war survival are not offered as alternatives to deterrence; they constitute the dominant theory of deterrence. Nuclear utilization theory has at its heart the idea of denying victory to the enemy and, no less important, of avoiding defeat ourselves. Whether or not the scale of damage that would be suffered in a central nuclear war is compatible with the idea of "victory" for our side is another matter. "Victory" and "defeat" are not absolute ideas, rather do they relate to the achievement or failure of achievement of political objectives. Those objectives may be more or less extensive in scope.

To deter the Soviet Union through the threat to deny victory, the current official U.S. policy story, must entail the United States developing a survivable capability to strike, either promptly or in a delayed manner, at places deemed by the Soviet Union to be essential for the preservation of its political system. By way of some contrast, the Soviet Union appears to be committed deeply to the idea of "assured survival."

The United States cannot assess its deterrent requirements solely on the basis of assuming a reasonable and prudent adversary who is calculating expected losses against possible gains within a context of peacetime normalcy. U.S. nuclear forces will be needed as a major influence upon Soviet minds perhaps only once or twice in a generation, if then. This is not to deny the day-in, day-out relevance of nuclear forces to consideration of the correlation of forces—they are a central feature on the military landscape—but it is to deny that the requirements of deterrence are very onerous day by day. The proper, though admittedly most stressful, test of strategic postural adequacy would be a political condition where the Soviet leadership anticipated the imminent breakup of its Empire unless it took offensive action, militarily, to attempt to control physically the external environment of that Empire. In short, a situation where the U.S. strategic posture was directly relevant to Soviet policy decision would be a situation wherein the Soviet Union probably would be close to being beyond deterrence. Needless to say, the United States has a major interest in minimizing, to the extent it is able, the possibility of such a situation coming to pass.



The greatest Soviet fear is loss of political control. If such control is lost, all is lost. Political control in the form of individuals, official records, and communication links can, and to some degree should, be targeted directly. The principal target should not so much be the official organs of the state, but rather the awe in which the state is held by society at large. The regime has to be seen to be failing. The United States cannot directly produce political revolution through nuclear attack, but it can enforce progressive defeat upon the means of coercion of the Soviet state. But, if the Soviet state can succeed in military operations abroad, it should be able to pick up the pieces at home and recover at some leisure. It must be emphasized that the Soviet political control structure must be placed at risk, for deterrent effect, but should not actually be struck until very late in a war—if then. Although the United States need not be stronger than the USSR everywhere and in all respects, the deterrence policy of the Reagan administration, which requires that the United States be able to wage a prolonged conflict, makes very plain the need for the enduring survivability of strategic forces able to threaten, and strike at, Soviet “core” political values.

The ability to limit damage to the United States, on a major scale, is essential for the credibility of the U.S. deterrent. It is all well and good for the U.S. defense community to design more and more sophisticated ways of hurting the Soviet Union in a manner particularly distressful in Soviet perspective. But, it should never be forgotten that the United States has no inherent interest in punishing the Soviet Union, and still less interest in punishing Soviet citizens for the actions of their government. In practice, in the undesired event of war, an American president is going to be much more interested in saving American lives than he is in taking Soviet lives.

U.S. strategic forces should be so postured that, to the degree possible, they deter attack upon themselves. A deceptively based MX system, with a noteworthy ballistic missile defense (BMD) backstop, could and should function for deterrence as a major “firebreak”: that is to say as a target set that the Soviet Union could not strike at with profit. Meanwhile the MX could impose very burdensome costs on the Soviet Union as Soviet ICBM payload is placed at prompt risk of attack.<sup>3</sup> But, nuclear war must be considered as a *campaign*. The United States should not initiate central nuclear employment if it anticipates, with high confidence, suffering intolerable damage by way of Soviet retaliation. Nonetheless, it is a fact that it is Nato that has the major net deficiency in theater forces, meaning that it is almost certain to be the United States who first needs to have to resort to “strategic” nuclear weapons—to attempt to redress a growing theater disaster.

Active and passive defense, in conjunction with considerable counterforce ability, cannot preclude damage to the American homeland, let alone assure national survival. Nothing

can be assured concerning nuclear war, save for the certainty of unprecedented damage to be suffered with unusual rapidity. Nonetheless, a national commitment to damage limitation is of the greatest importance. What should such a commitment accomplish?

- It should deny the Soviet Union the ability to win a military victory.
- It should enable the United States to take, and perhaps retain, the strategic initiative in an endeavor to seize and retain escalation dominance.
- It should make the difference between a catastrophe that we survive as a political, social, and economic entity, and a catastrophe that we do not survive.
- Also, a United States committed to damage limitation should be perceived (which, after all, is where deterrence is or is not effective) as a robust competitor and as a more reliable friend and ally.

It certainly is true that the advent of nuclear weapons and rapid means for intercontinental delivery stresses active defenses as never before. The arithmetic of prohibitive kill ratios achieved by air defense has been altered dramatically in favor of the offense. However, there is a permanent technological dialectic between the offense and the defense. Because all American cities cannot be defended with very high confidence in the 1980s, it does not follow that that task will be incapable of accomplishment twenty or thirty years from now. It is popular to argue that only a perfect, or very near perfect defense, is worth buying. This is incorrect.

Speculation concerning probable Soviet style in central nuclear targeting is exactly that, speculation. However, the United States is not totally ignorant concerning the probable character of Soviet style in central-war waging. There are grounds for believing that Soviet targeteers focus heavily upon American military and C<sup>3</sup>I targets, with some attention paid to important war-supporting industries. We should anticipate Soviet conduct of a central nuclear war according to fairly traditional military criteria. While the Soviet Union may not be interested in imposing maximum damage upon American society, as an end in and of itself, one should not anticipate Soviet willingness to pay a heavy price in terms of immediate military effectiveness in order to hold down collateral damage to urban and industrial America. Logically, if they were to seek to exploit the vulnerabilities of American society, Soviet leaders would choose to conduct a central nuclear war, in its initial stages, in a very controlled and restrained manner, leaving America's cities as hostages to American political acquiescence.

In practice, the Soviets almost certainly would choose to leave the United States a great deal more to lose following an opening round of a war. But, it would be a mistake to assume that the Soviets conceive of nuclear war as a political bargaining process rather than as a war. While the Soviets probably would not inflict any more damage than they

believed they had to for military reasons, it is almost certainly correct to argue that they design their war plans with a view to the efficient allocation of scarce nuclear assets.

The most agreeable, and certainly economical, theory of damage limitation holds that both sides, for fear of the consequences of retaliation, would conduct nuclear war extremely carefully, and that damage would be limited, by reciprocated choice, as a consequence of deliberate targeting restraint, in kind and in quantity. Most of what American defense planners think they know about Soviet military style does not encourage endorsement of this theory. Soviet nuclear rocketry is informed by a theory of application which derives directly from the artillery.

It is more likely than not that in the event of war, virtually the entire Western theoretical literature on the subject of intra-war deterrence and controlled response, with various “thresholds,” will be discovered, belatedly, to have been mere vanity and wishful thinking. Without assuming the worst possible case, by any means, it is only prudent to assume that the Soviet Union would attempt, in very short order, to win the military war by denying the United States the physical ability to continue to wage it. If that is the case, the pertinent question, of real-time importance, would not be, “how can we (the United States) encourage restraint on the Soviet part?,” rather would it be, “how well can our forces fight?—and how much of the American homeland can we protect from destruction and damage?”

Investment in active and passive defenses does not make war any the more likely to occur, contrary to the strange beliefs of some people. No American president is going to become a nuclear adventurer simply because he has active and passive defenses which, in conjunction with timely offensive-force attrition of enemy capabilities, might hold American casualties down to the low tens of millions.

But, investment in civil defense, in air defense, and in several layers of ballistic missile defense, should mean that an American president, *in extremis*, could threaten to initiate nuclear action in defense of ultimate Western values, and that threat should be credible. The theoretical, strategic, and political case for heavy investment in damage-limitation is clear indeed. Stated at its most succinct: A United States with a plausible theory of survival in a central nuclear war campaign is a United States capable of fulfilling its current foreign policy obligations; a United States bereft of such a theory (as today) is a United States incapable of fulfilling those obligations.

The question of what the proper balance should be between the offense and the defense does not lend itself to definitive answer. The American homeland must be protected because one simply cannot afford to assume that the deterrence system will “work” forever.<sup>4</sup> It is possible that the next century will see a technical-strategic shift from a condition of offense-dominance, as today, to a condition of defense-dominance. However, it is well to

remember why the United States invests in long-range nuclear weapons. The most stressful task with which the U.S. long-range nuclear forces are burdened is that of makeweight for conventional or nuclear theater deficiencies. Unlike the Soviet situation, the United States cannot be content merely to neutralize the political influence of the other superpower's strategic forces. If the United States should ever need to wield the threat of strategic nuclear employment, it would be with coercive purposes in mind, to induce the Soviet Union to pull back from a recent gain. Unless the United States has a persuasive theory of how it limits its societal vulnerability, the initiation of central nuclear war would, quite literally, be to begin a campaign that it could not finish. In the classic phrase, the Soviet Union would have "escalation dominance."

Opponents of active and passive defense tend to fail to address the logical (indeed, realistic political) connection drawn here between relative freedom of offensive action and the ability to limit damage at home. It is not at all obvious, furthermore, that any American gains in the fields of active and passive defense would easily and near-automatically be offset by Soviet counteraction. If very high technology is what the United States is particularly good at inventing and exploiting, we should back American reentry physicists against Soviet BMD designers, and American BMD designers against Soviet physicists. Also, it should not be forgotten that Soviet defense industry, in all its aspects, is not an agile instrument, easily fine-tuned to respond to particular American military programs. If, for example, American BMD deployment were to trigger Soviet BMD deployment, that would have a major impact on resource availability for other Soviet high technology programs which, considered in the round, might well be beneficial to Western security. The "slack" in U.S. high technology industry should easily accommodate the heavy competitive pressures.

No great reliance should be placed on any single damage-limitation program. The United States needs civil defense, air defense, BMD, and offensive forces capable of reducing the threat with which the defenses would have to cope. The issue here is not whether this or that BMD system assuredly will work very well. Active and passive defenses would vastly complicate the tasks of Soviet defense planners, greatly increase Soviet uncertainty, and should make a major difference in the credibility of the United States commitment to honor its treaty commitments without, in so doing, necessarily committing national suicide.

This paper has not sought to make light of nuclear war. Nor has it placed enormous faith in any particular defense technology. The case for large-scale investment in active and passive defenses, as part of a balanced strategic posture, must, in the first instance, be appreciated at the level of strategic argument. With one's eyes fully open as to the prospective horrors of nuclear war, one should endorse a substantial, though admittedly

imperfect, multi-layered defense, over no defense at all. We should not ensure by our actions that if deterrence fails it must fail deadly.

---

## Notes

1. Spurgeon M. Keeny Jr. and Wolfgang Panofsky, "MAD versus NUTS," *Foreign Affairs*, Winter 1981/82, p. 304.
2. For a pessimistic analysis, see Desmond Ball, *Can Nuclear War Be Controlled?*, Adelphi Papers, no. 169 (London: International Institute for Strategic Studies, Autumn 1981).
3. I have presented this argument in detail in *Strategy and the MX*, Critical Issues Series (Washington, DC: Heritage Foundation, 1980); and in *The MX ICBM and National Security* (New York: Praeger, 1981).
4. See Fred Charles Ikle, "Can Nuclear Deterrence Last to the End of the Century?," *Foreign Affairs*, January 1973, pp. 267–285.



## Strategic Uncertainty and Nuclear Deterrence

DONALD M. SNOW

*While we may disagree with the implications of what strategy deters, a nuclear strategy must deal with the real emergence of an uncertainty in the strategic environment. Strategies and patterns of force must flow from a concept of what deters, given the physical environment, and must be devised and procured relevant to current and future realities.*

Disagreement abounds over the state of the thermonuclear balance, the adequacy of American nuclear forces to deter a potential Soviet aggression or to carry out their assigned mission should deterrence fail, and about the propriety of American nuclear strategy to underpin the deterrent condition. Extraordinary claims and warnings are heard about the purported ability of the Soviet Union to destroy the U.S. fixed-site land-based ICBM force in the early 1980s and the consequent need for alternative ICBM basing<sup>1</sup> and about the need for alternative deterrent strategies, possibly most dramatically represented by Colin S. Gray's recent advocacies of a "war-fighting" strategy<sup>2</sup> and the Carter administration's announcement of a limited counterforce targeting policy (Presidential Directive 59).

This intellectual turbulence has been caused by important changes in the operational environment in which strategy and forces are fashioned. The pace of change has been dynamic and its effects very difficult to analyze and interpret. Differences of opinion in what these changes portend play a large part in the strategic and force configuration recommendations that analysts advocate. Two sources of change are particularly prominent and, because of their importance, require summary examination: the evolving Soviet threat and weapons technology developments.

Concern about Soviet nuclear capabilities stems from the force expansion and modernization program that the U.S.S.R. began in 1967.<sup>3</sup> The Soviets moved from strategic inferiority in the early and middle 1960s to parity and by most measures superiority today. Expansion has occurred in both ICBMs and SLBMs, with particular emphasis on

third- and fourth-generation ICBMs (notably the SS-17, SS-18, and SS-19, NATO designations of their three most recently deployed liquid-fuel intercontinental rockets). Alarm has arisen over vigorous MIRVing and accuracy improvements in their large-payload missiles, because such advances on their greater throw-weight rockets potentially endows these weapons with counterforce capability against American ICBMs.<sup>4</sup> These concerns form the basis of the ICBM vulnerability debate and advocated need for the MX missile deployed in a supposedly survivable basing mode.

The major concern about the Soviets is why they have developed the forces they possess. The question is contentious, but one thing is for sure. The Soviet force expansion produced a configuration and capability far in excess of the needs for an assured destruction employment strategy. The possibility that some other motive than assured destruction guided the Soviets shocked many observers who believed the Kremlin had been “educated” to accept American views about nuclear stability. The result was a concerted effort to try to assess Soviet intentions, using evidence from the publicly available literature (in military journals and the like) and pronouncement of leading Soviet spokesmen. Viewing this complex of sources over time and across commentators, this mode of analysis has revealed that the Soviets conceive nuclear weapons very differently from the way Americans do. Rather than basing deterrence in something like assured destruction, the Soviets argue deterrence is maintained by the Soviet ability to fight and win a nuclear war *should deterrence fail*. From this construction, Soviet emphasis on counterforce targeting, preemptive attacks, close integration of conventional and nuclear forces, and civil defense follow.

The degree of alarm this revelation engenders differs among observers and depends on which Soviet spokesmen one emphasizes. Soviet military writers emphasize how the U.S.S.R. plans to fight, win, and survive a nuclear war should one begin, and those analysts who find Soviet intentions particularly ominous tend to emphasize this literature (the Soviet civil defense debate is a bellwether).<sup>5</sup> Soviet political leaders, ever since the “peaceful coexistence” enunciation at the 20th Congress of the CPSU in 1956, have emphasized the necessity of avoiding nuclear war. Analysts who make primary reference to these sources tend to downplay the importance of Soviet declaratory policy and to point out the difficulties of inferring intentions from capabilities.<sup>6</sup> Lacking direct access to Soviet nuclear intentions, the debate continues inconclusively.

The fruits of technological development have also stimulated debate. The seminal technological event was the advent of the multiple independently targetable reentry vehicle (MIRV).<sup>7</sup> MIRV allowed warhead proliferation without increasing the number of strategic launchers, and permitted greater target coverage, including both countervalue and counterforce targets. MIRV thus made consideration of attacking retaliatory systems attractive by upsetting the symmetry between attacked and attacking systems (i.e., one could attack several retaliatory systems with a single launcher). Improvements in



guidance technology increased missile accuracy, making more serious the ICBM vulnerability problem.

Projected breakthroughs in ballistic missile defense (BMD) through laser and particle-beam technologies would add yet another dimension to this problem.<sup>8</sup> The result of these changes has been to leave nuclear strategy in a state of confusion and disarray for the last decade. The debate has taken assured destruction theory honed in the 1960s as the base and has either attacked its adequacy and attempted to provide an alternative or has tried to modify the basic strategy to changed conditions. What has emerged has been a series of partial, piecemeal, and often “quick fix” solutions rather than a clear and thoroughly articulated alternative strategy.<sup>9</sup> In the wake of SALT I and the Jackson amendment to its ratification, the term “essential equivalence” entered the lexicon. In 1973, then Secretary of Defense James Schlesinger added the notion of limited nuclear options (LNOs), a throwback to the controlled response idea introduced by Robert S. McNamara in 1962.<sup>10</sup>

The Carter administration repackaged this melange of ideas and partial strategies under the umbrella of a concept coined in 1965, the countervailing principle (the term originally appearing in a research contract report to the Secretary of the Air Force in 1965<sup>11</sup>). As will be argued later, it may prove prophetic that this “principle” originally occurred in a discussion of American response to ABM deployment or adoption of a counterforce targeting strategy. Elevated and elaborated, the principle has become the countervailing strategy, as summarized by former Secretary of Defense Harold Brown:

Our potential adversaries must be convinced that we possess sufficient military force so that if they were to start a course of action that could lead to war, they would be frustrated in their effort to achieve their objective or suffer so much damage that they would gain nothing by their action. . . . [O]ur adversary would recognize that no plausible outcome would represent a success—on any rational definition of success.<sup>12</sup>

This statement synthesizes previous strategies. The United States must be able to counteract (countervail) Soviet aggression across the range of provocations (limited nuclear options), up to and including a general exchange (assured destruction). Essential equivalence is defined implicitly as the capacity to carry out proportional countermeasures denying the Soviets the ability to calculate gain. The targeting philosophy adopted in Presidential Directive 59 publicly endorsed the counterforce orientation of the 1975 Single Integrated Operations Plan (SIOP) and basically implements the limited options strategy.<sup>13</sup> As Brown himself admitted, “In certain respects, the name is newer than the strategy.”<sup>14</sup> These formulations have a certain shopworn character. The question is, need this be the case?

My own answer to the question is in the negative. There has been an avoidance of questioning the assumptions on which nuclear strategy has been based, although events

make such an examination appropriate and necessary. The current debate on employment (military) strategy and force composition obfuscates the discussion by leaving those underlying assumptions implicit and unchallenged. Because most discussions have skirted these assumptions, it is worth briefly reviewing them. In essence, the underlying assumptions of assured destruction (and, in the absence of a clearly defined alternative, MAD remains the standard) are an admixture of strategic bombing theory, awe over the destructive capability of nuclear weapons (especially after the introduction of thermonuclear warheads), and resignation to the reality of ballistic missilery.

The late Bernard Brodie described the legacy of strategic aerial bombardment on nuclear strategy.<sup>15</sup> Pointing to such interwar advocates of such theorists as Douhet, the notion arose that bombardment could bypass normal military operations and attack directly the will and ability of the enemy to resist. Although the evidence from the European theater was ambiguous on this contention, the atomic bomb and its employment against the populations of Hiroshima and Nagasaki seemed to vindicate the airpower theorists. Aerial bombardment is inherently an offensive activity, and bombardment theory began to shift doctrine about military employment from the traditional superiority of the defense toward superiority of the offense. The greatly enhanced destructive power of thermonuclear warheads made the failure of the defense all the more crucial, and the advent of ballistic missilery completed the rise of offense over defense.

Both technological innovations were traumatic and, in combination, helped shape a consensus that deterrence was the prime, if not sole, purpose of nuclear weapons. Thermonuclear weapons increased the damage even a relatively few nuclear weapons could do to the point that “the devastation they would bring if fired would make a mockery of any political goal their use had been intended to achieve,”<sup>16</sup> and these weapons were considerably more compact than earlier nuclear weapons, creating the prospect of delivery by ballistic missiles. Successful ICBMs completed the offense’s ascendancy, because it was believed that there could be no effective defense against ballistic missiles.

The sure knowledge of devastation meant that the only way to avoid a nuclear holocaust was to prevent the employment of nuclear weapons at all. Deterrence became the goal, and in trying to make the best of a bad situation American strategists evolved the assured destruction concept as the heart of strategy. The heart of assured destruction is Thomas C. Schelling’s “hostage effect,”<sup>17</sup> the realization that, in a world where nuclear weapons can be hurled against a population with no prospect of self-defense, target populations are the hostages to the nuclear whims of those possessing the capability. The idea was to make the prospect of a nuclear attack so horrible that a state would not provoke such an attack under any circumstance. The emphasis was placed on the threat that an attack would cause an assured destruction retaliation, thus making the initial attack suicidal.

The key element in this formulation is the *assuredness* of retaliatory devastation. If both the Soviets and the United States know *with certainty* that an attack will result in a crushing counterattack, then neither can ever calculate advantage from initiating a nuclear war and both are deterred. For this absence of incentives to start a nuclear conflict to operate effectively, two conditions that were part of the environment of the 1960s had to be operative.

First, retaliatory forces had to be invulnerable to attack to guarantee their availability should the need arise. To this end, efforts were made to make forces invulnerable (e.g., placing missiles in concrete-reinforced silos and on submarines), and early missiles were too inaccurate to attack protected forces with any reasonable prospect of destruction anyway. Second, surviving retaliatory forces had to be capable of reaching their targets to carry out their retributive function. The ballistic missile's invulnerability to defensive countermeasures seemed to guarantee this. What emerged was a deterrence system based upon the assurance, or certainty, that the use of nuclear weapons would be catastrophic for the initiator of nuclear violence as well as the victim. Knowing that one's own society would be destroyed if one crossed the nuclear threshold made it impossible to calculate gain and hence maximized disincentives. The certainty that one was committing suicide acted as the primary deterrent.

This formulation has always had critics. The strategy has been described as macabre, even genocidal,<sup>18</sup> in its implications. Questions have been raised about whether assured destruction is good for anything but threatening an opponent, possibly best summarized in Richard Rosecrance's statement of the *ex ante-ex post* dilemma.<sup>19</sup> Collins agrees that the threat is only believable against an all-out Soviet attack: "Historical precedents suggest the survival of the state surpasses all other priorities. Threats that risk suicide for anything less strain credibility."<sup>20</sup> There is another level emerging at which the formulation of strategy is being challenged: the assurance of what the outcome of nuclear conflict would be. Indeed, it is the central contention here that the certainty that has underlaid strategic formulations is giving way to a condition wherein uncertainty in strategic calculation is the dominant reality.

### **The Uncertainty Factor**

Although assured destruction appeared to replace calculation of gain with the certainty of a lethal response to aggression, sources of uncertainty have always been present at the edges of this strategy. Uncertainty has always played an important role in military affairs, including nuclear planning, and these "traditional" sources of uncertainty merit brief review. At the same time, emerging weapons technologies heighten the effect of uncertainty and potentially elevate uncertainty to the level of central reality. Most notable among these technological trends are improving ballistic missile accuracies and ballistic missile defenses.

### “Traditional” Sources of Uncertainty

The conduct of warfare has always contained uncertainties. The decision to engage in military hostilities requires assessing likelihoods of success, including weighing imponderable factors, not the least of which is the influence of weapons systems previously unused in combat. In specific nuclear terms, there are conceptual uncertainties about basic concepts and dynamics relating to nuclear balance and even about the physical effects of nuclear weapons employment.

Whenever any weapons system is initially employed in battle, its effect is to some extent unknown. If there has been any consistent pattern in the 20th century, it has been to estimate inaccurately what the effect will be.<sup>21</sup> The history of the bomber airplane, particularly in speculation about the role aerial bombardment would play in World War II, is indicative. Although the bomber ultimately played an important role in concluding that conflict, it was only after considerable adjustment of expectations based on operational experience.<sup>22</sup> This difficulty of prediction arises because a new weapons' effectiveness is no greater than the ability of its human operators. As Panofsky puts it: “Those who demand certainty of performance and reliability in military weapons tend not to acknowledge the least reliable and predictable component of military conflict, which is *man*.” (Emphasis in original.) This is particularly a problem with new weapons qualitatively different from their predecessors, as nuclear weapons certainly are. As Panofsky suggests, “The unpredictability of behavior of human populations under stress, the vastness and uncertainty of the large-scale effects of nuclear weapons, and above all the abilities of ‘rational’ governments to control the course of a nuclear conflict all tend to submerge the importance of formal doctrine or goals.”<sup>23</sup>

The suggestion about human behavior in a nuclear environment is indicative of the uncertainty we have generally about the basic concepts and dynamics regarding nuclear deterrence; the empirical base on which “theory” about human behavior in a nuclear conflict is founded is exceedingly thin.<sup>24</sup> Moreover, the study of deterrence is dedicated to avoiding enlarging that base, as only the failure of deterrence can provide authoritative information on key points. Thus, high-sounding concepts are only hypothetical constructs for which virtually no reliable evidence is available. This problem pervades the strategy that is based upon these constructs.

Despite elaborate studies,<sup>25</sup> there is great uncertainty about the physical effects of nuclear weapons usage. Arsenalns are enormous, and even though not all weapons are available for use and some would be destroyed, the result of employing those available would be enormous and is a further source of uncertainty. Adding the combined superpower strategic arsenalns aimed at one another (about 15,000 warheads) to their reported “tactical” arsenalns in Europe (reported at around 7,000 warheads for the

United States and about half that many for the U.S.S.R.) results in an awesome potential rain of destruction even if only some are available at any time. Despite elaborate studies of weapons effects, there is no realistic way to judge the physical results of unleashing these arsenals.

This very real uncertainty is beclouded in at least two ways. First, estimates of weapons effects based on nuclear testing data appear so elegant and precise as to defy either refutation or questioning when extrapolated. It is, in other words, very difficult to deal with the mathematical precision that these calculations produce. Second, the results are generally so horrible that people avoid thinking about them. Shrouding bomb effects with antiseptic notions like “blast overpressure” and “thermal” effects obscures the absolute horror that would be inflicted in a nuclear exchange. The massive detonation of nuclear arsenals into which an exchange could devolve goes beyond our theoretical understanding. Testing data can reveal the effects of a single nuclear weapon delivered at a given place and we can extrapolate those effects to the use of a few weapons without overly prostituting its assumptions. At the same time, no models in which one has any reasonable level of confidence exist that allow estimation of the effects of using several thousand weapons in a more or less concentrated area. The effects curve is undoubtedly not linear, but no one can more than casually speculate on the curve’s actual shape.

An example relevant to the next section illustrates the point. To provide a “survivable” basing mode for the new MX missile system, the so-called multiple protective shelters (MPS) system, in which 200 missiles are shuttled among 4,600 locations, has been proposed. The deterrent logic is that the Soviets could only destroy MX by launching warheads against all the shelters. The system dissuades attack because the number of warheads that would have to be launched against it would be so large as to leave Soviet reserves depleted so that the postattack balance would overwhelmingly favor the United States. Thus, deterrence is premised on making it too expensive to attack the missiles.

Implicit is that the Soviets can destroy MX-MPS if they are willing to incur the costs. To do so would necessitate hurling at least 4,600 warheads at the MPS fields, an attack of unprecedented proportions whose destructiveness would be almost incomprehensible. What would the physical effects be? Would the force disrupt the atmosphere, affecting the ozone layer, the jet stream, or possibly wind current patterns? Would the crystallization of much of Utah and Nevada, including their mineral contents, cause changes in the earth’s gravitational fields? Could the force of such an explosion affect the earth’s rotation or attitude? What effects on the world’s weather would the resultant dust cloud have? An all-out attack on *Minuteman* silos spread across several states could have any of these effects; against MPS the effects would be physically concentrated and magnified.

These questions affect the ability of man to survive after a nuclear exchange, and their answers could prove critical to determining whether initiating a nuclear exchange would ever make any sense. Unfortunately, the answer is that we do not know. There is certainly no equivalent phenomenon in nature from which to draw analogies, and extrapolation from existing testing data is tenuous at best. All that can be said is that such an event would be unprecedented. What cannot be predicted is what the consequences would be.

### New Technological Sources of Uncertainty

Nuclear scenarios and appropriate strategies for the 1980s and beyond are faced by emerging technological capabilities which, despite other claims made for them, compound uncertainty. The two most prominent technological trends have been increased missile accuracy to counterforce capability and potential breakthroughs in ballistic missile defenses. Each represents a qualitative improvement in weapons systems sophistication, but their effect on nuclear strategy depends upon great precision in performance with little tolerance for error. The ability to accomplish the necessary performance characteristics introduces a new source of uncertainty, which will be described as the "targeter's dilemma."

#### *Missile Accuracy and ICBM Vulnerability*

Increasing Soviet missile accuracies have caused a great concern in the American strategic studies community and are part of a broader trend pointed out by Brodie some years ago: "If there is any single trend that seems to dominate in weaponry, it is for missiles of all kinds to become more accurate and more deadly."<sup>26</sup> Specifically, increased accuracy theoretically allows targeting of the easiest retaliatory system at which to aim: the fixed-site, land-based ICBM force. To understand the problem created by this theoretical capacity requires asking first what the capability's value is, which, in turn, defines the requirements for so-called hard counterforce capability. Those requirements highlight the uncertainty that attainment of the capability represents.

The most obvious reason to attain counterforce capability is to threaten credibly to destroy that portion of an enemy's retaliatory forces under threat or to be able to destroy those capabilities before they can be used against you. Thus, the purpose of a counterforce capability is either to degrade substantially or disarm an opponent, thereby effecting damage limitation on your side. This ultimate goal of damage limitation can be achieved in two ways. The most obvious is to disarm an opponent so that no forces remain to inflict damage on you. Failing in that, the purpose is to degrade an enemy's force to the point that after an attack, the adversary will conclude that he is disadvantaged in remaining forces and will thus be self-deterred. In either case, success is

measured by how much of the adversary force you can destroy. Given arsenal destructive characteristics, a relatively small residual force can do a great deal of damage. Thus a high degree of confidence in counterforce capability is necessary to make the strategy attractive.

From this perspective, precision in execution and high belief in that precision are the necessary preconditions in convincing leaders to accept the strategy. Conversely, uncertainty about the ability to succeed makes the strategy less appealing by raising the prospects of remaining retaliatory force after an attack. Secretary Brown admitted in 1978 that uncertainty is a key element in the vulnerability issue: “In recognizing that the MINUTEMAN vulnerability problem is a serious concern for us, we also realize that the Soviets would face great uncertainties in assessing whether they would have the capability we fear—and still greater uncertainties as to its military and political utility.”<sup>27</sup>

The heart of uncertainty regarding counterforce capability is that it is a theoretical rather than a demonstrated capability. The capability is theoretical in that neither side has nor ever will conduct realistic tests of the ability to mount a massive attack on missile fields. Rather, the capability must be extrapolated from numerically limited test data which are themselves questionably isomorphic of the “real thing.”

There are two key elements in determining counterforce capability: the accuracy of the weapons system and whether it explodes where it is intended to. The heart of accuracy lies in the concept “circular error probability” (CEP), defined as the radius around the target in which one has a 50 percent confidence that a warhead will land. CEP is measured in fractions of miles, and is the denominator in formulas calculating the lethality of weapons. Reduction or increase in CEP can thus have a dramatic effect on lethality calculation. CEP as a confident measure of kill probability (either single-shot or cumulative) is a questionable calculation base for two reasons.<sup>28</sup>

The first problem is that CEP is a statement of statistical probability which says something like “if you fire a large number of warheads at a target, 50 percent will fall within the designated radius.” A statement of statistical probability says *nothing* about whether a single launch will land within the radius (or the second, as implicitly assumed in cross-targeting, which assumes one can dramatically improve kill probabilities by dedicating a second warhead at a target).

Additionally, there is reason to question the precision of the test data on which CEP is based as it would apply to a real exchange. The United States, for instance, has never tested a missile armed with a nuclear warhead. Testing by both sides is generally done over east–west test ranges and largely over land, whereas a nuclear exchange would be north–south over the North Pole and thus the Arctic Sea. Although there are theoretical data indicating likely success for missile flights in these circumstances, success is

undemonstrated. For example, flight over water can pose unique gravitational problems: “The accuracy of a missile depends on the precise gravitational field through which it flies. Since the land is far more rigid than the sea, this field is much less affected than by tides raised by the moon and the sun in an ocean environment.”<sup>29</sup>

The second calculation problem is fratricide, the possibility that the effects of previous nuclear explosions over a target area will disable subsequent warheads heading for the same area.<sup>30</sup> The problem is acute in calculating an attack against missile silos, because a large number of warheads, fired in barrages, would have to be directed at these complexes in close sequence. Initial attacks would produce considerable nuclear effect in the upper atmosphere through which subsequent warheads would have to penetrate: heat, blast, radiation, and debris. The effect is difficult to predict because fratricide effects have only been observed underground. Calculations tell us that fratricide will occur, but “since there have been no atmospheric nuclear tests since before multiheaded missiles were invented, neither superpower knows for sure if the first warhead will disorient its brothers.”<sup>31</sup>

None of these problems would be overly important against “soft” counterforce or countervalue targets, given the destructive capacity of nuclear weapons. Against hardened retaliatory forces, failures in precision can result in great amounts of retaliatory power being released because of error.

### *Ballistic Missile Defenses*

The idea of ballistic missile defense has begun to find its way back into strategic discussions. This reemergence is partly the result of continuing advocacies by apologists who never accepted the idea of abnegating the defensive function and of ongoing improvements in ABM technologies. The increasing possibilities of dramatic breakthroughs in exotic BMD technology, notably lasers and particle beams, offer the potential of dramatic improvements in defense against a missile attack. Advocacy of BMD more went underground than disappeared in the wake of the ABM debate. Research and development of ABM systems have been ongoing, and there has been considerable progress in such areas as radar tracking and discrimination between actual attacking missiles and decoys. The result has been the emergence of theoretically effective missile defense systems, notably the proposed LoADS (Low Altitude Defense System), a “hard-point” defender intended for interception of ICBMs aimed at MX missiles in the MPS configuration. BMD advocacy has been further stimulated by defensive applications of directed energy transfer weapons research.

When the ABM debate occurred, three related arguments were made against active missile defenses. The first was the effectiveness of the systems. Wide disagreement among experts about how well ABM would work left a lingering public doubt. Second, cost



estimates for erecting an ABM defense were quite high and seemed a particularly questionable investment for a system of dubious effectiveness. Third, and emerging primarily from assured destruction advocates, was a concern that defenses would be destabilizing. According to this objection, ABMs potentially weaken the hostage effect by raising the possibility of surviving nuclear war. Just as ICBM vulnerability made retaliatory system survivability questionable, missile defense challenges penetrability and retribution. In either case, the *certainty* of disastrous effects from launching a preemptive attack is weakened.

The attractiveness of BMD depends on how effective such a system must be to become worthwhile. The answer to that question depends on what one seeks to defend with BMD. The distinction, of course, is between population and retaliatory systems protection, and the operational requirements vary depending on the target one seeks to protect.

The requirements for defending retaliatory forces are less stringent than those for population concentrations, particularly given the size of modern arsenals. The reason is straightforward: to avoid urban destruction, a defense must be virtually perfect, inasmuch as the failure to intercept even a single incoming RV can result in massive destruction. Thus, population protection with active defenses has absolute requirements: one either can or cannot protect the population from attack. If one cannot guarantee population protection, the effort is questionable, especially if the costs are substantial (which they invariably are). Retaliatory systems defense, on the other hand, is an incremental proposition. Because the purpose of attacking retaliatory systems is their maximum degradation (ideally to the point of disarmament), any interception of incoming RVs contributes incrementally to force survivability and hence availability for retribution. The greater the incremental contribution and hence the amount of retaliatory force surviving, the greater the deterring effect on a potential attacker.

Within this context, BMD advocacy is moving in two directions. Reflecting the technological state of the art, short-term advocacies center on so-called hard-point defense: "A point defense, to protect a missile silo (for example), would consist of short-range missiles deployed near the target and intended to counter only those warheads that appeared to be jeopardizing the target."<sup>32</sup> The LoADS project is a prime example and has been suggested as a solution to the ICBM vulnerability problem. Longer-range advocacies center on defensive applications of the so-called exotic DET technologies. Although actual deployment of these technologies is probably a decade or more away, they have been the subject of great acclaim and reservation.<sup>33</sup> Much of the debate centers on uncertainty about the final outcomes of developmental processes, because "it is characteristic of exotic systems that they probably do not work at all, but if by any chance they do work they

may be spectacularly better than conventional ones.”<sup>34</sup> Optimistic projections assign DET weapons comprehensive counterforce and countervalue defensive roles. These assessments feature space-based DET platforms engaging in boost-phase interception of rising missiles because “of the vulnerability of missiles at this stage”<sup>35</sup> (before they have reached maximum speed and can maneuver effectively). Some proposed schemes combine point defenses composed of DET-based weapons or conventional or nuclear-tipped ABMs with space-based systems in a “layered” defensive system.

The emergence of truly effective (in a population protection sense, essentially airtight) BMD would indeed revolutionize strategic thinking. Formidable problems in areas such as radar detection, tracking, and protection (the “eyes” of a defensive system always being their most vulnerable element) must be overcome, as well must the challenges posed by countermeasures to whatever capabilities emerge. Even if all the formidable difficulties are surmounted (which is by no means certain), ballistic missile defenses will share a common problem with projections regarding missile accuracy and counterforce capability.

That problem is that the effectiveness of BMD will also be theoretical and not demonstrated. As systems are developed, the testing will always be limited and incomplete, as with ICBM testing. A laser device, for instance, may repeatedly show the capability to destroy a handful of incoming reentry vehicles, but does that mean the results can be extrapolated to predicting success if thousands of warheads were incoming? The answer is that we can only really know by conducting realistic tests on a scale that is impractical on cost grounds alone.

The result is that there would always be substantial uncertainty about the actual performance of a BMD system. Some degradation would seem almost inevitable, because “the whole of the immensely complex system would have to function almost perfectly on the very first occasion on which it was used, without any possibility of full system trials.”<sup>36</sup> Some loss of effectiveness may be tolerable when dealing in an incremental protection situation, but would be unacceptable in population protection, with its absolute requirements.

### *The Targeter’s Dilemma*

The calculation of the outcomes of nuclear weapons employment is a special problem of the targeter. Targeting provides the operational answers to what national policies can and cannot be implemented through various patterns of weapons employment and what can and cannot be achieved through nuclear weapons employment. The key targeter’s concept in these estimations is damage expectancy (DE), the likelihood that a weapon will destroy its target. DE is the product of the probability of arrival (PA) of a weapons

system to the target area and the probability of target destruction (PD) and is calculated by the formula:

$$DE = PA \times PD$$

The PA and PD factors in the formula, in turn, are compound expressions. Examining the composition of each factor and the whole reveals the very real uncertainties which make up the targeter's dilemma.

Probability of arrival (PA) comprises four factors and can be expressed by the formula  $PA = WSR \times WR \times PLS \times PP$ . WSR (weapons systems reliability) refers to the working order of the delivery system. The ability of a rocket to ignite, escape its silo or missile tube, and adopt the proper trajectory and post-boost-phase attitude are operations that must occur properly for a system to be reliable. Weapon (or warhead) reliability (WR) refers to the warhead itself and whether it will detonate. Periodic checks are made against materials degradation, but such testing is highly selective. The physical state of the entire warhead inventory is unknown at any time, but is extrapolated from test/observation data. Prelaunch survivability (PLS) is the ability of a system to remain operable after an attack and is the targeter's operationalization of the vulnerability issue. Probability of penetration (PP) is the ability to overcome any active defenses and is the obverse of the effectiveness of ballistic missile or air defenses.

The other factor is probability of target damage (PD). PD is a function of two elements: the lethality of the weapons (see note 28) and the resistance (or hardness) of the target. Lethality varies depending on the type of target (e.g., blast overpressure against structures, radiation against people) and is related directly to target hardening. The combination of yield and accuracy determines the likelihood a target will be destroyed, with particular emphasis on accuracy. The prime means of determining accuracy is CEP, with the resulting uncertainty that enters into the calculation process.

Several things affect the ability to calculate likelihoods of mission accomplishment. First, the formula is multiplicative, with all factors expressed as percentages. The upper limit of a damage expectancy is 100 percent or unity (1.0) if all the probabilities are unity. If any or all factors are less than unity, the multiplicative nature of the formula makes the effect on overall damage expectancy progressive. Second, this multiplicative nature of the process means that a large decrease in *any* factor in the formula will have a dramatic effect on overall damage expectancy.

The ICBM vulnerability issue illustrates these points. For instance, if one is calculating the damage expectancy of the ICBM force against its targets and assumes a Soviet preemptive launch against the ICBMs would knock out 75 percent of them, then PLS for that force element is 25 percent, and damage expectancy is only one-quarter what it would be

otherwise. Because a statement of statistical probability is invalid for any individual instance, the methodology can be applied validly only to an aggregate of weapons systems. Thus, the likelihood that a given warhead will land within the CEP is either 100 percent or zero percent (it either will or will not), but one cannot predict in advance into which category a particular warhead will fall.

Third, the basis for DE formula elements is sample data which is assumed to be representative but may or may not be so. Thus, some percentage of warheads is examined periodically for reliability, and the percentage found reliable forms the basis for calculating WR for any given warhead. Sampling techniques allow a high degree of reliability within some confidence interval that the sample represents the universe, but a precise isomorphism is not possible.

If calculating DEs for our own systems is fraught with uncertainties, the process for estimating Soviet force effectiveness is even more difficult. The weighing of factors in one's own formula is at least based on observation and testing, but the assignment of values to Soviet force characteristics is based on less precise information. The Soviets do not, for instance, allow us to examine the warheads on their missiles for reliability, so we have less than perfect information on which to assign a WR value to Soviet forces. This is a crucial point when one considers that the frequent assertions of U.S. ICBM vulnerability are based on damage expectancy calculations that we assign to Soviet forces.

The new technological capabilities already discussed compound these uncertainties. If recent statements by Secretary Brown and others are to be believed, PLS for American ICBMs is becoming virtually nil, but such assessments are in turn based upon damage expectancies, based on theoretical calculations. Within these circumstances, what PLS can be assigned to the ICBMs in which one would have confidence? Similarly, any developments in BMD directly affect PP, and the deployment of a BMD system would require a reduction in PP (which, in the absence of BMD, is 1.0). But, because reliable test data against a large-scale attack will always be unavailable, what magnitude of reduction should there be? Neither question can be answered with high confidence. There is, however, considerable disagreement over the most appropriate and effective strategies to carry out the political purpose and over appropriate action should deterrence fail. The Soviets maintain that deterrence of an American nuclear aggression is accomplished through our sure knowledge that they would prevail in the ensuing war (the vaunted war-fighting and war-winning strategy). Until recently, the United States has countered with the proposition that assured destruction deters a Soviet aggression. The U.S. strategic debate has hinged on the credibility of the assured destruction threat. There is growing agreement that assured destruction no longer forms an adequate deterrent base. What has emerged is a new and purportedly more realistic base to avoid the onset of nuclear conflict under the countervailing strategy concept.

This “new” strategy is a lineal and nearly literal descendant of controlled response under the early Kennedy administration and Secretary Schlesinger’s limited nuclear options strategy in the early 1970s. It posits deterrence in a slightly different mode than has previously been the case, following closely from Collins’ description of “sound deterrence,” which “confronts foes with irrefutable indications that net gains will be less or net losses more than they would expect by refraining from some given move.”<sup>37</sup> Faced with a broad range of possible Soviet provocations and formidable forces, this definition is translated into a strategic imperative to deal with situations that could lead to war. As Secretary Brown puts it, “Crisis stability means that even in a prolonged and intense confrontation the Soviet Union would have no incentive to initiate an exchange, and also that we would feel ourselves under no pressure to do so.”<sup>38</sup>

The underlying principle of this deterrence conception is not remarkably different from that which it supersedes: creating an assuredness that no conceivable Soviet action can succeed. Translated to the operational level, Gray captures the underlying philosophy of this view: “*One of the essential tasks of the American defense community is to help insure that in moments of acute crisis the Soviet general staff cannot brief the Politburo with a plausible theory of military victory.*” (Emphasis in original).<sup>39</sup>

One can, and many do, disagree with the implications of this reconstruction of what strategy deters, particularly when that strategy is translated into a war-fighting military strategy or a counterforce targeting priority, as announced in PD-59. More basically, however, nuclear strategy must deal with the very real emergence, through advancing military capabilities, of the influence of uncertainty on the strategic environment. Gray’s imperative is the obvious goal. The question is how to achieve it. One answer is the buildup of American strategic forces as broadly advocated and as supported by adherents of a war-fighting strategy. Another answer, possibly in conjunction with the first, is to emphasize the targeter’s dilemma and the possible consequences of being wrong. Strategies and patterns of force must flow from an overall conception of what deters given the physical environment. Strategy and forces fashioned in a situation where certainty was the prevailing reality may not prove adequate in an increasingly uncertain world. It is imperative that underlying premises be examined before strategies are devised and forces procured that may or may not prove relevant to current and future realities.

