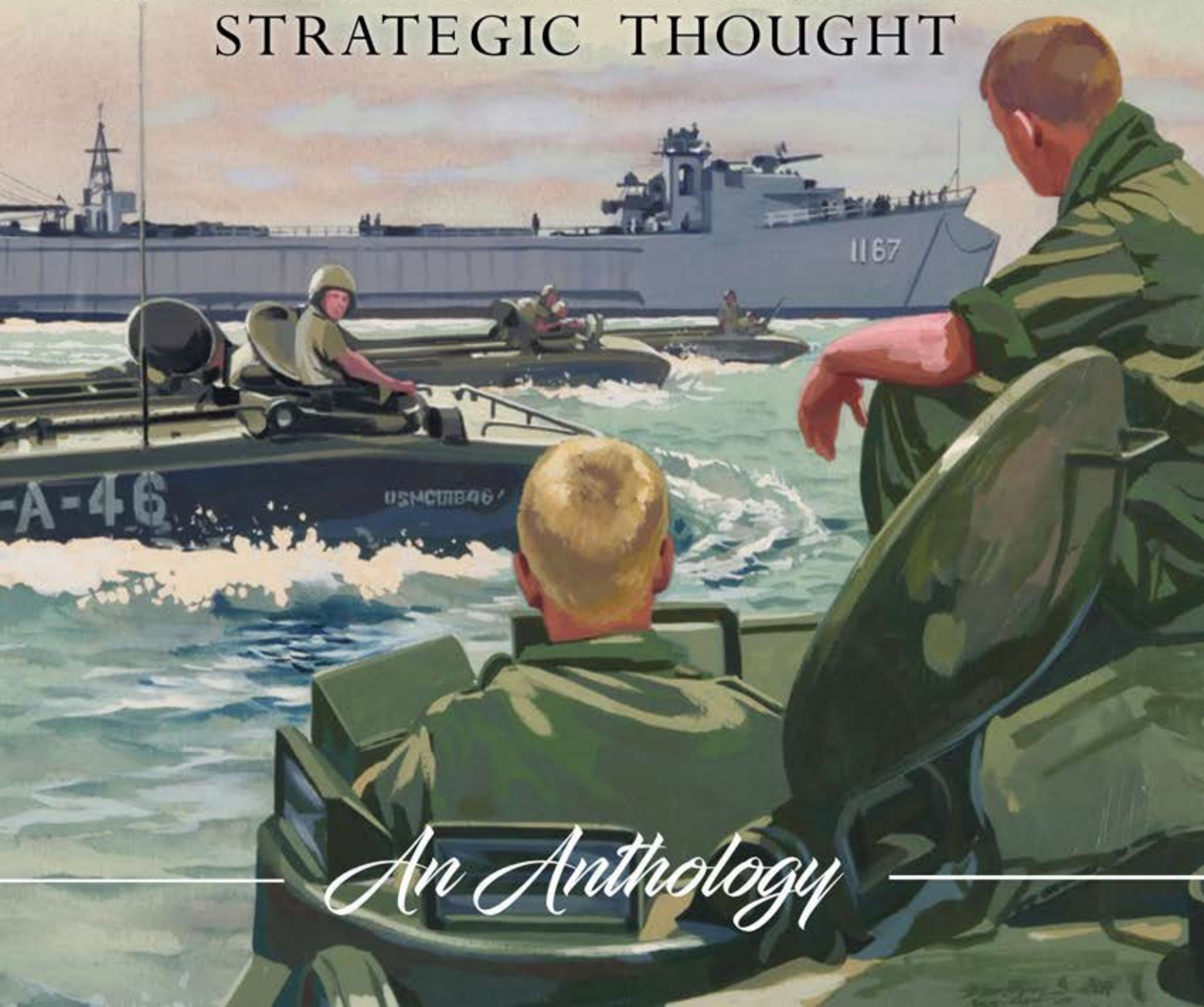


THE LEGACY OF AMERICAN NAVAL POWER

REINVIGORATING MARITIME
STRATEGIC THOUGHT



An Anthology

THE LEGACY OF AMERICAN
NAVAL POWER

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The Marine Corps is a part of the Naval Service, and its expeditionary duty with the Fleet in peace and in war is its chief mission. This fact was repeatedly brought to the attention of officers and men and was the controlling factor in deciding questions pertaining to military training, military education, and assignments to duty. It caused, too, every effort to be made to convince officers and men of the soundness of the doctrine that the future of the Corps would be determined by their ability to serve efficiently with the Fleet in the conduct of the shore operations which are essential to the successful prosecution of naval campaigns in war, and which are essential to the successful conduct of the foreign policy of our country in peace.