---

## Notes

1. The issue of ICBM vulnerability has been treated extensively in the recent literature. I have addressed the issue in *Nuclear Strategy in a Dynamic World: American Policy in the 1980s* (Tuscaloosa: University of Alabama

Press, 1981), pp. 96–99 and 205–216 and in “ICBM Vulnerability, Mobility and Arms Control,” *Air University Review* (forthcoming). Colin S. Gray has been a leading clarion of the danger, represented by his “The Strategic

Forces TRIAD: End of the Road?," *Foreign Affairs*, July 1978, pp. 771–789, and *The Future of Land-Based Missile Forces*, Adelphi Papers, no. 140 (London: International Institute for Strategic Studies, Winter 1977). Articulate, but somewhat technical, expressions of some skepticism include John D. Steinbruner and Thomas M. Garwin's "Strategic Vulnerability: The Balance between Prudence and Paranoia," *International Security*, Summer 1976, pp. 138–181; and more recently, Bruce William Bennett's *Uncertainty in ICBM Survivability*, Rand Paper Series No. P-6394 (Santa Monica, CA: Rand, October 1979). For more descriptive discussions, see U.S. Congress, *Counterforce Issues for the U.S. Strategic Forces* (Washington: Congressional Budget Office, January 1978); and Deborah Shapley, "Technology Creep: ICBM Problem a Sleeper," *Science*, 22 September 1978, pp. 1102–1105.

The MX issue has also received considerable attention. My own views are in "The MX-Basing Mode Muddle: Issues and Alternatives," *Air University Review*, July/August 1980, pp. 11–25. For representative advocacies of the system, see Colin S. Gray, "The MX ICBM: Why We Need It," *Air Force Magazine*, August 1979, pp. 66–68, 71; Lawrence J. Korb, "The Case for the MX," *Air University Review*, July/August 1980, pp. 2–10; and Edgar Ulsamer, "A Solid Case for the MX," *Air Force Magazine*, April 1980, pp. 29–35. For more skeptical views, see, for instance, Desmond Ball, "The MX Basing Decision," *Survival*, March/April 1980, pp. 58–65; William H. Kincade, "Will MX Backfire?," *Foreign Policy*, Winter 1979–1980, pp. 43–58; and Paul D. Zimmerman, "Will MX Solve the Problem?," *Arms Control Today*, January 1980, pp. 6–8. For a description, see U.S. Congress, *The MX Missile and Multiple Protective Structure Basing: Long-Term Budgetary Implications* (Washington: Congressional Budget Office, June 1979).

2. Gray has presented his ideas recently in "Nuclear Strategy: The Case for a Theory of Victory," *International Security*, Summer 1979, pp. 54–87; "Targeting Problems for Central War," *Naval War College Review*, January–February 1980, pp. 3–21; and (with Keith Payne), "Victory Is Possible," *Foreign Policy*, Summer 1980, pp. 14–27. P.D. 59 was referred to by Secretary Brown in his speech at the Naval War College Convocation in August 1980. See Harold Brown, "Remarks at the Convocation Ceremonies for the 97th Naval War College Class, Naval War College, Newport, Rhode Island" (Washington: Office

of Assistant Secretary of Defense (Public Affairs), August 20, 1980).

3. This subject has produced a torrent of literature in recent years. My own view and conclusions can be found in *Nuclear Strategy in a Dynamic World*, chap. 5 and pp. 216–223. A sample of authors and points of view includes: Robert L. Arnett, "Soviet Military Doctrine: Views on Nuclear War," *Arms Control Today*, October 1978, pp. 1–3; Les Aspin, "Putting Soviet Power in Perspective," *AEI Defense Review*, v. 2, no. 3, 1978, pp. 3–14; David J. Cabe, "Russian Military Doctrine: A Fresh Look," *Air University Review*, September/October 1978, pp. 19–27; John Erickson, "Soviet Military Policy in the 1980s," *Current History*, October 1978, pp. 97–99, 135–138; Leon Gouré, et al., *The Role of Nuclear Forces in Current Soviet Strategy* (Miami, FL: Center for Advanced International Studies, 1974); Colin S. Gray, "Soviet-American Strategic Competition: Instruments, Doctrines and Purposes," in Robert J. Pranger and Roger P. Labrie, eds., *Nuclear Strategy and National Security: Points of View* (Washington: American Enterprise Institute for Public Policy Research, 1977), pp. 278–301; William D. Jackson, "The Soviets and Strategic Arms: Toward an Evaluation of the Record," *Political Science Quarterly*, Summer 1979, pp. 243–261; C.G. Jacobsen, "Soviet Strategic Capabilities: The Superpower 'Balance,'" *Current History*, October 1977, pp. 97–99, 134–136; T.K. Jones and W. Scott Thompson, "Central War and Civil Defense," *Orbis*, 1978, pp. 15–36; Benjamin S. Lambeth, *The Elements of Soviet Strategic Policy*, Rand Paper Series, No. P-6389 (Santa Monica, CA: Rand, September 1979); William T. Lee, *Soviet Defense Expenditures in an Era of SALT*, USSR Report 79-1 (Washington: U.S. Strategic Institute, 1979); Michael Mcgwire, "Soviet Military Doctrine: Contingency Planning and the Reality of World War," *Survival*, May/June 1980, pp. 107–113; Richard Pipes, "Why the Soviet Union Thinks It Can Fight and Win a Nuclear War," *Commentary*, July 1977, pp. 21–34; and Jack Snyder, "The Enigma of Soviet Strategic Policy," *The Wilson Quarterly*, Autumn 1977, pp. 86–93.
4. Throw-weight (or payload) is that part of a missile above the last booster. Counterforce (or hard-target kill) capability is the capacity to destroy military targets that have been hardened against attack, as in missile silos.
5. The debate over the effectiveness of Soviet civil defense programs and how seriously the

- Soviets take them has been heated. T.K. Jones and Leon Gouré have been leading apostles of the problems created for the United States and a range of experts have attacked these conclusions. For a summary of these positions, see Fred M. Kaplan, "The Soviet Civil Defense Myth," *Bulletin of the Atomic Scientists*, March 1978, pp. 14–20, and "The Soviet Civil Defense Myth: Part II," *Bulletin of the Atomic Scientists*, April 1978, pp. 41–48 for the negative arguments; and Leon Gouré, "Another Interpretation," *Bulletin of the Atomic Scientists*, April 1978, pp. 48–51 for the positive position.
6. For a particularly eloquent analysis, see Raymond L. Garthoff, "On Estimating and Imputing Intentions," *International Quarterly*, Winter 1978, pp. 22–32.
  7. For a particularly thorough analysis, see Ronald L. Tammen, *MIRV the Arms Race: An Interpretation of Defense Strategy* (New York: Praeger, 1973). The decision process leading to the MIRV decision is well chronicled by Graham T. Allison, "Questions about the Arms Race: Who's Racing Whom? A Bureaucratic Perspective," in John E. Endicott and Roy W. Stafford, eds., *American Defense Policy* 4th ed. (Baltimore: Johns Hopkins University Press, 1977), pp. 424–441. Another good overview is Herbert F. York, "The Origins of MIRV," in David Carlton and Carlos Schaerf, eds., *The Dynamics of the Arms Race* (New York: Wiley, 1975), pp. 23–35.
  8. Progress in U.S. and Soviet laser and particle-beam programs has been closely monitored in a series of articles by Clarence A. Robinson Jr. in *Aviation Week and Space Technology* since 1978. My own analysis can be found in "Lasers, Charged-Particle Beams and the Strategic Future," *Political Science Quarterly*, Summer 1980, pp. 277–294; and "Over the Strategic Horizon: Directed Energy Transfer Weapons and Arms Control," *Arms Control Today*, November 1979, pp. 1, 8–9.
  9. For a survey of the evolution of American nuclear strategy, see my *Nuclear Strategy in a Dynamic World*, chap. 3. The sweep of post-war strategic evolution prior to the Carter administration is thoroughly covered in Jerome H. Kahan, *Security in the Nuclear Age: U.S. Strategic Arms Policy* (Washington: Brookings Institution, 1975). Harland Moulton's *From Superiority to Parity: The United States and the Strategic Arms Race, 1961–1971* (Westport, CT: Greenwood Press, 1971), remains the best analysis of the crucial events and forces of the 1960s.
  10. A clear statement and justification of LNO is in Lynn Ethridge Davis, *Limited Nuclear Options: Deterrence and the New American Doctrine*, Adelphi Papers, no. 121 (London: International Institute for Strategic Studies, Winter 1975/1976).
  11. See "Alternative U.S. Strategies and America's Future," *Foreign Policy Research Institute Contract AF 49 (638)-1249* (Philadelphia: University of Pennsylvania, 1965).
  12. Harold Brown, *Department of Defense Annual Report, Fiscal Year 1981* (Washington: U.S. Govt. Print. Off., 29 January 1980), p. 65.
  13. See Desmond Ball, "Research Note: Soviet ICBM Deployments," *Survival*, July/August, p. 167.
  14. Brown, *Annual Report, FY 1981*, p. 66.
  15. See particularly Bernard Brodie, *Strategy in the Missile Age* (Princeton, NJ: Princeton University Press, 1959).
  16. Michael Mandelbaum, *The Nuclear Question: The United States and Nuclear Weapons, 1946–1976* (London: Cambridge University Press, 1979), pp. 105–196.
  17. See particularly Thomas C. Schelling, *Arms and Influence* (New Haven, CT: Yale University Press, 1966).
  18. Philip Green, *Deadly Logic: The Theory of Nuclear Deterrence* (Columbus: Ohio State University Press, 1966).
  19. See "Deterrence in Dyadic and Multipolar Environments," in Richard Rosecrance, ed., *The Future of the International Strategic System* (San Francisco: Chandler, 1972), pp. 125–140. I have tried to summarize the more conventional objections to MAD in "Current Nuclear Deterrence Thinking: An Overview and Review," *International Studies Quarterly*, September 1979, especially pp. 461–473.
  20. John M. Collins, "Principles of Deterrence," *Air University Review*, November/December 1979, pp. 17–26.
  21. For a fascinating account of the influence of weaponry on warfare through history, see Bernard and Fawn Brodie, *From Crossbow to H-Bomb: The Evolution of the Weapons and Tactics of Warfare*, revised and enlarged edition (Bloomington: Indiana University Press, 1963).
  22. The multiple changes that had to be made in British bombing strategy because of



overestimates of bomber effectiveness are well catalogued in Max Hastings, *Bomber Command* (New York: Dial Press, 1979).

23. W.K.H. Panofsky, *Arms Control and SALT II* (Seattle: University of Washington Press, 1979), pp. 24, 6.
24. See Donald M. Snow, "Deterrence Theorizing and the Nuclear Debate: The Methodological Dilemma," *International Studies Notes*, Summer 1979, pp. 1-5.
25. The classic study of weapons effects is Samuel Glasstone, ed., *The Effects of Nuclear Weapons*, revised edition (Washington: U.S. Govt. Print. Off., 1964).
26. Brodie, p. 308.
27. Harold Brown, *Department of Defense Annual Report, Fiscal Year 1979* (Washington: U.S. Govt. Print. Off., 1978), p. 63.
28. The formula for the lethality (k) of a single warhead is:

$$K = \frac{Y^{2/3}}{(CEP)^2}$$

where Y is the yield of the warhead.

Obviously, squaring the denominator of a fraction, as CEP is expressed, dramatizes its effect.

29. Zimmerman, p. 145.
30. Discussed particularly well in Steinbruner and Garwin.
31. Aspin, p. 7.
32. W.F. Biddle, *Weapons Technology and Arms Control* (New York: Praeger, 1972), p. 166.
33. Much of this debate is summarized in Snow, "Lasers, Charged-Particle Beams and the Strategic Future."
34. Freeman J. Dyson, "Defense against Ballistic Missiles," in Eugene Rabinowitch and Ruth Adams, eds., *Debate the Antibalistic Missile* (Chicago: Bulletin of the Atomic Scientists, 1967), p. 15.
35. Biddle, p. 160.
36. *Ibid.*, p. 185.
37. Collins, p. 22.
38. Brown, *Annual Report, FY 1981*, p. 69.
39. Gray, "Nuclear Strategy: The Case for a Theory of Victory," p. 56.



# Strategic Deterrence and the Cruise Missile

EDWARD J. OHLERT

*The Admiral Richard G. Colbert Memorial Prize is a cash award given by the Naval War College Foundation to the author of the best of the professionally worthy essays submitted by a resident student. This, the 1977 prizewinner, argues that the cruise missile is stabilizing, adds an effective element to deterrence, and is an inappropriate arms limitation bargaining chip to squander in order to achieve Backfire Bomber basing restrictions.*

## Nuclear Deterrence Today

### *Elements of Deterrent Policy*

The introduction of large numbers of deliverable nuclear warheads into the Soviet arsenal engendered a new U.S. foreign policy aimed at the prevention of nuclear war through deterrence. U.S. strategy attempts to integrate strategic weapons *procurement*, proposed *employment methods* (targeting doctrine), and strategic *arms limitation* efforts into a coherent design thus increasing the net security of the nation by reducing the probability that a planned or accidental nuclear war will occur. These interactive elements stimulate, and are stimulated by, counterpart programs within the Soviet Union. While different historical experiences and strategies may mold differing perceptions of nuclear war within each nation, the necessary interrelationship of their respective strategic elements yields guidelines for evaluation of procurement alternatives, indicates optimum targeting doctrines to achieve national objectives, and highlights areas for common agreement in arms limitation.

Under the persistent pressure of a vigorous Soviet procurement program, U.S. perceptions of deterrence have evolved from “clear superiority” through “mutual assured destruction” to “flexible response options,” ideas expressed largely in terms of refined targeting options. Although changes in Soviet capabilities and U.S. employments

imply significant change in mission requirements for the supporting force structure, the realities of weapons procurement—high investment costs and long development times—have resulted in maintaining forces not best suited to present strategy.

The cruise missile, with high prelaunch survivability and usage flexibility, simplifies the decision requirements of second-strike warfare, making the system better suited to a true flexible response strategy than alternative systems. When deployed in combination with present strategic systems, the cruise missile diversifies the attack modes required of Soviet first-strike attempts, provides better coverage of certain elements of the target structure in a retaliatory strike, and avoids undesired Soviet reactions likely to be provoked by alternative systems.

Given an effective guarantee against the outbreak of nuclear war, the cruise missile contributes to subnuclear deterrence by significantly upgrading the capabilities of present general operating forces in otherwise critically deficient areas and thus provides the United States with a credible response less than nuclear war. The combined contributions to nuclear and conventional forces well suit the requirements of flexible response.

### *Flexible Response*

The massive Soviet strategic arms program that followed the Cuban missile crisis caused Secretary of Defense McNamara to define “mutual assured destruction”—deterrence through terror, with each side possessing the capability to inflict “unacceptable” damage on the opponent even after absorbing a first strike. With nuclear war thus deterred, only conventional war could conceivably occur, and emphasis was given to rebuilding conventional forces of the nation to ensure subnuclear deterrence. The resulting deemphasis of strategic weapons deployment resulted in a steady increase in the relative nuclear power of the Soviet Union (see Table I), nonetheless perceived as nonthreatening as long as “strategic equivalence” was maintained and the Soviet Union could not gain significant advantage in a first strike.

From its inception, however, assured destruction has been beset by a lack of worldwide credibility. European doubts that an American president would condemn U.S. cities in response to an attack on NATO generated pressures for proliferation and a desire that the nuclear deterrence function protecting NATO be autonomous with respect to that covering the United States. This doubt has been mollified only by the continued presence of U.S. troops, introduction of large numbers of tactical nuclear weapons, inclusion of allied planners in targeting decisions at Omaha, and separation of Western Europe from U.S. statements about no first use of nuclear weapons.

A Nixon-Schlesinger reevaluation of the inadequacies of assured destruction resulted in a stated requirement for “flexible response options” which have characterized U.S. deterrence during the 1970s. President Nixon expressed his underlying fears.

TABLE I  
*Historical Change in Strength<sup>1</sup>*

YEAR	U.S.A.			U.S.S.R.		
	ICBM	SLBM	BOMBERS	ICBM	SLBM	BOMBERS
1962	294	144	600	75		190
1963	424	224	630	100	100	190
1964	834	416	630	200	120	190
1965	854	496	630	270	120	190
1966	904	592	630	300	125	200
1967	1054	656	600	460	130	210
1968	1054	656	545	800	130	150
1969	1054	656	560	1050	160	150
1970	1054	656	550	1300	280	150
1971	1054	656	505	1510	440	140
1972	1054	656	455	1527	560	140
1973	1054	656	442	1527	628	140
1974	1054	656	437	1575	720	140
1975	1054	656	432	1618	784	135

Should a President, in the event of nuclear attack, be left with the single option of ordering the mass destruction of enemy civilians, in the face of the certainty that it would be followed by the mass slaughter of Americans?<sup>2</sup>

The major goals of flexible response are

1. To deter a broad range of Soviet military options;
2. To provide incentive and demonstrate U.S. capability to limit war should deterrence fail;
3. To permit continued negotiation even after the commencement of hostilities;
4. To terminate hostilities on terms acceptable to the United States and her allies.

A long-sought entrant into U.S. nuclear policy is strategic arms limitation. The high cost of weapons systems, the dangerously unsettling effect of rapidly accelerating weapons technology on world stability, and the unpredictability of result (both in terms of system performance and net security improvement) created a desire to “cap the arms race”—limiting the amount expended on weaponry that one hopes will never be used. The Anti-Ballistic Missile Treaty, Nuclear Non-Proliferation Treaty, Interim Offensive Agreement (SALT I), Vladivostok Understanding of 1974, Peaceful Nuclear Explosion Treaty, Threshold Test Ban Treaty, and Environmental Modification Treaty are present agreements resulting from strategic arms limitation efforts.<sup>3</sup>

### *Strategic Asymmetries*

The United States and the Soviet Union have not shared identical experiences, nor do they have identical political, military, or cultural characteristics. These asymmetries foster differences in the perceptions of each nation about the relevance of nuclear war to foreign policy, the probable course of war should it occur, and the necessary composition of force structures.

The government of the Soviet Union draws much of its legitimacy from continued primacy in the international Communist movement. Loss of leadership to China or any other nation would remove the basis for Soviet claims to authority and could affect the internal stability of the clique in power if not of the government as a whole. Détente, while reducing direct tension between the Soviet Union and the United States, could not imply an end of support for conversion of nations to communism. Brezhnev's statements in support of continued "wars of liberation" and Soviet efforts in Africa attest to the continued vitality of Soviet expansionism. As the party seeking change, the Soviet Union has the advantage of choosing the time, place, and intensity of confrontation.

Earlier "uprisings" in Hungary, Czechoslovakia, and incidents in Poland and the Soviet Union indicate that "population control" is a more serious problem for the Kremlin than for the West. While one party within a Western country may lose its popular support, there are few instances where there is little support for the *type* of government. Nor are U.S. troops present in NATO countries against the desires of the host population. The stability of Pact governments, and the continued basing of Soviet troops, requires formal police control and military occupation. The ability of the Soviets to commit presently deployed troops to a mobile front war of uncertain outcome is impaired as unexpected reverses with extended logistic lines might well encourage insurgency among their allies. Further, with dual tasking for occupation troops, larger forces would be required.

While the Soviet Union is at a serious disadvantage in access to open ocean, her land position confers compensating advantages. Soviet industry is connected to its resources, and her allies to her industry, by relatively invulnerable land transport. Road and rail routes are "hard" targets and easily repairable. U.S. sea lines of communication are vulnerable to open ocean interdiction, terminal blockade by SSNs and mines, and destruction of terminal facilities. Thus, isolated from natural resources and probable areas of conflict, U.S. industry will be unable to contribute to an allied war effort until the end of nuclear hostilities permits rebuilding ports and airfields. Interior land lines of communication will favor the Soviet Union in a long war, while the NATO countries will be unable to commence economic recovery until the Soviets permit terminal restoration.

The proximity of NATO allies to forward-deployed Soviet ground forces renders them vulnerable to a rapid investment which would complicate targeting the invaders without

sustaining significant collateral damage. Seizure of populated NATO industrial areas represents a nontargetable prize the equivalent of which is not available to Western planners. Concentration of Western industry and population increases their vulnerability (particularly in the absence of civil defense). The natural dispersion of Soviet population and the forced dispersion of industry complicates targeting Soviet economic recovery capabilities. Such targeting favors the Soviet Union more than the United States, and the Soviet Union has an economic “fallback” position in seizing border countries whereas the United States does not.<sup>4</sup>

Past national experience may be expected to affect strategic thought. The United States, isolated from 20th-century land conflict by the oceans, has not suffered severe population losses. Russia, on the other hand, has a long history of wars fought on her soil at high cost in individual lives. (Further, the Soviets have sacrificed millions of lives in execution of domestic policy.) Thus, history has demonstrated to the Russians that war extracts a high price in Russian lives—but a price that Russian and Soviet governments have been willing to pay. Soviet damage limitation efforts may be interpreted as an attempt to ensure that there will be no more Leningrads, while the United States’ preoccupation with preventing surprise attack may well stem from the Pearl Harbor experience. Further the United States long enjoyed a nuclear superiority that permitted nuclear war to be pushed out of mind as too terrible for consideration. The Soviet Union has been forced to consider foreign policy ventures in terms of the impact of an oft-threatened massive retaliation. The Cuban missile crisis of 1962 appears to have been the catalyst for a procurement program that generated the present force structure. The combination of these national experiences directly affects the basic premise of mutual assured destruction—the guaranteed ability to inflict unacceptable damage on valued items. *Unacceptable* must be correctly defined, and the opponent must *value* the target items. The United States’ assignment of unacceptability represents a curious crossing of cultural bounds, and while historical evidence (the dismantling of German factories) supports high Soviet regard for industry, there is little to indicate that the loss of unskilled population is too high a price to pay in the furtherance of either foreign or domestic policy.<sup>5</sup> Not only is it a speculation for the United States to presume deterrence by the prospect of losses the *Soviets* consider unacceptable, but Soviet civil defense programs and industrial dispersion eventually will blunt U.S. countervalue capability.

The force structures of the United States and the Soviet Union vary more widely than can be explained by technological lag. In 1976, the Soviets had deployed 2,342 warheads of 1 megaton or greater, while the United States had deployed less than 800. Many of these Soviet warheads were post-1975 systems with accuracy and yield efficiencies adequate for the hardest industrial target. Soviet procurement programs remain active long after U.S. ICBM production has ceased (the United States has maintained 1,054 ICBMs since 1967), and Soviet deployments outnumber those of the United States significantly. Greater throw

weights, improving accuracy, and more efficient yields characterize a Soviet strategic rocket force inappropriate to “city-busting” in a countervalue strike.<sup>6</sup> Soviet procurements are plainly guided by mission requirements other than those of mutual assured destruction.

In summary, international Communist competitions force Soviet leaders to be expansionist. Limitations on conventional forces restrict their use and tie them closely to nuclear forces. While the United States postulates that the use of nuclear weapons will be in last resort, the Soviets view them as the spearhead for conventional forces. Targeting against economic recovery most threatens the United States, and American force structure is designed for such a strike. A counterforce strike most threatens the Soviet Union, and Russian weapons have counterforce characteristics. The strategic objectives of the two nations appear different.<sup>7</sup>

While the United States views nuclear war as totally undesirable, and U.S. policy is actually one of war avoidance, the Soviets view nuclear war in a traditionally Clausewitzian sense.

The attempt of certain bourgeois ideologists to prove that nuclear missile weapons lead war outside the framework of policy and that nuclear war moves beyond the control of policy, ceases to be an instrument of policy and does not constitute its continuation is theoretically incorrect and politically reactionary . . . immeasurably more effective means of struggle are now at the direct disposal of state power.<sup>8</sup>

### Strategic Cruise Missiles

To implement its deterrent policy and guarantee long-term stability, the United States has maintained a force structure composed of three major elements—land-based ICBMs, submarine-launched ballistic missiles, and manned intercontinental bombers. The combined characteristics of these systems are intended to

1. render simultaneous first strike upon them impossible;
2. provide a capability for striking required targets;
3. ensure that a technological breakthrough does not simultaneously neutralize all systems.

System characteristics for any individual element of such a system are that it must be *survivable*, *capable* of delivering a warhead to a target, *flexible* to permit use against a variety of targets, and it must be *efficient* if it is employed. If the cruise missile is to be considered a procurement candidate, it must be judged on these characteristics.

### *Survivability*

The survival of a nuclear weapon system hinges on many factors, but in general results from a failure of first-strike forces to detect, localize, and penetrate to it. This failure can be induced by measures such as dispersal, deception, proliferation, mobility, hardening, and active defense. To the Soviet weaponeer the ICBM, generally MIRVed, the ballistic

missile submarine, and the manned aircraft, all bearing multiple warheads, present a concentration of targets, increasing the incentive for prelaunch destruction, rewarding successful first strike and decreasing stability. *Dispersal* within the continental United States is difficult without involving population centers in collateral effects. Deployment of the cruise missile on ships takes advantage of both dispersal and isolation of the potential target from the fallout-sensitive population. It is difficult to be *deceptive* with an ICBM or manned aircraft because silos and required support facilities are detectable by satellite and other means. Suggested deception schemes for the Minuteman replacement proposal (MX) include missile rotation among multiple silos, mobility in a covered trench, and land surface mobility. All these ideas share the disadvantage of attracting additional warheads to U.S. soil and they encourage further Soviet offensive rather than defensive investment. Given the small size of the cruise missile, both disguise of weapon-bearing ships and attraction of warheads to nonweapon-bearing ships is possible. *Proliferation* of MIRVed ICBMs is not permitted by interim SALT agreements. The cruise missile is not yet so restricted. Dispersal, deception, and proliferation represent a potential plethora of targets for the would-be Soviet first strike, increasing the uncertainties of the decision to fire. Considering the *mobility* of missile ships, a first-strike planner must not only detect multiple, widely dispersed nuclear targets, but must track those targets until the firing decision is executed. Resources to accomplish this presently exceed Soviet capability and the development of which would require diversion of a large portion of Soviet military investment from offensive weaponry. The land-based ICBM has a significant advantage in *hardening* potential, but hardening inevitably must fall prey to accuracy. Antibalistic missile *defense* of U.S. ICBM sites is restricted by treaty and is a difficult proposition technically. The cruise missile ship at sea presently cannot be attacked by ballistic missiles because of the ship's mobility. Torpedoes, bombers, and cruise missiles pose the major threats to ships—many of which, as general purpose forces, would be capable of self-defense. In keeping with the TRIAD motivation to diversify required attack means, the forces and tactics required to strike cruise-missile platforms would be distinct from those attacking other elements of TRIAD.

### *Capability*

Accuracy for the cruise missile over a 2,000 nm range has been estimated at under 100 feet. The payload is about 1,000 pounds, and can be delivered at a 50-foot altitude over a programmed course selected to avoid area defenses. Such a system clearly is capable of delivering a nuclear warhead to its target against the present Soviet defensive system, with the possible exception of a target well defended by alerted, sophisticated, terminal anti-air defenses. Proper target selection and use of the missile with complementary systems will minimize the effectiveness of terminal defense. Route barrage sanitization by SLBM, for

instance, would clear paths for swarms of cruise missiles. Timed routing over or near SLBM primary targets would provide this defense suppression without dedication of additional SLBM warheads.

### *Flexibility*

At a specified range, a missile can deliver a weight-limited payload which must include the weight of the warheads and the fuel that the bus must have for maneuver. Greater maneuverability will permit a larger footprint—the area in which the warheads from a single missile will land—only at the expense of lower-yield (lighter) warheads. This dependency makes the MIRV vulnerable to a damage limitation strategy. By selectively retaining spatially separated systems for reserve nuclear forces, the Soviets can widen the required footprint for the average MIRV, leading to a “virtual attrition” of yield through increased fuel requirements or warhead wastage because of multiple expenditure at isolated targets. The attempt to fire at a nonprogrammed target complex further reduces flexibility for MIRV in that it may preclude optimum warhead-target assignment. The ability to dedicate a single warhead to a single target and to match the warhead to the target represents flexibility for the cruise missile. This is particularly true when destruction of the target with a conventional warhead is possible and some benefit accrues from lowered collateral damage effects (such as firing at a target in or near an allied country).

### *Efficiency*

In the event deterrence fails, surviving force elements must be used efficiently to prosecute an engagement with minimum expenditure of remaining assets.

Figures 1 and 2 present portions of decision trees for both the single warhead system and the MIRV system. Further checks such as strike feasibility, timing coordination, target vulnerability, and political considerations may add more steps to both processes. For single warhead weaponry some criteria for judging target “value” compared to the warhead to be expended must be established (such as destructive potential and vulnerability indices) and a threshold selected below which a given target will not be struck. As the stock of U.S. warheads is depleted through destruction and expenditure, presumably this threshold would move upward, such that the United States would expend her last few warheads only on very important targets that are sure to be destroyed by the expenditure.

With the use of MIRV weaponry, the decision tree is more complex. As Soviet reserve force elements are detected, a value judgment is made justifying expenditure. Next, judgment must be made as to the time sensitivity of the target (e.g., mobile and escaping, or in firing readiness). If it is time sensitive and valuable, a MIRVed missile must be expended on it, thus wasting the warheads not required for its destruction. If the target is not time sensitive or its value does not justify the expenditure of an entire missile, the



FIGURE 1  
*Single Warhead Decision*

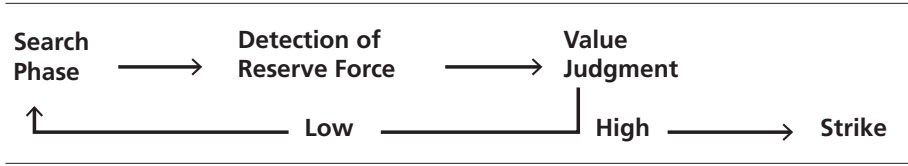
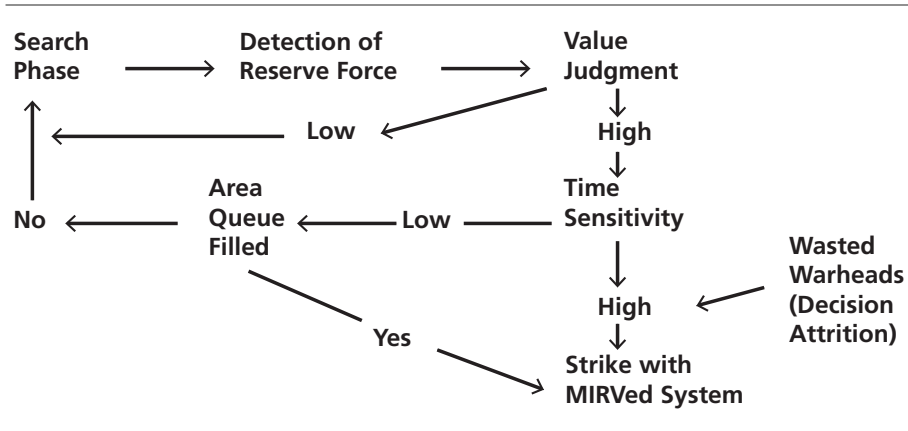


FIGURE 2  
*MIRV System Decisions*



target is placed into a queue. With targets being detected throughout the world, the responsibility area of each queue must continuously be determined via a mapping function which maximizes the number of targets within the footprint of the delivery vehicle. When an area queue is filled, a MIRVed missile may be expended on it, efficiently using each warhead in the destruction of a valuable target. Queue management is an extremely complex process requiring remapping and reevaluation of the summation of target values in the queue with each new target discovery. This process consumes more time than the decision process for single warhead weaponry, and requires greater capabilities in sustained surveillance, command, and control. Extensive computer support is required for queue managers. If Soviet counterbattery capability for backtracking along the course of a missile to localize the firing platform (e.g., a submerged submarine) is suspected, an additional decision must compare the value of all warheads onboard against the targets in a single queue. Alternatively, the size of the queue assigned to a multitube platform may be expanded by targeting every warhead onboard and conducting a rapid complete fireout when the queue is filled. This further increases the time from detection to attack and again burdens sensor systems with a tracking problem and data renewal requirements. To grasp the resulting control problem, consider a Trident submarine loaded with

24 missiles, each carrying 14 warheads. For optimal fireout with one warhead per target (some targets may, however, require additional warheads to achieve an acceptable kill probability) 336 targets must be detected and tracked. Then integrate the Trident into the national decision structure with other Tridents, Minutemen, bombers, etc. Clearly this is an immense problem to consider, let alone solve optimally. Computer size considerations indicate that this type of war, with MIRV weaponry, cannot be fought from an airborne command post and can be fought from ground-based command centers only if surveillance feedback and high data rate communications survive. Yet, with a nuclear force significantly reduced by a Soviet first strike, failure to use every surviving warhead to maximum efficiency will lower the postwar relative power of the United States versus the Soviet Union and degrade chances of achieving an acceptable settlement. The strong implication is that if the United States should find itself in a nuclear war in the near future, it will be armed with weapons ill-suited to the decision requirements of such war.

### *Theater Nuclear Weapons*

Present stockage of theater nuclear weapons in Europe has created concern for their vulnerability to assault or sabotage. The range of the cruise missile will permit its emplacement in more-secure but tactically ready sites.

### **Tactical Cruise Missiles**

Under any effective guarantee of nuclear deterrence, conventional forces assume increased importance in preventing lower order conflict not credibly deterred by nuclear threats. The cruise missile, conventionally armed, complements present land and naval general purpose forces and contributes to subnuclear deterrence.

### *Use Modes*

There are three general categories of conventional usage of the capabilities represented by the long-range cruise missile:

1. strike of fixed site point or area targets;
2. strike of mobile targets acquired by onboard guidance systems;
3. forward pass of ordnance from a "storage" platform to a controlling or designating agent.

Striking fixed position targets requires prior intelligence or a targeting loop with supporting reconnaissance and communication facilities. Examples of targets in this category include headquarters facilities, communication sites, ammunition depots, fuel dumps, bridges, rail and road freight transfer points, pipe or electrical line energy supply, troop and armor formations, and routes of imminent passage. Not all of these targets are

amenable to attack by warheads presently under consideration and define a need for area coverage as well as point target destruction.

Striking mobile targets acquired by onboard guidance is best illustrated by the proposed sea version of Tomahawk which is capable of terminal guidance against shipping. Development of a similar capability for acquisition ashore would permit striking land mobile targets within a wide geographic area. Moving trains, mobile SAMs, and tracked armor or artillery are targets in this category.

Forward pass of ordnance to a user from a central storage point would seem to be the category of greatest promise for cruise missile variants. Delivery on call or time schedule to forward deployed missile controllers would permit heavy ordnance delivery by light infiltration teams on land. Delivery of midcourse controllable ordnance would permit replenishing forward platforms without requiring their return for rearm. For example, airborne combat air patrol aircraft defending against a large Backfire raid will rapidly expend their air-to-air missiles. Launching additional aircraft may not be possible if the carrier deck is being respotted or has sustained battle damage. Given the speed of the Backfire and its missiles, there may be insufficient time for a deck-launched interceptor to gain a firing solution. The loiter characteristics of the cruise missile (or a recoverable variant) would permit "busing" additional air-to-air missiles from a picket ship to F-14 aircraft for their automatic control during peak threat times or high-intensity engagement.

Cruise missiles under local control could precede a manned aircraft strike, reducing the threat to aircraft penetration. Missions of potentially high attrition could be assigned to cruise missiles, sparing aircraft assets for missions requiring greater flexibility. The presence of cruise missiles within a strike group would multiply the targets that must be acquired by the opposing air defense net, contributing to saturation. The low payload characteristics of V/STOL aircraft might be given some relief by requiring only that the aircraft carry missile control equipment and use forward passed ordnance upon arrival at the target. Systems already in advanced development will add to the potential uses of the cruise missile or complement the system in the forward pass mode. Advanced Multipurpose Missiles, Copperhead and Hellfire, Ground Laser Locator-Designator antiarmor systems, Remotely Monitored Battlefield Sensor Systems, and Standoff Acquisition systems are a few programs with potential contributions.<sup>9</sup>

### *Specific Deficiencies Aided by Cruise Missiles*

Cruise missile systems may significantly restore credibility to conventional deterrence in the Central Front area of Europe. As mentioned previously, the potential exists for rapid investment of Soviet ground forces into fallout sensitive areas within allied nations. The low collateral damage of the conventionally armed cruise missile will permit targeting in such circumstances. The presently perceived threat of a rapid armor/mobile infantry

thrust into Europe diminishes when one considers that all known Soviet fuel depots, ammunition storage sites, transportation nets, communication sites, and even headquarters could be struck by accurate, low-flying cruise missiles within 2 hours of the outbreak of hostilities. Routes of advance—even in unexpected directions—could be mined and forward Soviet units delayed or isolated from supply and reinforcement. Present Army tactics call for a zone of attrition to reduce the Soviet impact upon arrival at a main battleline. Attrition teams need only be armed with target designators and communications equipment, unhampering their mobility and allowing them to remain undetected.

Declining naval gunfire capability in the face of sophisticated defenses has thrown the amphibious mission of the Marine Corps into some question. The strategic importance of areas such as Iceland and Denmark imply that the requirement for amphibious capability has not declined. Destruction of fixed site targets and the forward passing of ordnance to infiltration teams will reduce the enemy's ability to oppose a major assault. The rapid all-weather availability of cruise missiles may restore some of the responsiveness in supporting fire not available from carrier-based air. Owing to its low trajectory, naval gunfire is unable to engage defiladed targets, while the cruise missile with terrain-following capability does not share this disadvantage.

Platforms for at-sea carriage of the cruise missile can be the escorts for the high value unit, thus decentralizing a portion of the projection power of the carrier task force. The multiplicity of targets within any task force capable of an offensive role will force the Soviets to attack all units, thus diffusing the forces opposing the carrier task group. Given present prehostilities rules of engagement for a carrier in a high threat environment, the first engagement of U.S.-Soviet naval forces is likely to be followed by an attempt to extract a damaged carrier after it has been struck preemptively. The offensive strike power of the escorts then would be critical to carrier survival.

### *Cost Considerations*

While the cruise missile may be viewed as an expensive system, there are significant efficiencies which reduce the life cycle costs of the system.<sup>10</sup> Its employment may free expensive aircraft from high attrition missions and preclude destruction of otherwise vulnerable NATO forces.

Package deployment and central stockage will reduce maintenance costs compared with alternative systems. Training requirements are small compared with pilot training, and recoverable missiles may be used. The long range of the system permits an area defense rather than prepositioning at several forward points—some of which might be vulnerable to enemy interdiction and others out of the area of conflict. As in the nuclear area, Soviet counters to the conventional warhead cruise missile will likely include defense upgrading,

which will reduce funds available for offensive investment, thereby lessening the defensive requirements of NATO.

The rapid response of the system against the logistics of a major attack on NATO will permit stabilization times measured in hours instead of days, thereby saving territory and equipment from destruction and enhancing NATO counteroffensive capability.

High threat operating areas impose unacceptable attrition rates on manned aircraft. Missions demanding flexibility and an onscene decisionmaker will require that aviation assets be husbanded. Cruise missiles, remotely piloted vehicles, and manned aircraft complement each other in a cost/capability spectrum that dictates roles for each. Thus, high attrition missions requiring low flexibility are best handled by a cruise missile, while low attrition high flexibility missions are best handled by manned aircraft.

### *Summary*

The very large force structures deployed by both the Soviet Union and the United States cannot be justified solely on the basis of guaranteeing the assured destruction of a percentage of the enemy's population and industrial base. The survival of only a few warheads would accomplish this relatively simple task. Only the desire to guarantee that, in postwar conditions, the opponent does not have sufficient unopposed reserve nuclear forces to conquer the world accounts for the large numbers. In a deterrent strategy based primarily upon demonstrated capability to reestablish strategic equivalence, the cruise missile demonstrates "war-fighting" characteristics superior to MIRVed systems. Inflight vulnerability of the cruise missile will require coordinated tactics for its use with other strategic elements, and second-strike ad hoc targeting of reserve nuclear elements will require substantial reconnaissance and communications support.

The prelaunch survival characteristics of the cruise missile, in the tradition of the present members of the TRIAD, demand that it be attacked by means that cannot take advantage of surprise. The difficulty of coordinating an attack on *all* elements of a QUADRIGA will reduce further the possibility of surprise nuclear war.

Likely Soviet response to the cruise missile involves a buildup of conventional forces, representing a diversion of assets from fallout-producing ICBMs. An improved Soviet defensive capability will permit the Soviet decisionmaker more time for consideration in a crisis and aid in relieving him from a decision to "go nuclear" early in a crisis to avoid elimination of his force structure.

The cruise missile will contribute to subnuclear deterrence by upgrading general force capabilities and by providing a conventional warhead able to perform previously nuclear missions, thus raising the nuclear threshold.

The cruise missile represents the ideal in offensive weaponry for a second-strike-oriented nation. Its slow flight speeds preclude its use as a first-strike weapon, while its high prelaunch survivability deters an opponent's first-fire decision. Further development of highly survivable offensive systems coupled with treaty-mandated defensive development may permit restoration of the dominance of policy over strategy in nuclear warfare, area for maneuver for statesmen, and initiation of a national policy of mutual assured survival.

### Conclusions

- Deterrence under flexible response is achieved by ensuring that the Soviet Union does not have an attractive nuclear option in attacking the United States. Rather than the assured ability to destroy Soviet cities, an assured ability to reestablish strategic equivalence on second strike better accounts for U.S. procurements.
- This deterrent strategy mandates that a weapon system be survivable, capable, flexible, and efficient. MIRVed systems complicate the decision requirements of second-strike warfare while single warhead systems lead to a form of decision efficiency critical to optimum use of strategic assets.
- The cruise missile is “stabilizing” in that its slow flight time precludes first-strike use and its conventional capability permits a delay in the decision to “go nuclear” for lack of adequate conventional response.
- Over-the-horizon targeting and wartime control dictate requirements for complementary system development, particularly in reconnaissance, data processing, communications, and control.
- The cruise missile will contribute to nuclear deterrence, add an effective element to TRIAD, and contribute to subnuclear deterrence, augmenting existing general purpose forces.
- If the cruise missile is to be restricted through arms limitations, a more commensurate trade than proposed backfire basing restrictions (easily violated in crisis) is appropriate.
- Given the active cruise missile development programs of several nations, U.S. unilateral restraint in developing and deploying cruise missiles will remain unilateral.

---

### Notes

1. *The Military Balance 1975–1976* (London: International Institute for Strategic Studies, 1976), p. 73. Note that the capability of a force structure is composed of many elements—numbers of launchers being only

one measure. In general, Soviet missiles have larger payloads and less accuracy than U.S. systems. Fewer are MIRVed. Technological gains permitting greater accuracy, efficient MIRVing, and improved-yield warheads will

further accentuate the *trend* highlighted by Table I.

2. James R. Schlesinger, *Annual Defense Department Report, Fiscal Year 1975* (Washington: U.S. Govt. Print. Off., 1974), p. 35.
3. Donald Rumsfeld, *Annual Defense Department Report, Fiscal Year 1978* (Washington: U.S. Govt. Print. Off., 1977), pp. 49–50.
4. Henry Young discusses the economic incentives facing Communist leadership in crisis in the November 1976 Naval Institute *Proceedings* article “Holocaust for Happy Valley.”
5. Secretary of Defense McNamara indicated that 20–25 percent population kill and destruction of 75 percent of Soviet industry would constitute unacceptable damage. A 20 percent population kill, 40 million persons, would approximately equal the Russian losses in World War II and the purges combined. Recent studies of the Soviet civil defense program, however, question the ability to kill more than approximately 13 million—less than either World War II or the purges, thus challenging the term “unacceptable.”
6. Better area coverage of a “soft” urban target can be achieved by a number of small warheads than by a single large warhead. Accuracy is required only if one wishes to strike a specific portion of the urban area and minimize collateral damage. “Hard” targets, such as ICBM silos, are better struck with accurate large-yield warheads. While large-yield warheads on older systems may be interpreted as an attempt to overcome inaccurate guidance, large warheads on modern accurate systems indicate that counterforce is their intended use.
7. U.S. intelligence agencies noted the apparent disparity in objectives and characterized Soviet strategy as “war winning.” Presently deployed Soviet capabilities do not warrant characterization as beyond war survival or damage limitation; however, this is perhaps a narrow distinction as a war-fighting capability is essential to each of these strategies. Continued Soviet counterforce deployments will lend credence to the consideration that their goal is a war-winning capability.
8. “Communist of the Armed Forces” as quoted in *Soviet World Outlook* (Washington, DC: University of Miami Center for International Studies, 13 February 1976).
9. Rumsfeld, pp. 167–168.
10. Secretary Brown’s comments following President Carter’s June decision on the B-1/Cruise Missile issues stressed cost effectiveness of a B-52 upgraded with cruise missiles over the B-1.





## “Analogous Response” The Cruise-Missile Threat to CONUS

JEROME J. BURKE

In the early 1980s, the Soviets developed a strategic-messaging campaign intended to compel the United States to withdraw its newly deployed Pershing II and ground-launched cruise missiles (GLCMs) from Europe. The campaign included public statements by the most senior members of the Soviet leadership, development and fielding of new weapon systems, and deployment of submarines armed with nuclear submarine-launched cruise or ballistic missiles off the U.S. East Coast. These three components—Soviet public statements and official documents (i.e., what they say), the characteristics and performance of the weapon systems acquired to support articulated Soviet strategies (what they buy), and the ways in which the Soviets operated and exercised their forces (what they do)—composed a powerful, coherent, and credible strategic message that conveyed the seriousness of the Soviets’ objective.

However, this strategic-messaging campaign did not meet any of its objectives. It did not contribute materially to the signing on 8 December 1987 of the Treaty on Intermediate-Range Nuclear Forces (INF Treaty), under which the United States and the Soviet Union agreed to destroy all ground-launched ballistic and cruise missiles with ranges of 500–5,000 kilometers, along with their launchers.<sup>1</sup>

The campaign also failed to influence U.S. decision makers or public opinion. The Soviets may have intended for their submarine deployments to reinforce in American minds that U.S. governmental decisions had made the world a more dangerous place. Yet the issue received only minimal coverage in the American press. The United States also ignored, rejected, or impeded all the naval arms-control initiatives the Soviets proposed during the period.

Today, Russian Federation president Vladimir V. Putin has reasserted the Soviet strategic objective of holding the continental United States (CONUS) at risk with

---

*This chapter represents a condensed version of a treatment that will appear in the near future as a Naval War College Press Newport Paper.*

now-combat-proven land-attack cruise missiles (LACMs) and modern, difficult-to-detect submarines. The “analogous response” strategic-messaging campaign of the 1980s may have failed in the short term, but Russian leaders and strategists never abandoned the strategy of holding the United States at risk with nonstrategic nuclear weapons. The “say, buy, do” model remains useful in assessing current and future Russian strategic messaging.

### Part 1: Analogous Response in the Soviet Era

During the last twenty years of the Cold War, the United States and the Soviet Union were engaged in an apparent tit-for-tat competition of developing and deploying intermediate-range nuclear weapons and their comparable maritime nuclear components. This was especially true for submarine-launched cruise-missile (SLCM) systems, which by range and warhead were included in the classification of tactical LACMs. As tactical weapons with either a nuclear or a conventional warhead, these naval missile systems, especially those launched by submarines, became the focus of intense strategic and operational competition between the U.S. and Soviet navies.

*Analogous Response* was a shorthand term that U.S. strategists and intelligence analysts developed in late 1983–early 1984 to characterize a Soviet strategic-messaging campaign intended to counter the deployment of U.S. Pershing II ballistic missiles and GLCMs in Europe by attempting to hold CONUS at equivalent nuclear risk and, eventually, to pressure both U.S. and European political leaderships to withdraw the missiles.<sup>2</sup> The messaging campaign included public statements by the most senior members of the Soviet leadership in late 1983 and early 1984 and was coupled with deployments off the U.S. coast of submarines armed with nuclear SLCMs or submarine-launched ballistic missiles (SLBMs).

The submarine deployments enabled the Soviet leadership to establish an endo-atmospheric, low-observable nuclear threat to CONUS that was, in the words of Marshal Nikolay V. Ogarkov, then the chief of the General Staff of the Soviet Union (USSR), “no less effective than American systems that are being deployed in Europe, in range, yield, accuracy, and, what is especially important, in time of flight to their targets.”<sup>3</sup> According to experts, the cruise-missile-armed Soviet submarines would “pose an especially significant threat to the United States’ C3 [command, control, and communications] systems and bomber bases. The closer the submarine can get to a land target, the less warning time there would be for a cruise-missile attack.”<sup>4</sup> This Soviet campaign ended in 1986.

Soviet statements and military deployments of the period, as well as interviews with senior Soviet and U.S. national-security officials completed shortly after the Cold War’s end, provide the basis for the analysis in this chapter.<sup>5</sup> National-security documents

archived in U.S. presidential libraries and the archival repositories of the United States, the former Soviet Union, the former German Democratic Republic, and the United Kingdom supply a trove of unique insights that contributed enormously to the credibility and depth of this analysis.<sup>6</sup>

*The Strategic Context:*

*Altering the Theater Nuclear Balance in Europe—Soviet SS-20 Deployments*

In 1976, the Soviets deployed the SS-20/Saber road-mobile, intermediate-range ballistic missile (IRBM) to their Western and Far East Military Districts, which enhanced the immediate—if only by time of flight—nuclear threat to all of Western Europe and Asia. General Colonel Andrian A. Danilevich was a longtime member of the Main Operations Directorate of the Soviet General Staff and assistant for doctrine and strategy to Chiefs of the General Staff Marshal Sergey F. Akhromeyev and General Mikhail A. Moiseyev from 1984 to 1990. In a 1990 interview, Danilevich offered a deep insight into the General Staff's underlying rationale for developing and deploying the SS-20. "The SS-20 was a mobile, solid-fuel missile, which made possible the solution of problems at a totally different level. . . . [T]he SS-20 was a breakthrough, unlike anything the Americans had. We were immediately able to hold all of Europe hostage. . . . But we did not anticipate some of the consequences of their deployment. The Pershing II only appeared 10 years later, and that made us rethink the original decision."<sup>7</sup>

These nuclear enhancements raised a number of concerns in Washington and European NATO capitals about the credibility of the U.S. extended nuclear deterrent. The chief of these concerns was that many U.S. nuclear weapons in Europe were short-range tactical weapons designed for use on the battlefield and intended to disrupt a conventional attack by Warsaw Pact ground forces. The new Soviet IRBMs had much greater range, and thereby held European as well as Asian capitals at risk. If tactical nuclear weapons were used on the soil of European NATO allies, these same countries privately questioned whether the United States would retaliate against Soviet territory. Such a U.S. response easily could lead to a broader intercontinental nuclear exchange, resulting in potential devastation of all parties. While the United States continued to voice its commitment to provide a nuclear umbrella, significant tension grew between Americans and their European allies. These new Soviet "theater" nuclear systems threatened to "decouple" the United States from its NATO allies—a long-standing Soviet strategic objective.

*NATO's Nuclear Decision and Response*

In 1979, NATO adopted a "dual track" approach to respond to this gap in intermediate-range nuclear forces. In the first track, NATO agreed to execute a decision to deploy enhanced nuclear forces to Europe in the form of 108 Pershing II (P-II) IRBMs and 464

GLCMs between 1983 and 1986. The second track required the United States to enter into serious negotiations with the Soviets to limit these intermediate-range nuclear systems.<sup>8</sup>

The nuclear-capable naval forces of both the Soviet Union and the United States also represented a major constituent in this matter of the theater nuclear balance. In the maritime domain, the Soviets initiated a number of political and military actions encapsulated in a strategic-messaging campaign that, in aggregate, were termed Analogous Response.

In late 1983, NATO executed its 1979 decision to deploy to Europe the P-II IRBM and the GLCMs, which were termed intermediate-range theater nuclear forces (IRTNFs). There were two principal reasons for doing so.

First, both the United States and, ultimately, NATO considered modernized, ground-based theater nuclear weapons to be necessary to offset what the United States assessed was the eroded credibility of the extended deterrent of American strategic intercontinental nuclear forces that had been the main pillar of the alliance's security consensus for more than two decades.<sup>9</sup> This erosion of credibility resulted mainly from the negotiated parity in strategic nuclear forces achieved by the 1972 Strategic Arms Limitation Treaty (SALT I). Before SALT I, U.S. nuclear superiority was the foundation of extended deterrence; many Europeans feared that losing this superiority ultimately could decouple America from Europe.<sup>10</sup> Thus, this loss had to be offset with weapons in the theater that could tie America's nuclear forces more closely to Europe's defense.

Second, the ongoing expansion of already-massive Soviet conventional forces in Europe and the rapid modernization of the Soviet arsenal of theater nuclear weapons had to be offset.<sup>11</sup> Lawrence D. Freedman, the British nuclear strategist, analyzed the strategic context for this decision as follows:

The substance of the [December 1979 NATO] decision was to establish a distinctive regional response to the modernization of Soviet missiles designed solely for European use, without denying the essential link between the defence of Europe and American strategic forces. Thus, though American-owned and manned, the forces were to be ground-based so as to make their activation in the face of a Soviet advance credible. There were to be sufficient missiles to make a difference, but not so many as to suggest that they could fully satisfy NATO's nuclear needs without involving the rest of the American nuclear arsenal.<sup>12</sup>

### *The Soviet Strategic-Messaging Campaign: Objectives*

The architects of the Analogous Response strategy—Foreign Minister Andrey A. Gromyko, Defense Minister Dmitry F. Ustinov, and Yuri V. Andropov, chairman of the KGB (the main Soviet security agency)—provided its public voices as well, along with Marshal Ogarkov. With the discernible physical and mental deterioration of Chairman Leonid I. Brezhnev after his heart attack in 1976, these three emerged as an informal “troika”

responsible for state security and defense issues. Reportedly they faced opposition very rarely, and with few exceptions the Politburo accepted their recommendations.<sup>13</sup>

This Soviet leadership, as well as the General Staff, could not abide NATO's deployment decision.<sup>14</sup> With their strategic advisers, they planned a strategic-messaging campaign whose primary objective would be to checkmate the U.S. P-II and GLCM deployments by attempting to hold CONUS at equivalent nuclear risk using "tactical" missiles instead of strategic ballistic missiles.

Their second apparent objective, as Central Intelligence Agency director (DCI) William Casey predicted in a 22 November 1982 memorandum to President Ronald W. Reagan, was to engage U.S. and European political leadership and public opinion via public messaging to accomplish a veto of the NATO decision.<sup>15</sup> At the time, a significant, vocal, and influential antinuclear movement was operative throughout Western Europe and the United States. A presidential election was scheduled in the United States in 1984, and President Reagan's opponent, Walter F. Mondale, was an ardent advocate of a "nuclear freeze."<sup>16</sup>

A third apparent Soviet objective was to make it necessary for the United States to redirect the antisubmarine warfare (ASW) forces of its Atlantic Fleet away from their forward posture in Western Europe to defend the seaward approaches of the United States from SLCM attack. This also could be predicted to relieve the pressure that the U.S. Navy's Maritime Strategy was putting on Soviet ballistic-missile-submarine bastions.<sup>17</sup>

At the time, the Reagan administration was in the midst of a major effort to build the "600-ship Navy."<sup>18</sup> Yet the Soviets understood that the U.S. Congress was not going to provide additional funds to build "two navies"—one to project power forward and one to defend CONUS.

### *The Soviet Strategic-Messaging Campaign: Target Audiences*

Foremost among a number of internal and external intended recipients for the strategic message were the decision shapers and decision makers of the Reagan administration, especially those who would decide whether and how to respond. The end of 1983 marked the beginning of the 1984 presidential campaign, and already Reagan's opponents were advocating for a nuclear freeze.<sup>19</sup> In the Soviets' eyes, a new, credible, nuclear threat to America's homeland—one that emerged only after President Reagan's massive, purportedly unnecessary defense buildup and anti-Soviet rhetoric—likely would provoke a reaction among members of the opposition and like-minded influencers of public opinion.

In 1982, DCI Casey as much as predicted these objectives and the related campaign in the 22 November memorandum to President Reagan mentioned previously. It reported

on Casey's visit with Strategic Arms Reduction Treaty (known as START) and INF Treaty negotiators Ambassadors Paul H. Nitze, Edward L. Rowny, and others. He first surmised that the Soviets "are readying a full propaganda campaign to discredit the US [negotiating] proposal." He also essentially predicted the Analogous Response strategy. "They are threatening us, we believe, with deployment of sea-launched cruise missiles on submarines off the US [east] coast—and perhaps other actions as well—to reciprocate for our planned deployment of Pershing II in Europe, and they may deploy cruise missiles as early as next year [1983] for primarily political purposes. A requirement to protect against US cruise missiles would greatly stretch their resources."<sup>20</sup>

### *The Soviet Strategic-Messaging Campaign: Components*

**Public Statements.** The Soviets, represented by their most senior military and political leaders, reacted vigorously to NATO's deployment of modernized IRTNFs. Vocal Soviet opposition began with the decision and became much more pointed as deployment reached fruition in November 1983. On 19 November, Marshal Dmitry Ustinov, the Soviet defense minister, stated as follows in a lengthy article: "[T]he deployment of Pershing II and cruise missiles will be countered by our own nuclear systems corresponding to them in terms of combat effectiveness. . . . *Necessary retaliatory measures affecting [imeyushchiy v vidu] the territory of the United States itself will be taken so that the Americans will inevitably feel the difference between the situation that existed before the deployment of their missiles in Western Europe and after it.*"<sup>21</sup>

Six days later, Yuri Andropov, now general secretary of the Communist Party's Central Committee, made the USSR's threats even more explicit by stating that the Soviet leadership had made the following decisions:

First: Since by its actions the United States has torpedoed the possibility of reaching a mutually acceptable accord at the talks on questions of limiting nuclear arms in Europe . . . the Soviet Union considers its further participation in these talks impossible.

Second: . . . [T]he moratorium on the deployment of Soviet medium-range nuclear weapons in the European part of the U.S.S.R. is abrogated.

Third: On agreement with the Governments of the G.D.R. [East Germany] and Czechoslovakia the announced preparatory work to deploy on the territory of these countries operational-tactical missiles of increased range, that was started some time ago, will be accelerated.

Fourth: Since by deploying its missiles in Europe the United States increases the nuclear threat to the Soviet Union, *the corresponding Soviet systems will be deployed with due account for this circumstance in ocean areas and in seas.*

By their characteristics these systems of ours will be adequate to the threat which is being created to us and our allies by American missiles that are being deployed in Europe.<sup>22</sup>

On 1 December, General Yuri Lebedev of the Soviet General Staff warned that Soviet missile submarines "would be moved closer to the United States."<sup>23</sup>

On 6 December, Marshal Ogarkov held a news conference at the USSR Ministry of Foreign Affairs, during which he explained the effectiveness of these measures.

*The Soviet systems to be deployed in the oceans and seas and relevant to the territory of the United States itself will be no less effective than American systems that are being deployed in Europe, in range, yield, accuracy, and, what is especially important, in time of flight to their targets. These [response] measures are of a forced nature. With the deployment of the American Pershing and cruise missiles there will be a change in the military balance in Europe and globally in favor of the United States. This is something we naturally cannot allow. Considering this, we will also take other steps to assure security of [the] Soviet Union and the other countries of the Socialist community. The United States will not have superiority.*<sup>24</sup>

These explicit statements show that the Soviets were highly agitated and disconcerted, from both political and military perspectives. Politically, the deployment of P-IIIs and GLCMs to Europe represented a failure of the Soviets' nearly four-year effort to manipulate European NATO decision-making processes to exercise a veto, in effect, over NATO's IRTNF decision. The Soviets clearly were frustrated over their failure to exercise such a veto; had they succeeded, they would have contributed to the political decoupling of Europe and America. Moreover, the *fact* of their success would have been seen as a manifestation that this political decoupling already was well under way. Thus, Soviet public utterances and their resultant actions are best interpreted in this political context, as well as in strictly military terms.

**Weapon Systems.** In line with their public statements, the Soviets did make good on their threats to "deploy corresponding systems." The intent represented by General Secretary Andropov's public statement of 25 November 1983 (noted above) was realized when the Soviets deployed additional SS-20 IRBMs in the western USSR and SS-22/Scaleboard missiles to East Germany.<sup>25</sup>

However, it was the maritime dimension of Analogous Response that should have caused serious concern, particularly because it affected the linkages between nuclear war in Europe and nuclear attack on the United States. Beginning in late November and early December 1983, Soviet submarines executed a directive to impose in the short term a qualitatively different maritime nuclear threat to the United States. At the same time, Soviet engineers were developing a new naval weapon system that, when operationalized, would provide the capability to deploy at sea an LACM system that was roughly equivalent to the American GLCMs being deployed to Europe in range, yield, accuracy, and time of flight: the SS-N-21/Sampson. However, because the SS-N-21 was still in the developmental stage, to carry out General Lebedev's threat quickly the Soviet navy only had available for deployment some 1960s-vintage nuclear-powered submarines armed with an antiquated cruise-missile system.<sup>26</sup>

*Deployments.* As the Soviet leadership was making its public pronouncements about deploying an analogous nuclear threat to CONUS, Soviet nuclear-powered submarines were either under way or in the final stages of preparing to deploy to execute it. In January 1984, it was reported that a Soviet Echo-II SSGN (a nuclear-powered, antiship-cruise-missile submarine) was detected operating in the western Atlantic off the U.S. East Coast.<sup>27</sup> It was equipped with either the SS-N-3/Shaddock land-attack or the SS-N-12 antiship missile system.<sup>28</sup> In its nuclear land-attack version, the Shaddock had a reported range of 835 kilometers. In development since 1951, the Shaddock did not appear to be deployed in great numbers as a land-attack weapon, because the Soviet navy chose to invest in ballistic-missile submarines.<sup>29</sup> Because of the Echo-II's early-1950s vintage and limited land-attack capability, the submarine's deployment did not appear to conform to Marshal Ogarkov's threat to deploy to the oceans and seas adjacent to the United States systems that were "adequate in range, in yield, in accuracy, and, what is especially important, in time of flight to their targets."<sup>30</sup>

The Soviets' second escalatory step evidently also began in January 1984, with alterations to the deployment patterns of some Soviet Delta SSBNs—the most modern nuclear-powered, ballistic-missile submarines in the Soviet navy. U.S. Secretary of the Navy John F. Lehman Jr. reported at the time that as many as three of these boats were operating in the western Atlantic—far beyond their normal patrol areas in the Arctic.<sup>31</sup>

In directing this course of action, it appeared that the Soviets hoped to derive certain peacetime political as well as wartime military advantages:

- Deploying Delta SSBNs to the western Atlantic constituted a timely response to U.S. IRTNF deployments.
- Deploying Deltas to the western Atlantic reduced time of flight / warning times for Soviet SS-N-8 ballistic-missile systems.
- Additional targets in CONUS—most notably, Strategic Air Command bases in the central United States—were placed under a more immediate, time-sensitive threat.

Despite these advantages, military disadvantages resulting from the deployments severely limited any true improvement in the Soviets' overall war-fighting capability. The most important disadvantage was the vulnerability of these submarines in wartime that resulted. The 1984 Delta patrols in the western Atlantic gave the Soviets numerous operational and security-related problems. The altered deployment areas afforded U.S. ASW forces an opportunity to localize Deltas, and to practice doing so. The more exposed positions also negated the security these SSBNs derived from operating in northern latitudes, where they were much closer to Soviet defensive ASW and anti-air-warfare resources.<sup>32</sup>



Aperiodic Analogous Response patrols continued off the U.S. East Coast until 1986. At that point, as former Secretary Lehman has reported, the patrols ended.<sup>33</sup>

### *The Soviet Strategic-Messaging Campaign: Outcomes*

After a series of fits and starts, the dual-track strategy that NATO had adopted in 1979 finally reached fruition with the signing of the Treaty on Intermediate-Range Nuclear Forces on 8 December 1987. Under the treaty, the United States and Soviet Union agreed to destroy all ground-launched ballistic missiles and GLCMs with ranges between 500 and 5,500 kilometers, along with their launchers. Significantly, the treaty did not ban the possession, testing, or production of sea-based or air-delivered intermediate-range ballistic or cruise missiles.<sup>34</sup>

For the U.S. presidential election of 1984, a nuclear freeze featured prominently in the platform of the opposition party. Nevertheless, the Soviet strategic-messaging campaign failed to influence decision makers or public opinion. The Soviets may have intended for their submarine deployments, when—not if—they were made public, to reinforce in the mind of the American public that the world had been made more dangerous by the deployment of U.S. nuclear systems and Soviet counterdeployments. Yet the issue received only minimal coverage in the American press.<sup>35</sup> The Soviets may have counted on that U.S. public opinion, as well as pressure from legislators and other credible national-security experts, to persuade the U.S. government to return to the INF Treaty negotiations under conditions more favorable to the Soviets.

But that did not happen. In the United States, American voters endorsed President Reagan's "peace through strength" focus by reelecting him in a landslide victory in which he carried forty-nine of fifty states. The nuclear freeze movement was discredited thoroughly. Reagan's resounding reelection gave him the public support he needed to expand his personal outreach to the Soviet leadership while continuing his defense programs.

The deployment of the Echo-II appeared to have satisfied the Soviets' stated short-term political objectives—but only in the crudest way. In the short term, this combination of antiquated missile system and submarine platform was one of a handful of assets on which the Soviets could call to impose quickly on CONUS a qualitatively different (but not necessarily more effective) nuclear threat. Given the limited capabilities of its missile system, as well as the command-and-control and targeting issues likely to be associated with nuclear conflict, the Echo-II SSGN clearly had little if any meaningful land-attack war-fighting capability. The U.S. Navy recognized this immediately; available unclassified sources provide no evidence that the Echo deployments affected the Navy's operational posture in Europe negatively.

Because the Echo-II had little capability to threaten CONUS, its deterrent value was close to zero. Thus, from both war-fighting and deterrent perspectives, the Echo deployments were less than satisfactory.<sup>36</sup> In this case, the United States was dealing with an issue that was more directly political than military, just as DCI Casey had predicted.

The Delta SSBN patrols in the western Atlantic also appear to have had a peacetime political rationale. Yet, as with the Echos, the Deltas did not have the intended political impact. These valuable wartime strategic assets were, at a minimum, more vulnerable to USN ASW assets when patrolling immediately off the East Coast than they were when operating in their normal patrol areas. Thus, the Soviets again applied a short-term response to a long-term problem, and thereby undermined the credibility of their overall message.

The dual-track approach included active, ongoing arms-control talks. In the context of these ongoing INF Treaty negotiations, a Soviet strategist, Colonel General Vladimir Lobov, did offer a number of naval arms-control initiatives in 1987 to limit what the Soviets evidently saw as an emerging and expensive naval arms race and deteriorating nuclear balance. These offerings included calling for a nuclear-free zone in the Mediterranean and demilitarizing the Indian Ocean, as well as negotiating to limit the deployment of nuclear weapons in the South Atlantic and to limit nuclear-armed ships in the Pacific. Lobov also indicated that the Soviets were prepared to engage in serious negotiations to limit the size of U.S. and Soviet naval forces, including “‘restrictions on submarine forces and means,’ and limitations on overseas naval bases.” The United States, he observed, so far had ignored, rejected, or impeded every one of these initiatives.<sup>37</sup>

### *Conclusions from the Soviet Era*

The Soviet Analogous Response strategic-messaging campaign collapsed under its own weight. The Soviet navy was in such a deteriorating material condition that it could not sustain the operational tempo the western Atlantic deployments demanded.

Furthermore, the strategic-messaging campaign succumbed to the change in the political leadership of the Soviet Union. In March 1985, after three years of turmoil at the highest levels of the USSR’s governmental and party leadership—exclusive of Brezhnev’s deterioration years earlier—Mikhail S. Gorbachev became general secretary. Faced with the enormity of the Soviet economic crisis, Gorbachev desperately sought “breathing space” from the military competition, via policies dubbed *perestroika* (restructuring) and *glasnost* (openness). During the Twenty-Seventh Party Congress, on 25 February 1986—just eleven months after he became the Soviet leader—Gorbachev declared that the nation’s military would have to settle for what he termed “reasonable sufficiency.”<sup>38</sup>

Under Gorbachev, the Soviet Union adopted a defensive doctrine, based on its realization that a nuclear war could not be won. The new foundations of Soviet doctrine became

deterrence; war prevention; and limited war, if war must be fought. In his memoirs, Gorbachev later described his belief that the SS-20 decision was “an unforgivable misadventure . . . [and] supremely naive.” This appears to have been one of the reasons he signed the INF Treaty.<sup>39</sup>

## Part 2: Analogous Response in the Putin Era

While the Soviet Union and most of its missiles and submarines have passed from the scene, President Vladimir Putin of the Russian Federation has developed an arsenal of new weapons to impose new nuclear threats on the United States and its allies. Within this larger strategic context, Putin has reasserted the Soviet strategic objective of holding CONUS at risk from the maritime domain by deploying, within weapons range of Washington, DC, and other strategic targets, combat-proven LACMs and modern, difficult-to-detect submarines. The Analogous Response strategic-messaging campaign of the 1980s may have been a short-term failure, but it is clear that Putin and the current generation of Russian leaders and strategists never abandoned the strategy of holding the United States at risk by deploying off the U.S. coasts nuclear-weapons systems unbound by any treaty limitations. Consequently, the model used to assess the credibility of Soviet strategic messaging—focusing on what opponents say, buy, and do—can be used to analyze Russian strategic messaging today.

Putin has used his public statements to articulate explicitly the rationale for new classes of nuclear weapons, and the Russian Ministry of Defense has been equally open in releasing relevant photography and video to the international public. Together these have allowed unprecedented insight into the new systems.

### *Strategic Context: Putin and the Final Demise of the Partnership*

What began with optimistic expectations ended with disillusionment and distrust on both sides. When Russia annexed Crimea and invaded eastern Ukraine in 2014, the hopeful period that began with the dissolution of the Soviet Union in 1991 ended with the relationship between the United States and Russia having reached its lowest point since the depths of the Cold War.

*The Rise of Putin.* Observing all this from his posting in Dresden, East Germany, was an obscure Vladimir Vladimirovich Putin. He resigned from the KGB to return to his native Leningrad and began his meteoric rise in Russian politics.

Rising through the ranks of the Kremlin bureaucracy, Putin became prime minister in 1999 and replaced Boris N. Yeltsin as president in 2000. Initially, Putin may have been inclined to support the warming of relations with the West. However, NATO expansion, the NATO air campaign against Serbia, the U.S. invasion of Iraq in 2003, and the onset

of “color revolutions” were considered, individually and in the aggregate, a debacle in the Kremlin. Russia—in the form of the once-great Union of Soviet Socialist Republics that had anchored a position coequal with the West’s—had collapsed. From a Russian perspective, the West had imposed on Russia a position of strategic inferiority. With the Warsaw Pact gone, Russia lost a geographical buffer, a source of military manpower, economic partnerships, and a major part of its industrial base. An isolated, inferior, vulnerable Russia would be forced to retreat from Europe. In response, Putin and his coterie set about restoring Russia to what they ardently believed to be its rightful position as a world power.<sup>40</sup>

Accordingly, Putin abandoned the notion of any kind of partnership with the West, instead initiating his own Moscow-centered foreign and national-security policy. Putin was not going to accept an imposed status of junior partner on the world stage, in company with the likes of Brazil, China, and India. In a February 2007 speech in Munich, Putin articulated a much more assertive Russian foreign policy.<sup>41</sup> One element was an effort to reinsert Russia into the affairs of wavering states of what he termed the “near abroad.”<sup>42</sup> Another element was a major modernization of Russia’s military forces, emphasizing the development of new nuclear weapons and delivery platforms. In retrospect, it appears that funding was approved and construction started on several new submarines and weapon systems during this time.

*Chafing under the INF Treaty.* Putin and his national-security advisers never had been satisfied with the 1987 INF Treaty, because it codified what they considered Russian strategic inequities and vulnerabilities and overall inferiority to the West. A number of missile programs were under way in the Russian Ministry of Defense—notably, the 9M729 SSC-8/Novator cruise missile, whose range would exceed the treaty’s restrictions. By 2007, the Russian leadership, under Putin, also had begun to take issue with what they saw as a U.S. program aimed at circumventing the treaty: Aegis Ashore.

In October 2007, U.S. Secretary of State Condoleezza Rice and Secretary of Defense Robert M. Gates met in Moscow with their counterparts, Foreign Minister Sergey V. Lavrov and Defense Minister Anatoly E. Serdyukov, as well as with Putin. The U.S. delegation was in Moscow to apprise the Russian leadership of U.S. plans to deploy a missile-defense shield, based on the Navy’s Aegis missile system, to European NATO. The U.S. representatives tried to assuage Russian concerns that the system could threaten Russia by proposing a Joint Regional Missile Defense Architecture. In cooperation with the Russians, this European-based missile-defense system was to focus exclusively on the emerging Iranian ballistic-missile threat.<sup>43</sup>

At least in public, the Russians would have none of it. Kremlin statements after the meeting expressed dissatisfaction not only with the U.S. missile proposal, under which the

United States retained clear technological advantages, but also with the perceived vulnerabilities that the INF Treaty imposed on Russia. Putin himself reportedly argued in favor of abandoning the agreement, stating directly to the U.S. delegation as follows: “The only thing I would like to point out is that we hope in our complicated talks that you will not forge ahead with your previous agreements with eastern European countries. . . . If we fail to achieve these goals, I think, it will be difficult for us to remain in this agreement, when other countries are actively developing these systems of weapons, including states in the immediate vicinity of our borders.”<sup>44</sup>

Putin was signaling clearly that the INF Treaty no longer served Russia’s interests. Besides, he was dealing with the same government—albeit with different actors in place—that had assured Mikhail Gorbachev that NATO would not expand “one inch eastward.”<sup>45</sup>

Putin and his senior advisers long had been aware of the capabilities of the Aegis system, which had been operational in the U.S. Navy for three decades, but the Aegis Ashore system caused even more concern.<sup>46</sup> The Russians believed the system was intended to shoot down Russian ballistic missiles; such a capability would weaken the Russian deterrent. They also believed it could launch Tomahawk cruise missiles, in violation of the 1987 INF Treaty, despite U.S. officials’ repeated assurances that it could not.<sup>47</sup>

In the Russians’ eyes, the scenario, moves, and outcomes late in the first decade of the twenty-first century resembled those of the late 1970s, when the Soviets deployed SS-20s and the United States and NATO countered with Pershing IIs and GLCMs. The Russians viewed the INF Treaty as codifying a significant Russian vulnerability. In the event of conflict, the Russians feared that the United States and NATO could execute a decapitating strike on Moscow using air-, ground-, ship-, and submarine-launched cruise missiles. The Russians had responded by initiating several missile programs to evade INF Treaty restrictions. Now, the Russians believed, the Americans were trying to counter another emerging Russian offensive threat by deploying to Europe a system that the Americans claimed was defensive in nature, but that the Russians perceived to be an offensive threat as well. The vexing problem for Russia, as it always had been, was how to hold Washington and other U.S. decision centers at equivalent risk. From a maritime perspective, the Russians returned to the strategy of Analogous Response from the 1980s—which, it turns out, never really “just went away.”

### *Putin’s Analogous Response Messaging Campaign: Objectives*

In 2021, Putin aspires to reprise the Analogous Response of the late Soviet era. He and his senior military and foreign-policy officials have used (1) messaging in official and unofficial forums; (2) the public exposure of their naval forces and the characteristics and missions of their weapons, all of which were designed and built to execute the policy; and (3) visible and aggressive naval operations in the Northern and Pacific Fleet areas, as well

as in the Mediterranean, to warn the United States coherently and explicitly that CONUS itself faces a new and qualitatively different strategic threat. These are the nonviolent measures of “strategic containment” that are “carried out constantly by the federal executive bodies of the Russian Federation in close cooperation with international organizations . . . to achieve success in conducting negotiations . . . strengthening interstate ties . . . or withdrawing from international obligations.”<sup>48</sup>

Putin’s “Analogous Response Redux” is also an effort to keep the U.S. Navy off balance. By seeking in his naval policy to establish the Russian Federation Navy (RFN) as the world’s second-most-powerful navy, Putin is acknowledging that the U.S. Navy is a superior opponent; through his Analogous Response Redux, he seeks to reduce that superiority. His goal is for the U.S. Navy to redirect assets and resources toward defending the U.S. homeland and away from the much more threatening—in Putin’s assessment—offensive maritime posture directed at Russia.

Analysis of current Russian military and maritime doctrines, Putin’s unusually explicit public descriptions of at least two new classes of Russian submarines and their weapon systems, and public revelations of some of their operations suggest that Russia’s reprise of Analogous Response has the following objectives:

1. Hold the U.S. homeland at risk at any stage of a conflict or crisis with conventional or nuclear SLCMs (e.g., the Kalibr) and what Putin calls his “nuclear torpedo” (i.e., the Poseidon) (both will be discussed in more detail later).
2. Present U.S. policy makers and arms-control negotiators with a series of dilemmas. Choices would include
  - a. Withdrawing the Aegis Ashore systems from Romania and Poland.
  - b. Agreeing to a mutual withdrawal of LACM platforms (i.e., ships and submarines of the U.S. and Russian Federation Navies) from within weapons range of the American and Russian homelands. Since the RFN does not forward-deploy, it would accept such a limitation readily, but the U.S. Navy consistently has rejected negotiations aimed at establishing areas of exclusion for naval operations.
  - c. Agreeing to destroy naval cruise-missile systems—which neither side likely would be willing to do.
3. Finally, Putin and certainly the Main Naval Staff aim to present such a significant maritime strategic threat to CONUS that the U.S. Navy withdraws some or even most of its forward-deployed forces to deal with this new threat in the western Atlantic and eastern Pacific.

The following analysis will demonstrate that applying an analytical model that considers what Putin and official Russian policy statements say, the missile systems and submarine

platforms the Russian Ministry of Defense buys, and the systems and platforms that either have been used in combat in Syria already or are under active testing and development offers insight into the credibility and strategic objectives of Putin's reprise of Analogous Response.

*Putin's Analogous Response Messaging Campaign: Components*

**Public Statements.** The first component of the model for understanding Russian strategic messaging is examining what the Russians are saying. Putin has made public statements explicitly warning that Russia would respond to any U.S. deployment to Europe of missiles that Russia perceives as threatening by taking similar action to hold the United States at risk. In a 2019 address to the Russian Federal Assembly, Putin argued that the planned U.S. deployment of Aegis Ashore systems to Romania and Poland violated the INF Treaty because the missile launchers were capable of launching Tomahawk cruise missiles that could reach Moscow in ten to twelve minutes. To counter what he called "a very serious threat," Putin pledged to take "mirror or asymmetric actions." He elaborated, "Russia will be forced to create and deploy weapons that can be used not only in the areas we are directly threatened from but also in areas that contain decision-making centres for the missile systems threatening us."<sup>49</sup>

Putin also has enacted policies that position Russian forces, particularly the RFN, to reprise Analogous Response. As president, Putin has taken a greater, more direct, personal interest in the navy than have any of his predecessors—certainly since the advent of the Communist era. Since 2015, he has promulgated a number of state documents that together articulate an ambitious, expansive, and expensive vision for the service. His priorities for the RFN include preventing the exclusive superiority of the U.S. Navy and developing and maintaining the naval capability to strike ground targets of a potential enemy with conventional as well as nuclear weapons.<sup>50</sup>

Three elements of Putin's maritime doctrine, policy, and strategy stand out from these documents as the reprise of Analogous Response:

1. The RFN's role in deterrence
2. The pivotal importance of nuclear-armed and conventionally armed cruise missiles in furthering deterrence
3. The application of all instruments of Russian state power to prevent and reduce the level of threat

Russian concepts of strategic containment are reflected directly in Putin's naval pronouncements and policies, in the naval forces he is acquiring to execute strategic containment, and in the means by which they are being articulated to the West, specifically to the United States.

The 2017 naval policy document contains an entire section with the heading “The Navy as an Effective Instrument of Strategic Deterrence.” The document defines one of the most immediate threats to Russia as the “deployment (buildup) of strategic high-precision sea-based non-nuclear weapons systems, as well as sea-based ballistic missile defense systems by foreign states in the waters adjacent to the territory of the Russian Federation.”<sup>51</sup> It goes on to characterize the RFN as “one of the most effective instruments of strategic (nuclear and non-nuclear) deterrence, including preventing ‘global strike.’”<sup>52</sup> Since destroying the enemy’s military and economic potential (i.e., inflicting unacceptable damage) by striking its vital facilities from the sea is one of the primary ways that naval operations can deter military conflicts and implement strategic deterrence, Putin’s maritime policy highlights the pivotal importance he places on nuclear and conventionally armed cruise missiles in the furtherance of deterrence.<sup>53</sup>

According to the policy, the primary objective of modernizing and developing the RFN is “build[ing] the combat potential of the [RFN] by construction and modernization of multipurpose nuclear and non-nuclear submarines, and multipurpose surface combatants designed to perform tasks in the near and far zones and ocean areas.” The policy also identifies the primary armament of Russian naval forces through 2025 as “long-range high-precision cruise missiles.” After 2025, the policy notes, “hypersonic missiles and various unmanned autonomous systems, including unmanned underwater vehicles, will be supplied to equip undersea, surface, and coastal forces of the Navy.”<sup>54</sup>

*Weapon Systems.* The second component of the model for understanding a Russian strategic-messaging campaign is assessing what the Russians are buying. The Russians and their Soviet predecessors often are characterized as focusing excessively on security and secrecy. With the possible exception of the later days of Gorbachev and the chaos of the Yeltsin era, “openness” has not been an identifiable characteristic of governance by the Kremlin.

Moreover, submarines, by their nature, are a difficult strategic, operational, and tactical adversary. Nations and their navies wishing to employ them pursue every possible engineering innovation—nuclear power being the most prominent—and every possible technical and tactical advantage, then try to keep anything related to submarines secret. During the Cold War, the United States spent billions of dollars in highly classified intelligence programs trying to discern such facts about Soviet submarines.

What is most unusual, then, about Putin’s reprise of Analogous Response is that he and his military establishment have displayed so openly new-construction submarines and have described in detail new weapon systems, to the point of providing photography and YouTube videos. One operational Russian missile system, Kalibr, actualizes Putin’s policy



of holding land targets at risk from the maritime domain. In addition, a planned underwater unmanned vehicle, Poseidon, when operational, will present an unprecedented threat.

The development of these naval systems is in addition to the priority focus Putin has placed on modernizing the entirety of Russian strategic forces with new ICBMs, SLBMs, and the Avangard hypersonic glide vehicle. In a two-hour speech before both houses of the Russian parliament on 1 March 2018, Putin presented, with accompanying videos, a new arsenal of Russian nuclear weapons. He described Poseidon as having low noise and high maneuverability and being practically invulnerable to the enemy. “The means to resist them today simply do not exist in the world.”<sup>55</sup>

*The 3-M-14/Kalibr (SS-N-30A) LACM:* The Kalibr LACM is comparable to the U.S. Navy’s Tomahawk. The missile provides General Staff planners and RFN operators a combat-proven air-, surface-, or submarine-launched cruise missile to threaten CONUS as well as overseas locations. The RFN reportedly plans to deploy Kalibr on all newly designed nuclear and nonnuclear submarines and surface combatants of all displacements, as well as to retrofit the missile system to existing platforms. Fitted with either a nuclear or conventional warhead, the missile has a range of 1,500–2,500 kilometers (930–1,550 nautical miles).<sup>56</sup>

*The Poseidon (NATO Kanyon) Unmanned Underwater Vehicle:* Putin and the Russian military establishment have revealed that they have under development a nuclear-powered underwater drone, Poseidon, which is designed to have the capability to deliver a conventional or nuclear warhead from unlimited range. As multiple sources have described, including the Russian Ministry of Defense in press releases, Poseidon has been under development since 2000. It is more than 2 meters (m) (6.5 feet [ft]) in diameter and an estimated 24 m (79 ft) in length, with an estimated speed in excess of seventy knots and an operating depth greater than one thousand meters (3,280 ft). Its nuclear power plant gives the weapon unlimited range.<sup>57</sup>

*Design Project 885/885M/Yasen Nuclear-Powered Cruise-Missile Submarines:* Given the perceived strategic advantages that the Analogous Response submarine patrols off the U.S. East Coast in the 1980s afforded the Soviets, the Malakhit Design Bureau of Saint Petersburg evidently was tasked with designing and building a next-generation submarine, the Project 885/Yasen nuclear-powered cruise-missile submarine (designated an SSGN). The lead unit of the Yasen class, K-560 *Severodvinsk*, was laid down at the Sevmash shipyard in December 1993. This confirms that the requirements for the submarine and its design specifications were under way in the 1980s, coincident with the failure of the initial Analogous Response deployments of the Soviet era. *Severodvinsk* was launched in June 2010—seventeen years after construction began—and commissioned for trial service in January 2014.<sup>58</sup>

The Yasen class offers a formidable offensive platform. Approximately 393 feet long and displacing 11,800 tons submerged, the submarine is equipped with ten torpedo tubes and eight multipurpose, vertical-launch tubes behind the sail. These tubes can accommodate the P-800 Onyx (NATO designator SS-N-26/Strobile) Mach 2.5 antiship missile. It also is reported that Yasen will be equipped with the Tsirkon hypersonic antiship missile, which would make it even more formidable. The submarine also is armed with as many as forty Kalibr LACMs.<sup>59</sup> The Project 885M is somewhat smaller (reportedly 10–12 m shorter) than the lead unit of the class (*Severodvinsk*) but has the same weapons configuration, albeit involving a smaller load (thirty-two Kalibrs vice forty). Thus far, seven 885M submarines are under various stages of construction.<sup>60</sup>

Collectively, the Yasen-class submarines provide Russia with a significant capability to threaten targets at sea and on land. After *Severodvinsk* had completed a full cycle of tests of the Kalibr in 2018, TASS noted, “Nuclear-powered cruise missile fourth generation submarines of projects 885 and 885M are designed to destroy surface and underwater targets, as well as ground objects of the adversary.”<sup>61</sup> Project 885M submarines probably will be assigned evenly to the Northern and Pacific Ocean Fleets of the RFN.

*Project 09851/Khabarovsk*: The RFN reportedly has ordered four *Khabarovsk*-class nuclear-powered submarine drone-torpedo carriers (known as SSDNs), which will be the operational platform for six to eight Poseidon UUVs. The four *Khabarovsk*s are to be assigned to the service’s Northern and Pacific Fleets.<sup>62</sup> *Khabarovsk* had been expected to be launched in the spring of 2020, but was delayed owing to COVID’s effects on the Sevmash shipyard. The RFN is slated to receive as many as thirty Poseidons, with the first production units arriving in 2027.<sup>63</sup>

**Deployments.** The third component of the model for understanding a Russian strategic-messaging campaign is examining what the Russians are doing. Unlike in the 1980s, no submarines overtly deployed have been linked specifically to Putin’s public statements. There has been, however, a recent surge in Russian submarine activity, and Kalibr has been used in combat in Syria.

Submariners are notoriously reticent to disclose the submarine and antisubmarine operations of friend and foe alike. Yet reportedly RFN submarines have been active recently. In a 3 January 2020 interview, Admiral James G. Foggo III, then Commander, U.S. Naval Forces Europe and Africa, reported, “We’re seeing a surge in undersea activity from the Russian Federation Navy that we haven’t seen in a long time.” Foggo noted that more Russian submarines were deploying in the North Atlantic for longer periods and with more-lethal weapon systems. He estimated that the number of Russian submarines out on patrol in 2019 was “more than I’ve seen throughout my time in Europe over the last ten years.”<sup>64</sup>

The Russian military also has been employing its Kalibr cruise missiles in combat in Syria. On 7 October 2015, Russian defense minister Sergey K. Shoigu announced that four warships had fired twenty-six sea-based cruise missiles, destroying eleven Islamic State group targets in Syria. The missiles were launched from warships in the Caspian Sea, about 1,500 kilometers (930 miles) away.<sup>65</sup> Two months later, Russian news agencies reported that Shoigu had informed Putin, “We used Kalibr cruise missiles from the *Rostov-on-Don* submarine from the Mediterranean Sea.” A Russian statement on Facebook amplified: “For the first time from an underwater position, a combined launch [of four] Kalibr sea-based cruise missiles was carried out by the submarine *Rostov-on-Don*.”<sup>66</sup> Since then, Kalibr has been used multiple times in combat in Syria, launched from RFN surface ships and submarines operating in the Mediterranean.

Although neither the surge in submarine activity nor the use of Kalibr in Syria was linked explicitly to Russian strategic-messaging efforts, recall the earlier discussion of current RFN policy. To deter military conflicts and implement strategic deterrence, Russian policy states that the navy requires the ability to destroy the enemy’s military and economic potential (i.e., inflict unacceptable damage) by striking its vital facilities from the sea. Despite the lack of any explicit connection of Russian submarine activities or cruise-missile employment to a strategic-messaging campaign, Putin’s actions thus far (what he does), combined with his public statements and policies (what he says) and the unusually open disclosure of current RFN submarine and missile programs (what he buys), appear at this time to be sufficient to carry out Russia’s strategic messaging. More overt deployments may depend on the progress of arms-control negotiations and what the United States decides vis-à-vis a Tomahawk or other class of GLCM in Europe, especially a nuclear variant.

Since his 2007 Munich speech, Putin has been open and assertive. In 2005, he delivered a clear message to U.S. ambassador William J. Burns. “You Americans need to listen more. . . . You can’t have everything your way anymore. We can have effective relations, but not just on your terms.”<sup>67</sup> Analogous Response submarines are in commission, and more are on the building ways at Sevmash shipyard. Missiles have been tested, and some, such as Kalibr, have been used in combat. Putin clearly is committed to Analogous Response in 2021. It is real and, unlike its predecessor from the 1980s, it is not just going to fade away. Putin likely will be president of Russia until 2036, if not longer.

A core element of Soviet and now Russian military doctrine has been the imperative to hold the United States under a nuclear threat equal to that which the United States and NATO pose to Russia. Analogous Response in the 1980s attempted to provide the military capability to do so; its reprise in the 2020s certainly does so. At the end of the Gorbachev era and through Yeltsin’s period of governance, there was a strategic pause as submarines

were laid up, construction was halted, and the economy faltered. Yet the Russians have invested in new classes of submarines and weapons for more than three decades, as well as modernizing their Strategic Rocket Forces, to reestablish and operationalize this threat. Analogous Response in the twenty-first century articulates with and executes the Russian concept of strategic containment in peacetime and provides Putin and his military commanders a potent war-fighting capability to attempt to coerce U.S. and NATO decision makers.