~ Major General John A Lejeune, 13th Commandant of the Marine Corps
The Reminiscences of a Marine (1930)

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FOREWORD

In the conclusion of *First to Fight*, Lieutenant General Victor H. Krulak proffers timeless wisdom for future generations of Marines:

For the Marines, the maritime nature of the globe creates at once grave responsibility and an elegant opportunity. It makes a powerful statement of a truth the Corps must never, never forget—that their future, as has their past, lies with the Navy.

The sea is the lifeblood of our country and, accordingly, the U.S. Constitution empowers Congress in Article I, Section 8 “to provide and maintain a Navy.” The United States Marine Corps has always been a naval Service, bound indivisibly to the U.S. Navy through bonds of mission, comradeship, and federal statute.

For most of the last two decades, the expeditionary Marine Corps’ main effort focused primarily on shore-based counterterrorism and counterinsurgency campaigns, while maintaining a global presence at sea through our Marine Expeditionary Units and Amphibious Ready Groups. While ashore, our Marines served mainly alongside our counterparts in the U.S. Army, maritime special operations forces, and allies and partners. On every battlefield, our medical officers, corpsmen, and chaplains remained

integral to our operations ashore. These shore-based campaigns have either subsided or are transforming, returning naval expeditionary operations to strategic prominence as our country enters an era of great power competition. The United States remains the world’s preeminent naval power, and we must be ready to face challenges to that primacy by earnestly preparing to fight at sea, from the sea, and ashore as an integrated naval expeditionary and joint combined arms team.

The Marine Corps’ role in maritime strategic affairs is critical, and remains a cornerstone of the Corps. In a speech he gave to the Naval War College in 1923, Lieutenant General John A. Lejeune declared that “the maintenance, equipping and training of its expeditionary force so that it will be in instant readiness to support the Fleet in the event of war, I deem to be the most important Marine Corps duty in time of peace.” We must now recommit to fulfilling that critical function for the Fleet.

Although produced by the Marine Corps’ History Division, this is not a work of historical scholarship; it is rather a historical primer on the development and fundamentals of maritime strategy, and the role of the Marine Corps in the maritime strategy of the United States. It in-

cludes a preface by retired Navy Captain Wayne P. Hughes Jr., wherein he articulates seven cornerstones for Marines in a new era of naval expeditionary operations. Marines are encouraged to use these cornerstones as lenses to view the articles and essays that follow.

The Marine Corps has a long history of thinking, writing, and producing innovative work on maritime strategy, operations, and tactics. It is time for the Navy-Marine Corps team to reinvigorate maritime strategic thought. This anthology contributes to this worthy aim.

A handwritten signature in black ink, reading "Robert B. Neller". The signature is stylized with a large, looped "R" and a cursive "Neller".

General Robert B. Neller
Commandant
United States Marine Corps

PREFACE

SEVEN CORNERSTONES OF MARINE CORPS OPERATIONS

Chapter 1 of *Fleet Tactics and Naval Operations* describes six cornerstones that apply through most of naval history. The decisive Battle of the Nile in 1798 shows how Royal Navy Vice Admiral Horatio Nelson instinctively knew their significance. I cite them early because the cornerstones have been guideposts for successful combat at sea since the age of fighting sail. With some significant adjustments, they can serve today's Marine Corps as well. I have added a seventh cornerstone that is particularly relevant to Navy-Marine teamwork in the twenty-first century.

The first cornerstone in the 1986 and 1999 editions of *Fleet Tactics* is "men matter most." It emphasizes men because the combatants in perhaps 99 percent of all sea battles were men. To acknowledge the growing role of women in the U.S. Navy, the cornerstone in the third edition has been updated to "sailors matter most." The purpose is to emphasize the abiding value of leadership, morale, training, physical and mental conditioning, willpower, and endurance as the most important elements of warfare. To be sure, one cannot win without the quantitative and qualitative sufficiency of good equipment and sound tactics. The equivalent cornerstone here is "Marines matter most." The ways Ma-

rines, both men and women, have recognized and exploited human effectiveness is especially impressive. I have nothing to tell the Marine Corps about improving the first cornerstone but would add that the human element is especially vital because, as tradition says, the Navy mans its fighting ships, but when Marines go into combat the machines serve the fighters.