---

## Notes

1. "Treaty between the United States of America and the Union of Soviet Socialist Republics on the Elimination of Their Intermediate-Range and Shorter-Range Missiles (INF Treaty)," *U.S. Department of State*, 2009-2017.state.gov/.
2. The author was unable to identify an explicit definition of *analogous response* in Soviet-era literature. The Central Intelligence Agency first described the strategy in 1983. Central Intelligence Agency, "Memorandum for Holders of SNIE 11/20-3-82: INF; The Prospects for West European Deployment and the USSR's Reactions," 9 August 1983, p. 6. James McConnell with the Center for Naval Analyses used *analogous* to describe this Soviet maritime strategy in 1985. James McConnell, with Susan Clark and Mary Fitzgerald, "Analyzing the Soviet Press—Spot Report No. 1: The Irrelevance Today of Sokolovskiy's Book *Military Strategy*," Research Memorandum CRM 35-85, May 1985, p. 6.
3. Nikolay V. Ogarkov [Marshal], "Press Conference in Moscow" [in Russian], *Pravda*, 6 December 1983.
4. Robbin F. Laird and Dale R. Herspring, "The Soviet Union and the Strategic Arms Race," in "The Soviet Union in the 1980s," ed. Erik P. Hoffmann, *Proceedings of the Academy of Political Science* 35, no. 3 (1984), p. 190, doi.org/10.2307/1174127.
5. William Burr and Svetlana Savranskaya, eds., "Previously Classified Interviews with Former Soviet Officials Reveal U.S. Strategic Intelligence Failure over Decades," *National Security Archive*, 11 September 2009, nsarchive2.gwu.edu/.
6. The recent work by Simon Miles, *Engaging the Evil Empire: Washington, Moscow, and the Beginning of the End of the Cold War* (Ithaca, NY: Cornell Univ. Press, 2020), demonstrates the kinds of insights that can be derived from a careful, multinational examination of archives. It also broadly supports the conclusions reached in this chapter.
7. John G. Hines, "Record of Interview with General Colonel Andrian Danilevich," in John G. Hines, Ellis M. Mishulovich, and John F. Shull, *Soviet Intentions 1965-1985*, vol. 2, *Soviet Post-Cold War Testimonial Evidence* (McLean, VA: BDM Federal, 1995), p. 33.
8. Amy F. Woolf, *Russian Compliance with the Intermediate Range Nuclear Forces (INF) Treaty: Background and Issues for Congress*, CRS Report R43832 (Washington, DC: Congressional Research Service, updated 27 June 2019), p. 2.
9. Edward C. Keefer, *Harold Brown: Offsetting the Soviet Military Challenge 1977-1981*, Secretaries of Defense Historical Series 9 (Washington, DC: Historical Office, Office of the Secretary of Defense, 2017). Chapter 15, "NATO and the Theater Nuclear Forces," provides an excellent summary of U.S. and NATO deliberations leading up to the INF decision.
10. Stephen Pifer et al., *U.S. Nuclear and Extended Deterrence: Considerations and Challenges* (Washington, DC: Brookings Institution, 2010).
11. Donald H. Rumsfeld, introduction to Donald R. Cotter, James H. Hansen, and Kirk McConnell, *The Nuclear "Balance" in Europe: Status, Trends, Implications* (Washington: U.S. Strategic Institute, 1983), pp. vii-ix.
12. Lawrence Freedman, *The Evolution of Nuclear Strategy* (New York: St. Martin's, 1981), p. 386.

13. John G. Hines, Ellis M. Mishulovich, and John F. Shull, *Soviet Intentions 1965–1985*, vol. 1, *An Analytical Comparison of U.S.-Soviet Assessments during the Cold War* (McLean, VA: BDM Federal, 1995), p. 56.
14. Keefer, *Harold Brown*, p. 473.
15. William J. Casey, Director of Central Intelligence, to President Reagan, memorandum, 22 November 1982, in *Soviet Union, January 1981–January 1983*, ed. James Graham Wilson, *Foreign Relations of the United States, 1981–1988*, vol. 3 (Washington, DC: U.S. Government Publishing Office, 2016), doc. 242.
16. Walter F. Mondale, “Building a Safer World,” *Arms Control Association—Arms Control and the 1984 Election*, [www.armscontrol.org/](http://www.armscontrol.org/).
17. This conclusion is the author’s. It is based on discussions with naval analysts with whom I was working on this and other, related issues at the time.
18. John B. Hattendorf, *The Evolution of the U.S. Navy’s Maritime Strategy, 1977–1986*, Newport Paper 19 (Newport, RI: Naval War College Press, 2004). As Hattendorf describes, the “600-ship Navy” concept originated in the Navy Staff during the Carter administration. It became a major national-security issue for then-candidate Ronald Reagan during the 1980 presidential campaign and was a recurring issue during President Reagan’s administration. See, for example, Ronald Reagan, “Address at the United States Naval Academy Commencement Exercises in Annapolis, Maryland, May 22, 1985,” *Ronald Reagan Presidential Library & Museum*, [www.reaganlibrary.gov/](http://www.reaganlibrary.gov/).
19. Mondale, “Building a Safer World.”
20. Casey memorandum.
21. Dmitry F. Ustinov [Marshal], “Struggling for Peace and Strengthening Defense Capability” [in Russian], *Pravda*, 19 November 1983, collected in U.S. Arms Control and Disarmament Agency, *Documents on Disarmament—1983*, Pub. 125 (Washington, DC: U.S. Government Printing Office, 1986), p. 984. Emphasis added.
22. “Text of Andropov’s Statement on Missile Dispute,” *New York Times*, 25 November 1983, p. A18. Emphasis added.
23. Henry Giniger and Milt Freudenheim, “The World,” *New York Times Week in Review*, 4 December 1983.
24. Ogarkov, “Press Conference in Moscow.” Emphasis added.
25. “New Soviet Missile Shift Is Reported,” *Baltimore Sun*, 26 January 1984, p. 1; “Soviets Plan Missiles for Western U.S.S.R.,” *Washington Times*, 21 February 1984, p. 5.
26. On the SS-N-21 and its deployment in 1984, see Joel Wit, “Soviet Cruise Missiles,” *Survival* 25, no. 6 (November/December 1983), pp. 249–60; George C. Wilson, “Soviet Submarines to Carry Cruise Missiles,” *Washington Post*, 11 June 1983, p. A10; “Russians Expected to Start Deploying Their Cruise Missile,” *New York Times*, 17 November 1983, p. A7; “New Soviet Cruise Missiles,” *Los Angeles Times*, 1 March 1984, p. SD2; John F. Burns, “Soviets Said to Add New Subs off U.S.,” *New York Times*, 21 May 1984, p. A1; and Seth Mydans, “Soviet Announces Own Deployment of Cruise Missiles,” *New York Times*, 14 October 1984, p. A1.
27. “More, Newer Soviet Subs Seen off U.S.,” *Washington Post*, 27 January 1984, p. A23.
28. Office of the Chief of Naval Operations, *Understanding Soviet Naval Developments*, NAVSO P-3560, 4th ed. (Washington, DC: U.S. Government Printing Office, 1981), pp. 90, 131–32.
29. Wit, “Soviet Cruise Missiles,” pp. 249–60.
30. Ogarkov, “Press Conference in Moscow.”
31. “Advanced Soviet A-sub Move to North Atlantic, Navy Secretary Asserts,” *Los Angeles Times*, 15 February 1984, p. 13.
32. *Ibid.*
33. John Lehman, *Oceans Ventured: Winning the Cold War at Sea* (New York: W. W. Norton, 2018), p. 141.
34. Woolf, *Russian Compliance*, pp. 14–15.
35. *Ibid.*; “More, Newer Soviet Subs Seen off U.S.”
36. The deployment of the Echos and Deltas did, however, alter the alert posture of the U.S. bomber force. Monitoring the submarines also imposed a cost on U.S. ASW and intelligence-collection assets. William Chambers [Maj. Gen., USAF (Ret.)] to author, 6 January 2021.
37. Vladimir Lobov [Col. Gen.], “Peace and Stability for the World’s Oceans,” *Krasnaya Zvezda*, 28 June 1987, cited in David A. Rosenberg, “‘It Is Hardly Possible to Imagine Anything Worse’: Soviet Thoughts on the Maritime Strategy,” *Naval War College Review* 41, no. 3 (Summer 1988), p. 80.

38. Miles, *Engaging the Evil Empire*, p. 193.
39. *Ibid.*, p. 28.
40. Michael McFaul, "Putin, Putinism, and the Domestic Determinants of Russian Foreign Policy," *International Security* 45, no. 2 (Fall 2020), pp. 95–139.
41. Vladimir Putin, "Speech and the Following Discussion" (Munich Conference on Security Policy, Munich, Ger., 10 February 2007), available at [en.kremlin.ru/](http://en.kremlin.ru/).
42. Hillary Appel, "The 'Near-Abroad' Factor: Why Putin Stands Firm over Ukraine," *National Interest*, 23 May 2014, [nationalinterest.org/](http://nationalinterest.org/).
43. Thom Shanker and Steven Lee Myers, "Putin Criticizes U.S. Officials on Missile Defense," *New York Times*, 13 October 2007, [www.nytimes.com/](http://www.nytimes.com/).
44. "Putin Hopes U.S. Will Not Forge Ahead with Eastern Europe on NMD," *Russia and CIS Presidential Bulletin*, 12 October 2007.
45. Svetlana Savranskaya and Tom Blanton, "NATO Expansion: What Gorbachev Heard," National Security Archive Briefing Book 613 *National Security Archive*, 12 December 2017, [nsarchive.gwu.edu/](http://nsarchive.gwu.edu/).
46. Ian Williams, "Aegis Ashore," *Missile Threat—Center for Strategic and International Studies*, 14 April 2016, [missilethreat.csis.org/](http://missilethreat.csis.org/). Aegis Ashore is a land-based version of the Navy's Aegis ballistic-missile-defense system. Each site includes a SPY radar and vertical-launch-system tubes containing a total of twenty-four missiles. When configured for missile defense, the Aegis system fires the SM-3 antiballistic missile. However, the ship-based version also can fire the SM-2/SM-6 Standard surface-to-air missile, as well as the Tomahawk cruise missile. Missile Defense Agency, "Aegis Ashore," fact sheet 14-MDA-7921, 23 July 2014, [photos.state.gov/](http://photos.state.gov/); U.S. Navy, "Aegis Weapon System," fact file, [www.navy.mil/](http://www.navy.mil/).
47. Larry Luxner, "Top Pentagon Official Disputes Russian Claims That Aegis Ashore Violates INF Treaty," *New Atlanticist*, 26 June 2015, [www.atlanticcouncil.org/](http://www.atlanticcouncil.org/).
48. *Military Encyclopedic Dictionary*, s.v. "Voennyi Entsikopedicheskii Slovar'," [encyclopedia.mil.ru/](http://encyclopedia.mil.ru/).
49. Vladimir Putin, "Presidential Address to the Federal Assembly," 20 February 2019, [en.kremlin.ru/](http://en.kremlin.ru/).
50. Anna Davis, trans., *Fundamentals of the State Policy of the Russian Federation in the Field of Naval Operations for the Period until 2030*, RMSI Research 2 (Newport, RI: Russia Maritime Studies Institute, 2017).
51. *Ibid.*, para. 25b.
52. *Ibid.*, para. 32. Global Strike is a U.S. Air Force (USAF) war-fighting concept operationalized by the USAF Global Strike Command. Its mission is to provide "combat-ready forces to conduct strategic nuclear deterrence and global strike operations in support of combatant commanders." *Air Force Global Strike Command*, [www.afgsc.af.mil/units/](http://www.afgsc.af.mil/units/). While the command is a USAF entity, the Russians—at least with regard to their naval policy—consider Global Strike to include naval forces. See Davis, *Fundamentals of the State Policy of the Russian Federation in the Field of Naval Operations for the Period until 2030*, para. 31.
53. Davis, *Fundamentals of the State Policy of the Russian Federation in the Field of Naval Operations for the Period until 2030*, para. 30.
54. *Ibid.*, paras. 41–44.
55. Vladimir Putin, "Presidential Address to the Federal Assembly," 1 March 2018, [en.kremlin.ru/](http://en.kremlin.ru/).
56. Missile Defense Project, "SS-N-30A (3M-14 Kalibr)," *Missile Threat—Center for Strategic and International Studies*, 11 August 2016, [missilethreat.csis.org/](http://missilethreat.csis.org/).
57. H. I. Sutton, "Poseidon Torpedo," *Covert Shores*, 22 February 2019, [www.hisutton.com/](http://www.hisutton.com/).
58. Office of Naval Intelligence, *The Russian Navy: A Historic Transition* (Washington, DC: 2015), available at [www.oni.navy.mil/](http://www.oni.navy.mil/).
59. Kyle Mizokami, "Russia's Newest Yasen-Class Attack Submarines Are the Equal of America's Subs," *Foxtrot Alpha*, 10 October 2018, [foxtrotalpha.jalopnik.com/](http://foxtrotalpha.jalopnik.com/).
60. Sidharth Kaushal et al., "The Yasen-M and the Future of Russian Submarine Forces," *RUSI Defence Systems*, 28 May 2021, [rusi.org/](http://rusi.org/).
61. "Project 885 Yasen-Class SSGN Severodvinsk K-560 Completes Kalibr Tests," *Navy Recognition*, 15 January 2018, [www.navyrecognition.com/](http://www.navyrecognition.com/).
62. Sebastien Roblin, "Russia Plans to Build Four Submarines Armed with Nuclear Drone Torpedoes," *National Interest*, 29 June 2019, [nationalinterest.org/](http://nationalinterest.org/).

63. Franz-Stefan Gady, "Russia's Second Poseidon Underwater Drone-Carrying Submarine to Be Launched in 2020," *The Diplomat*, 15 May 2019, [the.diplomat.com/](http://the.diplomat.com/).
64. Megan Eckstein, "Admiral Foggo on Meeting the Russian Challenge," *Defense Info*, 3 January 2020, [defense.info/](http://defense.info/).
65. "Russian Missiles Strike Syria from Caspian Sea," *BBC*, 7 October 2015, [www.bbc.com/](http://www.bbc.com/).
66. Christopher Cavas, "Russian Submarine Hits Targets in Syria," *Defense News*, 8 December 2015, [www.defensenews.com/](http://www.defensenews.com/). *Rostov-on-Don* is a Kilo-class, diesel-powered submarine assigned to the RFN Black Sea Fleet.
67. William J. Burns, "How the U.S.-Russian Relationship Went Bad," *The Atlantic*, April 2019, [www.theatlantic.com/](http://www.theatlantic.com/).





# **PART THREE**

---

Conventional Deterrence



# The Place of Maritime Strength in the Strategy of Deterrence

GEORGE R. LINDSEY

*Strategic nuclear war is not the only hostile act toward which deterrence may be directed. In the NATO area deterrence is equally applicable to tactical nuclear warfare, to the conventional land/air war, and to situations less than war. Maritime strength is always a major contributor to the success of deterrence and in some cases is the sine qua non.*

A great deal has been written on the subject of deterrence. However, most of the attention has been concentrated on strategic nuclear deterrence and on graduated deterrence for the European Central front. There are many other forms of deterrence, and the purpose of this paper is to discuss the place of maritime strength as a deterrent to all forms of aggression against the North Atlantic Alliance.

The establishment of strategic nuclear deterrence between NATO and the Warsaw Pact Organization (WPO) is one of the most important developments of the 20th century and it can be argued, though not logically proven, that it has prevented a third world war. However, now that its ultimate sanction has taken the form of mutually assured destruction of dozens of great cities on both sides, there is a real question as to just what forms of aggression are actually being deterred today. The all-out nuclear surprise attack—yes. The rapid escalation of a conflict that began in a limited way—perhaps. But the threat of mutual suicide is not very credible for any situation falling short of the deadliest of threats to national survival itself.

NATO must be in a position to deter much less serious threats, or to deal with them in an adequate manner should deterrence fail.

## The Limitations of Graduated Deterrence in Central Europe

The greatest threat to NATO is considered to be on the European Central front, where the WPO is able to concentrate greatly superior armored forces in selected areas. With

short overland lines of supply the WPO can reinforce faster than NATO, at least during the first few weeks of a buildup. A rapid breakthrough could allow deep penetration into the rather narrow area bounded by the Iron Curtain to the east and the Rhine and the North Sea to the west.

NATO's means of deterring such aggression is seen as provision of frontline forces well-equipped for defense against armor, backed up by the threat of escalation through tactical use of nuclear weapons on the battlefield and against lines of supply.

It is possible that the conventional defenses or the threat of the actual use of nuclear weapons will succeed in stopping the advance early, and that military operations will cease at this point. But it seems far more probable that the WPO would only initiate an attack after careful calculation that NATO's conventional forces will be inadequate to bring it to an early halt, and that tactical nuclear weapons (TNW) will be used by both sides. In fact the WPO is very likely to initiate the use of TNW themselves. Soviet writings<sup>1</sup> suggest that it would be their policy to use every tactical weapon—nuclear, chemical, and conventional—in the land battle right from the beginning, aiming for rapid territorial gains before NATO can bring in reinforcements.

It is by no means certain that TNW will help the defense more than the offense. What is quite possible is that their use will destroy a large part of the main combat units of both sides, leading to a pause for negotiation or leaving the issue to be decided by those reinforcements which can get into place in adequate strength. In either case, everything will then depend on reinforcement.

Too many of the discussions of graduated deterrence have confined themselves to this one scenario—the short war on the European Central front—and have recorded a satisfactory conclusion when NATO's strategy enforces a "pause." It is the contention of this paper that such an eventuality is likely to mark the beginning of a war that may last for months, proceeding under the threat of use of strategic nuclear weapons but not in fact seeing them used.

Equally important, the short war on the European Central front is only one of many scenarios that need to be studied and for which appropriate deterrence must be provided. The European Central front is not the only front, and the contest between NATO and the WPO is not confined to battlefronts alone. In fact, the best opportunities for deterrence to be effective may be in times of tension short of war and in areas far removed from the European Central front.

### **The Need for Deterrence of All Forms of Aggression**

NATO has two principal objectives. The first is to deter any of the aggressions from being attempted at all. The other objective is to be able to cope with aggression should

deterrence fail. The first objective, deterrence, is the more desirable, but it is the obvious ability to succeed in the second which will attain the first.

In planning NATO capabilities, we should assume that the WPO will think of every form of pressure from legitimate competition upwards, plan, conduct war games and analyses, and forecast the ultimate results. If the WPO's estimate of NATO's capabilities and of its will to employ them is high enough, then the WPO will conclude that no aggression will be successful. In this event, NATO has succeeded.

The possible WPO activities can be divided into five categories as follows:

1. Legitimate competition in conditions of peaceful coexistence.
2. Harassments short of overt warfare.
3. Conventional war.
4. Tactical nuclear war.
5. Strategic nuclear war.

It is not sufficient to estimate which of these five is the most likely, and then plan our capabilities for it alone. With the advantage of the initiative, the opponent's offense will be selected after an assessment of our defense, and we must be able to deter all types of aggression in the last four categories.

### **Competition in Conditions of Peaceful Coexistence**

Short of actual aggression, one must expect the U.S.S.R., as a superpower of growing strength and confidence, to use the normal means of asserting its influence on the international scene. This should be accepted as a condition of peaceful coexistence and need not be deterred. But unless the West is content to see its power and influence shrink it must be prepared to compete with the Soviets, and to hold its own in a world which, though it may not be violent, will be nevertheless competitive.

Soviet prominence in the competition for world prestige extends over many fields, from space to sports, but in recent years, few, if any, areas have had more attention than naval presence. The quality of the new Soviet ships and armament and the way in which their operations have been extended into new parts of the world offer a challenge to the West which has not been very effectively answered.<sup>2</sup>

NATO has confined its naval operations to the North Atlantic and Mediterranean theaters. But its vital interests extend to farther seas including the oil routes from the Middle East, the Caribbean, and the Indian Ocean.<sup>3</sup>

The establishment of Soviet bases on the African coasts represents gains for them in "peaceful coexistence." Well-conducted port visits and visible presence of impressive naval strength expand their influence in other areas and support the activities of political agents ashore.<sup>4</sup>

The best counteraction by NATO is offsetting naval presence. The alternative is erosion of influence, loss of prestige, and possible loss of access to ports or waters now available to NATO ships.

A dividend from effective competition in peacetime is that respect for NATO's naval forces and an appreciation of their capabilities will contribute to deterrence of all forms of aggression.

### **Deterrence of Harassment Short of War**

Harassment short of overt warfare may not have the immediate dangers inherent in active combat, but it could have serious long-term implications of a political, economic, and psychological nature that could undermine the North Atlantic Alliance. Any weakness in NATO's collective political will to commit our forces, as perceived by the WPO, will reduce our powers of deterrence, as the latter depend on the opponent's estimate of what we *will* do rather than what we *can* do.

Harassment of NATO countries or of alliance interests could be carried out on the oceans or in the air, and on any continent. It could be associated with conflict between countries not members of NATO, such as in the Middle East or Africa, or with economic transactions, such as the supply of oil from the Persian Gulf. It could come during bilateral negotiations, perhaps over rights around islands or coastal locations of strategic importance such as Svalbard, over rights of passage of warships, or over fishing or other exploitation of the sea. Recovery of a lost submarine, aircraft, or space vehicle could easily lead to threatening manifestations, and interference with naval or air exercises or weapons trials could develop. It is quite possible that an economic blockade could be declared by some countries and opposed by others.

Most of the possibilities just mentioned are likely to involve naval forces, although many of the circumstances will not necessarily call for sophisticated weapon systems. Many of the situations could involve a single NATO country in a way that would make it difficult for forces from an Allied country to be helpful. A conclusion would be that each NATO partner should maintain at least some general purpose maritime forces rather than trying to build up an Allied fleet composed of specialized national contributions. However, the cost of aircraft carriers and nuclear submarines certainly precludes their presence in most of the smaller navies.

### **Deterrence of Land/Air War in Europe**

It is not the intention of this paper to criticize the priority that has been given to consideration of the first few days of the conventional land/air battle and the introduction of theater nuclear weapons into the land/air battle. From the point of view of deterrence, these probably should be the items of first priority. If NATO cannot deter

a land attack, or halt one, then its prospects are bleak indeed. However, for the defender it is not enough to concentrate everything on the deterrence or defense of one or two types of attack, nor on the operations of the first few days only. Suppose that NATO can hold the Pact for 30 days without recourse to TNW. This is highly desirable, but what happens next? If the Pact foresees that it can win in 60 days, 90 days, or longer, it will continue, and NATO may still have to face the option of escalation or defeat. But at this stage NATO's chances depend on reinforcement and resupply, mainly coming across the Atlantic in ships.<sup>5</sup> The longer the battle lasts, the greater the opportunity for NATO's superior economic, industrial, and manpower potential to be brought to bear.

In addition to the land/air war in Central Europe, both conventional and nuclear, it is necessary to deter aggression on both of NATO's flanks. Although the size of the formations could be smaller, the difficulties of reinforcement and supply will be considerably greater and very dependent on sealift. Timely passage and safe delivery of merchant ships crossing the North Sea, Norwegian Sea, or Mediterranean could pose particularly difficult problems of antisubmarine and especially antiaircraft protection, whereas the Pact is well placed for resupply overland.

In the United States, the objectives of naval strategy are often expressed in terms of projection of power ashore and sea control, and sea control has a number of requirements, of which protection of the sea lines of communication is only one. The ability to project power ashore provides deterrence of harassment, conventional war, and all levels of nuclear war, but it probably has its greatest effect on deterrence of conventional war on the flanks of NATO. The capability of controlling key areas of the seas has an extremely important function in deterring harassment and conventional war, and while the ability to overcome Soviet surface fleets and allow the presence of NATO strike forces is a factor of some significance, the really vital capability for deterring a long war is the capability to maintain the sea lines of communication.

### **Deterrence of Tactical Nuclear War**

To move up to the higher levels of violence, it seems difficult to identify a strategy by which NATO can deter directly the tactical use of nuclear weapons at sea other than through the general fear of widespread devastation should a conflict escalate to general nuclear war. The war at sea will be very asymmetric: NATO depends on the use of the sea, the WPO will wish to deny it. Some of the various antiship weapons, e.g., air-to-surface missiles, torpedoes, and missiles launched from submarines and surface ships, cannot carry a large enough conventional warhead to ensure a sinking or even neutralization of a large warship with one hit. With a nuclear warhead they could be certain of destruction with a direct hit, and with a properly placed burst might be able to destroy

or seriously damage more than one ship. Should seaports be attacked, nuclear weapons could render them unusable for extended periods.

It is true, of course, that the kill probabilities of NATO's antisubmarine and antiaircraft weapons would be enhanced by the use of nuclear warheads, provided that they can be launched and guided, but this could be more than offset by deterioration in the performance of sonar and radar following a nuclear detonation. The balance would move in favor of those wishing to render the seas impassable.

A certain element of passive deterrence is added when NATO warships are designed to operate under conditions of radioactive fallout, but this is not being done for merchant ships.

Graduated deterrence in the form of the ability to attack land targets, especially on the northern flank and in the early stages of the tactical use of nuclear weapons, can make use of naval power. Carrier-based air is extremely flexible in application, well suited for surprise, able to deliver conventional or nuclear armament, and capable of defense of its base. If long-range sea-launched cruise missiles become available, they also ought to be a valuable asset for graduated deterrence.

It is sometimes suggested that there could be a war, even a nuclear war, at sea but not on land. Used at sea, nuclear weapons will not inflict collateral damage on population and are unlikely to produce excessively dangerous radioactive fallout at great distances. The scenario would be favorable to the Warsaw Pact, which can live without seaborne imports and which can supply its troops by land. If NATO's carriers and missile submarines were subject to nuclear attack at sea but were unable to use their own nuclear weapons for projection of power ashore, the balance would be further shifted in favor of the WPO.

### **Deterrence of Strategic Nuclear War**

At the highest level of violence—strategic nuclear war—the relative invulnerability of the current nuclear-powered ballistic missile submarines and the increasing invulnerability of those equipped with the longer-range submarine-launched ballistic missiles (SLBMs) gives them the key role in provision of assured retaliation.

The two methods of deterring the Soviets from using SLBMs against NATO's cities are by the threat of retaliation in kind, which is very effective, and by the threat of destroying the nuclear-powered ballistic-missile-firing submarines (SSBNs). The latter is a less effective deterrent, especially for the nonaggressor, because of the difficulty of locating SSBNs and the very short time that it would take them to launch their missiles. An aggressor planning a surprise first strike would carry out synchronized attacks on hostile SSBNs to the extent that he was able.



An argument is sometimes offered against the desirability of developing an anti-SSBN capability. It identifies SLBMs as the weapon system contributing the most to the stability of strategic nuclear deterrence. The reasoning depends on the distinction between an offensive first strike, aimed against the opponent's weapons and intending to disarm him before he can retaliate, and a retaliatory second strike, intended to punish the aggressor by destroying his cities. For deterrence to be stable, both sides must be able to deliver the retaliatory second strike even after receiving a counterforce first strike. Submerged in the middle of the ocean, an SSBN is not likely to be vulnerable to a counterforce first strike. Moreover, while the SLBMs of yesterday and today have an accuracy and a payload quite adequate for retaliation against population targets, they might not be very effective in an attack on buried and hardened ICBM silos. Therefore, the SSBN of the 1970s can be described as a retaliatory second-strike weapon, supporting the stability of strategic nuclear deterrence. This argument concludes that an anti-SSBN capability would be destabilizing, and an extension of the argument against developing an anti-SSBN capability is that any form of antisubmarine capability is undesirable and destabilizing, in case the antisubmarine forces may mistake an SSBN for an attack submarine.

There are strong counterarguments to this thesis, particularly from the point of view of a NATO participant rather than a detached neutral observer. Although the SLBM may be better designed for retaliation, it certainly could contribute to a first strike. Today's SLBMs are sufficiently powerful and accurate to attack airfields, ports, and command centers, often described as "time-sensitive targets," as the exposure of valuable assets can be greatly reduced if warning is available. In a few years Soviet SLBMs are likely to have Multiple Independently Targetable Reentry Vehicles able to destroy pinpoint hard targets. Moreover, the surveillance and tracking of the movements of SSBNs provides intelligence useful for two highly stabilizing purposes: when nothing unusual is building up, the adversaries should be aware of this; and, in times of tension or crisis, balanced and sensible reactions are more probable from a participant who is confident that he has reliable knowledge regarding the activities of his opponent. These considerations support the value for stable deterrence of the ability to detect the movements of SSBNs. As regards destruction of SSBNs, there is an extraordinarily difficult time constraint—unless NATO is the aggressor, it would need to be able to carry out the destruction of Soviet SSBNs within seconds, or at most a very few minutes, of an H-hour which will remain unknown until the moment of truth.

A reason to strengthen antisubmarine capability is to protect friendly SSBNs from their chief enemy, the SSN. To the extent that anti-SSBN kill capability to be exercised in synchronism with a strategic first strike is destabilizing, a pro-SSBN protection capability is stabilizing.

Thus, the ability to conduct surveillance of the movements of submarines contributes to the stability of deterrence of nuclear war. As regards deterrence of conflicts below

the nuclear level, it would be difficult to conceive of a more disastrous policy for NATO than to weaken its antisubmarine capability. It can be assumed that Soviet SSBNs placing themselves within range of NATO antisubmarine forces do so in the knowledge that they may not be distinguishable from other classes of submarines.

### The Place of Maritime Strength

It is clear that all the dimensions of seapower, including merchant cargo shipping, fishing fleets, icebreakers, coast guards, and other miscellaneous components in addition to naval forces, have great significance for the economic well-being of nations and alliances. In considering deterrence of war we are primarily concerned with military rather than economic contests, but in at least one case, that of the long conventional war in Europe, the success of NATO forces will depend on seaborne supply, and this requires the merchant tankers and cargo ships as well as the naval escorts to protect them. To be able to deter a long war NATO needs the services of a large number of merchant ships, although they may not have to fly the flags of the member nations, and also the seaports able to load and unload them. Fortunately, adequate tonnages are available and the ports have the necessary facilities.

To the role of protection of shipping we should also add that of projecting power ashore through means such as amphibious landings and bombardment by carrierborne aircraft and gunfire.

To summarize the role of naval strength in deterrence:

Harassment short of war can occur in many forms. The sea probably offers the WPO the greatest variety of opportunity, especially if its naval forces attain local superiority over those of NATO. The most appropriate reaction is likely to be presence in adequate strength, which is also the requirement for legitimate competition in peacetime.

Although a conventional war at sea *only*, with no active hostilities on land, may not seem very probable, it could appeal to the WPO, and is best deterred by NATO naval strength. Naval power may not have much influence on a short conventional land campaign in Europe once it has broken out and unless the region of operations permits projection of power ashore, but any contest lasting long enough to require extensive reinforcement and resupply puts a heavy requirement on NATO (though not on the Pact) for establishment and maintenance of sea lines of communication. This demands both cargo ships and forces to protect them, as well as terminals able to load, unload, and deliver. For maritime deterrence of conventional war the requirement is that the enemy recognize that supplies will be delivered in spite of his attempt to cut the communications.

Deterrence of the introduction of nuclear weapons into a land battle by the WPO may depend on the ability of NATO's land and air forces to retaliate in kind, although some

support for them can be provided from carrier-based and ballistic missile submarines. The main contribution of NATO maritime forces to the prevention of use of TNW is to supply and support the conventional land battle so effectively that NATO is not obliged to be the escalator.

The maritime contribution to direct deterrence of strategic nuclear war is the SSBN, arguably the most important element of the strategic nuclear triad of ICBM, bomber, and submarine. And, in addition to the provision of mutual assured destruction, the deterrence is stabilized by surveillance of the movements of Soviet submarines.

Thus, naval power has a role to play across the entire spectrum of deterrence, and especially in the earlier stages of flexible response. The essential requirements are for general purpose strength to deter maritime adventures short of war, protection of the sealanes to deter a long war on land, and continued guarantee of nuclear retaliation by SSBNs to deter strategic nuclear attack.

This last capability is in a very satisfactory state and it is difficult to see what more can be done to deter strategic nuclear war. In fact, strategic nuclear war is so effectively deterred that it has become extremely unlikely to occur and correspondingly less credible as a deterrent to lesser forms of aggression. So far as maritime forces are concerned, priority for improvement should go to the second capability—guarantee of the sealanes. If the Warsaw Pact can be made to view their prospects for success in a long conventional war as minimal, another step will have been taken towards the deterrence of all forms of aggression. Such an objective coincides with the ultimate purpose of the North Atlantic Alliance.

Fortunately, most of the units of maritime power have the flexibility to be effective in the legitimate competition of peaceful coexistence, and for deterrence of most of the forms of aggression. These are the purposes for which they should be acquired and used.

---

## Notes

1. Marshal V.D. Sokolovskiy, *Soviet Military Strategy*, 3rd ed., edited by Harriet F. Scott (London: Macdonald and Jane's, 1975); V. Ye. Savkin, "Tactics—Characteristics of Modern Warfare," *Strategic Review*, Fall 1974, pp. 120–124. William F. Scott, "Soviet Military Doctrine and Strategy: Realities and Misunderstandings," *Strategic Review*, Summer 1975, pp. 57–66.
2. John Moore, *The Soviet Navy Today* (London: Macdonald and Jane's, 1975); David Fairhall, *Russia Looks to the Sea* (London: Deutsch, 1971); Edward Wegener, *The Soviet Naval Offensive* (Annapolis: U.S. Naval Institute, 1975); Wolfgang Hopner, "Soviet Global Challenge: The Great Challenge to the West at Sea," *U.S. Naval Institute Proceedings*, December 1975; J.W. Middendorf II, "American Maritime Strategy and Soviet Naval Expansion," *Strategic Review*, Winter 1976, pp. 16–25.
3. Patrick Wall, ed., *The Indian Ocean and the Threat to the West* (London: Stacey International, 1975).

4. Michael MccGwire, et al., *Soviet Naval Policy: Objectives and Constraints* (New York: Praeger, 1974). See especially Part II, "Soviet Policy and the Third World: Case Studies." MccGwire and McDonnell, eds., *Soviet Naval Influence: Domestic and Foreign Dimensions* (New York: Praeger, 1977). See especially Part VII, "The Soviet Navy and Third World Influence Building." L.W. Martin, *The Sea in Modern Strategy* (London: Chatto and Windus, 1967). See Chapter 7, "Seapower and Non-Belligerent Action."
5. Frank Case, "Time to Secure the Seas," *U.S. Naval Institute Proceedings*, August 1973, pp. 24–31. Hans Garde, "The Influence of Navies on the European Central Front," *U.S. Naval Institute Proceedings*, May 1976, pp. 160–175.

## “They Were Playing Chicken” The U.S. Asiatic Fleet’s Gray-Zone Deterrence Campaign against Japan, 1937–40

HUNTER STIRES

The United States is facing a significant strategic challenge to its interests, allies, and leadership of the liberal world order from an increasingly wealthy, well-armed, and assertively nationalistic China. Whether through the seizure of maritime features and the construction of artificial island fortifications in the South China Sea, the aggressive use of maritime law enforcement to articulate and impose its nationalistic territorial claims on its neighbors, or attempts to restrict military and civilian freedom of navigation in international waters, Chinese forces are working to undermine and revise the political and geopolitical status quo in East Asia.<sup>1</sup> These subtly assertive steps, which stop short of open warfare, constitute a category of activity known to contemporary military thinkers as *gray-zone aggression*.<sup>2</sup> Current U.S. policy makers and the forces at their command struggle to find effective countermeasures against this strategy, which operates by incremental “salami-slice” actions that individually fall below the thresholds that normally would justify a military response but cumulatively achieve the political-strategic revision to the status quo that conventional deterrence aims to prevent.<sup>3</sup>

However, this is not the first time the United States has faced such a destabilizing challenge in the western Pacific. Starting in 1937, Japanese forces invading metropolitan China undertook a concerted campaign to expel U.S., British, and other Western interests from that country as part of imperial Japan’s broader effort to dominate East Asia and actualize the popular jingoistic slogan of “Asia for the Asiatics.”<sup>4</sup> Japanese moves against the West during this period bear striking resemblance to those of China today, including blockades of key foreign outposts, attempts to infringe on free navigation in recognized international waterways, and the harassment (and at times open attack) of foreign warships.<sup>5</sup>

Against this Japanese gray-zone campaign stood the U.S. Navy’s small but highly experienced forward-deployed contingent in the western Pacific, the U.S. Asiatic Fleet, with its

thirty-nine warships and five thousand “old China hands” under the command of long-time Asia specialist Admiral Harry E. Yarnell, USN. With a combination of individual initiative and delegated authority from Washington, Yarnell adopted a policy that U.S. naval forces would protect American citizens in China wherever they were in danger for as long as necessary and assume a forward-leaning force posture of deterrence through persistent presence and engagement. During the period of its implementation between 1937 and 1940, Yarnell’s assertive and dynamic approach was markedly successful at protecting American nationals and comprehensively deterring Japanese encroachments against American interests. Eighty years on, the dynamics of imperial Japan’s gray-zone aggression against the United States and its Western partners during the invasion of China and the U.S. Asiatic Fleet’s experience in countering these efforts offer an important, yet thus far little-known, case study for contemporary American policy makers and commanders seeking to contextualize and find solutions to twenty-first-century gray-zone challenges.

### **China as Chessboard**

An examination of the operating environment in 1930s China provides important points of comparison to circumstances prevailing now. Although that era is remembered (not least by today’s ruling Chinese Communist Party) for the colonized-colonizer relationship between a largely prostrate China and the foreign powers that had dominated it since the nineteenth century, China in its weakness was also very much a playing field among the imperial powers themselves.

#### *Position of the Foreign Powers in China*

With the virtual elimination of German, Austro-Hungarian, and Russian imperial influence from China following the First World War and the Bolshevik Revolution, the chief foreign powers in China in the 1930s were Japan, Great Britain, the United States, and France. Each of these countries had significant economic interests in China and maintained forward-deployed military and naval forces for their protection. As Yarnell reported in a January 1938 letter to U.S. High Commissioner for the Philippines Paul V. McNutt, before the start of Sino-Japanese hostilities in the July 1937 Marco Polo Bridge Incident, Japan had the largest foreign presence, with one hundred thousand nationals living in China and three hundred million yen (roughly U.S.\$89 million) in trade with China in 1934.<sup>6</sup> By Yarnell’s assessment, Great Britain was next in importance, with fifteen thousand nationals in-country, one thousand business firms, and one billion dollars in investment. After Japan and Britain came the United States, with ten to eleven thousand citizens and \$230 million in investment, including the property of two to three thousand missionaries. France was a distant fourth, with three thousand citizens and two hundred firms. Germany and Italy also were present, but to a lesser degree.<sup>7</sup>

By 1937, the foreign powers maintained two general international settlements in China, one at Shanghai on the south shore of the Whangpoo River and one at Amoy on the island of Kulangsu, as well as a number of national concessions, particularly the British and the French at Canton and the British, French, and Italians at Tientsin.<sup>8</sup> According to Kurt Bloch, writing for the Institute of Pacific Relations' *Far Eastern Survey* in May 1939, "the bulk of China's foreign trade is handled by foreign and Chinese merchants resident in concessions and settlements. Indeed, for eighty years prior to the outbreak of the present conflict, no less than 50% of China's foreign trade passed through Shanghai alone."<sup>9</sup>

*Rights of Foreign Powers in China Enshrined by Treaty—Relevant Analogue to Today's International Legal Landscape*

In its capacity as a chessboard, China held a unique legal status as an imperial—if not quite global—commons that contributes to its usefulness as an analogue to the present. In that era, the process of formal codification of global international law had progressed primarily to issues of nationality and armed conflict rather than the more expansive system today that seeks to regulate state conduct across a far wider spectrum of activities.<sup>10</sup>

However, international law was codified more extensively inside China than it was outside, with imperial activity in China regulated through a series of treaties between China and the great powers that expressly delineated foreign rights and privileges there. This patchwork body of accumulated bilateral and multilateral jurisprudence operated on a general international basis in accordance with the accepted principle of equal opportunity and equal treatment of foreign powers and citizens engaged in commerce in China. This had key implications for questions of freedom of navigation and maritime law in particular.<sup>11</sup> Unlike on the broader oceans, which remained subject only to customary international law until the postwar United Nations Convention on the Law of the Sea, on Chinese waterways international freedom of navigation was enshrined specifically as far back as the Tientsin Treaties of 1858–59.<sup>12</sup> International settlements and concessions were given similar legal recognition.<sup>13</sup> Accordingly, Japanese gray-zone aggression and attempts at coercion took place against a backdrop of the defenders' explicit legal rights—as Chinese gray-zone aggression and coercion in the South and East China Seas typically do today.

*The U.S. Asiatic Fleet in 1937: Strategic Predicament of Western Forward-Deployed Naval Forces*

During the interwar period, the Asiatic Fleet was the latest incarnation of the U.S. Navy's forward-deployed force in the western Pacific, maintained continuously since 1835 except for a brief interruption during the American Civil War.<sup>14</sup> In 1937, the Asiatic Fleet was composed of thirty-nine ships: two cruisers, thirteen aging destroyers, six small submarines, three oceangoing gunboats, seven river gunboats, three minesweepers, two tankers, two tenders, and one armed yacht.<sup>15</sup> Although its nominal area of responsibility stretched

from the Persian Gulf to the international date line, its limited resources meant that the Asiatic Fleet's chief purpose was of a diplomatic and constabulary nature—specifically, safeguarding American interests in East Asia.<sup>16</sup> “Interests” were taken to mean lives, property, commerce, diplomatic outposts, treaty rights, and, after 1898, colonial possessions in the Philippines, which the U.S. Asiatic Squadron under Commodore George Dewey first acquired in the opening action of the Spanish-American War. The Asiatic Fleet's focal point was unquestionably China, given the significant American economic and diplomatic interests and foreign imperial activity there.

Despite its small size, after 1919 the Asiatic Fleet's commander was always a four-star admiral, one of just four in the U.S. Navy at the time. This practice was meant to ensure that the senior American naval representative in China would not be outranked by his European and Japanese naval and military counterparts in the vital diplomatic exchanges that were at the center of the Asiatic Fleet's role.<sup>17</sup>

Western forward-deployed naval forces, specifically the U.S. Asiatic Fleet, the Royal Navy's China Station, and the French navy's Far East Squadron, faced a strategic situation that starkly resembles the one faced by the Japan-based elements of the U.S. Seventh Fleet today. Each of these formations were and are relatively small contingents of large but distant navies, facing down the concentrated forces of an increasingly avaricious, regionally based peer competitor whose heavy battle squadrons would take only hours to sortie from their home bases to the locations of the interests at stake, as opposed to the weeks of steaming time that separated—and continues to separate—the China seas from major Western fleet concentration areas on the U.S. West Coast and in the Mediterranean. As a result, the Western fleet commanders were faced with the challenge of safeguarding their nations' interests and international treaty law from an unescapable position of local material disadvantage and military inferiority in the event of a hostile contingency.

*Militant Ultrationalism and Lack of Civilian Oversight as Sources of Factional Complexity, Unaccountability, and Danger*

Over the course of the interwar period, Japan was riven by political turmoil and spates of assassinations fomented and conducted by nationalist and pan-Asianist officers in the Imperial Japanese Army and Navy (IJA and IJN, respectively). This was followed in 1931 by the IJA's abandonment of any remaining pretense of subservience to civilian authority when it seized Manchuria from China on its own initiative—and, according to Yarnell, “without the knowledge or consent of the Premier or responsible civil officials in Tokyo.”<sup>18</sup> In the interim between the takeover of Manchuria and the Marco Polo Bridge Incident, the IJA and IJN secured near-complete domination over the political scene at home, with the IJA the more powerful of the two rival services. The civilian government, although nominally still in charge, was essentially powerless and largely blind to the



actions being taken in its name. This had significant implications for American diplomacy, as Yarnell observed in July 1939:

During the present controversy, the rights of Americans in the Far East have been upheld vigorously by the State Department. Had our notes been addressed to a government which retained control over its armed forces, some recognition of our rights might have been obtained. . . . It should be recognized however that the Tokyo government is generally impotent to deal with or give decisions regarding affairs and incidents in China. In many cases it is entirely ignorant of what is going on. It has been stated on good authority that the Foreign Minister was not aware of the seizure of the Spratley [*sic*] Islands by the Japanese Navy until a few hours before a protest was made by the French Ambassador.<sup>19</sup>

Beyond the breakdown in Japanese civil-military relations, the Japanese armed forces, and the IJA in particular, were themselves split between higher-ranking commanders and their virulently nationalistic field-grade subordinates. The latter sought to dictate strategy, and at times even national policy, through their actions in the field. Yarnell wrote:

The “younger officer” element in the Army, and to a lesser extent in the Navy, is a factor which renders uncertain any policy which may be formulated by officials in Tokyo. These officers may in certain cases dictate to their superiors as to policies to be followed. Failure to be guided by the young officers may result in assassination. Conservative or liberal minded senior officers of the Army and Navy naturally hesitate to assert themselves and may in self defense be forced to assume a chauvinistic attitude.<sup>20</sup>

These twin dynamics had several important implications for Yarnell and the Asiatic Fleet. First, State Department channels to the civilian government in Tokyo would have little impact and could not be relied on to produce material results in the operational theater. Military-to-military diplomacy among in-theater commanders would be considerably more valuable from a practical standpoint, thereby stressing the function of the Commander in Chief, Asiatic Fleet as naval diplomat. At the same time, however, interacting with and affecting the calculus of leaders on the strategic level would not be enough to deter Japanese field-grade subordinates from taking local, aggressive actions against American interests. The combination of the lack of political oversight with the independence of Japanese officers at low levels of command reduced accountability, increased situational uncertainty, and raised the risks associated with U.S. deterrent actions, while accentuating the need for effective U.S. deterrence down the chain of command to a very localized scale.

Today, although Chinese president Xi Jinping has been at least outwardly successful in his campaign to subordinate the People’s Liberation Army (PLA) to the Chinese Communist Party and his own will, there are in contemporary China some disturbing echoes of the conditions that led to interwar Japan’s breakdown in civil-military relations and command and control. From an institutional organization standpoint, there is but one civilian (Xi Jinping) in the Central Military Commission atop the PLA chain of command, which is a tenuous arrangement for the oversight of an armed force with a long-standing

independent streak that now is being repressed severely by that lone civilian autocrat.<sup>21</sup> Xi and his close uniformed partner, Central Military Commission vice-chair General Xu Qiliang, have purged over sixty generals as part of the national anticorruption campaign, which reports indicate already has contributed to an atmosphere of restiveness and instability in the ranks, officer corps, and associated civilian elites.<sup>22</sup> On the grassroots level, the Chinese Communist Party since 1989 has used a heavy hand inculcating popular nationalism to legitimate its rule to the generation that has grown up since the Tiananmen Square crackdown and now has begun entering the junior levels of the PLA.<sup>23</sup>

With the present strongman-oriented governmental organization and nationalist propaganda campaign likely to persist in the short-to-medium term, the combination of weak institutional civilian oversight and popular nationalism in the ranks could prove explosive. Recent military veteran protests against poor retirement benefits and job prospects similarly bode ill for stability across China's broader military community.<sup>24</sup> This combination of factors leaves open the likelihood that Xi and Xu's personal vise grip on China's armed forces conceivably could weaken over the course of their tenure or fail to transfer to their successors, all the while agitating those officers desiring more political autonomy or more hardheaded nationalism in Chinese policy abroad than the party leadership is willing to countenance. Such a situation could lead to an increase in incidents involving subordinate PLA commanders taking aggressively risky independent action or to a potentially dangerous PLA institutional move back toward independence from civilian political control.<sup>25</sup> Given these presently existing circumstances in China today, the case study of the military and civil-military politics of interwar imperial Japan and the resulting dynamics for foreign forces is worth consideration, both now and in coming decades.

## Japan Invades China

### *"A Short, Sharp Campaign": Then and Now*

In July 1937, the IJA embarked on what its general staff envisioned would be a limited expeditionary operation to seize five northern Chinese provinces, an operational concept that Yarnell later characterized as "a short, sharp campaign of two or three months."<sup>26</sup> Yarnell's analysis of imperial Japanese anticipation (and, ultimately, wishful thinking) of a brief rather than a protracted military action would be echoed hauntingly in the Chinese context in 2014 by Captain James E. Fanell (USN, Ret.), then deputy chief of staff for intelligence and information operations for the U.S. Pacific Fleet. On a panel at the 2014 WEST Conference, Fanell publicly stated his assessment that the contemporary PLA "has been given a new task: to be able to conduct a short, sharp war to destroy Japanese forces in the East China Sea, followed by what can only be expected [to be] a seizure of the Senkakus or even the southern Ryukyus, as some of their academics write about."<sup>27</sup>

In 1937, however, Nationalist Chinese leader Chiang Kai-shek defied misguided Japanese expectations that he would either consent to the seizure of his northern provinces or fight Japan's preferred limited, localized war in the remote north.<sup>28</sup> Chiang instead surprised the Japanese by laterally escalating the conflict, sending his best divisions to attack the small IJN garrison in Shanghai. The Japanese then counterescalated vertically by significantly increasing the resources allocated to China and expanding Japanese war aims to include the occupation and domination of China in its entirety and the destruction of the Nationalist Chinese government.<sup>29</sup> After two months of intense urban combat in Shanghai, Chiang's forces were compelled to withdraw, and as winter approached the Japanese moved inland toward the Nationalist Chinese capital at Nanking.

### *Japan Enters the Gray Zone*

The above sequence of events is remembered in hindsight as the initial phase of the conflict known as the Second Sino-Japanese War. Yet this modern nomenclature is largely retrospective. When the Japanese invaded China in 1937, neither side formally declared war, so the fighting, despite its high intensity and heavy casualties, was referred to in Japanese (and later also American) writings as a Sino-Japanese "incident," with the rhetorical implication that this outbreak was just the latest in a long sequence of local clashes between an imperial power and a country under varying degrees of foreign occupation and domination.<sup>30</sup> This seemingly euphemistic terminology had implications for the conflict's legal status and, by extension, for the conduct of the belligerents and the neutral powers. By not declaring war, both Japan and China legally denied that one existed, forgoing for themselves any claim to "belligerent rights," such as the right to declare a blockade and enforce it on neutral commerce. The unique landscape of international law in China also was unaffected by hostilities, declared or undeclared. All past agreements and treaties providing for international freedom of navigation on Chinese rivers remained in effect, and indeed stipulated that neutral powers could continue to sail Chinese waters even if China was in a declared state of war with another foreign power.<sup>31</sup>

In this legal environment, Japanese attempts to dictate affairs in the international settlements or impose restrictions on neutral freedom of navigation in Chinese waterways under Japanese military control were neither in accordance with law nor legally binding on neutral powers. Therefore, Japanese revisions to the status quo vis-à-vis neutral Western powers in China would require either the use of force to compel change or the de facto assent of a cooperative adversary. Since the greater portion of the Japanese officer corps, apart from the most extreme, recognized the at least momentary undesirability of open war with the West, Japan's revisionist gray-zone campaign against Western interests manifested itself in a mixture of outwardly innocuous requests, more-menacing impositions, and occasional outright intimidations designed to gain this assent.

Japan's gray-zone assertions against neutral powers started in August 1937, around the time its forces began to gain the upper hand in Shanghai. These early probing actions took the form of attempts to impose Japanese will in various respects on the other powers. For example, they closed the area of the Shanghai international settlement normally patrolled by Japanese forces in peacetime to nationals of other powers, and then after the fighting had moved on they required passes and permissions for residents to reenter to inspect or remove their property.<sup>32</sup> This action disregarded rights to free movement within the international settlement and infringed on the administration of the multinational Shanghai Municipal Council.<sup>33</sup>

More pressingly, the Japanese attempted to restrict international navigational rights—which soon became a key sticking point. These restrictions began with a proclamation by Vice Admiral Kiyoshi Hasegawa, commander in chief of Japanese naval forces in the Shanghai area, without advance notice to Yarnell or any of the other foreign admirals in China, of a “peacetime blockade” of the China coast, directed against Chinese shipping, with the caveat that foreign ships “will be liable to boarding by Japanese naval authorities bent on ascertaining their true nationality in case of doubt.”<sup>34</sup> Hasegawa followed with a request on September 1, 1937, in response to an inquiry on the matter from Yarnell, for notification of movements by American vessels in the proscribed zone.<sup>35</sup> Most importantly, with the victory in Shanghai and movements west toward Nanking, the Japanese gained military control of the Yangtze River and began to assume the right to grant or refuse permission to navigate it to other powers—contrary to treaty rights.<sup>36</sup> This issue would become the key point of gray-zone contention between Japan and the West between late 1937 and mid-1939.

The gray-zone confrontation took on new urgency as Japan and China reached a battlefield stalemate between 1938 and 1939. After a series of operationally successful Japanese offensives nevertheless failed either to bring the Chinese government to terms or to impose Japanese control over the restive countryside, the Japanese came to regard the Nationalist Chinese bullion reserves, some of which were held in the vaults of Western banks within the international settlements and concessions, as a potential means of forcing an end to the war through economic strangulation. In mid-1939, therefore, the Japanese embarked on their most aggressive gray-zone offensive yet: blockading the British and French concessions in Tientsin, introducing landing troops into the foreign concession on Kulangsu in Amoy Harbor, and seeking to close China's last open seaports—Swatow, Foochow, Wenchow, and Ningpo—to foreign shipping. According to Yarnell, “the taking over of these Concessions, giving them absolute control of [China's] trade and finance, and the capture of the silver stocks now in Concession banks would be equivalent to many victories on the battle field.”<sup>37</sup>

## The Yarnell Strategy and Its Implementation

Yarnell's responses to the spectrum of Japanese impositions show a consistent approach of polite but firm resolve, characterized by

- Continuous military-to-military diplomatic contact asserting American rights and challenging Japanese infringements on the spot
- Persistent physical U.S. force presence at the point of Japanese gray-zone attack
- Development of the Asiatic Fleet's organizational culture around the principles of forward presence, particularly regarding the exercise of independent judgment and action by on-scene commanders and subordinates

With these approaches, Yarnell accepted inherent risk attendant to maintaining presence in war zones and defending U.S. interests against gray-zone aggressions from a malignant, militaristic force unchecked by civilian control.

### *Sending U.S. Force Presence toward the Sound of the Guns*

Backed by an American national policy of "standing adamantly on all American rights of property and person," Yarnell laid out the foundations of his strategy in a statement of policy of the U.S. Asiatic Fleet on September 22, 1937.

The policy of the Commander in Chief during the present emergency is to employ U.S. naval forces under his command so as to offer all possible protection and assistance to our nationals in cases where needed. Naval vessels will be stationed in ports where American citizens are concentrated and will remain there until it is no longer possible or necessary to protect them or until they have been evacuated. This policy . . . will continue in full force even after our nationals have been warned to leave China and after an opportunity to leave has been given. . . . In giving assistance and protection our naval forces may at times be exposed to dangers which will in most cases be slight, but in any case these risks must be accepted.<sup>38</sup>

This approach was assertive and forward leaning, placing U.S. warships in the midst of active combat to protect American interests. Indeed, Yarnell deployed the bulk of the Asiatic Fleet to Shanghai within hours of the initial outbreak of fighting there. Charles Henry Kretz, who served between 1937 and 1938 as first lieutenant and gunnery officer of the destroyer USS *Bulmer* (DD 222), offers a vivid account of his ship's arrival at Shanghai on September 1, 1937. The ship entered the mouth of the Yangtze

during the actual landing of the Japanese at Woosung. We went right through the Japanese fleet as they were bombarding the shore, with troops along the shore and landing craft on the beach. . . . We were right in the middle of the combat, with shells flying around all around us. We proceeded on up the Whangpoo River to the Texaco compound, where we moored to a pontoon . . . to guard the Texaco compound. We were there for months . . . we were right in the midst of most of the fighting. It was all around us. . . . The Japanese would come up with their destroyers and cruisers firing point-blank into the opposite bank of the river. When they'd get near us, they'd stop firing, turn around and salute us, and as soon as they passed, open fire again.<sup>39</sup>

As the Japanese expanded the conflict beyond Shanghai to different ports, U.S. Asiatic Fleet ships would steam toward the sound of the guns, shadowing Japanese operations and taking up station to guard American interests and maintain comprehensive deterrence.

Presence operations of this type proved their value in 1939 with the start of the Japanese economic strangulation campaign against the Western concessions and the remaining open Chinese ports. An illustrative example is the Swatow incident in June of that year, when a Japanese expeditionary force took the treaty port of Swatow, where approximately forty American and eighty British missionaries resided, and demanded the withdrawal of the destroyers USS *Pillsbury* (DD 227) and HMS *Thanet*. Yarnell replied by ordering *Pillsbury* to remain; dispatching a second U.S. destroyer to the scene (a move that the British emulated); and communicating to his Japanese naval counterpart, Admiral Koshiro Oikawa, “that the paramount duty of the United States naval vessels is the protection of American citizens and that they will go wherever necessary at any time to carry out that mission and will remain in such place as long as American citizens are in need of protection or assistance.”<sup>40</sup> Faced with this unambiguous commitment, the Japanese relented.

#### *Operational Hazards from Both Mistaken and Intentional Attack*

The dangers of accidental damage or mistaken attack during these operations were considerable—during the first phase of the battle of Shanghai, U.S. warships were bombed mistakenly five times by Chinese aircraft and struck by errant antiaircraft shells and shrapnel on numerous occasions. Yarnell’s flagship, USS *Augusta* (CA 31), was nearly a victim of a Chinese bomb that fell just twenty yards wide of the ship, less than half an hour after arriving at the mooring buoy on the Whangpoo on the afternoon of August 14, 1937. It suffered one man killed and seventeen wounded when an antiaircraft shell exploded on the ship’s well deck six days later.<sup>41</sup> In October of that year, Yarnell himself was conversing with his chief of staff on *Augusta*’s bridge wing when a piece of shrapnel wounded a radioman standing between them. Most infamously, Japanese naval aircraft mistakenly bombed and sank the gunboat USS *Panay* (PR 5) on December 12, while *Panay* was escorting three merchantmen engaged in noncombatant evacuation operations from Nanking.<sup>42</sup>

The pursuit of Yarnell’s strategy frequently required Asiatic Fleet ships to place themselves in tactically vulnerable positions as they interposed themselves between a militaristic, unpredictable, aggressive adversary and coveted objectives. The risk to American forces was only “slight” so long as the Japanese—which is to say, whichever Japanese officer happened to be in tactical command in the vicinity—did not choose to start a fight with the United States by simply destroying the vulnerable American unit before them. While the bombing of *Panay* was a genuine case of misidentification by overzealous Japanese fliers without a strike plan, outright deliberate attacks did take place.<sup>43</sup> Earlier on December 12, an

ultranationalist Japanese artillery officer, Colonel Kingoro Hashimoto, chose to open fire on a pair of British gunboats operating off Wuhu, and subsequently sent soldiers under his command to machine-gun the decks of the sinking *Panay* a few hours later.<sup>44</sup>

At the time of the attack on *Panay*, the destroyer *Bulmer* was riding at anchor in Tsingtao between two Japanese cruisers. According to Kretz's later recollection, *Bulmer's* crew was acutely aware of the ship's all-but-certain fate should war break out between the United States and Japan at that juncture: "When we learned of the sinking of the *Panay*, we immediately put warheads on our torpedoes. We kept six torpedoes trained on each of these Japanese cruisers day and night. . . . They didn't have the torpedoes, but they had their guns . . . they were trained on us. But if we weren't going to get out, there were two Japanese cruisers that weren't going to get out either."<sup>45</sup>

### *Deploying Four Stars*

Yarnell was particularly effective in his use of the diplomatic stature associated with his own four-star rank to assert American rights in the face of Japanese navigational restrictions and blockades. In June 1938, the Japanese delivered letters to U.S. ambassador to China Nelson T. Johnson requesting that neutral ships evacuate a 326-mile zone of the Yangtze between Wuhu and Hankow and provide notification of future movements. In addition, in light of past difficulties regarding identification of neutral vessels from the air, the letters expressed that Japanese air commanders "earnestly hope[d] . . . that the Powers concerned would find out a new method to make their vessels more distinguishable, for example, such as painting the greater part of the vessels SCARLET [emphasis original] or in other colours."<sup>46</sup> Yarnell flatly refused to repaint or restrict the movements of U.S. warships on the Yangtze and reiterated that Japanese forces must hold themselves accountable for damage to American lives and property.

Later that month, Yarnell cruised aboard the Asiatic Fleet's armed yacht and relief flagship USS *Isabel* (PY 10) from Shanghai without Japanese naval escort to Nanking, downriver of the purported "danger zone" but nevertheless penetrating an area that the Japanese previously had pronounced impassable to foreign shipping.<sup>47</sup> Yarnell then repeated the maneuver with U.S. consul Clarence Gauss aboard in January 1939, proceeding as far as Wuhu and proclaiming to reporters that, in light of the area's lack of fighting, clearance of previous navigational barriers, and presence of many Japanese transport ships on the river, he saw no reason why the Yangtze should not be open to international shipping.<sup>48</sup> Since the Japanese could not well impede the passage of an American four-star admiral on an inspection tour without causing a serious incident, Yarnell used himself as a powerful diplomatic chess piece to ensure the success of what today would be labeled "freedom of navigation operations" that asserted American navigational rights on the Yangtze while undermining the public Japanese position that the river was not physically safe.

### *Fostering a Mission Command Culture*

Yarnell also harnessed and nurtured his force's distinctive organizational culture, which encouraged independent action and judgment on the part of relatively junior officers in high-stakes political-military-diplomatic situations. This sensibility was inculcated well down the chain of command, as was the case with Kretz's ship, USS *Bulmer*, at Amoy in July 1938. The Japanese had conducted an amphibious landing on Amoy Island in early May of that year, leading to a significant exodus of civilians from Amoy into the international settlement on the adjacent island of Kulangsu. Japanese troops occupied Amoy Island, while the Chinese held the shore of the mainland. Yarnell sent *Bulmer* to relieve the destroyer *Edsall* (DD 219) at Amoy in early July with broad, mission-type orders, which *Bulmer's* commanding officer, Walter Ansel, later recounted were simply "to protect American interests' . . . that's all I could get out of him."<sup>49</sup> Ansel described his approach to this tasking with a frank, clear-eyed assessment of the potential range of action open to on-scene commanders with such instructions and of the implications of a captain's performance on his career prospects: "If you protected them [American interests] and met emergencies which couldn't be anticipated and you did something that was a little extreme or maybe impulsive and succeeded, you were a duke. But if it turned out sour and you caused trouble, if the problem intensified, why, of course, you . . . weren't doing very well and you could be yanked out."<sup>50</sup>

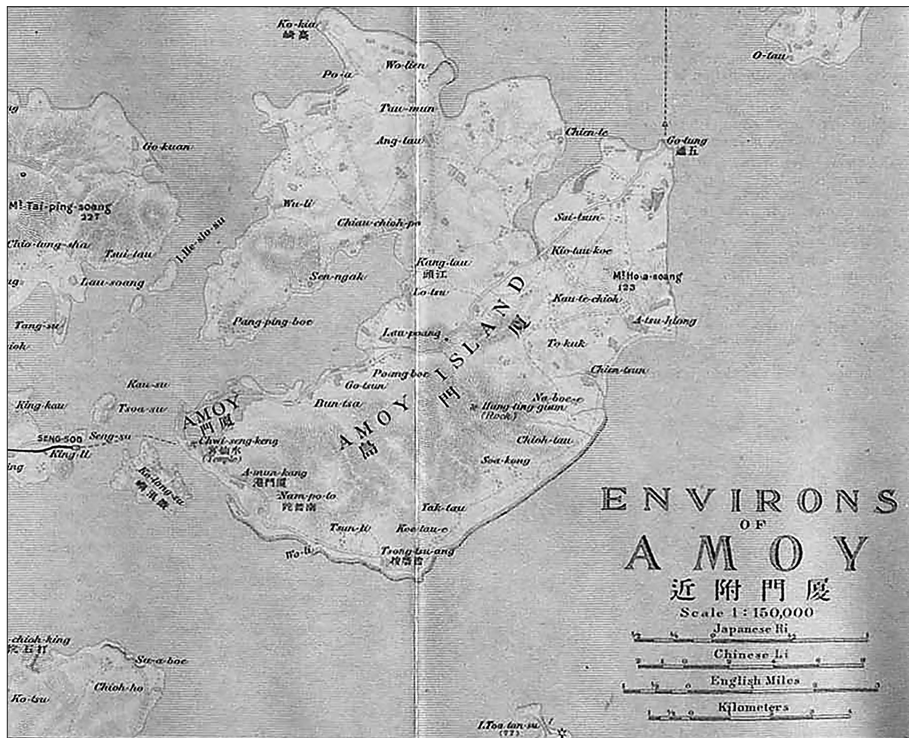
The anchorage for U.S. station ships in Amoy was chosen to ensure line of sight to the two major American interests in the vicinity: the U.S. consulate facing Amoy on Kulangsu and a Standard Oil installation on the Chinese mainland on the far side of Kulangsu from Amoy (see figures 1 and 2).<sup>51</sup> With *Bulmer* anchored in this key position, Japanese artillery began to fire directly over the American ship to hit purported Chinese positions on the mainland, and as Kretz later explained, "periodically, they'd land a shell as close to us as they possibly could."<sup>52</sup> On the third day, Ansel resolved as follows:

It was obvious to me that they were shooting to get me out of that anchorage, just to show me they could do it. So I got in my gig, with my dress clothes on, my sword, and a pennant flying and landed on the Japanese shore. . . . There was a Japanese naval aide . . . and they [the aide and an interpreter] carried me up to the boss Admiral. I told him that shells were flying every day right over my ship. . . . The admiral asked right away, is it interfering with any of your instruments? I said, "No, we have no instruments that shelling could hurt. However, if one of your gunners makes a mistake and the shell doesn't go over us, I would have to reply with everything that the United States ship *Bulmer* has. . . ." And he said, "I have great confidence that we will never make a mistake like that." I had to reply that I had great confidence in the capabilities of the United States ship *Bulmer* to defend herself, and we looked at each other and laughed. They didn't fire over us again.<sup>53</sup>

Ansel's narrative is not, however, the whole story. While the captain and the executive officer were meeting with the Japanese, Kretz, as first lieutenant, had command of the ship. Kretz recounts that, during this period while the senior officers were engaged in their diplomatic tête-à-tête ashore, "the Japanese let one go right on our bow."<sup>54</sup> Accordingly, Kretz



FIGURE 1  
*Environs of Amoy*



This figure shows detail of environs of Amoy. The Standard Oil plant is at the terminus of the railway (black line) marked Seng-su, to the west of Kulangsu.

Sources: *An Official Guide to Eastern Asia*, vol. 4, *China* (Tokyo: Imperial Japanese Government Railways, 1915), available at [www.lib.utexas.edu/](http://www.lib.utexas.edu/); P. W. Pitcher, *In and about Amoy* (Shanghai: Methodist Publishing, 1910), pp. 215, 266, e-book.

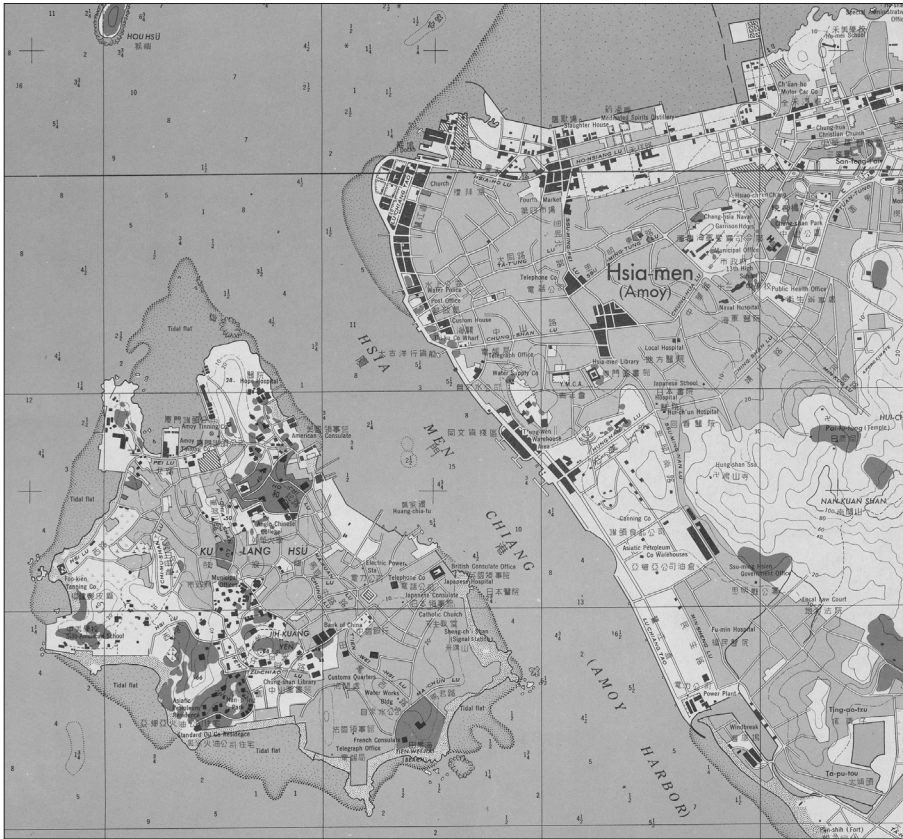
demonstrated his own Asiatic Fleet initiative and steely nerve: “I went to general quarters and aimed our 5-inch guns on this gun emplacement, which I could see not more than 500 yards from us. And they stopped firing on us.” Reminiscing years later, Kretz aptly described the deterrence dynamics at work both in this specific situation and more broadly in the Japanese gray-zone campaign with a succinct summation: “they were playing chicken.”<sup>55</sup>

### Japan Exits the Gray Zone

Despite its successes on the operational level at checking and deterring Japanese gray-zone aggression against American interests in China, the small Asiatic Fleet nevertheless was subject to the larger political and strategic forces that were impelling the United States and Japan toward a direct confrontation. It was not long after Yarnell handed off command of the Asiatic Fleet to his Naval Academy classmate Admiral Thomas C. Hart, USN, in July 1939 that Japan’s ally Germany opened hostilities in Europe with its invasion of Poland, deepening the international crisis. With the sudden collapse of France in

FIGURE 2

*Hsia-Men (Amoy), 1945, Detail of Kulangsu*



American consulate marked, facing Amoy across Amoy Harbor. Approximate distance from Kulangsu to Amoy is one-half mile. Standard Oil plant on mainland at Seng-su is one mile to the west of Kulangsu (not on map). U.S. destroyers seeking to maintain line of sight to both the consulate and Standard Oil therefore had to moor to the north of Kulangsu, close to Amoy Island; as Kretz indicates, *Bulmer* was five hundred yards from the offending Japanese artillery position at the time of the shelling incident in July 1938.

Source: U.S. Army Map Service, 1945, available at [www.lib.utexas.edu/](http://www.lib.utexas.edu/).

midsummer 1940, one of the major European powers in China and Southeast Asia effectively became neutralized. Hart and his fleet worked successfully to ensure that the Japanese would not use that occasion as an opening to move on French and other Western interests in China. But Hart's fleet was not in a position to stop the Japanese from seizing the northern part of France's colony in Indochina, the first step on Japan's southward advance toward Malaya and Singapore.

With tensions on the rise between the United States and Japan, Hart reached the difficult conclusion that the strategic competition with Japan soon would change the Asiatic Fleet's mission from contesting subtle yet aggressive Japanese moves to fighting Japan

in overt hostilities. He later described his reasoning: “By mid-October, 1940, I became convinced that the place for me was with the Fleet, and for the Fleet in the Philippines, that our main job was to get ready for war; that being on the China Coast protecting American interests and all that was not reduced in importance, but it was no longer the main issue; that as such it must be dropped; that I myself should get south with the Fleet and get ready for the war which I felt more and more every day was coming.”<sup>56</sup>

With strategic-level conditions darkening the clouds over the Pacific, Hart discontinued his predecessor’s strategy for countering Japan’s creeping aggression against U.S. interests and withdrew his force to Philippine waters to begin working up for combat.

Hart was proved prescient a little over a year later in December 1941, when the Asiatic Fleet was one of the few Allied formations in the Pacific to weather the initial wave of Japanese attacks unsurprised and relatively unscathed.<sup>57</sup> However, the Asiatic Fleet subsequently would be lost after the inexperienced and incompetent Dutch vice admiral Conrad Helfrich politically engineered Hart’s removal from command in February 1942 and threw the combined Allied naval forces in Southeast Asia into the poorly conceived and badly planned battle of the Java Sea. Helfrich gave no regard for the logistical and command-and-control arrangements needed for an ill-equipped, multinational, multilingual fleet to achieve victory against a homogeneous, well-coordinated foe with numerous advantages over the Allied striking force, including superior scouting and night-fighting capabilities, powerful (and reliably functional) ship-launched torpedoes, and near-complete control of the air.<sup>58</sup> The Java Sea action and those that followed led to the vast majority of the U.S. naval losses in the Philippines and Dutch East Indies campaigns, totaling twenty-two ships sunk, 1,826 men killed or missing, and 518 sailors captured by the Japanese.<sup>59</sup>

There are several takeaways from this study of Japanese gray-zone aggression against the West and the U.S. Asiatic Fleet’s actions to deter it. The situation among the imperial powers in China in the 1930s is, in several important ways, similar to contemporary conditions. Japan’s gray-zone efforts against the other treaty powers sought to subvert a well-codified and unambiguous international law environment inside China that bears a close resemblance to key elements of the current worldwide international legal architecture, particularly with respect to the law of the sea.

Many of Japan’s maneuvers in the 1930s should be recognizable to contemporary China observers. China today demands prior notification of transit and insists on a right to grant explicit permission to foreign warships and aircraft conducting innocent operations in Chinese territorial waters and exclusive economic zones (EEZs).<sup>60</sup> China has made assertive increases in maritime law-enforcement and naval patrols around disputed maritime features and—similarly to the Japanese blockade at Tientsin—physically interposed

China Coast Guard and PLA Navy assets to harass U.S. and allied ships and aircraft during routine operations in EEZs and international waters.<sup>61</sup> Chinese forces even attempted a strategic-level version of the 1938 *Bulmer* shelling affair at Amoy with their infamous (and politically counterproductive) firing of ballistic-missile salvos into the approaches of major Taiwanese ports, endeavoring to disrupt commercial shipping traffic and influence an upcoming Taiwanese election during the third Taiwan Strait crisis, in 1996.

Admiral Yarnell's policy—that "United States naval vessels . . . will go wherever necessary at any time . . . and will remain in such place as long as American citizens are in need of protection or assistance"—can be characterized as the imperial era's equivalent to the modern American mantra that "the United States will fly, sail, and operate wherever international law allows."<sup>62</sup> Yarnell's strategy for gray-zone deterrence—incorporating continuous military-to-military communication, persistent physical forward presence, and the inculcation of a culture of independent judgment and mission command down to junior levels of responsibility—allowed the Asiatic Fleet to "punch above its weight" by leveraging all its assets, from its commander's four-star rank to the adaptive thinking and independence of its junior officers on the spot. Although political and strategic dynamics beyond the control of forward-deployed naval forces would lead the United States and Japan into an open conflagration in late 1941, the Asiatic Fleet's counter-gray-zone campaign against the Japanese in China between 1937 and 1940 offers a valuable case study with critical insights for those seeking to craft strategies to deter and defeat gray-zone aggression in the contemporary western Pacific.

---

## Notes

For place-names in China and similar references, this article uses the names used in U.S. and Western sources from 1937 to 1940, which tended to follow the Wade-Giles system of romanization of Mandarin.

1. James Holmes and Toshi Yoshihara, "Small Stick Diplomacy in the South China Sea," *National Interest*, April 23, 2012, nationalinterest.org/.
2. Philip Kapusta [Capt., USN], "The Gray Zone" (white paper, U.S. Special Operations Command, September 9, 2015), p. 1, available at [info.publicintelligence.net/](http://info.publicintelligence.net/). Kapusta's white paper was the first document to popularize the term *gray zone* in the modern military context. He defines gray-zone challenges as "competitive interactions among and within state and non-state actors that fall between the traditional war and peace duality. They are characterized by ambiguity about the nature of the conflict, opacity of the parties involved, or uncertainty about the relevant policy and legal frameworks. . . . [G]ray zone challenges rise above normal, everyday peacetime geo-political competition and are *aggressive, perspective-dependent, and ambiguous*" (emphasis original).
3. The specific phrase "salami tactics" reportedly was coined by Hungarian communist Mátyás Rákosi in the late 1940s to describe his consolidation of power. "HUNGARY: Salami Tactics," *Time*, April 14, 1952, available at [content.time.com/](http://content.time.com/).
4. "Asia for Asiatics' Is Japan's Slogan," *The Mail* (Adelaide, SA, Austral.), April 22, 1933, available at [trove.nla.gov.au/](http://trove.nla.gov.au/).
5. Michael Green et al., *Countering Coercion in Maritime Asia: The Theory and Practice*



- of *Gray Zone Deterrence* (Washington, DC: Center for Strategic and International Studies, May 2017), pp. 52–65, 148–68, 169–201, available at [www.csis.org/](http://www.csis.org/).
6. Lawrence H. Officer, “Exchange Rates between the United States Dollar and Forty-One Currencies,” *MeasuringWorth*, 2017, [www.measuringworth.com/](http://www.measuringworth.com/); Harry E. Yarnell [Adm., USN] to High Commissioner Paul V. McNutt, January 20, 1938, p. 3, in *Sino-Japanese Incident (1937): Correspondence of C-in-C, Asiatic Admiral H. E. Yarnell, U.S.N.*, box 18, folder 3, Record Group [RG] 8, Naval Historical Collection, Naval War College, Newport, RI.
  7. Yarnell to McNutt, January 20, 1938, pp. 9–11. Germany had 2,700 citizens and 340 firms in China but no combat forces present to protect them. Although nominally allied with Japan through the Anti-Comintern Pact, Germans in China were disposed more toward China than Japan, and Germany sent a military mission that gained a trusted advisory place in Chiang Kai-shek’s government. The best Chinese divisions, sent to Shanghai in 1937, were German trained. Italy in 1936 was reported to have 756 citizens and thirty-three business firms in all of China and the Regia Marina had gunboats on the Yangtze. In 1937, Italy used the pretext of the protection of its 140 citizens at Shanghai to send a cruiser and eight hundred troops there. Yarnell observed to McNutt that the Italians “are making the most of their alliance with Japan, and are demanding representation on the Shanghai Municipal Council and have hopes of obtaining a concession in Shanghai in the final settlement.” On account of this close relationship with Japan, Yarnell quickly discounted Italy as a useful partner in maintaining neutral rights in China.
  8. William C. Johnstone, “International Relations: The Status of Foreign Concessions and Settlements in the Treaty Ports of China,” *American Political Science Review* 31, no. 5 (October 1937). By way of definition, according to Johnstone: “The terms ‘settlement’ and ‘concession’ have often been used indiscriminately, but the word ‘settlement’ has most often been applied to a foreign-controlled area in which all the Treaty Powers have equal rights. Such an area is governed by a locally elected municipal council of foreigners. . . . Its chief characteristic is the fact that land can be leased by foreigners directly from the Chinese owner, the deeds being registered through the consulate of the foreigner and with the local Chinese authorities. The term ‘concession,’ on the other hand, has been applied to a grant of land by the Chinese government to a single foreign nation, either directly by treaty or indirectly under general treaty terms by the local Chinese authorities. A concession is governed by the consular representative of the nation controlling the grant, sometimes with the assistance of an elected municipal council. The chief characteristic of a national concession is that the grant is in the form of a long-term or perpetual lease on which the nation concerned pays a nominal ground rent to the Chinese government. The nation controlling the concession, in turn, acts as landlord by sub-leasing plots to individuals, either foreign or Chinese.”
  9. Kurt Bloch, “The Basic Conflict over Foreign Concessions in China,” *Far Eastern Survey* 8, no. 10 (May 10, 1939), pp. 111–16.
  10. “Origin and Background: League of Nations Codification Conference,” *International Law Commission*, July 31, 2017, [legal.un.org/](http://legal.un.org/).
  11. Westel W. Willoughby, *Foreign Rights and Interests in China* (Baltimore, MD: Johns Hopkins Univ. Press, 1920), chap. 9.
  12. “Old Treaty Permits U.S. Patrol; Ships Not on Aggressive Mission,” *New York Times*, December 13, 1937. The Treaties of Tientsin between 1858 and 1859 formally granted Great Britain, France, the United States, and Russia freedom of navigation on the Yangtze and access to Chinese ports.
  13. Johnstone, “International Relations.”
  14. Robert Erwin Johnson, *Far China Station: The U.S. Navy in Asian Waters 1800–1898* (Annapolis, MD: Naval Institute Press, 1979), e-book. From 1835 to 1861 the force was known officially as the East India Squadron; from 1868 to 1901 the force was known officially as the Asiatic Squadron.
  15. “39 U.S. Warships Ready off China,” *New York Times*, August 15, 1937.
  16. *Reminiscences of Henri Smith-Hutton* [Capt., USN (Ret.)], vol. 1, p. 112, U.S. Naval Institute Oral History Program, accessed at Naval Historical Collection, Naval War College, Newport, RI.
  17. *Reminiscences of Thomas C. Hart* [Adm., USN (Ret.)], Columbia University Oral History Research Office (New York), microfiche,

- accessed at Naval Historical Collection, Naval War College, Newport, RI.
18. Yarnell to McNutt, January 20, 1938, p. 6.
  19. Memorandum by Harry E. Yarnell [Adm., USN] to the Secretary of the Navy, "Far Eastern Situation," July 20, 1939, p. 10, box 18, folder 1, RG 8, Naval Historical Collection, Naval War College, Newport, RI. The IJN seized control of the Spratly Islands in February 1939.
  20. Yarnell to McNutt, January 20, 1938, p. 4.
  21. "CMC," *ChinaMilitary.com*, english.chinamil.com.cn/.
  22. Bill Gertz, "China's Most Powerful General, a Xi Jinping Henchman, Meets Mattis," *Washington Free Beacon*, July 2, 2018, freebeacon.com/.
  23. "575: Poetry of Propaganda," December 18, 2015, in *This American Life*, produced by WBEZ Chicago and distributed by Public Radio Exchange, podcast, www.thisamericanlife.org/.
  24. Chris Buckley, "Marching across China, Army Veterans Join Ranks of Protesters," *New York Times*, June 25, 2018, www.nytimes.com/.
  25. Robert Farley, "USS *Cowpens* Incident: Rule Bending in the South China Sea," *The Diplomat*, December 25, 2013, thediplomat.com/.
  26. Yarnell, "Far Eastern Situation," p. 4.
  27. U.S. Naval Institute, "WEST 2014: What About China?," *YouTube*, February 13, 2014, video, www.youtube.com/.
  28. In his July 1939 farewell memo to the Secretary of the Navy, Yarnell characterizes the Japanese general staff as having "showed incredible stupidity and ignorance in assuming that the Chinese would not fight, or if they did, that their resistance would not be serious." Yarnell, "Far Eastern Situation," p. 4.
  29. Yarnell reported at the end of his tenure in July 1939 that Japan had sent eight hundred thousand to one million soldiers to China and had engaged approximately one-quarter of its merchant marine, or one million tons, in transport duty. *Ibid.*, p. 6; Yarnell to McNutt, January 20, 1938, p. 5.
  30. William A. Angwin, "The China Incident," 1938, Harry E. Yarnell Papers, box 13, Manuscript Division, Library of Congress, Washington, DC.
  31. Treaty of Peace, Amity, and Commerce [also known as Sino-American Treaty of 1858], China-U.S., art. XXVI, June 18, 1858, T.S. No. 46.
  32. Angwin, "China Incident," pp. 60–63.
  33. See Johnstone, "International Relations," note 8, for more on municipal councils.
  34. Harry E. Yarnell [Adm., USN] to Vice Admiral Kiyoshi Hasegawa, August 28, 1937, quoting an item from the *North China Daily News*, August 27, 1937, "Communications regarding Japanese Blockade," Harry E. Yarnell Papers, box 13, folder 1, Manuscript Division, Library of Congress, Washington, DC.
  35. Angwin, "China Incident," p. 78.
  36. *Ibid.*, p. 80.
  37. Yarnell, "Far Eastern Situation," p. 8.
  38. Angwin, "China Incident," pp. 1–2.
  39. "Movements of Naval Vessels," *New York Times*, September 2–3, 1937; *Dictionary of American Naval Fighting Ships*, s.v. "Bulmer (DD-222)," www.history.navy.mil/; Reminiscences of Charles H. Kretz Jr. [Capt., USN (Ret.)], pp. 49–51, U.S. Naval Institute Oral History Program, accessed at the Naval Historical Collection, Naval War College, Newport, RI.
  40. "Admiral Yarnell, U.S. Sentry in the Far East," and "Mounting Japanese Pressure Strains Patience of British," *Newsweek*, July 3, 1939, Harry E. Yarnell Papers, scrapbook of clippings, box 13, Manuscript Division, Library of Congress, Washington, DC.
  41. Angwin, "China Incident," pp. 22–24, 27.
  42. Kemp Tolley, *Yangtze Patrol: The U.S. Navy in China* (Annapolis, MD: Naval Institute Press, 1971), chap. 7, e-book.
  43. *Ibid.*; Masatake Okumiya, "How the *Panay* Was Sunk," U.S. Naval Institute *Proceedings* 79/6/604 (June 1953).
  44. Hallett Abend, "Rift in Army Seen," *New York Times*, December 20, 1937; Tolley, *Yangtze Patrol*, chap. 7. Hashimoto, "the artilleryman who gave the order to 'fire on anything that moves on the river[,]'" was a dedicated, ascetic, supernationalist member of a secret organization that was above government—The Black Dragon Society. Hashimoto was proved by events to be untouchable, both by General Matsui, the CinC in China, and by the War Minister." In 1936 Hashimoto had been a prime mover in a failed coup d'état against the civilian administration, which resulted in the sole repercussion of being placed into the

- reserve before he was remobilized as part of the Japanese war effort in China.
45. Reminiscences of Kretz, p. 64.
  46. Text of letters addressed to Ambassador Johnson by Mr. Tani, Japanese Minister Plenipotentiary, June 11, 1938, Harry E. Yarnell Papers, box 13, Manuscript Division, Library of Congress, Washington, DC.
  47. "Japanese Warning Is Rejected by U.S.," *New York Times*, June 14, 1938.
  48. "Thousands Leave Chungking in Raids," *New York Times*, January 24, 1939.
  49. "Movements of Naval Vessels," *New York Times*, June 30 and July 6, 1938; Reminiscences of Walter C. W. Ansel [Rear Adm., USN (Ret.)], p. 65, U.S. Naval Institute Oral History Program, accessed at Naval Historical Collection, Naval War College, Newport, RI.
  50. Reminiscences of Ansel, pp. 65–66.
  51. *Ibid.*, p. 66.
  52. Reminiscences of Kretz, p. 66.
  53. Reminiscences of Ansel, p. 67.
  54. Reminiscences of Kretz, p. 66.
  55. *Ibid.*
  56. Reminiscences of Hart, pp. 131–32.
  57. Thomas C. Hart [Adm., USN], "Narrative of Events, Asiatic Fleet Leading Up to War and from 8 December 1941 to February 15, 1942," p. 37, manuscript item 603, Naval Historical Collection, Naval War College, Newport, RI.
  58. Jeffrey Cox, *Rising Sun, Falling Skies: The Disastrous Java Sea Campaign of World War II* (London: Bloomsbury, 2014), pp. 129, 250–53. The Dutch officer in question, Vice Admiral Conrad Helfrich, had never commanded a ship and had limited to no experience commanding task forces at sea. Thomas C. Hart [Adm., USN], "Supplementary Narrative," pp. 37–41, manuscript item 603, Naval Historical Collection, Naval War College, Newport, RI.
  59. 126 Cong. Rec., p. 1896 (March 1, 2000) (statement of Senator Durbin).
  60. John Burgess et al., eds., *Law of the Sea: A Policy Primer* (Medford, MA: Fletcher School of Law and Diplomacy, 2017), chap. 3, available at [sites.tufts.edu/](http://sites.tufts.edu/).
  61. "No. of Vessels Identified within the Contiguous Zone (Total/Month)," *Japanese Ministry of Foreign Affairs*, December 8, 2017, [www.mofa.go.jp/](http://www.mofa.go.jp/).
  62. "Carter Says U.S. Will Sail, Fly and Operate Wherever International Law Allows," *Reuters*, October 13, 2015, [www.reuters.com/](http://www.reuters.com/).





## **PART FOUR**

---

Deterrence in the Taiwan Strait



## U.S. Conventional Access Strategy Denying China a Conventional First-Strike Capability

SAM GOLDSMITH

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

The problem is that the Chinese leadership appears unconvinced that the United States would risk a conflict with China—one that could escalate to a nuclear war—over disputes concerning territories that geographically are distant from the U.S. mainland and seemingly are unrelated to core U.S. national security interests.<sup>3</sup> However, the PLA has a relatively small nuclear arsenal, estimated at fewer than four hundred warheads, in contrast with the U.S. arsenal, which has around 1,550 warheads.<sup>4</sup> Any nuclear strike China made on the United States would involve only a fraction of the PLA's overall arsenal, because it would need to retain some reserve to deter other nuclear-armed neighbors, such as Russia and India. If the Chinese leadership authorized a nuclear strike against the U.S. homeland, or even a limited nuclear strike against forward-deployed U.S. forces, it would be inviting overwhelming devastation from the considerably larger U.S. nuclear force.<sup>5</sup> For these reasons, China likely would aim to confine itself to the use of conventional weapons during any potential high-intensity conflict with the United States—particularly given

that China already possesses a lethal array of long-range, conventional, theater-strike options.<sup>6</sup> Such a strategic, conventional, first-strike option is one that the United States should seek to deny China by developing an effective conventional access strategy.

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

Operation DESERT STORM required the U.S. military to transport around five hundred thousand personnel, 6.1 million tons of fuel, and 3.7 million tons of equipment and stores to the Persian Gulf theater. Building up sufficient personnel, equipment, stores, and supplies required seven months of intense air and sealift operations, as well as access to bases in Saudi Arabia.<sup>11</sup> Because of the range limitations of tactical aircraft and payload-laden airlifters, the U.S. Air Force (USAF) was forced to use in-flight refueling tankers to form “air bridges.” Air bridges allowed aircraft with range limitations to cross oceans by flying between in-flight refueling tankers until they reached the desired theater of operations. USAF in-flight refueling tankers also supported U.S. and allied short-range tactical aircraft, flying around 16,868 sorties to deliver four hundred thousand tons of fuel in flight.<sup>12</sup> The U.S. military deployed a total of around 1,600 short-range tactical aircraft that operated from in-theater air bases and six U.S. Navy (USN) aircraft carriers stationed in littoral waters.<sup>13</sup> Long-range, precision-guided munitions accounted for around 5 percent of all air-to-ground ordnance delivered, supported by around sixteen Global Positioning System (GPS) satellites.<sup>14</sup> U.S. military satellite constellations also gathered intelligence and provided global communications.<sup>15</sup>

The PLA keenly observed the 1991 Gulf War, particularly American exploitation of conventional, long-range, precision strikes.<sup>16</sup> The PLA also observed how two USN carrier strike groups intervened during the 1995–96 Taiwan Strait crisis. Both developments highlighted the PLA’s technological inferiority and inability to prevent USN sea power from threatening the Chinese mainland.<sup>17</sup> In response, the PLA has developed a “counter-intervention strategy,” designed specifically to negate traditional U.S. advantages in global force projection. The core problem is that the PLA’s counterintervention capabilities

could be used to undermine the U.S. military's credibility to deter and defeat state aggressors—thereby increasing the likelihood of a China-U.S. armed conflict.