The second cornerstone illustrated by Nelson's victory that remains true today is that doctrine is the glue of good tactics. In a navy, doctrine is the companion and instrument of good leadership. It is the basis of training and all that results from it: cohesion, reliability in battle, and mutual understanding for collaboration. Doctrine is the springboard and benchmark of all tactical improvement. Admiral Nelson knew that doctrine is standard battle methodology but it must not become dogma. A sturdy definition of the term *combat doctrine* is "the comprehensive and practical plans of action." When I was a junior officer in the 1950s, the doctrine developed in World War II was still sound and served us well. An analogy of doctrine then is a football playbook with different plays to call for every "tactical" circumstance on the gridiron. Here, one of the most important corollaries to remember is how *joint doctrine* enhances

Navy-Marine collaboration. Beyond that, I have little to add. *Warfighting*, the 1989 doctrine first published by the 29th Commandant and founder of Marine Corps University, General Alfred M. Gray Jr., is my exemplar of tight, meaningful, specific, and executable doctrine.

The third cornerstone is to “know tactics you must know your weapons.” In the Marine Corps, everyone is taught to be a combatant and awareness of the capabilities of every weapon is second nature. Marines know that tactics and technology are two sides of a single coin. When new technologies emerge, such as unmanned and robotic systems or cyber operations, they cannot be fully exploited until new tactics are developed and forces are trained to employ them effectively. A recent insight is that robots also must be “trained” for different tasks, especially when they are expected to act in swarms. Indeed, information warfare that incorporates cyberwarfare, robots, and artificial intelligence has so risen in importance that the third edition of *Fleet Tactics* devotes a new chapter to it.

The fourth cornerstone, “the seat of purpose is on the land,” comes easily and naturally to Marines. “From the halls of Montezuma to the shores of Tripoli” is an illustration of decisions achieved on land that are engraved in the heart of every Marine. When I describe this cornerstone to my Navy compatriots, I like to point out that since Greek and Roman times most fleet battles were fought near land. When Nelson defeated French Admiral François-Paul Brueys d’Aigalliers in the Battle of the Nile, the effect was to doom Napoleon Bonaparte’s plan to take over Egypt and the Levant as French tributaries. The defeat of the Spanish Armada in 1588 and all the seventeenth century fleet actions fought in the Anglo-Dutch Wars took place near a coast. In the latter wars, invasion was nev-

er an aim of the fighting. The English general at sea, George Monck, expressed that “the Dutch have too much trade and I intend to take it from them” because he knew the many battle outcomes would have enduring consequences on land. In the Seven Years War (1756–63), when English Admiral Edward Hughes fought French Admiral Pierre André de Suffren in some of the most evenly matched battles in naval history off the coasts of India, all of India was an issue.

The fifth cornerstone, “a ship’s a fool to fight a fort,” was supposedly said by Nelson, who lost an arm and an eye fighting forts and whose decisive victory at Copenhagen in 1801 was fought against forts and anchored Danish warships. The message is that forts—represented today by missile launch sights and land-based airfields—have the advantage because they can be reconstituted more quickly and cheaply than sunken ships. During World War II in the Pacific, Marines learned the hazards of attacking defended islands. They suffered severely in critical yet necessary assaults. In the twenty-first century, the Marine Corps is reassessing its roles in expeditionary warfare. Personally, I think large amphibious assaults are far less desirable today than the ability to move swiftly into positions threatened by a major enemy because it is easier to defend them than to assault them from the sea. If the Marines decide to employ small detachments of air-land capability to threaten an enemy in their home waters, this will be a decision determined in part by the hazards of expeditionary operations against modern land-based “forts.”

The sixth, and in some ways the most pervasive, cornerstone of fleet combat is to attack effectively first. I do not say attack *decisively* first, because sometimes a detachment of a navy must fight outnumbered, in which case its combat

goal is to have the greatest effect on the enemy while it goes down fighting. In modern sea battles, first attack rather than an exchange of fire demonstrably has had great value. In *Fleet Tactics and Naval Operations* the ways to attack effectively are described for the age of fighting sail, the battleship era, the carrier era, and—although the U.S. Navy has not had to fight one—battles in the missile era of warfare. The Marine Corps must ponder its equivalent cornerstone because defense in pure ground operations has usually been the superior posture in battle. Clues can be found in the challenging Guadalcanal campaign and still more in the cruel consequences suffered at Peleliu and Iwo Jima. These severe battles in World War II can be contrasted with the great Marine successes in Operations Desert Storm and Iraqi Freedom. I have in mind a Marine combat equivalent that is something more like “get there first and make the enemy attack.” I was only shot at twice, but that was enough to demonstrate the difference between Navy and Marine combat. At sea, you can run but you cannot hide. I urge the Marine Corps to devote its best minds to the cornerstone that best describes the essence of successful combat tactics at a beach and onto land.