### PLA Counterintervention Strategy

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

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

In carrying out this strategy, the PLA will employ each of its four subordinate service branches: the PLA Army, the PLA Navy (PLAN), the PLA Air Force (PLAAF), and the PLA Rocket Force (PLARF). PLAN submarines would execute undersea attacks against U.S. ships and submarines in port or at sea and strike at land targets with cruise missiles.<sup>22</sup> The PLAAF would execute air strikes against U.S. aircraft on the ground or in the air, as well as U.S. ships and submarines in port or at sea. Strikes against U.S. bases would occur with extended-range missiles launched from PLAAF combat aircraft or conventional ballistic missiles launched from the Chinese mainland.<sup>23</sup>

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

intermediate-range ballistic missile (IRBM) would strike land targets or moving ships in the ASBM configuration at ranges around three thousand kilometers.<sup>25</sup>

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

Antiaccess operations would degrade or deny USAF and USN force-projection capabilities for accessing the western Pacific, thus isolating U.S. allies.<sup>30</sup> Denying USN seaborne force-projection capabilities would be a priority because over 90 percent of all U.S. military assets, stores, and equipment are transported by sea.<sup>31</sup> PLA antiaccess operations would force USN task forces to run a gauntlet of layered offensive PLA capabilities during the approach to the western Pacific.<sup>32</sup> Surviving USN task forces likely would arrive in theater with depleted missile magazines, having suffered fleet-wide damage or ship losses, or both, just to come within range of the Chinese mainland. Weapons and vessels available for Chinese antiaccess operations include DF-21D ASBMs, potentially DF-26 ASBMs, air-launched ASCMs, diesel-electric and nuclear-powered attack submarines, and surface combatants.<sup>33</sup>

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

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

## PLA Passive Defenses

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

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

Second, the PLA has invested in survivable, land-based C3 systems designed specifically to enable the Chinese national command hierarchy to retain basic C3 functions over all PLA branches, even while under heavy attack.<sup>41</sup> PLA C3 systems include underground fiber-optic cables; microwave relays; and long-range, high-frequency radio technologies augmented by civilian communication channels.<sup>42</sup>

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

The PLARF has an extensive network of hardened tunnels and facilities buried deep underground and within mountains that can protect land-based strategic assets such as road-mobile ballistic missiles, launchers, and PLARF personnel.<sup>46</sup> Some reports indicate that the PLARF has 4,856 kilometers of such hardened and deeply buried tunnels, some as deep as one thousand meters. The tunnels form part of an extensive underground web of HDBT facilities and are serviced by internal transport or train networks that move

**TABLE 1**  
*Types of Hard Targets*

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

Note:

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

ordnance and launchers. These facilities have surface-level entrances where the missile transporter-erector-launchers (TELs) can access surface-level launchpads.<sup>47</sup>

The PLAAF has hardened its air bases to protect its combat aircraft.<sup>48</sup> PLAAF air bases feature hardened aboveground HSs, such as aircraft hangars, with reinforced concrete protection estimated to be between 0.9 and 1.2 meters thick. PLAAF air bases also feature underground HSs that function as hangars and storage facilities. Some of the PLAAF underground HSs are very large, provided with multiple entrances, constructed inside mountains, and covered by anywhere from twenty to sixty meters of concrete, dirt, and rock. Other passive measures include revetments between parked aircraft and long paved areas that can be used as emergency runways, as well as multiple points of access for runways. These measures usually are augmented by advanced camouflage and advanced air-defense systems.<sup>49</sup>

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

### PLA Conventional First-Strike Capability

The PLA's most significant counterintervention capability is its inventory of long-range conventional ballistic missiles, particularly given that the U.S. military does not field an equivalent capability. PLA DF-21 MRBMs and ASBMs have ranges around 1,500 km;



PLA DF-26 IRBMs and ASBMs have ranges around three thousand kilometers. It is also important to note that the PLA currently possesses between two and three hundred MRBMs and likely will expand this inventory with the introduction of the DF-26. The long range and growing inventory of PLA conventional ballistic missiles would force relatively slow U.S. maritime assets to run a lethal gauntlet of PLA ASBMs while they are unable to return fire and degrade the threat.<sup>53</sup>

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

PLA conventional ballistic missiles have the potential to carry submunitions warheads capable of inflicting wide-area destruction, which increases their threat profile.<sup>55</sup> Against fixed land targets, however, MARV penetrator warheads provide the capability to inflict serious damage to hardened targets.<sup>56</sup> MARV penetrator warheads could sink USN ships outright, whereas submunitions warheads could inflict a range of damage to them.<sup>57</sup> For instance, aircraft carrier flight decks, arresting gear, catapults, and landing signal systems could be damaged, thereby preventing flight operations.<sup>58</sup> Similarly, USN cruisers and destroyers could suffer damage to phased-array radar panels and Mk 41 vertical launching system (VLS) missile batteries. Damage of either type likely would result in a "mission kill," rendering the damaged ship unfit to fight. The predicted high lethality and significant impact of PLA conventional ballistic missiles pose a serious challenge to the survivability of U.S. forces operating in the western Pacific and thus to U.S. force-projection capabilities.

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

### **Toward a U.S. Conventional Access Strategy**

The Cold War concept of mutually assured destruction (MAD) maintained relative stability between the United States and the Soviet Union.<sup>62</sup> Underpinning MAD was the knowledge that both sides possessed credible nuclear second-strike capabilities—the

ability to absorb a nuclear first strike and still retain sufficient operable capability to respond with unacceptable devastation.<sup>63</sup> This understanding provided a relative degree of stability, since both sides clearly understood their mutual vulnerability and that any preemptive nuclear first strike would receive a response in kind.<sup>64</sup> Using Cold War deterrence theory as an underlying basis, this article advocates that the U.S. military should consider introducing a conventional access strategy, designed specifically to balance the PLA's counterintervention strategy. The purpose would be to provide the U.S. military with an improved capacity to deter a PLA conventional first strike, and, if necessary, degrade PLA capabilities with long-range conventional strike forces, to facilitate access for follow-on U.S. forces.

Strategically, a U.S. conventional access strategy would provide Chinese leaders with a clearer understanding of how the U.S. military can impose costs on China, even in the aftermath of a PLA conventional first strike. Operationally, it would increase the permissiveness of the western Pacific for forward-deployed and follow-on U.S. forces. The Department of Defense's Joint Operational Access Concept (JOAC) states that "in-range combat forces at the beginning of a crisis can facilitate operational access" for other forces in antiaccess/area-denial (A2/AD) environments.<sup>65</sup> The primary operational objective of a U.S. conventional access strategy would be to degrade the effectiveness of the PLA's conventional strike capability, as opposed to seeking its complete eradication, so as to facilitate access for U.S. forces entering the western Pacific. The JOAC states that the U.S. military must be able to strike deep into enemy A2/AD capability networks to "disrupt the integrity of the enemy defensive system" and that preferred targets include "logistics and command and control nodes, long range firing units and strategic and operational reserves."<sup>66</sup> The secondary operational objective would be to deny the PLA unfettered use of communications, logistics, and transport capabilities such as airfields, airports, ports, rail networks, land-based C4ISR networks, and fuel or ordnance stocks. By degrading PLA strike and war-fighting capabilities, forward-deployed U.S. forces could increase the permissiveness of the western Pacific for U.S. forces arriving in theater.

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

### *Theater-Wide Passive-Defense Capability*

The PLA aims to be capable of striking at intercontinental distances with hypersonic boost-glide (HBG) missiles by 2020 and capable of striking at intercontinental distances with hypersonic aircraft by 2025.<sup>67</sup> The 2013 Air-Sea Battle Concept (ASBC) states that in a future armed conflict, U.S. bases could be attacked and that “even the US homeland cannot be considered a sanctuary.”<sup>68</sup> Both factors indicate that the United States should consider hardening its infrastructure in the western Pacific and at key locations across Hawaii and the continental United States, so as to deny any adversary a relatively easy way to degrade or deny U.S. force-projection capabilities.

Within this context, a theater-wide passive-defense capability would require improvements in the hardening of critical fixed sites to withstand kinetic threats, and the hardening of critical C4ISR systems to resist nonkinetic strikes. Hardening of critical fixed sites might include building aboveground HS submarine pens, aboveground HS aircraft shelters, and deep-underground HS fuel- and ordnance-storage facilities, as well as deep-underground HS or HDBT shelters for theater-strike missiles, personnel, and base-repair kits. A 2007 study from the RAND Corporation notes that major U.S. forward bases should protect their in-theater fuel stocks in underground HSs and that stores should be sufficient to enable several weeks of high-intensity air operations.<sup>69</sup> Hardening of critical C4ISR systems might include the protection of base computer networks and electronic infrastructure from the effects of cyber, electromagnetic pulse (EMP), and high-powered microwave (HPM) weapon effects. At the bare minimum, such improvements in hardened infrastructure should be rolled out across all U.S. bases in the western Pacific. It also might be desirable for the U.S. military to consider selectively rolling out similar hardened infrastructure packages across key Hawaiian and mainland installations, such as Pearl Harbor and San Diego.

### *Conventional Theater-Strike Capability*

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

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

One option might be road-mobile IRBMs with conventional warheads and a range of 5,500 km, sufficient to strike at Haixi City in Qinghai Province from Guam or the Cocos Islands. Another option might be an HBG missile with intercontinental or intermediate range, consisting of a rocket booster stack and hypersonic glide vehicle (HGV).<sup>71</sup> After the boost phase, the HGV would exhibit a limited ballistic trajectory before sharply reentering the atmosphere, followed by the HGV's transition into a high-altitude glide phase of flight to the intended target.<sup>72</sup> The United States is developing an HGV that can be deployed from a modified USAF intercontinental ballistic missile (ICBM) rocket booster.<sup>73</sup> Either option could carry a variety of conventional warheads, including penetrators for hardened targets, submunitions for wide-area destruction, and EMP or HPM warheads to cripple electronic infrastructure.

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

HBG theater-strike missiles ideally should be capable of being launched from road-mobile TELs. Road-mobile HBG strike missiles would enable forward-deployed U.S.

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

HBG theater-strike missiles should be used to target the weakest points of PLA hardened facilities and infrastructure. Typically, these will be a hardened facility's communication links to the outside world and the surface-level entrances. The reason for attacking entrances is that every underground hardened facility, by its very nature, will have some surface-level access point. This is a vulnerability that can be exploited by U.S. HBG theater-strike missiles to collapse the entrances to PLA hardened facilities, sealing all personnel and ordnance inside, or at the very least impeding the movement of PLA assets in and out of the facility. In the case of PLA HSs inside mountains, surface-level entrances would be vulnerable to landslides, which could be triggered by U.S. HBG warhead detonations higher up the mountain. However, the main problem with targeting the entrances of PLA HSs is that they are likely to be camouflaged and "virtually undetectable by current imagery assets."<sup>77</sup> Locating a significant portion of PLA hardened facility entrances would require years of dedicated intelligence gathering by the entire U.S. Intelligence Community, using its wide array of collection techniques.

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

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

Any future hypersonic undersea strike missile would need to be fully compatible with the U.S. Navy's undersea wide-diameter payload tubes, which measure 2.2 meters in diameter and currently store seven UGM-109E Tomahawk land-attack missiles.<sup>79</sup> Ideally, a future hypersonic undersea strike missile also would be fully compatible with strike-length

Mk 41 VLS cells. Full compatibility with both launching systems would enable the same missile design to be supported by *Arleigh Burke*-class guided-missile destroyers (DDGs), *Virginia*-class nuclear-powered attack submarines (SSNs), and *Ohio*-class nuclear-powered guided-missile submarines.

Undersea towed payload modules (TPMs) are another launch option for future USN undersea strike weapons. TPMs essentially are containers fitted with vertically launched undersea ordnance that would be submerged and towed by submarines into theater.<sup>80</sup> TPMs are the most attractive option for several reasons. First, TPMs lack the expensive crew life support, hotel loads, fuel storage, and propulsion systems of surface combatants and submarines, and they can be acquired in large numbers. Second, TPMs could be pre-positioned in littoral waters near Guam years in advance of any conflict. Third, targeting data could be uploaded by the towing submarine into a TPM computer system prior to launch. An onboard TPM computer system would enable the TPM to activate on a time delay, giving the towing submarine time to escape the area before the TPM launch cycle compromised its location. At the outbreak of hostilities, one or more submarines could tow the pre-positioned TPMs to within striking distance of the Chinese mainland.

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

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

Boeing's Echo Voyager unmanned undersea vehicle measures 2.6 by 2.6 by 15.5 meters, is fully autonomous, and has a range of around 12,038 km. It also has a maximum diving depth of three thousand meters and seagoing endurance of several months, is fitted with non-GPS navigation technologies, and is capable of carrying very large payloads of up to eight tons, with a total internal space of 14.75 square meters. The Boeing Echo Voyager uses an inertial navigation system (INS), Doppler velocity logs (DVLs), depth sensors, and various other technologies to navigate independent of GPS satellite navigation

constellations. Given the exceptional range, seagoing endurance, diving depth, GPS-independent navigation technologies, and large payload, Boeing's Echo Voyager could be an ideal baseline from which to build an AUV tailored specifically for neutralizing or rendering inoperable Chinese ports, PLA naval bases, and PLA hardened submarine pens, particularly by attacking sea-level tunnel entrances. To ensure the survivability of AUVs from PLA conventional strikes, AUVs should be submerged in littoral waters close to shore, or alternatively stored in hardened underground facilities ashore.<sup>83</sup>

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

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

### *Theater-Recovery Capability*

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

Hardened facilities would shield personnel, supplies, repair kits, and reserve air- and missile-defense (AMD) systems from a PLA conventional first strike. Ideally, hardened facilities would be buried deep underground. Airdrop repair teams would enable the U.S. military to repair damaged runways at bases without requiring USAF C-5 and C-17



airlifters to land. The USAF maintains prime base engineer emergency force (Prime BEEF) units that execute on-site repairs, largely using equipment and stores located at each base. Prime BEEF units are supplemented by USAF rapid engineer deployable heavy operational repair squadron engineer (RED HORSE) units, which specialize in repairing air bases under combat conditions. RED HORSE units can be air-dropped into distant locations, and they aim to be capable of operating without support for limited durations.<sup>87</sup>

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

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

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

### *Rapid-Response Capability*

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

USAF B-2 Spirit stealth bombers have an unrefueled combat radius of around 5,500 km.<sup>91</sup> However, the USAF inventory contains only twenty B-2s, as the acquisition program was reduced significantly from an original order of 132 aircraft.<sup>92</sup> The USAF also is



replacing its legacy B-1B and B-52H bomber fleets with one hundred B-21 Raider long-range stealth bombers.<sup>93</sup> However, the B-21 Raider could have an unrefueled combat radius as short as 4,600 km—significantly shorter than the B-1B at 6,900 km and the B-52H at 8,100 km.<sup>94</sup> Assuming that the B-21 Raider has a combat radius of at least 5,500 km, both B-2s and B-21s would be capable of executing deep strikes across the Chinese mainland without access to in-flight refueling—as deep as Haixi City from Guam or the Cocos Islands. Both the B-2 and B-21 can deliver the enormous GBU-57 MOP, which measures eighty centimeters in diameter by 6.25 meters in length and weighs 13,600 kg per bomb. The B-2 is capable of carrying two GBU-57 MOPs, one in each internal weapons bay.<sup>95</sup>

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

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

## Inventory Estimates

During any armed conflict nothing ever works perfectly or goes entirely according to plan. As Clausewitz once stated, this concept of “friction” means that the outcome of military operations is inherently uncertain and that any element of a plan can fail.<sup>103</sup> In the cases of conventional theater-strike, theater-recovery, and rapid-response operations, the United States would need to consider how many stores of various types are sufficient to respond to operational uncertainties that might arise. For instance, conventional theater-strike capabilities could exhaust in-theater ordnance stores, theater-recovery capabilities could run out of base-repair kits, and a rapid-response capability could run out of in-theater ground-penetrating ordnance.

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

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

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

## Advantages of a U.S. Conventional Access Strategy

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

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

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

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

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

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

The sixth advantage is that a U.S. capacity to execute a conventional theater strike from the Cocos Islands would complicate significantly the PLA's operations to defend the Chinese mainland. During a South China Sea or East China Sea crisis, the PLA could deploy most of its AMD systems along China's east and southeast coastlines. However, if the Australian government allowed the U.S. military to operate conventional B-21s or HBG theater-strike

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

### Limitations of a U.S. Conventional Access Strategy

A conventional access strategy would incur seven major limitations.

#### *Homeland Sanctuary*

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

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

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

Third, the U.S. Department of Defense openly acknowledges that the military must be ready to execute joint military operations against A2/AD adversaries "at the outset of a contingency to avoid delays for buildups."<sup>111</sup> The JOAC states that "joint forces will attempt

to penetrate into the depth of an enemy's anti-access/area-denial defenses . . . to disrupt the integrity of the enemy defensive system."<sup>112</sup> The ASBC states that deep strikes against A2/AD adversaries have the objective of "disrupting, destroying or defeating an adversary's A2/AD capabilities." The ASBC also states that "even the US homeland cannot be considered a sanctuary."<sup>113</sup> The deep-strike objectives of Pentagon operating concepts and the notion of covert special forces teams operating across the Chinese mainland, combined with the stated need to be ready at the outset of a conflict and open acknowledgment that the U.S. homeland could be targeted, strongly suggest that the U.S. military does not plan on granting the PLA homeland sanctuary during a China-U.S. conflict.

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

#### *Treaty Limitations on Aircraft*

The second limitation is that the New Strategic Arms Reduction Treaty (New START) severely handicaps the acquisition of B-21 Raider long-range strike bombers, since the aircraft will be capable of delivering both conventional and nuclear ordnance.<sup>115</sup> New START requires U.S. and Russian nuclear arsenals not to exceed 1,500 nuclear warheads and eight hundred nuclear delivery vehicles, with seven hundred deployed and one hundred not deployed.<sup>116</sup> Under New START, nuclear delivery vehicles are defined as ICBMs, submarine-launched ballistic missiles, and heavy bombers.<sup>117</sup> A nuclear bomber is defined by New START as an aircraft that has a maximum one-way range exceeding eight thousand kilometers and that could carry nuclear weapons.<sup>118</sup> The problem is that a B-21 Raider with an unrefueled combat radius of 5,500 km, as needed to strike deep into the Chinese mainland from Guam, would give the aircraft a total range of around eleven thousand kilometers. Given that the B-21 will be capable

of delivering both nuclear and conventional ordnance, it will be counted under New START. Consequently, the challenge for the USAF will be finding a way to increase the size of its combat-coded conventional long-range stealth bomber force without violating New START.

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

### *Treaty Limitations on Weapons*

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

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

### *First-Strike Risk*

The fourth limitation is that launching one or more HBG weapons could be misconstrued by the PLA, Russia, or both as a U.S. nuclear first strike. This risk has been

discussed since the conceptualization of hypersonic boost-glide systems, because they depend on long-range rocket boosters similar to those that nuclear-armed ballistic missiles use.

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

### *Potential Nuclear Aggression*

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

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

### *Hardened Structures*

The sixth limitation is that a U.S. conventional access strategy might not overcome the PLA's extensive investments in hardened structures. This is a very real possibility. To paraphrase Moltke, no plan, however good, survives contact with the enemy.<sup>128</sup> However, the measures proposed under a U.S. conventional access strategy would provide a reasonable ability to neutralize PLA hardened facilities, such as underground tunnels and sea-level submarine pens. This conventional access strategy prioritizes advanced penetrator ordnance delivered by HBG theater-strike missiles and B-2s and B-21s, as well as AUVs armed with large conventional warheads for sea-level tunnels and submarine pens. While the penetration capabilities of all ordnance might not be able to overcome PLA HDBTs, such as tunnels buried deep within mountains, what this ordnance could do is target the most vulnerable points of these structures. For instance, these weapons could target external communications links and surface-level entrances. By targeting surface-level entrances of PLA hardened facilities, U.S. penetrator ordnance could be sufficient to seal the structures from the outside world, or at the very least impede the movement of traffic in and out of the facilities. The advantage of targeting surface-level entrances is that every

underground hardened structure must be accessible from the surface, making them a vulnerability of all PLA HSs and HDBTs that can be exploited.

### *Survivable and Capable Force-Projection Capability*

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

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

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

The PLA's counterintervention capabilities could be used to execute a conventional first strike against U.S. bases and forward-deployed forces west of Hawaii. The Chinese leadership could be convinced that a decisive conventional first strike, in conjunction with other PLA capabilities, would provide the PLA with temporary regional superiority, giving China a rare window of opportunity to settle regional disputes through coercion and on terms favorable to China. Any such perception would undermine seriously the U.S. military's ability to deter Chinese aggression in the western Pacific.

The solution is not for the U.S. military to build a larger force structure but rather for it to rearrange its thinking around a conventional access strategy. This would require the U.S. military to acquire four critical capabilities: a theater-wide passive-defense capability, a conventional theater-strike capability, a theater-recovery capability, and a rapid-response capability. Strategically, a conventional access strategy would accomplish several things: it would deny the PLA a conventional first-strike capability, increase the permissiveness



**TABLE 2**  
*U.S. Counter-A2/AD Force-Projection Capabilities*

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

Note:

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

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

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

---

## Notes

1. U.S. Defense Dept., *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2016* [hereafter *Annual Report: Military and Security 2016*] (Washington, DC: 2016), pp. 5, 7, 11, 41, 44–45, 87–88; U.S. Defense Dept., *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2011* [hereafter *Annual Report: Military and Security 2011*] (Washington, DC: 2011), p. 3.
2. U.S. Defense Dept., *Annual Report: Military and Security 2016*, pp. 15, 59, 87–88; *2016 Report to Congress of the U.S.-China Economic and Security Review Commission* (Washington, DC: 2016), pp. 28, 256–57.
3. Paul Dodge, "China's Naval Strategy and Nuclear Weapons: The Risks of Intentional and Inadvertent Nuclear Escalation," *Comparative Strategy* 24, no. 5 (2005), p. 427; Eric Heginbotham et al., *The U.S.-China Military Scorecard: Forces, Geography, and the Evolving Balance of Power 1996–2017* (Santa Monica, CA: RAND, 2015), p. 317.
4. Anthony H. Cordesman, Joseph Kendall, and Steven Colley, *China's Nuclear Forces and Weapons of Mass Destruction* (Washington, DC: Center for Strategic and International Studies, 2016), p. 18; Heginbotham et al., *The U.S.-China Military Scorecard*, pp. 314–16; U.S. Defense Dept., *Nuclear Posture Review 2018* (Washington, DC: 2018), p. i.
5. U.S. Defense Dept., *Nuclear Posture Review 2018*, pp. 31–32.
6. Heginbotham et al., *The U.S.-China Military Scorecard*, p. 317.
7. U.S. Defense Dept., *Quadrennial Defense Review 2014* (Washington, DC: 2014), pp. 13–15, 16–18.
8. Ibid., pp. 19–20; U.S. Defense Dept., *The National Military Strategy of the United States of America 2015* (Washington, DC: Joint Staff, 2015), p. 7.
9. Congressional Budget Office [hereafter CBO], *Options for Strategic Military Transportation Systems* (Washington, DC: September 2005), p. 2.
10. U.S. Defense Dept., *Joint Operational Access Concept* (Washington, DC: Joint Staff, January 17, 2012), p. 2.
11. Ibid.; CBO, *Options for Strategic Military Transportation Systems*, p. 2; Christopher J. Bowie, Robert P. Haffa Jr., and Robert E. Mullins, *Future War: What Trends in America's Post-Cold War Military Conflicts Tell Us about Early 21st Century Warfare* (Falls Church, VA: Northrop Grumman, January 2003), pp. 3, 13.
12. Bowie, Haffa, and Mullins, *Future War*, p. 10; U.S. Defense Dept., *Air Mobility Operations*, Joint Publication 3-17 (Washington, DC: Joint Staff, September 30, 2013), pp. I-17, IV-14 to IV-15, V-5.
13. Benjamin Lambeth, *American Carrier Air Power at the Dawn of a New Century* (Santa Monica, CA: RAND, 2005), pp. 1–2; Nicola K. Molloy, *Impact to Defence of Lessons Learnt Using Modern Precision Strike Weapons* (Edinburgh, SA, Austral.: DSTO Systems Sciences Laboratory, April 2003), p. 3.
14. U.S. Defense Dept., *Annual Report to Congress: Military Power of the People's Republic of China 2002* [hereafter *Annual Report: Military Power 2002*] (Washington, DC: 2002), pp. 11–12, 18; U.S. Defense Dept., *Annual Report to Congress: Military Power of the People's Republic of China 2003* [hereafter *Annual Report: Military Power 2003*] (Washington, DC: 2003), pp. 18–19, 24; Michael G. Vickers

- and Robert C. Martinage, *The Revolution in War* (Washington, DC: Center for Strategic and Budgetary Assessments, December 2004), pp. 14–15, 18, 45; Molloy, *Impact to Defence of Lessons Learnt*, p. 8; Barry D. Watts, *Six Decades of Guided Munitions and Battle Networks: Progress and Prospects* (Washington, DC: Center for Strategic and Budgetary Assessments, March 2007), p. 87.
15. Barry D. Watts, “The Implications of China’s Military and Civil Space Programs” (testimony presented before the U.S.-China Economic and Security Review Commission, Washington, DC, May 11, 2011), p. 2, available at [csbaonline.org/](http://csbaonline.org/).
  16. U.S. Defense Dept., *Annual Report: Military Power 2003*, p. 18.
  17. Thomas Mahnken, “China’s Anti-access Strategy in Historical and Theoretical Perspective,” *Journal of Strategic Studies* 34, no. 3 (2011), p. 317.
  18. U.S. Defense Dept., *Annual Report: Military Power 2003*, pp. 11, 13, 46; U.S. Defense Dept., *Annual Report to Congress: Military Power of the People’s Republic of China 2005* [hereafter *Annual Report: Military Power 2005*] (Washington, DC: 2005), pp. 33, 41; U.S. Defense Dept., *Annual Report to Congress: Military Power of the People’s Republic of China 2007* [hereafter *Annual Report: Military Power 2007*] (Washington, DC: 2007), pp. 15–17; U.S. Defense Dept., *Annual Report to Congress: Military and Security Developments Involving the People’s Republic of China 2012* [hereafter *Annual Report: Military and Security 2012*] (Washington, DC: 2012), pp. 21, 42; 2016 *Report to Congress of the U.S.-China Economic and Security Review Commission*, p. 206.
  19. U.S. Defense Dept., *Annual Report: Military and Security 2012*, p. 21; Jeffrey Goedecke [Capt., RAN], “China’s Assertiveness in the South China Sea: How Will It Affect Australia’s National Interests over the Next 10 Years?,” Australian Defence College *Indo-Pacific Strategic Digest* (May 2016), pp. 293–304; Ronald O’Rourke, *Maritime Territorial and Exclusive Economic Zone Disputes Involving China: Issues for Congress*, CRS Report (Washington, DC: Congressional Research Service, 2016), p. 9; Republic of China Ministry of National Defense, *2011 Republic of China National Defense Report* (Taipei: 2011), p. 42.
  20. U.S. Defense Dept., *Annual Report: Military Power 2003*, pp. 20–21; U.S. Defense Dept., *Annual Report: Military Power 2007*, pp. 15–17; U.S. Defense Dept., *Annual Report: Military and Security 2016*, pp. 26, 30–31, 60–61, 72.
  21. U.S. Defense Dept., *Annual Report: Military Power 2002*, pp. 13–14; U.S. Defense Dept., *Annual Report: Military Power 2003*, pp. 20–21.
  22. U.S. Defense Dept., *Annual Report: Military Power 2003*, pp. 20–21; U.S. Defense Dept., *Annual Report: Military Power 2007*, pp. 15–17; U.S. Defense Dept., *Annual Report to Congress: Military and Security Developments Involving the People’s Republic of China 2014* [hereafter *Annual Report: Military and Security 2014*] (Washington, DC: 2014), pp. 8, 31; U.S. Defense Dept., *Annual Report to Congress: Military and Security Developments Involving the People’s Republic of China 2015* [hereafter *Annual Report: Military and Security 2015*] (Washington, DC: 2015), pp. 9, 34–35; U.S. Defense Dept., *Annual Report: Military and Security 2016*, pp. 26, 61.
  23. U.S. Defense Dept., *Annual Report: Military Power 2003*, pp. 20–21; U.S. Defense Dept., *Annual Report: Military Power 2007*, pp. 15–17; U.S. Defense Dept., *Annual Report: Military and Security 2016*, pp. 30–31, 60, 72.
  24. U.S. Defense Dept., *Annual Report: Military and Security 2011*, p. 31; U.S. Defense Dept., *Annual Report: Military and Security 2016*, pp. 22–23, 25.
  25. U.S. Defense Dept., *Annual Report: Military and Security 2016*, pp. 22–25, 72; Jordan Wilson, *China’s Expanding Ability to Conduct Conventional Missile Strikes on Guam* (Washington, DC: U.S.-China Economic and Security Review Commission, 2016), pp. 4, 8; 2016 *Report to Congress of the U.S.-China Economic and Security Review Commission*, p. 491.
  26. U.S. Defense Dept., *Annual Report: Military Power 2003*, pp. 20–21.
  27. U.S. Defense Dept., *Annual Report to Congress: Military and Security Developments Involving the People’s Republic of China 2013* [hereafter *Annual Report: Military and Security 2013*] (Washington, DC: 2013), p. 33.
  28. U.S. Defense Dept., *Annual Report: Military Power 2007*, p. 1; U.S. Defense Dept., *Annual Report: Military and Security 2012*, p. 9.

29. U.S. Defense Dept., *Annual Report: Military and Security 2016*, p. 64.
30. U.S. Defense Dept., *Annual Report: Military Power 2005*, p. 33; U.S. Defense Dept., *Annual Report: Military and Security 2012*, p. 21; U.S. Defense Dept., *Annual Report: Military and Security 2016*, pp. 59–60.
31. “Sealift Program (PM5),” *U.S. Navy Military Sealift Command*, [www.msc.navy.mil/](http://www.msc.navy.mil/).
32. U.S. Defense Dept., *Annual Report: Military and Security 2014*, p. 30.
33. U.S. Defense Dept., *Annual Report: Military and Security 2011*, pp. 28–29; U.S. Defense Dept., *Annual Report: Military and Security 2016*, pp. 23, 25; Wilson, *China’s Expanding Ability*, p. 8; *2016 Report to Congress of the U.S.-China Economic and Security Review Commission*, p. 491.
34. U.S. Defense Dept., *Annual Report: Military and Security 2016*, p. 66; Ross Babbage, *Australia’s Strategic Edge in 2030*, Kokoda Paper 15 (Kingston, ACT, Austral.: Kokoda Foundation, February 2011), p. 30.
35. U.S. Defense Dept., *Annual Report: Military Power 2003*, p. 25; U.S. Defense Dept., *Annual Report: Military Power 2007*, pp. 15–17; U.S. Defense Dept., *Annual Report to Congress: Military Power of the People’s Republic of China 2008* (Washington, DC: 2008), p. 23; U.S. Defense Dept., *Annual Report: Military and Security 2016*, pp. 33, 59–61; Office of Naval Intelligence, *The People’s Liberation Army Navy: A Modern Navy with Chinese Characteristics* (Suitland, MD: 2009), pp. 27–30.
36. U.S. Defense Dept., *Annual Report: Military Power 2002*, pp. 5, 29; U.S. Defense Dept., *Annual Report: Military Power 2003*, pp. 31–33.
37. U.S. Defense Dept., *Annual Report to Congress: Military and Security Developments Involving the People’s Republic of China 2010* [hereafter *Annual Report: Military and Security 2010*] (Washington, DC: 2010), p. 2; U.S. Defense Dept., *Annual Report: Military and Security 2013*, p. 42; U.S. Defense Dept., *Annual Report: Military and Security 2016*, p. 72; Ronald O’Rourke, *China Naval Modernization: Implications for U.S. Navy Capabilities—Background and Issues for Congress*, CRS Report (Washington, DC: Congressional Research Service, 2012), p. 29; Heginbotham et al., *The U.S.-China Military Scorecard*, pp. 54, 157–58.
38. U.S. Defense Dept., *Annual Report: Military and Security 2013*, p. 68; U.S. Defense Dept., *Annual Report: Military and Security 2014*, p. 69.
39. O’Rourke, *China Naval Modernization*, p. 29.
40. U.S. Defense Dept., *Annual Report: Military Power 2002*, pp. 28–29; U.S. Defense Dept., *Annual Report: Military Power 2003*, pp. 32–33; Heginbotham et al., *The U.S.-China Military Scorecard*, pp. 32, 155–56.
41. U.S. Defense Dept., *Annual Report: Military and Security 2013*, p. 31; U.S. Defense Dept., *Annual Report: Military and Security 2015*, p. 47; U.S. Defense Dept., *Annual Report: Military Power 2003*, p. 34.
42. U.S. Defense Dept., *Annual Report: Military Power 2002*, p. 30; U.S. Defense Dept., *Annual Report: Military Power 2003*, p. 34; U.S. Defense Dept., *Annual Report: Military Power 2005*, p. 18; Heginbotham et al., *The U.S.-China Military Scorecard*, pp. 32, 157–58.
43. U.S. Defense Dept., *Annual Report: Military and Security 2016*, p. 73.
44. U.S. Defense Dept., *Annual Report: Military Power 2002*, p. 30.
45. U.S. Defense Dept., *Annual Report: Military and Security 2013*, p. 31; U.S. Defense Dept., *Annual Report: Military and Security 2015*, p. 47; U.S. Defense Dept., *Annual Report: Military Power 2003*, p. 34.
46. U.S. Defense Dept., *Annual Report: Military and Security 2015*, p. 47.
47. U.S. Defense Dept., *Annual Report: Military and Security 2011*, p. 36; Cordesman, Kendall, and Colley, *China’s Nuclear Forces*, pp. 10, 12; L. C. Russell Hsiao, “China’s ‘Underground Great Wall’ and Nuclear Deterrence,” *Jamestown Foundation China Brief* 9, no. 25 (December 2009), pp. 1–2.
48. Heginbotham et al., *The U.S.-China Military Scorecard*, pp. 133, 147; Robert Haddick, *Challenges in the Asia-Pacific Theater for U.S. and Partner Nation Special Operations Forces*, JSOU Report 14-6 (Tampa, FL: Joint Special Operations Univ. Press, 2014), p. 52.
49. Haddick, *Challenges in the Asia-Pacific Theater*, pp. 19, 52; Roger Cliff et al., *Shaking the Heavens and Splitting the Earth: Chinese Air Force Employment Concepts in the 21st Century* (Santa Monica, CA: RAND, 2011), pp. 198–201, 226; Eric Gons, *Access Challenges and Implications for Airpower in the Western Pacific* (Santa Monica, CA: RAND, 2011), pp. 156, 158–60.
50. U.S. Defense Dept., *Annual Report: Military and Security 2010*, p. 2.

51. U.S. Defense Dept., *Annual Report to Congress: Military Power of the People's Republic of China 2009* (Washington, DC: 2009), p. 49; U.S. Defense Dept., *Annual Report: Military and Security 2011*, p. 3; U.S. Defense Dept., *Annual Report: Military and Security 2012*, p. 22.
52. Yoji Koda, "Japan's Perspectives on U.S. Policy toward the South China Sea," in *Perspectives on the South China Sea: Diplomatic, Legal, and Security Dimensions of the Dispute*, ed. Murray Hiebert, Phuong Nguyen, and Gregory B. Poling (Washington, DC: Center for Strategic and International Studies, September 2014), p. 89; O'Rourke, *China Naval Modernization*, p. 94.
53. U.S. Defense Dept., *Annual Report: Military and Security 2016*, pp. 22–25, 72, 109; Wilson, *China's Expanding Ability*, pp. 4, 8; *2016 Report to Congress of the U.S.–China Economic and Security Review Commission*, p. 491; U.S. Defense Dept., *Joint Operational Access Concept*, p. 13.
54. U.S. Navy Dept., *Seapower Questions on the Chinese Submarine Force* (Washington, DC: Office of Naval Intelligence, December 20, 2006), p. 4; U.S. Defense Dept., *Annual Report: Military and Security 2012*, p. 32; Office of Naval Intelligence, *The People's Liberation Army Navy*, p. 26; Mahnken, "China's Anti-access Strategy," p. 315.
55. Office of Naval Intelligence, *The People's Liberation Army Navy*, p. 27.
56. *Ibid.*; Vickers and Martinage, *The Revolution in War*, pp. 81, 158.
57. Office of Naval Intelligence, *The People's Liberation Army Navy*, p. 27; Thomas Ehrhard and Robert Work, *Range Persistence Stealth and Networking: The Case for a Carrier-Based Unmanned Combat Air System* (Washington, DC: Center for Strategic and Budgetary Assessments, 2008), p. 178.
58. Office of Naval Intelligence, *The People's Liberation Army Navy*, p. 27.
59. Roger Cliff et al., *Entering the Dragon's Lair: Chinese Anti-access Strategies and Their Implications for the United States* (Santa Monica, CA: RAND, 2007), pp. 30–31, 43; U.S. Defense Dept., *Annual Report: Military and Security 2016*, p. 88.
60. Forrest Morgan et al., *Dangerous Thresholds: Managing Escalation in the 21st Century* (Santa Monica, CA: RAND, 2008), p. 171.
61. U.S. Defense Dept., *Annual Report: Military and Security 2016*, pp. 34, 65.
62. Evan Montgomery, *Nuclear Terrorism: Assessing the Threat, Developing a Response* (Washington, DC: Center for Strategic and Budgetary Assessments, 2009), p. 46.
63. Richard Burns and Joseph Siracusa, *A Global History of the Nuclear Arms Race: Weapons Strategy and Politics* (Santa Barbara, CA: Praeger, 2013), vol. 2, p. 377.
64. Montgomery, *Nuclear Terrorism*, p. 46.
65. U.S. Defense Dept., *Joint Operational Access Concept*, p. 8.
66. *Ibid.*, p. 24.
67. Mark Stokes, "China's Quest for Joint Aerospace Power: Concepts and Future Aspirations," in *The Chinese Air Force: Evolving Concepts, Roles, and Capabilities*, ed. Richard Hallion, Roger Cliff, and Phillip C. Saunders (Washington, DC: National Defense Univ. Press, 2012), p. 51.
68. U.S. Defense Dept., *Air-Sea Battle: Service Collaboration to Address Anti-access & Area-Denial Challenges* (Washington, DC: Air-Sea Battle Office, 2013), p. 3.
69. Cliff et al., *Entering the Dragon's Lair*, p. 97.
70. U.S. Defense Dept., *Joint Operational Access Concept*, p. 8.
71. Amy Woolf, *Conventional Prompt Global Strike and Long-Range Ballistic Missiles: Background and Issues*, CRS Report (Washington, DC: Congressional Research Service, 2015), p. 1; Lauren Caston et al., *The Future of the U.S. Intercontinental Ballistic Missile Force* (Santa Monica, CA: RAND, 2010), p. 71.
72. James Acton, "Hypersonic Boost-Glide Weapons," *Science & Global Security* 23 (2015), p. 194; Caston et al., *The Future of the U.S. Intercontinental Ballistic Missile Force*, p. 73.
73. Heginbotham et al., *The U.S.–China Military Scorecard*, p. 353; Anthony Cordesman and Bryan Gold, *The Gulf Military Balance*, vol. 2, *The Missile and Nuclear Dimensions* (Washington, DC: Center for Strategic and International Studies, 2014), p. 122.
74. Boeing, *Small Diameter Bomb Increment I* (Saint Louis, MO: 2012), pp. 1–2; Rebecca Grant, *Return of the Bomber: The Future of Long-Range Strike* (Arlington, VA: Air Force Association, 2007), p. 22; Peter Grier, *The JDAM Revolution: The Low-Cost Highly Accurate Joint Direct Attack Munition Has*



- Revolutionized Bombing in Just a Few Short Years* (Arlington, VA: Air Force Association, 2006), p. 63.
75. General Dynamics, *BLU-122/B Penetrator* (Niceville, FL: General Dynamics Ordnance and Tactical Systems, 2007), p. 2; Jim Zanotti et al., *Israel: Possible Military Strike against Iran's Nuclear Facilities*, CRS Report (Washington, DC: Congressional Research Service, 2012), p. 29; Robert Haffa and Michael Isherwood, *The 2018 Bomber: The Case for Accelerating the Next Generation Long-Range Strike System* (Falls Church, VA: Northrop Grumman, August 2008), p. 11; Grant, *Return of the Bomber*, p. 22.
76. Stephen Linch [Airman 1st Class, USAF], "Future 30,000-Pound Bomb Reaches Milestone," *Air Combat Command*, December 21, 2007, [www.acc.af.mil/](http://www.acc.af.mil/); David A. Deptula [Lt. Gen., USAF], *Beyond the Bomber: The New Long-Range Sensor-Shooter Aircraft and United States National Security* (Arlington, VA: Mitchell Institute for Aerospace Studies, 2015), p. 27; Cordesman and Gold, *The Missile and Nuclear Dimensions*, p. 128.
77. Russell J. Hart, "Defeating Hard and Deeply Buried Targets in 2035" (student paper, USAF Air War College, 2012), pp. 10–11, available at [au.af.mil/](http://au.af.mil/).
78. U.S. Defense Dept., *Department of Defense Fiscal Year 2012 Budget Estimates: Defense Advanced Research Projects Agency—Research, Development, Test & Evaluation, Defense-Wide* (Washington, DC: 2011), vol. 1-226, p. 8.
79. "First Virginia Class Payload Tube Increases Force's Versatility," *America's Navy*, May 21, 2009, [www.navy.mil/](http://www.navy.mil/); Ronald O'Rourke, *Navy Trident Submarine Conversion Program: Background and Issues for Congress*, CRS Report (Washington, DC: Congressional Research Service, 2008), p. 3.
80. Robert Martinage, *Toward a New Offset Strategy: Exploiting U.S. Long-Term Advantages to Restore U.S. Global Power Projection Capability* (Washington, DC: Center for Strategic and Budgetary Assessments, 2014), pp. 45, 61, 84; Mark Gunzinger and Chris Dougherty, *Outside-In: Operating from Range to Defeat Iran's Anti-access and Area-Denial Threats* (Washington, DC: Center for Strategic and Budgetary Assessments, 2011), pp. 84–85.
81. Terrence Kelly, David Gompert, and Duncan Long, *Smarter Power, Stronger Partners*, vol. 1, *Exploiting U.S. Advantages to Prevent Aggression* (Santa Monica, CA: RAND, 2016), pp. 30–31, 83, 119–20, 123–24.
82. Office of Naval Intelligence, *The People's Liberation Army Navy*, pp. 13, 24–25; Kelly, Gompert, and Long, *Exploiting U.S. Advantages to Prevent Aggression*, p. 83.
83. Boeing, *Echo Voyager: Extra Large Unmanned Undersea Vehicle* (Huntington Beach, CA: 2016), p. 2.
84. David Gompert, Astrid Cevallos, and Christina Garafola, *War with China: Thinking the Unthinkable* (Santa Monica, CA: RAND, 2016), p. 14; U.S. Defense Dept., *Annual Report: Military Power 2007*, p. 1; U.S. Defense Dept., *Annual Report: Military and Security 2012*, p. 9.
85. U.S. Defense Dept., *Annual Industrial Capabilities: Report to Congress for 2014* (Washington, DC: 2016), p. 42; U.S. Defense Dept., *Annual Industrial Capabilities: Report to Congress—October 2013* (Washington, DC: 2013), p. B-5.
86. Cliff et al., *Shaking the Heavens and Splitting the Earth*, pp. 99–101; Cliff et al., *Entering the Dragon's Lair*, pp. 51–52.
87. U.S. Army Dept., *Air Base Damage Repair (Pavement Repair)*, TC 5-340 (Washington, DC: December 1988), pp. 1-4 to 1-5, 1-8, G-1 to G-4, available at [armypubs.army.mil/](http://armypubs.army.mil/); U.S. Air Force Dept., *Airfield Damage Repair Operations*, Air Force Pamphlet 10-219, vol. 4 (Washington, DC: 2011), pp. 117–18, 151, 157.
88. "Hybrid Airships: The Road Not Needed," *Lockheed Martin Australia*, 2015, [www.lockheedmartin.com.au/](http://www.lockheedmartin.com.au/).
89. Department of Defence, *DSC 17540: Small Satellite Missions* (Canberra: Defence Science Technology Group, 2017), pp. 1–2.
90. U.S. Defense Dept., *Fiscal Year 2016 President's Budget Submission: Defense Advanced Research Projects Agency—Research Development Test and Evaluation Defense-Wide* (Washington, DC: 2015), p. 206.
91. Northrop Grumman, "B-2 Spirit Stealth Bomber," news release no. ASC 07-0064, March 14, 2007, available at [www.northropgrumman.com/](http://www.northropgrumman.com/); Northrop Grumman, "B-2 Spirit: Protecting Freedom Worldwide," data sheet, June 2007, available at [www.northropgrumman.com/](http://www.northropgrumman.com/); Dan Katz, "Program Dossier: B-2A Spirit," *Aviation Week*, 2015, [aviationweek.com/](http://aviationweek.com/); "B-2 Spirit," *U.S. Air Force*, December 16, 2015, [www.af.mil/](http://www.af.mil/).

92. "B-2 Spirit"; Rebecca Grant, *B-2: The Spirit of Innovation* (Falls Church, VA: Northrop Grumman, 2013), p. 75; Jeremiah Gertler, *Air Force B-21 Raider Long-Range Strike Bomber*, CRS Report (Washington, DC: Congressional Research Service, 2017), p. 9.
93. Gertler, *Air Force B-21 Raider*, p. 9.
94. Dan Katz, "Program Dossier: B-21," *Aviation Week*, 2016, aviationweek.com/; Jeremiah Gertler, *Air Force Next-Generation Bomber: Background and Issues for Congress*, CRS Report (Washington, DC: Congressional Research Service, 2009), p. 14.
95. Linch, "Future 30,000-Pound Bomb"; Deptula, *Beyond the Bomber*, p. 27; Cordesman and Gold, *The Missile and Nuclear Dimensions*, pp. 128, 135.
96. Jim Thomas, Zack Cooper, and Iskander Rehman, *Gateway to the Indo-Pacific: Australian Defense Strategy and the Future of the Australia-U.S. Alliance* (Washington, DC: Center for Strategic and Budgetary Assessments, 2013), p. 13.
97. Mark Gunzinger and Bryan Clark, *Winning the Salvo Competition: Rebalancing America's Air and Missile Defenses* (Washington, DC: Center for Strategic and Budgetary Assessments, 2016), p. 12.
98. Haffa and Isherwood, *The 2018 Bomber*, pp. 5, 14; Michael R. Moeller [Lt. Gen., USAF], *U.S. Bomber Force: Sized to Sustain an Asymmetric Advantage for America* (Arlington, VA: Mitchell Institute for Aerospace Studies, 2015), p. 14.
99. Gertler, *Air Force B-21 Raider*, p. 9; Moeller, *U.S. Bomber Force*, p. 3.
100. Gertler, *Air Force B-21 Raider*, p. 9.
101. Haddick, *Challenges in the Asia-Pacific Theater*, p. 29.
102. Moeller, *U.S. Bomber Force*, p. 14.
103. Watts, *Six Decades of Guided Munitions and Battle Networks*, p. 34; Royal Australian Navy, *Australian Maritime Doctrine: RAN Doctrine 1* (Canberra: 2010), pp. 59–60.
104. Heginbotham et al., *The U.S.-China Military Scorecard*, p. 62.
105. Gompert, Cevallos, and Garafola, *War with China*, p. 39.
106. General Accounting Office, *Navy Carrier Battle Groups: The Structure and Affordability of the Future Force*, GAO/NSIAD-93-74 (Washington, DC: February 1993), p. 32.
107. Justin Kelly, "Fighting China: Air-Sea Battle and Australia," *Australian Army Journal* 9, no. 3 (2012), p. 160.
108. Heginbotham et al., *The U.S.-China Military Scorecard*, p. 322.
109. U.S. Defense Dept., *Joint Operational Access Concept*, pp. 17–24; U.S. Defense Dept., *Gaining and Maintaining Access: An Army-Marine Corps Concept* (Washington, DC: 2012), p. 8; U.S. Defense Dept., *Air-Sea Battle: Service Collaboration to Address Anti-access & Area-Denial Challenges* (Washington, DC: Air-Sea Battle Office, 2013), pp. 6–7.
110. U.S. Defense Dept., *Gaining and Maintaining Access*, p. 6.
111. U.S. Defense Dept., *Air-Sea Battle*, p. 9.
112. U.S. Defense Dept., *Joint Operational Access Concept*, p. 24.
113. U.S. Defense Dept., *Air-Sea Battle*, pp. 3, 6.
114. Gompert, Cevallos, and Garafola, *War with China*, p. 61.
115. Gertler, *Air Force B-21 Raider*, p. 1.
116. U.S. Defense Dept., *Nuclear Posture Review Report 2010* (Washington, DC: 2010), p. 21.
117. Treaty between the United States of America and the Russian Federation on Measures for the Further Reduction and Limitation of Strategic Offensive Arms [hereafter New START], Russ.-U.S., April 8, 2010, T.I.A.S. No. 11-205, p. 3.
118. Protocol to the Treaty between the United States of America and the Russian Federation on Measures for the Further Reduction and Limitation of Strategic Offensive Arms [hereafter Protocol to New START], Russ.-U.S., April 8, 2010, T.I.A.S. No. 11-205, pp. 5–6.
119. New START, pp. 6–7; Protocol to New START, p. 97.
120. Protocol to New START, p. 97.
121. New START, p. 6; Protocol to New START, p. 5.
122. CBO, *The U.S. Military's Force Structure: A Primer* (Washington, DC: 2016), p. 103.
123. Protocol to New START, pp. 2, 11.
124. Treaty between the United States of America and the Union of Soviet Socialist Republics on the Elimination of Their Intermediate-Range and Shorter-Range Missiles [also known as the INF Treaty], U.S.S.R.-U.S., December 8, 1987, 1657 U.N.T.S. 2.

125. Acton, "Hypersonic Boost-Glide Weapons," p. 194; Caston et al., *The Future of the U.S. Intercontinental Ballistic Missile Force*, p. 73.
126. Woolf, *Conventional Prompt Global Strike and Long-Range Ballistic Missiles*, pp. 12, 34.
127. Heginbotham et al., *The U.S.-China Military Scorecard*, p. 49.
128. U.S. Defense Dept., *Command and Control for Joint Land Operations*, Joint Publication 3-31 (Washington, DC: Joint Staff, 2014), p. IV-1.



## Between Peace and the Air-Sea Battle A War-at-Sea Strategy

JEFFREY E. KLINE AND WAYNE P. HUGHES JR.

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

JOHN ARQUILLA

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

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

### The Strategy's Ends, Ways, and Means

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

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

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

### More Options for Deterrence

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

attacks on their homelands, they may be more willing to maintain and expand partnerships with the United States.

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

### **A Maritime Strength: Undersea Capabilities**

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

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

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

- Hit-and-run raids on Chinese seabed exploitations that are contrary to international law
- Escort of vital shipping into friendly ports, especially in the South China Sea

- Augmentation of Japanese patrol vessels to constrain illegal interference by China near the Senkaku Islands.

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

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

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

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

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

### **Wishing Does Not Make a Strategy**

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

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

the U.S. armed forces and our partners in Asia, that the strategy be openly published. China will not like it, but it is a peacekeeping strategy, not at all a manifest for aggression.

### Consummation

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

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

---

### Notes

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

## Revisiting Taiwan's Defense Strategy

WILLIAM S. MURRAY

China's recent military modernization has fundamentally altered Taiwan's security options. New Chinese submarines, advanced surface-to-air missiles, and, especially, short-range ballistic and land-attack cruise missiles have greatly reduced Taiwan's geographic advantage. Taipei can no longer expect to counter Chinese military strengths in a symmetrical manner, with Patriot interceptors, diesel submarines, surface warships, F-16 fighters, and P-3 maritime patrol aircraft. Taiwan must therefore rethink and redesign its defense strategy, emphasizing the asymmetrical advantage of being the defender, seeking to deny the People's Republic its strategic objectives rather than attempting to destroy its weapons systems. This would enable Taipei to deter more effectively Beijing's use of coercive force, would provide better means for Taiwan to resist Chinese attacks should deterrence fail, and would provide the United States additional time to determine whether intervening in a cross-strait conflict was in its own national interest. The strategy would also place the responsibility for Taiwan's defense squarely on its own military. Finally, it would restore the United States to unambiguous compliance with the Taiwan Relations Act.

The People's Republic of China (PRC) has been increasingly explicit about its military modernization objectives. China's 2004 white paper on national defense stated that "the PLA [People's Liberation Army] will . . . enhance the development of its operational strength with priority given to the Navy, Air Force and Second Artillery Force, and strengthen its comprehensive deterrence and warfighting capabilities."<sup>1</sup> The introduction of new classes of advanced surface warships; the unveiling of new nuclear-powered submarines, tactical fighter aircraft, and short- and medium-range ballistic missiles with advanced warheads; and an antisatellite demonstration—all attest to the determined pursuit of these goals.<sup>2</sup> Many analysts believe that China's near-term purposes are to deter Taiwan from declaring independence, to provide leverage by which to

coerce a reunification with Taiwan if deterrence fails, and to inhibit or delay U.S. intervention in such a conflict.<sup>3</sup>

Chinese employment strategies for these new weapons systems and potential capabilities remain unknown, though statements from senior leaders provide important hints. For example, President Hu Jintao is said to have stated in August 2007 that China had five major military priorities relative to Taiwan: establishing military readiness, conducting demonstrative exercises, “imposing a blockade on the Taiwan Strait,” “carrying out combined firepower attacks,” and “[conducting a] cross-sea landing.”<sup>4</sup> Guo Boxiong, vice chairman of the Central Military Commission, boasted in March 2008, “We have the resolve and capability to deal with a major ‘Taiwan independence’ incident at any time.”<sup>5</sup> The likely use of force would encompass three components: long-range precision bombardment, invasion, and blockade. These attack mechanisms would also likely be conducted in close coordination, not independently.<sup>6</sup> Taiwan faces the daunting challenge of how best to deny China the fulfillment of these objectives.

Previous studies of potential China-Taiwan conflict scenarios have concluded that Taiwan (either acting alone or with the assistance of the U.S. military) could defeat PRC coercion, thus presumably ensuring reliable deterrence.<sup>7</sup> Several of these studies have asserted that the Second Artillery (the PRC’s strategic rocket force) possessed only a limited inventory of relatively inaccurate short-range missiles with which to attack Taiwan, restricting its role to what Robert Pape calls “coercion by punishment,” terrorizing or inflicting pain on the population—a strategy that observers like Pape argue is rarely successful.<sup>8</sup> These circumstances, however, have now changed profoundly. Over the past decade China has greatly enhanced its capacity to “reach” Taiwan with far more accurate and decisive capabilities, and recent analyses question Taiwan’s near-term ability to resist coercive force.<sup>9</sup>

For example, the PRC’s expanding arsenal of increasingly accurate ballistic missiles can quickly, and with complete surprise, cripple or destroy high-value military assets, including aircraft on the ground and ships at piers. This emergent capability, plus the acquisition of long-range surface-to-air missiles (SAMs), suggests that the PRC has shifted its anti-Taiwan military strategy away from coercion by punishment toward denying Taiwan the use of its air force and navy.<sup>10</sup> Taiwan therefore faces a threat against which it has not adequately prepared and that offers the PRC a real prospect of achieving success before the United States could intervene. This is a very worrisome development.

Taiwan’s responses to China’s enhanced capabilities remain highly conflicted, a situation that reflects the deep political disagreements that shape Taipei’s military policies. Taipei decreased its defense budgets in absolute and relative terms from 1993 until



2003, with only meager improvements thereafter.<sup>11</sup> These diminished efforts hardly seem commensurate with the increased threat that Taiwan confronts. They suggest either a state of denial about the threat, a gridlocked political system, misplaced faith in current systems and geographic advantages, or, perhaps most disturbingly, a belief that the United States is certain to provide timely military assistance. Despite this ambivalence and its anemic defense budget, Taiwan has sought costly weapons systems from the United States, including PAC-3 (Patriot Advanced Capability, third version) missile systems, P-3 maritime patrol and F-16 fighter aircraft, *Kidd*-class destroyers, and diesel submarines. Taiwan is also reportedly attempting to develop offensive counterstrike capabilities indigenously, including the 360-mile-range Hsung-Feng IIE cruise missile.

Both approaches represent serious misperceptions of the threats posed to Taiwan and a misallocation of budgetary resources. The PAC-3s and other potential purchases are expensive, and they concentrate Taiwan's defense dollars on a limited range of capabilities that China is increasingly able to defeat. Offensive counterstrike weapons, furthermore, are potentially destabilizing, since China would have difficulty determining if such strikes originated from American or Taiwanese platforms. They are also unlikely to be acquired in numbers sufficient to deter China.<sup>12</sup>

More affordable, more effective, and less destabilizing means of defense against precision bombardment, invasion, and blockade are nonetheless available, but to take advantage of them, Taiwan must rethink its defense strategies. Rather than trying to destroy incoming ballistic missiles with costly PAC-3 SAMs, Taiwan should harden key facilities and build redundancies into critical infrastructure and processes so that it could absorb and survive a long-range precision bombardment.<sup>13</sup> Rather than relying on its navy and air force (neither of which is likely to survive such an attack) to destroy an invasion force, Taiwan should concentrate on development of a professional standing army armed with mobile, short-range, defensive weapons. To withstand a prolonged blockade, Taiwan should stockpile critical supplies and build infrastructure that would allow it to attend to the needs of its citizens unassisted for an extended period. Finally, Taiwan should eschew destabilizing offensive capabilities, which could include, in their extreme form, tactical nuclear weapons employed in a countervalue manner or, less alarmingly, long-range conventional weapons aimed against such iconic targets as the Three Gorges Dam.

Such shifts constitute a "porcupine strategy." They would offer Taiwan a way to resist PRC military coercion for weeks or months without presuming immediate U.S. intervention.<sup>14</sup> This shift in strategy might also be less provocative to the PRC than Taiwan's current policy of offensive defense. A porcupine strategy would enhance deterrence, in that a Taipei truly prepared to defend itself would be able to thwart a decapitation

attempt—thereby discouraging Beijing from acting militarily. Perhaps most important, such a policy would allow the United States time to deliberate whether intervention was warranted. Washington could avoid a reflexive decision that would draw it into a war against a major power that had systematically prepared for just such a contingency for more than a decade.

This article has five principal parts. The first summarizes the history and rationale of the 2001 U.S. arms offer to Taiwan and explains why the weapons sales proposed are unsuited to the effective defense of the island. The second section outlines how China would probably attempt to destroy or neutralize the Taiwan air force and navy, and it proposes an alternative strategy for countering China's increasingly precise short-range ballistic missiles (SRBMs), cruise missiles, and manned tactical aircraft. The third part explores how Beijing's invasion options would change if Taipei lost its navy and the use of its air force. The fourth section examines PRC blockade options against Taiwan and suggests how Taiwan could more effectively deny China its blockade objectives. The concluding section considers the impediments to, and repercussions of, adoption by Taiwan of a "porcupine defense."

### **Whatever It Takes: The 2001 U.S. Arms Sale Offer**

In April 2001, reversing twenty years of American policy, the George W. Bush administration offered to provide to Taiwan eight diesel submarines for U.S. \$12.3 billion.<sup>15</sup> This was part of a larger offer that also included six batteries of PAC-3 surface-to-air missiles for an additional \$4.3 billion and twelve P-3C maritime patrol and antisubmarine aircraft at \$1.6 billion.<sup>16</sup> This potential sale evoked predictably strong opposition from the mainland, stirred extensive internal Taiwanese debate, and brought significant American pressure on Taiwan to assent to these purchases.<sup>17</sup> For example, Richard Lawless, the Deputy Under Secretary of Defense for Asian and Pacific Affairs, stated that "the passage of this budget is a litmus test of Taiwan's commitment to its self-defense";<sup>18</sup> he also warned Taipei of "repercussions" if it failed to approve the arms purchase.<sup>19</sup>

One early version of the proposal also envisioned Taiwan buying new P-3Cs.<sup>20</sup> This would have required restarting a production line that had closed in 1990, at a cost of some \$300 million per plane.<sup>21</sup> Many in Taiwan viewed the totality of this package as exorbitant.<sup>22</sup> Indeed, the leader of Taiwan's People First Party likened it to extortion by American mafiosi in exchange for protection from Chinese thugs.<sup>23</sup> The combination of high cost and intense divisiveness produced political theater and gridlock;<sup>24</sup> proposals to fund the package were defeated some sixty times between 2004 and 2007.<sup>25</sup> Six bitter years of stonewalling, stalemate, and wrangling finally ended in June 2007 with passage of watered-down legislation allocating a billion dollars to purchase rebuilt P-3 aircraft

and upgrade Taiwan's existing SAM systems of the less advanced PAC-2 type, probably to PAC-3 standards.<sup>26</sup> The Legislative Yuan, however, allocated only about six million dollars to fund continued feasibility studies on the U.S. diesel submarine deal, thereby postponing or even killing it.<sup>27</sup>

The military rationale underlying the original arms package was one of a classic symmetrical response to perceived threats. Thus the P-3C Orion aircraft, which specialize in antisubmarine warfare (ASW) and open-ocean surveillance, could defend Taiwan from China's modernizing fleet of diesel and nuclear submarines. Similarly, eight modern diesel submarines would presumably defend against the PRC's increasingly impressive and capable surface forces and submarines. Finally, the PAC-3 would seemingly offer a viable defense for critical targets against Beijing's expanding inventory of short-range ballistic missiles, attack aircraft, and highly accurate land-attack cruise missiles.<sup>28</sup> Yet closer analysis suggests that none of these three weapons systems serve Taiwan's current or immediate future defense needs, that each would be acutely vulnerable to existing Chinese weapons and for Taipei would therefore be a major misallocation of resources. To support this conclusion I will review the presumed role of various potential capabilities in relation to the likely employment of Chinese capabilities.

#### *PAC-2 and PAC-3 SAMs versus China's SRBMs*

Taiwan clearly faces a major challenge in defending against Chinese short-range ballistic missiles. In 2005 Taiwan had an inventory of approximately two hundred earlier PAC-2 interceptors in three batteries.<sup>29</sup> Each PAC battery consists of a multifunction phased-array radar, an engagement control station, communications gear, and eight launchers with four missiles per launcher, plus one reload each. In theory, these three batteries of PAC-2 missiles could destroy up to 192 (that is,  $3 \times 8 \times 4 \times 2$ ) Chinese SRBMs. SAM firing doctrine, however, mandates shooting two missiles against each target to increase the odds of success.<sup>30</sup> The downside of this enhanced kill probability is that it effectively halves the inventory of interceptors and doubles the cost of each attempted intercept. Unless Taiwan were to increase its inventory of PAC missiles hugely, it can expect to shoot down with the PAC-2 interceptors already in inventory at most ninety-six of the SRBMs targeted against it, or as many as 192 if Taipei upgrades all its current PAC-2 batteries to PAC-3 capabilities (which have sixteen missiles per launcher). Even this would allow over nine hundred of China's 2007 inventory of a thousand SRBMs to arrive unchallenged at their targets.

Patriot interceptors are useless unless guided by the PAC radar. China could target these radars with SRBMs, cruise missiles, homing antiradiation missiles fired from tactical aircraft, or even Harpy antiradar drones launched from the mainland. Taiwan would then have to devote SAMs to defending the PAC radar, thus reducing the number

available for defending airfields, leadership sites, critical infrastructure, or other key facilities.

Additionally, a PAC-3 installation protecting a particularly valuable target (e.g., Tsoying naval base) could be saturated and overwhelmed by large numbers of SRBMs. China could also initially fire older, less precise weapons to deplete Taiwan's inventory of interceptors, following them closely with unimpeded precision attacks using more accurate missiles. Mark Stokes, a close observer of China's Second Artillery, also notes that Beijing may have "a terminal guidance system that could preclude engagement by terminal missile defenses," such as Patriot interceptors.<sup>31</sup>

One argument commonly used to dismiss the threat posed by SRBMs is that the ballistic warheads lack the accuracy necessary for precision targeting. In a 2000 publication, for example, Michael O'Hanlon observed that the reported inaccuracy—a three-hundred-meter circular error probability (CEP)—of China's SRBMs made them little more than terror weapons.<sup>32</sup> However, O'Hanlon derived that estimate from 1999 and earlier sources; since then China has greatly improved the accuracy of its missiles, as well as the number in its inventory. Authoritative judgments are classified, but Thomas Christensen noted in 2001 that internal PLA sources assumed that the Second Artillery would be able to support accurate, concentrated attacks on enemy military assets.<sup>33</sup> *Jane's* in 2005 estimated China was producing ballistic missiles with CEPs of forty meters.<sup>34</sup> Mark Stokes wrote in 2006 that "at least 10 years ago, PRC missile engineers had been tasked to meet an accuracy requirement of below 50 meters circular error probability (CEP)."<sup>35</sup> Taiwan's Ministry of National Defense reported in September 2007 that China's SRBMs could strike within forty meters of their intended targets.<sup>36</sup> The Global Positioning System (GPS), which provides accuracy to within a few meters over most of the earth's surface, would be available to Beijing's weapons during all phases of launch and flight.<sup>37</sup> Further, the U.S. Navy's Office of Naval Intelligence also reported in 2004 that China is building ballistic missiles that can target large ships at sea; in 2006 it stated that these maneuvering warheads were guided by either infrared or radar seekers.<sup>38</sup> These reports reflect a growing consensus that China has mastered the engineering and manufacturing challenges involved in fielding highly accurate ballistic-missile warheads. China's ballistic missiles are therefore no longer weapons for frightening populations but precision munitions. The Second Artillery's SRBMs provide the PLA the capability to destroy very large numbers of fixed targets with little or no warning.<sup>39</sup>

### *P-3s versus China's Submarines*

Taiwan's purchase of P-3 Orion antisubmarine aircraft appears to make more sense. P-3s have a proven capability to find submarines; China has a large submarine fleet, over fifty diesel and nine or more nuclear submarines; and Taiwan's 1960s-vintage S-2

Tracker ASW aircraft is hopelessly obsolete.<sup>40</sup> Japan, another island state facing similar strategic imperatives, has up to 110 P-3s.<sup>41</sup> In reality, however, twelve P-3C aircraft will make little or no difference against China's submarine fleet. The reason is straightforward: P-3 aircraft require secure airfields from which to fly, but Taiwan will probably lose its airfields in the opening salvos of any all-out war with China. Air superiority will be doubtful. Further, a dozen P-3s can patrol only a fraction of the waters in which China's submarines could operate against Taiwan, and this fraction would be very likely reduced by combat losses. Twelve P-3s will have meaningful reconnaissance and maritime patrol roles to play during peacetime and scenarios of limited conflict, through their ability to conduct wide-area searches, but they will have little wartime utility.

### *Taiwan's Diesel Submarines versus the People's Liberation Army Navy*

Diesel submarines can conduct effective operations against an opposing navy and merchant fleet, but only when they are used offensively. Admittedly, there are examples of diesel submarines effectively defending home or nearby waters. One is the Argentine Type 209 diesel submarine that operated against the Royal Navy during the 1982 Falklands War. Although making a number of attacks against surface and submarine contacts, it failed to damage any British ships. The Royal Navy, meanwhile, expended nearly its entire inventory of ASW weapons against the boat without sinking or disabling it.<sup>42</sup>

Conversely, there are many examples of effective employment of diesel submarines in offensive operations. The U.S., German, and British submarine forces have all excelled offensively. Yet technological developments after World War II dramatically altered the operational role of diesel submarines—they can no longer prowl for targets at relatively high speeds on the surface, submerging only to attack. Diesel submarines must now remain submerged, where their battery capacity forces them to hunt at low speeds—approximately four knots. They must also transit slowly to locations where enemy vessels might eventually deploy—geographic choke points, sea-lanes, and the waters around enemy harbors and naval bases being the most likely.

It is also erroneous to view diesel submarines as effective antisubmarine systems. A diesel submarine can, if equipped with appropriate torpedoes, attack another submarine, but modern submarines are very quiet and exceedingly difficult to detect. The Congressional Research Service, for example, reports that some Kilo-class diesel submarines are quieter than improved *Los Angeles*-class nuclear submarines.<sup>43</sup> This suggests that properly maintained, modern diesel submarines can be detected at ranges varying from two hundred yards to four nautical miles.<sup>44</sup> By maritime standards, these are very short distances. Diesel submarines, therefore, cannot reasonably expect to find other quiet submarines at long ranges.

Thus the importance of the low speeds of diesel submarines. If they can detect opponents only at ranges of a few miles, they will take a considerable amount of time to search large areas effectively. Furthermore, the hunting diesel submarine might well be itself detected and attacked by the hunted boat. Having no marked advantages in detection range, search speed, or quietness over opponents, diesel submarines cannot hope to become effective ASW platforms. Diesel submarines are therefore really specialists in antisurface warfare, mining, and intelligence gathering. These are all offensively oriented missions.

During a conflict, Taiwan would likely maximize the effectiveness of its submarines by either laying mines against Chinese ports or by attacking with torpedoes or cruise missiles warships leaving their bases. This would provide a much higher probability of success against People's Liberation Army Navy (PLAN) vessels than would the defensive tactic of waiting in or around Taiwanese waters for them. But China would have difficulty determining the origin of any resulting attacks and could attribute them to the United States, particularly any by Mark 48 torpedoes, which were included in the 2001 arms sale offer and a variant of which is carried by American submarines.<sup>45</sup> Such a contingency seems unnecessarily escalatory, especially since there are other, purely defensive and nonescalatory, alternatives that could more quickly offer Taiwan equal or better deterrence and at lesser cost.

### Taiwan's Vulnerable Navy and Air Force

Taiwan's navy could probably fight the PLAN effectively. It possesses highly advanced equipment, including four *Kidd*-class destroyers and Harpoon antiship and SM-2 anti-air missiles; its officers and men have a reputation for competence.<sup>46</sup> In consequence, China can be expected to look for a way to defeat this force decisively without a campaign of symmetrical, force-on-force attrition. A surprise, long-range, precision bombardment on Taipei's navy while it is in port seems a clear choice. Beijing would need sufficient weapon accuracy, availability, and reliability, as well as targeting information, but all of these are now within the PRC's technical ability.

As mentioned above, problems of accuracy that used to characterize Beijing's long-range weapons have likely been solved. Accurate weaponry is useless without knowledge of the precise location of targets, but targeting Taiwan's surface combatants in port is increasingly easy. In the age of Google Earth, the latitude and longitude of naval piers at Tsoying, Suau, and Taiwan's other naval bases are easy to determine exactly, and these piers are finite in number. Moreover, many of Taiwan's naval bases are also commercial ports, suggesting that direct observation of surface ships within them would be a simple matter. Ships in port rarely shift berths, so Beijing could readily monitor the location of most, if not all, of Taiwan's surface combatants in port on a day-to-day basis.<sup>47</sup>

If Beijing knew that Taipei's destroyers were tied up to a given pier, it could readily program cruise or ballistic missiles to strike the appropriate aim points. Even if jamming denies GPS and similar signals, technology like laser radar guidance allows automatic target recognition.<sup>48</sup> Deficiencies in accuracy can also be compensated for by submunitions, which can damage targets within a larger area. China has developed ballistic-missile-deployed submunitions since at least 2000.<sup>49</sup> Submunitions designed to penetrate and damage runways, which China has almost certainly developed for its SRBMs, would also be highly effective against moored naval vessels.<sup>50</sup>

Unclassified information regarding China's weapons-system reliability is not available. But technological shortfalls no longer plague China's space program or significantly retard its ability to manufacture dependable high-technology consumer products such as memory chips, digital processors, digital cameras, cell phones, or personal computers. China thus seems increasingly capable of achieving adequate weapons-system reliability. Producing sufficient numbers of weapons is also well within the PRC's technical and budgetary capacities. Devoting, say, a hundred SRBMs to the destruction or crippling of Taiwan's navy would likely be a fruitful allocation of China's inventory of precision weapons.

Taiwan's air force is also threatened by long-range precision bombardment, but by different means.<sup>51</sup> The Taiwan air force has nine air bases, from which approximately 145 F-16, fifty-six Mirage 2000, and 131 F-CK-1A Indigenous Defense Fighters operate.<sup>52</sup> An examination of the air bases using Google Earth shows upward of four hundred protected revetments at these nine bases, approximately half of them covered and perhaps hardened.<sup>53</sup> This gives credence to the reports of underground hangars at Ta-Shan Air Base in Hualien that reportedly can protect over half of Taiwan's tactical fighter aircraft. Other underground shelters exist at Taitung Air Base and perhaps elsewhere.<sup>54</sup> The table describes results of open-source satellite imagery examination of Taiwan's air bases.

Any Chinese attempt to destroy individual aircraft in hardened shelters would be hindered by the large number of targets. The Second Artillery might have to devote at least one highly accurate unitary warhead to each covered aircraft revetment. This allocation of over two hundred missiles could be wasted, however, if Taiwan did not place any aircraft in these revetments but instead parked them in the open to defeat such targeting. Such dispersed aircraft, however, would be vulnerable to SRBM-delivered fragmenting submunitions. This too would be an inefficient use of a potentially large percentage of the Second Artillery's short-range ballistic missiles, and neither method would threaten any aircraft protected in underground shelters.

A better option for the Chinese would be to target the runways with warheads designed to crater them and so prevent Taiwan's aircraft from taking off.<sup>55</sup> For example, a loaded F-16 apparently requires approximately 2,500 feet of uninterrupted runway to take off;

*Taiwan's Air Bases*

AIR BASE	LATITUDE/ LONGITUDE	RUNWAYS (TAXI)	RUNWAY LENGTH × WIDTH (FT)*	WARHEADS	SHELTERS	REVTMENTS	TUNNELS
Taoyuan	250319/ 1211431	1 (1)	10,015 × 145	8	41	46	0
Hsinchu	244905/ 1205621	1 (2)	11,955 × 148	12	43	11	0
Ta-Shan	240148/ 1213629	1 (1)	7,959 × 140	5	0	0	8
Chashan	240109/ 1213652	1 (2)	9,022 × 148	8	23	10	0
Chiayi	232747/ 1202329	2 (1)	10,007 × 148 5,307 × 74	9	34	37	0
Tainan	225700/ 1201220	2 (1)	10,007 × 148 10,007 × 148	8	43	50	0
Kangshan	224657/ 1201553	2 (1)	8,019 × 145 7,435 × 145	6	4	0	0
Ching Chuan Kang	241525/ 1203738	1 (2)	12,000 × 148	12	31	16	0
Taitung	241104/ 1203914	1 (1)	11,055 × 147	8	29	0	12
Sungshan	250353/ 1213303	1 (1)	8,578 × 197	5	0	0	0
Makung	243409/ 1193747	1 (1)	9,843 × 148	8	4	8	0
Total		14 (14)		89	252	178	20

\* Nearly all runway data in this table are taken from posted airport information on Google Earth. Information not provided was determined using Google Earth.

U.S. doctrine, however, demands a fifty-by-five-thousand-foot minimum operating strip for tactical aircraft operations.<sup>56</sup> Taiwan's air bases have fourteen runways ranging from 5,307 to 11,995 feet long, and these strips are on average approximately 150 feet wide. If China's SRBMs are sufficiently accurate and reliable, six unitary warheads each creating a fifty-foot crater could cut a 12,000-by-148-foot runway into six segments, each smaller than a U.S. minimum operating strip.<sup>57</sup> Where taxiways could also serve as runways, they would also have to be cratered. Using this logic, China would have to devote at least eighty-nine perfectly accurate warheads (see the "warheads" column of the table) to Taiwan's runways and taxiways to prevent their use by tactical aircraft. The PRC cannot rely on 100 percent SRBM reliability and accuracy, but something between a hundred and two hundred unitary warheads could deny Taiwan the use of its air bases for a while. This number would be greater if accuracy and reliability were poor and ballistic missile defenses were effective; conversely, it could be smaller if China has runway-penetrating submunitions, tactical aircraft or cruise missiles can reliably



deliver antirunway munitions, or fighter aircraft require longer takeoff or landing distances than assumed.<sup>58</sup>

China has reportedly acquired runway-penetrating bombs from Russian sources.<sup>59</sup> It also seems likely that the Second Artillery has developed rocket-delivered warheads. A Google Earth image at 40°29'20" north latitude, 93°30'02" east longitude, depicts what is likely Chinese testing of a concrete-penetrating submunition warhead. Mark Stokes asserts that in fact the Second Artillery already has runway-penetrating submunitions, terminally guided.<sup>60</sup> In any case, there is little reason to doubt that China has developed suitably accurate antirunway weapons to support such a campaign as envisioned here. As a point in evidence, Taiwan recognizes that its runways present a critical vulnerability and has acquired the ability to repair them rapidly under combat conditions.<sup>61</sup> Disturbingly, however, as late as 2007 at least one Taiwan airfield's runway repair capabilities consisted of "a pile of gravel and pile of sand at the apex of the runways. Both piles were uncovered, exposed to the elements, and obviously had been very long in place; furthermore, there was no earthmoving equipment stored anywhere near the piles."<sup>62</sup> Effective rapid runway repair during sustained ballistic missile strikes requires highly trained and motivated teams. If Taiwan has established and maintained such teams, it should be able to keep some of its airfields operable. Observers might be forgiven doubts, however, given other manning problems that afflict Taiwan's military.<sup>63</sup>

Among those problems is a shortage of pilots. For nearly a decade Taiwan has struggled to maintain a ratio of one pilot to one modern fighter aircraft. Bernard Cole relates that Taiwan's minister of defense has seriously considered mothballing some of its Mirage 2000s in an effort to increase the pilot-to-plane ratio.<sup>64</sup> Attrition among pilots by any means would be a very serious matter.

Finally, Taiwan has on at least two occasions conducted exercises in which tactical aircraft flew from highways.<sup>65</sup> Yet this expedient incurs a host of logistics problems, very low sortie rates, and increased vulnerabilities to traditional, fifth-column, or PRC special operations forces attacks.<sup>66</sup>

The key point is simple and sobering: the Second Artillery's expanding inventory of increasingly accurate SRBMs probably allows Beijing to incapacitate much of Taiwan's navy and to ground or destroy large portions of the air force in a surprise missile assault and follow-on barrages.

### *An Invitation to Invasion?*

Hypothetical Chinese invasion fleets have always been presumed to risk devastation by Taipei's highly regarded air force. Yet even if Taiwan's fighters could take to the air and conduct coordinated defensive operations after suffering a long-range precision

bombardment, they would still have to prevail against the Chinese air force and navy's growing inventory of fourth-generation Su-27, Su-30, J-10, and J-11 aircraft, all with impressive anti-air capabilities. Other mortal threats include Beijing's four (soon to be eight) batteries firing the land-based S-300 PMU2 surface-to-air missile, which with its 120-mile range can reach nearly across the Strait of Taiwan and make penetration of China's airspace "difficult if not impossible" with F-16s and F-15s.<sup>67</sup> This difficulty could be exacerbated by the ninety-mile SA-20, which China is sending to sea on its pair of Luzhou-class destroyers, and by the fifty-four-mile HHQ-9 SAMs on both of its Luyang II destroyers.<sup>68</sup> Combined, these weapons systems could effectively defend an invasion fleet against any tactical aircraft that got airborne.

It is also widely assessed that Beijing lacks the amphibious lift required to conduct a successful invasion. A spate of recent mainland amphibious-ship construction, however, suggests that Beijing continues to pursue that option. The launching and outfitting of the Yazhou-class landing ship (LPD) in 2006 and 2007 at Shanghai's Hudong shipyard means that shortly an invasion fleet would have helicopter and air-cushion-vehicle support.<sup>69</sup> An additional invasion capability will be gained if China acquires from Russia the sixty-knot *Zubr*-class amphibious hovercraft, which can carry three main battle tanks, ten armored personnel carriers, or 140 troops. Long-swirling rumors of the impending sale of six or more are gaining credibility.<sup>70</sup> Further, the ten Yuting-II tank landing ships built during 2003 and 2004 increased China's inventory of that type by approximately 50 percent.<sup>71</sup> The total number of amphibious vessels required to support a Taiwan invasion is debated; it depends on attrition rates, weather, loading and unloading times, the use of civilian shipping, availability of off-loading infrastructure in Taiwan, Taiwan's will to resist, and other factors both physical and subjective.<sup>72</sup> Regardless, it is apparent that China has not forsaken an invasion option and has the ability to develop rapidly additional amphibious forces.

### *Rethinking Taiwan's Defenses*

Taiwan can do little to prevent a Chinese bombardment by many hundreds, even thousands, of precision-guided munitions. Taipei might have a better payoff, therefore, in seeking not to defeat the incoming warheads but to prevent the attack from achieving its objectives. For instance, one technologically unsophisticated and relatively affordable measure would be to harden key civil and military facilities—burying them or constructing concrete shelters that can withstand multiple direct hits.<sup>73</sup> This would be especially important for civilian leadership facilities, military command posts, and communications systems. It could even be done for Taiwan's three Patriot interceptor sites, which, Google Earth reveals, are in the open. Keeping the launchers and radars in caves or hardened bunkers would cause Beijing to devote more warheads to them. Also,

having survived the initial bombardment, the launchers could be rolled out to protect against follow-on harassment strikes by SRBMs, cruise missiles, and tactical aircraft.

The same logic would further suggest redundancy of critical infrastructure—such as food and water distribution systems, medical services, wartime command and control, warning radars, or civil defense information networks. However, Taiwan’s electrical grid is particularly vulnerable. For example, the magnitude 7.6 earthquake that struck central Taiwan on 21 September 1999 resulted in a complete loss of electricity in the northern half of the island. A major cause was heavy damage to the Chungliiao electrical substation, “a major hub in the island’s high voltage transmission network that directs 45% of the north’s power demand.”<sup>74</sup> Attacks on this attractive target could be resisted either by distribution redundancy or emergency generators (with fuel) to supply vital networks and facilities during and after a bombardment. Tax incentives or building-code revisions could help create such capacity.<sup>75</sup>

As a further example, Taiwan could complicate China’s targeting. Decoys are an excellent and affordable way to do so. In 1999 Serbia reportedly misled many NATO precision-guided munitions with such primitive ruses as simulated tanks made of wood and tarpaulins.<sup>76</sup> Taiwan could complicate Beijing’s targeting options with radar emitters that seduce homing antiradiation missiles, inflatable “missile launchers,” and the like. Properly done, these measures could cause the Second Artillery to waste a large percentage of its warheads on false targets.

Another worthwhile alternative to trying to shoot down ballistic warheads would be making critical targets mobile. Fixed targets are relatively easy to locate and destroy with precision weaponry (unless buried or hardened), but mobile targets are not, as the United States discovered in its unsuccessful hunt for Scuds in the Iraqi western desert during the first Gulf War.<sup>77</sup> An option would be for Taiwan to move its Patriot radars frequently between several sites. For its part, the navy could consider frequently shifting its ships’ berths, increasing the time they spend at sea, or even anchoring them in its ports, especially in time of heightened tensions.<sup>78</sup> Another option would be hardened pens for missile patrol craft, in which they might survive an initial SRBM attack.<sup>79</sup> Taipei could also rotate its fighters between airfields or between hardened shelters, in a high-stakes analogy to three-card monte. Future weapons acquisitions could emphasize mobility and concealment.

Beijing’s short-range ballistic missiles are highly accurate, but they are not infinite in either destructive power or number.<sup>80</sup> In the face of such passive defenses they might well fail, however many struck targets, to achieve the true purpose for which they were fired—destruction of Taiwan’s ability, or willingness, to resist “regime change.”

Under existing conditions, however, a surprise long-range precision bombardment would likely cost Taiwan its ability to fly useful numbers of tactical aircraft in a coordinated manner or to sortie its navy. This prospect has important implications. For one, it suggests that additional tactical fixed-wing aircraft requiring long runways would not be a wise investment. If their mission would be countering invasion and (more important) preventing the PRC from using its own aircraft in a bombardment, invasion, or blockade, Taiwan would do better to invest more in mobile SAM systems. For instance, Taiwan reportedly has 162 medium-range Improved Hawk missiles but as few as five launchers.<sup>81</sup> The surface-launched advanced medium-range air-to-air missile (SLAMRAAM), a truck-mounted version of the highly capable AIM-120 AMRAAM, if acquired and integrated with existing systems, would significantly enhance Taiwan's anti-air capability.<sup>82</sup> Taiwan could enhance its short-range man-portable and truck-mounted air-defense systems, such as the Stinger, Avenger (a truck-borne Stinger), and Chaparral; they might be stored in hardened or disguised shelters and frequently moved between them. These steps would greatly complicate targeting and help deny China air superiority in the aftermath of a major bombardment. On this view, further investments in fixed-site surface-to-air missiles, such as Taiwan's silo-based Sky Bow 1, would seem unwise due to their vulnerability to precision-guided munitions, unless they can withstand multiple direct hits.

### Repelling an Invasion

An all-out Chinese campaign to topple the Taiwan government might combine bombardment with invasion. If Taiwan's navy and air force were neutralized or destroyed by the bombardment, the army would have to repulse or defeat an invasion alone. There are several weapons—all affordable and unambiguously defensive in nature—that, if purchased, could greatly improve its chances of doing so.

At the top of this list are mobile coastal-defense cruise missiles (CDCMs), such as truck-mounted Harpoons. A fairly small number of these missiles would likely devastate China's armor-carrying amphibious shipping, which would have to come well within range, and then stop, to disembark the vehicles. Recent naval history strongly suggests that a vessel loaded with tanks or armored personnel carriers could be sunk or put out of action by a single five-hundred-pound (or lighter) high-explosive warhead, such as cruise missiles deliver.<sup>83</sup> Thus far, no Chinese amphibious vessel has a robust anti-cruise missile capability.<sup>84</sup> Cruise missiles' targets could be acquired by mobile radars.<sup>85</sup> Best of all, CDCMs could greatly enhance Taiwan's ability to destroy an invasion force without third-party assistance.<sup>86</sup>

A second class of weaponry that would be highly effective in repelling an invasion comprises attack helicopters, such as the Apache AH-64D. Taiwan, recognizing the utility

of helicopters, has sixty-three AH-1A Super Cobras and has set in motion an initiative to buy thirty Apaches in 2008 from the United States for an estimated U.S. \$2.26 billion.<sup>87</sup> These aircraft would be highly effective against armor that approached in landing craft or got ashore, if adequately protected during the preparatory bombardment. Additionally, helicopters' ability to fly low affords a degree of immunity to long-range surface-to-air missiles.

The Multiple Launch Rocket System (MLRS) is another truck-mounted weapon that might be appropriate for Taiwan. These mobile launchers could be readily hidden or sheltered. Equipped with appropriate rockets, their long-range precision fire could greatly weaken any PLA toeholds.<sup>88</sup> They might do so even if key bridges or roads were impassable; a handful of MLRS sites could cover the entire island. Advanced tanks, artillery, and antitank weapons should not be left off this list of effective hardware, but Taiwan already has sizable stocks of most of them.

Another hardware recommendation, less strictly associated with ground warfare, involves surf-zone sea mines. These weapons, designed for waters less than ten feet deep, are extraordinarily difficult to counter and would bedevil the planning or execution of any Chinese invasion of Taiwan. A former commandant of the U.S. Marine Corps, General James L. Jones, stated in 2002 that "the inability to clear mines from the surf zone is the 'Achilles' heel of our maneuver force."<sup>89</sup> U.S. Navy mine warfare officers also attest to their effectiveness and to the speed and ease of deploying them.<sup>90</sup> Since they are lightweight and portable, shallow-water mines can be quickly and easily moved from secure bunkers to where they are needed. They are also quite inexpensive, relative to many of the other weapons systems Taiwan might choose.

None of these weapons would be effective if Taiwan's army were not highly trained or motivated. Unfortunately, however, its conscript ground forces reportedly "suffer from low morale, a poor NCO [noncommissioned officer] program and poorly maintained equipment."<sup>91</sup> Also, Taiwan's reserve forces are very weak; conscripts serve only fourteen months before entering the reserves.<sup>92</sup> In any case, conscript-based armies are poorly suited to the high-technology combat that would characterize an invasion attempt by the PRC. These problems are no doubt rooted in structural, social, and political issues beyond the scope of this article. However, it should be pointed out briefly that the aim of thwarting the ultimate objectives of a PRC attack (or better, thereby discouraging Beijing from the attempt) would be best served by an all-volunteer, highly professional and highly trained army. An all-volunteer army, though consistent with the stated desires of many elected officials, could not be developed quickly.<sup>93</sup> It would increase personnel costs, but it would also increase the ground force's deterrent value, since it would reduce the likelihood of total collapse at the beginning of hostilities, which numerous informed observers believe is a real possibility.<sup>94</sup>

### **Withstanding a Blockade**

If Taiwan's military and leadership were to ride out a bombardment and repel an invasion, China might then consider an extended blockade designed to prevent Taiwan from importing energy.<sup>95</sup> The Republic of China would be acutely vulnerable to such an action, since it imports over 98 percent of its energy requirements. All these fuels pass through easily identifiable bottlenecks, including off-loading terminals and processing locations that would be susceptible to destruction or mining.<sup>96</sup> Imported energy is also carried on easily identifiable ship types, which could be isolated, diverted, or even sunk. Additionally, Taiwan's refiners are required only to maintain crude oil stocks equivalent to thirty days' demand.<sup>97</sup> This all suggests that an energy blockade's effects would be felt very quickly throughout Taiwan, and could be severe.

One wonders how long Taipei could resist Beijing's demands under such conditions. It is equally unclear how a blockade that was preceded by a long-range precision bombardment could be countered, whatever defensive military options Taiwan pursues. A partial solution might lie in the civil, rather than military, sphere. Specifically, Taiwan could prepare for a blockade by stockpiling critical energy, food, and medical supplies and planning for rationing and financial contingencies.<sup>98</sup> Such preparations would reassure Taiwan's leadership and citizenry that they could withstand a blockade, thus reducing the likelihood of panic and early capitulation. A second objective of comprehensive preparations and plans would be to delay significantly the point when shortages would force Taipei to concede.<sup>99</sup>

Perhaps most important, the United States could use the interim to deliberate how best to respond. For instance, Washington could withhold the possibility of intervention as leverage to induce Taipei to behave within acceptable parameters, both before and during crises. With the luxury of time, the United States might find ways to assist that avoided direct military conflict with China—for example, supplying critical military material via airlift, much as the Nixon administration did for Israel during the 1973 Yom Kippur War, or by shipping oil to Taiwan on reflagged, escorted tankers. The United States might, conversely, decide to intervene with conventional force in an overwhelming but carefully phased manner that took advantage of asymmetrical American advantages. A standing realization by China that it could well be defeated in such a contingency would significantly contribute to deterrence.

### **The Porcupine Republic**

It is difficult to escape the conclusion that China either already has or shortly will have the ability to ground or destroy Taiwan's air force and eliminate the navy at a time of its own choosing. This prospect fundamentally alters Taiwan's defense needs and makes

the intended acquisition from the United States of diesel submarines, P-3 aircraft, and PAC-3 interceptors ill advised.

Diesel submarines are poor antisubmarine platforms, since with their low speed and limited underwater endurance they simply cannot search quickly large volumes of ocean for quiet submarines. These physical restrictions also limit their versatility as antisurface platforms. They are, for all practical purposes, four-knot minefields. At a cost of over U.S. \$1.5 billion each and with indeterminate delivery dates, conventional submarines also carry significant opportunity costs, as some in Taipei clearly recognize. Finally, submarines are no more likely than other naval ships tied up at exposed piers to survive the opening salvo of a war with China.

Taiwan's apparent decision to purchase up to twelve submarine-hunting P-3C aircraft is similarly brought into question. Although these planes can collect valuable information during peacetime and in crisis, in wartime they would be sitting ducks while on the ground (though hardened shelters might protect P-3s) and aloft would require uncontested air superiority to have any chance of accomplishing their mission.<sup>100</sup> In any case, Taipei cannot protect its runways. Patriot surface-to-air missiles have some utility against short-range ballistic missiles, but China already has the means to defeat this expensive air-defense system.

The implication is that Taiwan would be far better served by hardening, and building redundancy into, its civil and military infrastructure and systems. In that way the island could reasonably hope to survive an initial precision bombardment, deny the PRC the uncontested use of the air, repel an invasion, and defy the effects of a blockade for an extended period. Many of these actions, in fact, would be consistent with recent efforts by Taiwan to improve its defenses. Others, however, would entail substantial shifts that some in Taiwan's navy and air force would doubtless oppose. Air force leaders would be understandably loath to admit that their fighters cannot defend Taiwan's skies; their navy counterparts might similarly resist suggestions that their fleet is acutely vulnerable in port. Both services' political champions would certainly challenge the implications of this article's analysis. So too would the arms manufacturers who stand to benefit from the sale of aircraft, ships, and supporting systems to Taiwan.

Yet under present conditions it is doubtful that the people and government of Taiwan could withstand a determined PRC assault for long. A hasty American military intervention would be Taiwan's only hope, but only at the risk of strategic miscalculation and nuclear escalation. A "porcupine" strategy—a Taiwan that was patently useless to attack—would obviate the need; it would also make a determined Taipei conspicuously able to deny the objective of a bombardment or defeat an invasion, thus deterring either scenario. Ability to resist a full-scale campaign—long-range precision bombardment,

invasion, and blockade—for a substantial amount of time would allow its potential allies to shape their responses carefully. Above all, demonstrable Taiwanese resilience would diminish Beijing's prior confidence in success, strengthen cross-strait deterrence, and reduce the risk of the United States being dragged into a conflict with China.<sup>101</sup>

Meanwhile, a porcupine strategy would restore the United States to unequivocal adherence to the Taiwan Relations Act, since Taiwan would be in the market only for defensive systems. Taiwan would find itself with a better defense for fewer dollars, and the United States would abide by the 17 August 1982 joint communiqué declaring that it would “not exceed, either in qualitative or in quantitative terms, the level of those [arms] supplied in recent years . . . and that it intends gradually to reduce its sale of arms to Taiwan, leading, over a period of time, to a final resolution.”<sup>102</sup>

Finally, and most important, a porcupine approach would shift the responsibility for Taiwan's defense to Taiwan, rendering U.S. intervention in a cross-strait battle a last resort instead of the first response. Many observers believe that Taiwan today relies unduly on a perceived American security guarantee and does not do enough to provide for its own defense. Yet since 2000 the Kuomintang and the Democratic People's Party have not framed a defense debate that could produce the open, honest appraisal that is desperately needed if domestic consensus on a viable defense is to be achieved. A Taiwan that China perceived could be attacked and damaged but not defeated, at least without unacceptably high costs and risks, would enjoy better relations with the United States and neutralize the threat posed by many of China's recently acquired military capabilities. Unfortunately, political gridlock in Taipei stands in the way of any such hopes. It is not that Taiwan does not do enough to construct a viable defense but that it is not doing the right things.

---

## Notes

The views expressed in this article are those of the author and do not necessarily reflect those of the U.S. Navy, Department of Defense, or government. The author gratefully acknowledges the major contributions of Craig Koerner and thanks Jonathan Pollack; Bernard Cole; Rear Adm. Michael McDevitt, USN (Ret.); Lyle Goldstein; Michael Chase; Marshall Hoyler; Andrew Erickson; and Christopher Weuve for their invaluable suggestions.

1. *China's National Defense in 2004*, available at [www.fas.org/](http://www.fas.org/). China's 2006 defense white paper did not emphasize the same point.
2. Many of these improvements have been proudly displayed on the Internet. See, for

example, the intelligently moderated China Defense Forum at [forum.china-defense.com/](http://forum.china-defense.com/). The annual U.S. Department of Defense reports to Congress on the “Military Power of the People's Republic of China” also chronicle many of Beijing's military developments.

3. U.S. Defense Dept., *Annual Report to Congress: Military Power of the People's Republic of China 2007* (Washington, DC: 23 May 2007), p. 15, available at [www.defenselink.mil/](http://www.defenselink.mil/); Roger Cliff et al., *Entering the Dragon's Lair: Chinese Antiaccess Strategies and Their Implications for the United States* (Santa Monica, CA: RAND, 2007), available at [www.rand.org/](http://www.rand.org/); Ron O'Rourke, *China Naval Modernization:*



- Implications for U.S. Navy Capabilities—Background and Issues for Congress* (Washington, DC: Congressional Research Service [hereafter CRS], 20 July 2007).
4. Wang Yu-yen, "Hu Jintao Says the Only Task of the CPC Armed Forces Is to Launch War against Taiwan," *Lien-Ho Pao*, 27 August 2007, Open Source Center [hereafter OSC] CPP20070827312001.
  5. Wang Shibin, "Guo Boxiong Sets Out PLA Tasks, Warns 'Taiwan Independence' Forces," *Jiefangjun Bao*, 7 March 2008, p. 1, OSC CPP20080307710003.
  6. Thus, in all probability, an invasion or a blockade would be preceded by a long-range precision bombardment. These scenarios could, and likely would, involve extensive information warfare operations, as well as "decapitation attacks," in which senior political and military leaders would be personally targeted, perhaps by assassins or precision-guided munitions.
  7. See, for example, Michael O'Hanlon, "Why China Cannot Conquer Taiwan," *International Security* 25, no. 2 (Fall 2000), pp. 51–86; Michael A. Glosny, "Strangulation from the Sea? A PRC Submarine Blockade of Taiwan," *International Security* 28, no. 4 (Spring 2000), pp. 125–60; Robert S. Ross, "Navigating the Taiwan Strait: Deterrence, Escalation Dominance, and U.S.-China Relations," *International Security* 27, no. 2 (Fall 2002), pp. 48–85; and David A. Shlapak, David T. Orletsky, and Barry A. Wilson, *Dire Strait? Military Aspects of the China-Taiwan Confrontation and Options for U.S. Policy* (Santa Monica, CA: RAND, 2000). However, these studies were published before the evidence of PLA modernization was fully apparent.
  8. Robert A. Pape, *Bombing to Win* (Ithaca, NY: Cornell Univ. Press, 1996), pp. 12–26.
  9. See, for example, Thomas J. Christensen, "Posing Problems without Catching Up: China's Rise and Challenges for U.S. Security Policy," *International Security* 25, no. 4 (Spring 2001), pp. 5–40; and Lyle Goldstein and William Murray, "Undersea Dragons: China's Maturing Submarine Force," *International Security* 28, no. 4 (Spring 2004), pp. 161–96. For a careful, and rather discouraging, analysis of Taiwan's security situation see Bernard D. Cole, *Taiwan's Security: History and Prospects* (London: Routledge, 2006).
  10. Pape refers to this use of bombardment as "coercion by denial," maintaining that such strategies are much more likely to succeed than strategies that rely on punishment; *Bombing to Win*, pp. 27–35.
  11. For details see Shirley Kan, *Taiwan: Major U.S. Arms Sales since 1990*, CRS Report for Congress (Washington, DC: CRS, 5 July 2005), pp. 17–22.
  12. A thoughtful criticism of such offensive systems is provided by Denny Roy, "Taiwan Perilously Ponders Its Strategic Missile Force," Jamestown Foundation *China Brief* 6, no. 20, available at [jamestown.org/china\\_brief](http://jamestown.org/china_brief).
  13. A PAC-3 interceptor costs approximately \$3.2 million. Rich Chang, "PAC-3s Will Protect Taiwan, MND Says," *Taipei Times*, 21 March 2005, p. 3, available at [www.taipetitimes.com](http://www.taipetitimes.com). Although the cost of Chinese SRBMs is not publicly available, the fact that the PRC is building over a hundred a year suggests they are much more affordable to the PRC than are PAC-3 interceptors to Taiwan.
  14. This would align with the 11 September 2007 speech by Thomas J. Christensen, Deputy Assistant Secretary of State for East Asian and Pacific Affairs, to a U.S.-Taiwan Business Council defense industry conference. Christensen said that the United States desires a "strong and moderate Taiwan . . . that maintains the military capacity to withstand coercion for an extended period of time"; available at [www.state.gov](http://www.state.gov). Further, section 3302 of the Taiwan Relations Act states, "The President and the Congress shall determine, in accordance with constitutional processes, appropriate action by the US in response to any such danger" ([usinfo.state.gov/eap](http://usinfo.state.gov/eap)). Such process would likely take a significant period of time.
  15. Ross, "Navigating the Taiwan Strait," p. 82.
  16. Jim Wolf, "Taiwan Submarine Builder Not Chosen Yet: Envoy," Reuters, 29 September 2004; prices are in U.S. 2001 dollars. The complete package offered in response to a Taiwanese request also included "54 Mark-48 torpedoes, 44 Harpoon submarine-launched anti-ship cruise missiles, 144 M109A6 Paladin self-propelled howitzers, 54 AAV7A1 amphibious assault vehicles, AN/ALE-50 electronic countermeasure systems for F-16s, and 12 MH-53 mine-sweeping helicopters"; Kan, *Taiwan*, p. 6. Kan's excellent report contains a comprehensive accounting of the arms sale's subsequent tortuous progress.
  17. See, for example, "China Opposed to US Submarine Sale to Taiwan: FM Spokeswoman,"

- People's Daily*, 21 November 2001, available at [english.peopledaily.com.cn](http://english.peopledaily.com.cn).
18. Nicholas Kralev, "Election Results Threaten U.S. Arms Agreement," *Washington Times*, 16 December 2004, p. 17.
  19. "U.S. Official Warns of 'Repercussions' If Taiwan Fails to Approve Weapons Deal," Associated Press, 6 October 2004, available at [taiwansecurity.org](http://taiwansecurity.org). Other public pressure from the United States included statements by Stephen Young, the director of the American Institute of Taiwan, who called frequently on Taiwan to fund the package. See Rich Chang, "Time Expiring on Arms Deal: Congressman," *Taipei Times*, 23 February 2006, p. 2, available at [www.taipetimes.com](http://www.taipetimes.com); and Jane Rickards, "Taiwan Rejects Most of U.S. Arms Package Offered in 2001," *Washington Post*, 16 June 2007. Peter Rodman, Assistant Secretary of Defense for International Security Affairs, testified in 2004 to Congress, "We expect Taiwan to go forward with its plan to pass a 'Special Budget' this summer to fund essential missile defense and anti-submarine warfare systems and programs"; Kan, *Taiwan*, p. 20, citing statement before the House International Relations Committee, *The Taiwan Relations Act: The Next 25 Years*, 108th Cong., 2nd sess., 21 April 2004, note 102.
  20. Lu Chao-lung, "US Demands Exorbitant Price for Purchase of Submarines. Anti-submarine Planes," *Chung-Kuo Shih-Pao*, 8 May 2003, Foreign Broadcast Information Service [hereafter FBIS] CPP20030508000022.
  21. *Jane's Defence Weekly*, 21 May 2003.
  22. In comparison, the Russians in 2002 sold eight Project 636M Kilo-class submarines to the PRC for a reported \$1.6 billion. See, for example, "Sevmachpredpriyatiye Enterprise Ready to Construct Submarines for Chinese Navy," Agentstvo Voyennyykh Novostey, 3 September 2002, FBIS CEP20020903000123. All eight Kilos were delivered to China by the end of 2006.
  23. "Warning on Arms Purchase Angers Taipei Opposition," Reuters, 7 October 2004, available at [taiwansecurity.org](http://taiwansecurity.org).
  24. Taiwan's defense minister, Lee Jye, for example, said, "I have said I will resign if the budget is not passed. I am serious"; "Defense Minister Threatens to Quit over Sub Budget," *Taipei Times*, 15 June 2004, p. 4, available at [www.taipetimes.com](http://www.taipetimes.com).
  25. Ted Galen Carpenter, "Taiwan's Free Ride on U.S. Defense," *Asian Wall Street Journal*, 23 April 2007, available at [www.cato.org](http://www.cato.org).
  26. Taiwan apparently decided to buy twelve P-3Cs; Reuters, "U.S. May Sell Weapons to Taiwan," *New York Times*, 13 September 2007.
  27. Shih Shiu-chuan, "Legislature Finally Passes US Arms Budget," *Taipei Times*, 16 June 2007, p. 1, available at [www.taipetimes.com](http://www.taipetimes.com).
  28. "By November 2007, the PLA had deployed between 990 and 1070 CSS-6 and CSS-7 short-range ballistic missiles (SRBM) to garisons opposite Taiwan. It is increasing the size of this force at a rate of more than 100 missiles per year, including variants of these missiles with improved ranges, accuracies, and payloads"; U.S. Defense Dept., *Annual Report to Congress: Military Power of the People's Republic of China 2008* (Washington, DC: 29 February 2008), p. 2. The 2008 DoD report states (pp. 2, 56) that China has up to 250 DH-10 land-attack cruise missiles. *Jane's* claims a ten-meter-CEP accuracy for these weapons; "China Tests New Land-Attack Cruise Missile," *Jane's Missiles and Rockets*, 1 October 2004, available at [www.Janes.com](http://www.Janes.com). CEP is the radius of a circle within which a warhead will land at least 50 percent of the time.
  29. Chang, "PAC-3s Will Protect Taiwan, MND Says," p. 3.
  30. A Taiwan Ministry of National Defense official leaked that PAC-3 interceptors have a 0.8 probability of kill; Chang, "PAC-3s Will Protect Taiwan, MND Says." By extension, they also have a probability of miss of 0.2. The probability of at least one of a pair of PAC-3 interceptors striking their target would therefore be  $1 - (0.2 \times 0.2) = 0.96$ .
  31. Mark A. Stokes, prepared statement before the U.S.-China Economic and Security Review Commission, *China's Military Modernization and Export Controls Hearings*, 109th Cong., 2nd sess., 16 March 2006, p. 44, available at [www.uscc.gov/hearings/2006hearings/transcripts](http://www.uscc.gov/hearings/2006hearings/transcripts).
  32. O'Hanlon, "Why China Cannot Conquer Taiwan," p. 58.
  33. Christensen, "Posing Problems without Catching Up," p. 26.
  34. John Hill, "Missile Race Heightens Tension across the Taiwan Strait," *Jane's Intelligence Review*, 1 January 2005. This article also reports

- the Chinese development of land-attack cruise missiles with ten-meter accuracy.
35. Stokes, prepared statement before the U.S.-China Economic and Security Review Commission, p. 44.
  36. "Chinese Missiles Aimed at Taiwan Exceeds [sic] 900," *China Post*, 11 September 2007, available at [www.chinapost.com.tw](http://www.chinapost.com.tw). A 2007 Taiwan article claims newer SRBMs have a CEP of thirty, or even twenty, meters; see Cheng Ta-cheng, "Taiwan Report on PRC Missile Threat to World," *Taipei Lu-chun Yueh-k'an*, 26 January 2007, OSC CPP20070524312005. Cheng does not provide a source for this estimate in his otherwise well-documented article.
  37. Russia's GLONASS system, which would presumably be available even if the U.S. GPS were denied, provides similar accuracies, as will the even more accurate Galileo system, to be built by the European Union and China. China is also putting into orbit its Beidou navigation satellite system.
  38. Scott Bray, Office of Naval Intelligence Public Affairs Office, "Seapower Questions on the Chinese Submarine Force," e-mail to author, 6 March 2007.
  39. Stokes relates that "2nd artillery doctrine stresses surprise and disarming first strikes to gain the initiative in the opening phase of a conflict"; Stokes, prepared statement before the U.S.-China Economic and Security Review Commission, p. 44.
  40. One close observer's assessment to the author was, "I don't think any of the S-2s are operable."
  41. See "P-3C Orion Maritime Patrol and Anti-submarine Warfare Aircraft, USA," *Air Force Technology*, [www.airforce-technology.com](http://www.airforce-technology.com). Japan obtained and honed this significant force during the Cold War to oppose the threat posed by the Soviet submarine force. The multimission capability of these aircraft, however, justifies their continued operation by Japan and other countries, including the United States.
  42. Adm. Harry D. Train, USN, "An Analysis of the Falkland/Malvinas Islands Campaign," *Naval War College Review* 41, no. 1 (Winter 1988), p. 40.
  43. Shirley Kan, Christopher Bolkom, and Ronald O'Rourke, *China's Foreign Conventional Arms Acquisitions: Background and Analysis*, CRS Report for Congress (Washington, DC: CRS, 10 October 2000), p. 61, available at [www.fas.org](http://www.fas.org). China has twelve Kilo submarines.
  44. See figure A6-6 in Tom Stefanick, *Strategic Antisubmarine Warfare and Naval Strategy* (Lexington, KY: Institute for Defense and Disarmament Studies, 1987), p. 278. Stefanick concludes that a *Los Angeles*-class submarine can be detected at ranges from one to twenty-five nautical miles. If a Kilo-class diesel submarine is quieter than an improved *Los Angeles*-class unit, which in turn must be quieter than an unimproved *Los Angeles*, then Stefanick's graph suggests that detection ranges for a Kilo are on par with those of *Ohio*-class SSBNs.
  45. Kan, *Taiwan*, p. 6.
  46. Taiwan also has nine *Chi Yang* (ex-U.S. *Knox*-class) frigates, eight *Cheung Kung*-class frigates that are copies of the U.S. *Oliver Hazard Perry* class, six frigates of the *Kang Ting* (*Lafayette*) class, and some fifty missile patrol craft. See Cole, *Taiwan's Security*, pp. 119–34.
  47. Ship movements in port would require the interruption of daily training and maintenance, involve several harbor tugs, and complicate the planning of harbor operations. As a result, it is somewhat expensive and generally avoided.
  48. See, for example, "Laser Radar (LADAR) Guidance System," at the Israeli Aerospace Industry's *Defense Update: International, Online Defense Magazine*, [www.defense-update.com/products/l/ladar.htm](http://www.defense-update.com/products/l/ladar.htm). I make no claim that the PRC has this technology but only observe that high weapons-system accuracy is no longer a monopoly of the United States.
  49. Bruce Bennett, "The Emerging Ballistic Missile Threat: Global and Regional Ramifications," in *Emerging Threats, Force Structures, and the Role of Air Power in Korea*, ed. Natalie W. Crawford and Chung-in Moon (Santa Monica, CA: RAND, 2000), p. 193.
  50. The technology for such weapons is not cutting-edge. The British JP233, used in the Gulf War, for example, was an aircraft-delivered anti-airfield munition that dropped thirty 34 kg cratering bomblets and 215 2.4 kg antipersonnel mines. The bomblets had two stages—the first used a shaped charge to blow a hole in the concrete runway into which the second stage would fall, exploding to create a large crater. The antipersonnel mines were sufficiently strong and sensitive

- to disable heavy equipment passing nearby, slowing runway repair. The JP233 weighed approximately 1,587 kg; see "JP233," *Wikipedia*, en.wikipedia.org/wiki/JP233. Germany's STABO runway-penetrating submunitions weigh just 16 kg each. China's CSS-7 SRBM is thought to be able to carry 800 kg warheads at least 174 miles, which suggests that in terms of mass delivered, two SRBMs could create the same airfield damage as a single JP233. Similarly, a single CSS-7 could also carry approximately the mass of forty-eight STABOs, though its ability to carry that much volume is uncertain. See "CSS-7," *Missilethreat.com* (Claremont Institute).
51. An informed discussion of this idea can be found in Lt. Cdr. William E. Bunn, USN, "Shock and Awe with Chinese Characteristics," *Chinese Military Update* 3, no. 2 (March 2006). Readers who type "Hualien" into Google Earth can observe for themselves the location of the hardened aircraft revetments at Taiwan's Chashan and connected Ta-Shan air bases.
  52. See "Republic of China Air Force (ROCAF)," *TaiwanAirPower.org*; and Cole, *Taiwan's Security*, pp. 105–18. Cole points out that Taiwan also has ninety or more F-5 aircraft but notes that these largely obsolete aircraft are used mostly for pilot training.
  53. Knowledgeable individuals who have inspected Taiwan's aircraft shelters have observed to the author that they are "inadequate in coverage and strength."
  54. Oliver August, "Secret World That Guards Taiwan," *London Times*, 23 May 2001. Google Earth images of Taitung's underground shelters, which are approximately two thousand feet long in total, suggest that they can protect a substantial number of aircraft.
  55. This is apparently consistent with at least some Chinese operational concepts. See the discussion in Cliff et al., *Entering the Dragon's Lair*, pp. 62, 81–109.
  56. See U.S. Air Force Dept., "Mission Planning," *Pilot Operating Procedures: F-16*, Multi-Command Instruction 11-F16, sec. 2.2.2, 21 April 1995, available at [www.fas.org](http://www.fas.org). Despite this, in U.S. doctrine the minimum operating strip for flight operations is fifteen meters wide and 1,525 meters long (or fifty by five thousand feet). This additional length is more important during landings than on takeoff. See "Aviation Facilities," *Federation of American Scientists*, [www.fas.org](http://www.fas.org).
  57. Cole reports a Taiwanese Ministry of National Defense estimate that a 500 kg unitary warhead from an SRBM would create in a runway a crater ten meters deep and twenty wide. *Taiwan's Security*, p. 113.
  58. A 1999 RAND study estimated that dozens of missiles with nonpenetrating submunitions bomblets could attack a U.S. air base effectively; John Stillion and David Orletsky, *Airbase Vulnerability to Conventional Cruise-Missile and Ballistic-Missile Attacks* (Santa Monica, CA: RAND, 1999), pp. xiii, 13, 14. I contend that runway-penetrating submunitions further reduce that number.
  59. "KAB-500Kr TV-Guided Bomb," *Sino Defence.com*.
  60. "These warheads include things like, for example, submunitions, terminally guided submunitions for example, for runway cratering in order to pin down an air force on the ground or to disrupt naval operations"; Stokes, prepared statement before the U.S.-China Economic and Security Review Commission, p. 42.
  61. The Washington, DC, company Rapid Mat U.S. was awarded a \$43 million contract in 2002 to provide rapid-runway-repair kits to Taiwan by the end of 2004. See the U.S. Defense Dept., Press Release 145-2, 22 March 2002, available at [www.defenselink.mil/contracts](http://www.defenselink.mil/contracts). The company's website, [www.coltrapidmat.com](http://www.coltrapidmat.com), lists the materials used in rapid-runway-repair kits.
  62. E-mail to the author from a knowledgeable individual who visited the base.
  63. See, for example, Cole, *Taiwan's Security*, pp. 74–78, 89–90, 102, and 111–12.
  64. *Ibid.*, pp. 111–12.
  65. This occurred in 2007 and in 2004. See "Planes Land on Highway as Taiwan Simulates Attack from Rival China," *China Post*, 15 May 2007, available at [www.chinapost.com.tw](http://www.chinapost.com.tw); and "Taiwan Turns Highway into Flyway," Associated Press, 22 July 2004, available at [taiwansecurity.org](http://taiwansecurity.org).
  66. Shlapak, Orletsky, and Wilson, *Dire Strait?*, p. 33.
  67. For a description of the threat posed by advanced Russian SAMs see John A. Tirpak, "The Double-Digit SAMs," *Air Force Magazine Online* 84, no. 6 (June 2001), [www.afa.org/magazine](http://www.afa.org/magazine). The quoted phrase is that of Lt. Gen. Bruce Wright, USAF, in Eric Talmadge,

- "While U.S. Is Boggled Down in Iraq China Seen Making Big Military Strides," *Japan Times*, 1 October 2007, available at search.japantimes.co.jp.
68. "SA-N-6/20 'Grumble' (S-300 Fort/Rif)," *Jane's Strategic Weapon Systems*, 29 December 2006, available at www.janes.com; and U.S. Defense Dept., *Annual Report to Congress: Military Power of the People's Republic of China 2006* (Washington, DC: May 2006), p. 5.
69. See Richard D. Fisher, "Chinese Aspects of Singapore's IMDEX Naval Technology Show," *International Assessment and Strategy Center*, 20 June 2007, available at www.strategycenter.net.
70. See, for example, "China Orders 6 Giant Russian 'Zubr' Hovercraft," *Defense Industry Daily*, 13 September 2007, available at www.defenseindustrydaily.com.
71. "Yuting-II Class (LSTH)," *Jane's Fighting Ships*, 29 January 2007, available at www.janes.com.
72. O'Hanlon's discussion in "Why China Cannot Conquer Taiwan" of the difficulties facing an invasion of Taiwan is still quite good, although his conclusion regarding the survivability of Taiwan's air force during bombardment has been overcome by developments.
73. James Mulvenon has been making this point since at least 2000. Steven Mufson, "U.S. Faces a Dilemma on Taiwan: Warship Sale Could Fuel China Tensions," *Washington Post*, 14 April 2000, available at taiwansecurity.org. A hardened aircraft shelter in Europe cost approximately four million dollars in 1999; see Stillion and Orletsky, *Airbase Vulnerability to Conventional Cruise-Missile and Ballistic-Missile Attacks*, p. 31. Shlapak, Orletsky, and Wilson strongly advocate hardening not only aircraft revetments but also air base fuel-tank farms, fuel distribution systems, and critical maintenance facilities; *Dire Strait?*, pp. 32–33. Bernard Cole too argues strongly that Taiwan should harden critical facilities, in *Taiwan's Security*, pp. 113–14.
74. Restoration of power to northern Taiwan businesses and residences took weeks. Risk Management Solutions, *Event Report Chi-Chi, Taiwan Earthquake* (n.d.), pp. 13–15, available at www.rms.com/publications/Taiwan\_Event.pdf.
75. Although this would be a significant commitment, it is not entirely without precedent. Israeli law mandates that all new houses have a "safe room" designed to withstand a bomb blast.
76. "And Now, the War Forecast," *Economist Technology Quarterly*, 17 September 2005, p. 23.
77. The United States reportedly dedicated nearly 2,500 missions to finding and destroying Scuds, with no successes. Mark Thompson, "The Great SCUD Hunt," *Time*, 15 December 2002, available at www.time.com.
78. Because an anchored ship swings, or pivots, around its anchor, it cannot be struck by warheads aimed at coordinates. It could be hit, however, by area-covering submunitions or guided warheads, perhaps from antiship cruise missiles, to which China has devoted much effort.
79. Missile craft sheltered in facilities modeled on Germany's famously impervious submarine shelters in Brest, France, during World War II would be vulnerable to cruise missiles, however, or to the effects of thermobaric warheads, which could be delivered via missiles or aircraft. See Jonathan Marcus, "Analysis: How Thermobaric Bombs Work," *BBC News*, 4 March 2002, available at news.bbc.co.uk.
80. Milošević withstood the destruction caused by 6,728 U.S. precision-guided munitions striking approximately six thousand aim points before conceding to demands. Taiwan, with an island's additional defensive characteristics, ought to be able to do even better. See Benjamin S. Lambeth, *NATO's Air War for Kosovo: A Strategic and Operational Assessment* (Santa Monica, CA: RAND, 2001), pp. 87–88, note 4.
81. See "Army, Taiwan," *Jane's Sentinel Security Assessment: China and Northeast Asia*, 23 April 2007, table, "Air Defense Weapons," available at www.janes.com.
82. For a description of this system, see "Surface Launched (SL)AMRAAM Complementary Low Altitude Weapon System (CLAWS)," *Defense Update*, www.defense-update.com/products.
83. During the 1982 Falklands War, HMS *Sheffield* was sunk and HMS *Glamorgan* badly damaged by hits by single Exocet ASCMs. The USS *Stark* (FFG 31) nearly sank after being hit by two Iraqi Exocet ASCMs in 1987, and Israel's *Sa'ar*-class corvette *Ahi Hanit* retired from battle after being struck by a Chinese-model C-802 ASCM in 2006. The Exocet and C-802 both have 165 kg (363-pound) warheads.



84. The one exception to this statement is the solitary Lashou-class LPD, which is equipped with the AK-630 Gatling-gun point-defense system.
85. These radars would be vulnerable to HARM systems, such as Harpy subsonic unmanned drones or China's supersonic KH-31 Krypton missiles. To counter these weapons coastal surveillance radars could be mobile, operated in "blinking" modes from hardened locations, or protected by decoys.
86. Taiwan is developing the 180-mile-range Hsiung Fen III supersonic ASCM; it displayed this weapon during a 13 October 2007 parade.
87. Sofia Wu, "Apache Helicopter Most Suited to Taiwan's Defense Needs: Army," ROC Central News Agency, 10 July 2007, available at [www.globalsecurity.org](http://www.globalsecurity.org).
88. The MLRS can fire a multitude of rockets with a variety of lethal warheads. Many of these variants could greatly assist Taiwan's defenses, but as presently configured some have ranges that theoretically would allow them to strike China, especially from Penghu. See "MLRS Multiple Launch Rocket System, USA," *Army Technology*, [www.army-technology.com/projects](http://www.army-technology.com/projects).
89. See, for example, Sandra I. Erwin, "Shallow-Water Mines Remain 'Achilles' Heel' of U.S. Navy," *National Defense* (January 2002), available at [www.nationaldefensemagazine.org](http://www.nationaldefensemagazine.org).
90. Commercially available mines can be deployed by two people on the back of a pickup truck. The mines detonate with sufficient force to flip over an amphibious tank.
91. "Army, Taiwan."
92. Cole, *Taiwan's Security*, p. 79.
93. For a careful explanation of other impediments to Taiwan's developing an effective, all-volunteer army, see *ibid.*, pp. 72–90, 102–103.
94. "The biggest unknown is, will they fight?" This is how one retired U.S. military officer who has extensively inspected the Taiwanese army, interviewing both leaders and rank-and-file members, summarized the issue in an interview with the author. See also Cole, *Taiwan's Security*, pp. 88–89.
95. In order to maximize the chances of success, such a campaign would likely be either preceded or accompanied by bombardments designed to destroy the air force and navy, by information warfare, and by decapitation.
96. For example, in 2007 Taiwan had only one LNG terminal, at Yungan, Kaohsiung. Another is being built in Taichung Harbor, with completion slated for 2009. Taiwan has only four oil refineries. See Taiwan Ministry of Energy, "Energy Supply," *The Energy Situation in Taiwan, Republic of China*, [www.moeaboe.gov.tw](http://www.moeaboe.gov.tw); and U.S. Energy Dept., "Taiwan Country Analysis Brief," *Energy Information Administration*, [www.eia.doe.gov](http://www.eia.doe.gov).
97. "Taiwan Country Analysis Brief."
98. For example, Taiwan's current crude oil stocks are above ground in vulnerable tank farms. An alternative would be to stockpile refined oil products either underground or in numerous smaller tanks, including indoor tanks at the points of consumption.
99. Substitution, rationing, and cessation of nonessential activities can allow determined blockaded populations to resist for extended periods of time, as numerous historical examples, including Malta and Japan in World War II and Germany in World War I, have shown.
100. E-3 AWACS aircraft, which have 145-foot wingspans and are 144 feet long and 42 feet high, are too large to shelter; see David Shlapak, "Projecting Power in a China-Taiwan Contingency: Implications for USAF and USN Collaboration," in *Coping with the Dragon: Essays on PLA Transformation and the U.S. Military*, ed. Stuart Johnson and Duncan Long (Washington, DC: National Defense Univ. Center for Technology and National Security Policy, December 2007), p. 90, available at [www.ndu.edu/ctnsp/pubs/CopingwithDragon.pdf](http://www.ndu.edu/ctnsp/pubs/CopingwithDragon.pdf). P-3Cs, which have ninety-eight-foot wingspans and are 115 feet long and thirty-three feet high, may also be too large to shelter.
101. This is one of the fundamental points made by Ted Galen Carpenter in *Let Taiwan Defend Itself*, Cato Policy Analysis 313 (Washington, DC: Cato Institute, 24 August 1998), available at [www.cato.org/pubs](http://www.cato.org/pubs). I agree with much of his analysis and reasoning but disagree on the subject of the United States making available weapons of offensive character.
102. "Joint Communiqué of the United States of America and the People's Republic of China," 17 August 1982, U.S. Information Access program, available at [usinfo.state.gov/eap/](http://usinfo.state.gov/eap/).

## About the Contributors

*Robert Ayer*, Captain, USCG (Ret.), is the Naval War College (NWC) Press Managing Editor. After graduating from the U.S. Coast Guard Academy (CGA), he served in ships, then spent twenty-five years on the Permanent Commissioned Teaching Staff at CGA. Upon his retirement from active duty, he served as a civilian editor for multiple U.S. government agencies. He earned a master of arts in law and diplomacy and a doctorate from the Fletcher School of Law and Diplomacy at Tufts University.

*Jerome J. Burke*, Captain, USN (Ret.), a career naval intelligence officer, served multiple assignments at sea and ashore. Following his retirement, he became a career civil servant in the U.S. Defense Department. He joined the research staff of the Institute for Defense Analyses in 2008. He holds a master's degree from Georgetown University's national security studies program.

*Peter A. Dutton*, Commander, USN (Ret.), is the Interim Dean, Center for Naval Warfare Studies. He is a former Navy judge advocate and naval flight officer. He has served as director of the China Maritime Studies Institute, professor of strategic research, and professor of law at NWC. He is an adjunct professor at New York University (NYU) School of Law, a faculty adviser to NYU's U.S.-Asia Law Institute, and an associate in research at Harvard University's Fairbank Center for Chinese Studies. He holds a PhD from King's College London, a JD from the College of William & Mary, and an MA from NWC. Among his recent books, he coauthored *China's Evolving Surface Fleet* (2017).

*Sam Goldsmith* holds an MA from the Australian National University Strategic and Defence Studies Centre.

*Colin S. Gray* was a British-American writer on geopolitics and a professor of international relations and strategic studies at the University of Reading, U.K., where he was the director of the Centre for Strategic Studies. He founded the National Institute for Public Policy in Washington, DC, and served as its president. A PhD in international politics from Oxford University, he published thirty books and numerous articles on military history and strategic studies. Mr. Gray died in 2020.

*Wayne P. Hughes Jr.*, Captain, USN (Ret.), was a professor of practice at the Naval Postgraduate School (NPS), in Monterey, California. On active duty he commanded two ships and a large training command. He held an MS in operations research from NPS and served on the faculty for thirty-three years in a variety of positions. He was the author

of numerous books, most notably *Fleet Tactics and Naval Operations*, of which the third edition was published in 2018. Captain Hughes died in 2019.

*Jeffrey E. Kline*, Captain, USN (Ret.), is a professor of practice in the Operations Research Department and director of the Wayne P. Hughes Jr. Naval Warfare Studies Institute at NPS, and is an adjunct professor at NWC. On active duty he served in several surface-warfare billets, including two commands at sea, as well as in the Office of the Secretary of Defense. He is a graduate of the National War College in Washington, DC. His published works include *Responding to Capability Surprise: A Strategy for U.S. Naval Forces* (2013).

*George Lindsey* served in the Royal Canadian Artillery from 1942 to 1945 and joined the Canadian Department of National Defence in 1950. From 1967 he was chief of the Operational Research and Analysis Establishment in Ottawa. He held degrees in mathematics and physics from the Universities of Toronto and Cambridge and Queen's University, and attended the National Defence College. Mr. Lindsey died in 2011.

*William S. Murray* is an associate research professor at NWC. He conducted submarine deployments and qualified to command nuclear submarines prior to retiring from the U.S. Navy in 2003. He received an MA from NWC in 1994. He is coeditor of and a contributing author to *China's Energy Strategy: The Impact on Beijing's Maritime Policies* (2008).

*Edward J. Ohlert* is senior vice president of strategic development at Technology Associates International. In his naval career he served in several electronics- and weapons-associated billets afloat. He received an advanced degree in electronics from NPS in 1974 and studied at NWC.

*Jack Raymond* entered the U.S. Army in 1942 and served as a combat correspondent for *Stars and Stripes* in Europe. After the war he returned to the *New York Times* and remained a correspondent in various assignments through 1966. He attended City College of New York. Among his books was *Power at the Pentagon* (1964). Mr. Raymond died in 2007.

*Donald M. Snow* is a professor emeritus at Indiana University, from which he received his PhD. He taught political science at the University of Alabama and national security affairs at the Air University. As author or coauthor he published *When America Fights: The Uses of U.S. Military Force*; *From Lexington to DESERT STORM and Beyond: War and Politics in the American Experience*; and *International Relations: The Changing Contours of Power* (all 2000).

*Hunter Stires* is an analyst supporting the Navy Staff and a fellow at the John B. Hattendorf Center for Maritime Historical Research at NWC. He attended Columbia University. He has contributed to the *National Interest* and the U.S. Naval Institute *Proceedings*.



## **The Newport Papers**

*Ten Years In: Implementing Strategic Approaches to Cyberspace*, edited by Jacquelyn G. Schneider, Emily O. Goldman, and Michael Warner (no. 45, 2020).

*Taiwan's Offshore Islands: Pathway or Barrier?*, by Bruce A. Elleman (no. 44, January 2019).

*On Wargaming: How Wargames Have Shaped History and How They May Shape the Future*, by Matthew B. Caffrey Jr. (no. 43, January 2019).

*Navies and Soft Power: Historical Case Studies of Naval Power and the Nonuse of Military Force*, edited by Bruce A. Elleman and S. C. M. Paine (no. 42, June 2015).

*Writing to Think: The Intellectual Journey of a Naval Career*, by Robert C. Rubel (no. 41, February 2014).

*Commerce Raiding: Historical Case Studies, 1755–2009*, edited by Bruce A. Elleman and S. C. M. Paine (no. 40, October 2013).

*Influence without Boots on the Ground: Seaborne Crisis Response*, by Larissa Forster (no. 39, January 2013).

*High Seas Buffer: The Taiwan Patrol Force, 1950–1979*, by Bruce A. Elleman (no. 38, April 2012).

*Innovation in Carrier Aviation*, by Thomas C. Hone, Norman Friedman, and Mark D. Mandeles (no. 37, August 2011).

*Defeating the U-boat: Inventing Antisubmarine Warfare*, by Jan S. Breemer (no. 36, August 2010).

*Piracy and Maritime Crime: Historical and Modern Case Studies*, edited by Bruce A. Elleman, Andrew Forbes, and David Rosenberg (no. 35, January 2010).

*Somalia . . . From the Sea*, by Gary Ohls (no. 34, July 2009).

*U.S. Naval Strategy in the 1980s: Selected Documents*, edited by John B. Hattendorf and Peter M. Swartz (no. 33, December 2008).

*Major Naval Operations*, by Milan Vego (no. 32, September 2008).

- Perspectives on Maritime Strategy: Essays from the Americas*, edited by Paul D. Taylor (no. 31, August 2008).
- U.S. Naval Strategy in the 1970s: Selected Documents*, edited by John B. Hattendorf (no. 30, September 2007).
- Shaping the Security Environment*, edited by Derek S. Reveron (no. 29, September 2007).
- Waves of Hope: The U.S. Navy's Response to the Tsunami in Northern Indonesia*, by Bruce A. Elleman (no. 28, February 2007).
- U.S. Naval Strategy in the 1990s: Selected Documents*, edited by John B. Hattendorf (no. 27, September 2006).
- Reposturing the Force: U.S. Overseas Presence in the Twenty-First Century*, edited by Carnes Lord (no. 26, February 2006).
- The Regulation of International Coercion: Legal Authorities and Political Constraints*, by James P. Terry (no. 25, October 2005).
- Naval Power in the Twenty-First Century: A Naval War College Review Reader*, edited by Peter Dombrowski (no. 24, July 2005).
- The Atlantic Crises: Britain, Europe, and Parting from the United States*, by William Hopkinson (no. 23, May 2005).
- China's Nuclear Force Modernization*, edited by Lyle J. Goldstein with Andrew S. Erickson (no. 22, April 2005).
- Latin American Security Challenges: A Collaborative Inquiry from North and South*, edited by Paul D. Taylor (no. 21, 2004).
- Global War Game: Second Series, 1984–1988*, by Robert Gile (no. 20, 2004).
- The Evolution of the U.S. Navy's Maritime Strategy, 1977–1986*, by John Hattendorf (no. 19, 2004).
- Military Transformation and the Defense Industry after Next: The Defense Industrial Implications of Network-centric Warfare*, by Peter J. Dombrowski, Eugene Gholz, and Andrew L. Ross (no. 18, 2003).
- The Limits of Transformation: Officer Attitudes toward the Revolution in Military Affairs*, by Thomas G. Mahnken and James R. FitzSimonds (no. 17, 2003).
- The Third Battle: Innovation in the U.S. Navy's Silent Cold War Struggle with Soviet Submarines*, by Owen R. Cote Jr. (no. 16, 2003).

*International Law and Naval War: The Effect of Marine Safety and Pollution Conventions during International Armed Conflict*, by Dr. Sonja Ann Jozef Boelaert-Suominen (no. 15, December 2000).

*Theater Ballistic Missile Defense from the Sea: Issues for the Maritime Component Commander*, by Commander Charles C. Swicker, U.S. Navy (no. 14, August 1998).

*Sailing New Seas*, by Admiral J. Paul Reason, U.S. Navy, with David G. Freymann (no. 13, March 1998).

*What Color Helmet? Reforming Security Council Peacekeeping Mandates*, by Myron H. Nordquist (no. 12, August 1997).

*The International Legal Ramifications of United States Counter-proliferation Strategy: Problems and Prospects*, by Frank Gibson Goldman (no. 11, April 1997).

*Chaos Theory: The Essentials for Military Applications*, by Major Glenn E. James, U.S. Air Force (no. 10, October 1996).

*A Doctrine Reader: The Navies of the United States, Great Britain, France, Italy, and Spain*, by James J. Tritten and Vice Admiral Luigi Donolo, Italian Navy (Retired) (no. 9, December 1995).

*Physics and Metaphysics of Deterrence: The British Approach*, by Myron A. Greenberg (no. 8, December 1994).

*Mission in the East: The Building of an Army in a Democracy in the New German States*, by Colonel Mark E. Victorson, U.S. Army (no. 7, June 1994).

*The Burden of Trafalgar: Decisive Battle and Naval Strategic Expectations on the Eve of the First World War*, by Jan S. Breemer (no. 6, October 1993).

*Beyond Mahan: A Proposal for a U.S. Naval Strategy in the Twenty-First Century*, by Colonel Gary W. Anderson, U.S. Marine Corps (no. 5, August 1993).

*Global War Game: The First Five Years*, by Bud Hay and Bob Gile (no. 4, June 1993).

*The "New" Law of the Sea and the Law of Armed Conflict at Sea*, by Horace B. Robertson Jr. (no. 3, October 1992).

*Toward a Pax Universalis: A Historical Critique of the National Military Strategy for the 1990s*, by Lieutenant Colonel Gary W. Anderson, U.S. Marine Corps (no. 2, April 1992).

"Are We Beasts?" *Churchill and the Moral Question of World War II "Area Bombing,"* by Christopher C. Harmon (no. 1, December 1991).

Newport Papers are available online (Acrobat required) at [www.usnwc.edu/Publications/Naval-War-College-Press/](http://www.usnwc.edu/Publications/Naval-War-College-Press/).