For the Marine Corps and its expeditionary operations there is a seventh cornerstone related to getting there first. In littoral war-

fare, the home team has the advantage. This is not merely an issue of offense versus defense. It is a recognition that the littorals, where Marines traditionally operate, are dynamic, complex fighting environments where all operational and geographical domains intersect because each combat circumstance is unique. Therefore, local knowledge of topography, geography, hydrography, and oceanography will play a critical and variable role in tactical employment of forces. Where Marines have traditionally operated the invading force is at a disadvantage and must redouble its efforts to understand the local environment. The seventh cornerstone puts the burden on the Marine Corps to set conditions for success early by knowing the terrain, the people, and culture of the people. Building relationships with allies and partners can give the Marine Corps the *home team advantage* in the face of aggressive peer attempts to seize territory. The year-long Solomon Islands campaign during the Second World War was a brilliant example of Navy-Marine air-sea-ground collaboration. On the other hand, it is far better today to contain the war with *naval* forces that emphasize *maritime* actions to *prevent* the conflict from getting out of control and escalating into a world war. Today a maritime containment strategy is particularly applicable against China and/or Russia, and perhaps Iran.

~ Captain Wayne P. Hughes Jr. (Ret)

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In the summer of 2018, the president of Marine Corps University, Brigadier General William J. Bowers, ordered a lecture series, “Reinvigorating Maritime Strategic Thought: The Future of Naval Expeditionary Forces.” The series would include four lectures, and it was to be supported by this anthology, produced by History Division, providing readings to the students on the topics each lecture would cover.

This volume presents a collection of 36 extracts, articles, letters, orders, interviews, and biographies. The work is intended to serve as a general overview and provisional reference to inform both Marines, sailors, and the general public of the broad outlines of maritime strategic thought.

Additional support for this work came from the *Journal of Military History*, *Naval History*, *MCU Journal*, *SEAPOWER*, U.S. Naval Institute *Proceedings*, *Leatherneck* magazine, and the *Marine Corps Gazette*, all of whom gave permission to reprint their articles. Their cooperation made this anthology possible.

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This anthology is organized into an introduction on the history of maritime strategic thought, four chapters covering the evolution of

American naval power and strategic thought, a chronology of significant events, and a bibliography. This work is not meant to be an authoritative history, but rather it is intended to be used as a starting point for Marines, sailors, the gen-

eral public, and academic researchers who are interested in further reading or applying these lessons for the betterment of their seagoing profession.

THE LEGACY OF AMERICAN
NAVAL POWER

A BRIEF INTRODUCTION TO THE HISTORY OF MARITIME STRATEGY

by Paul Westermeyer

War is the father of all and king of all, who manifested some as gods and some as men, who made some slaves and some freemen.

~ Heraclitus, pre-Socratic philosopher¹

One of mankind's oldest activities is certainly intraspecies conflict arising from competition over resources, mates, or ideas; such conflicts undoubtedly began long before civilization evolved with its complex social organizations. Once civilization developed, however, such conflicts became war, which may be defined as "organized, socially sanctioned armed violence employed by opposing groups against one another, normally for political, social or economic purposes."² The methods used to guide the attainment of those purposes through violence is strategy, and it was born along with warfare at the dawn of civilization.

As Carl von Clausewitz later said, "No one starts a war—or rather, no one in his senses ought to do so—without first being clear in his mind what he intends to achieve by that war and

how he intends to conduct it."³ In other words, war is not merely about violence, it has a purpose. Guiding violence to achieve that end is one definition of strategy; but strategy goes beyond guided violence, it encompasses the threat as well as the means of violence—indeed some strategists have argued that avoiding violence entirely is the highest form of strategy.⁴ Regardless of its scope, strategy is always (or should be) subordinate to policy—why one fights defines the strategic equation any set of belligerents are faced with.⁵

If warfare is one of civilizations oldest activities, maritime warfare is not far behind. Ancient societies soon developed seafaring technologies as the advantages of travel by sea were quickly apparent; goods could be transported in larger quantities with less labor by water than by land. This basic logistical advantage underpinned the

¹ Heraclitus fragment, DK22B53. Hermann Diels and Walther Kranz, *Die Fragmente der Vorsokratiker, griechisch und deutsch*, 6th ed. (Berlin: Weidmann, 1952).

² Working definition of war as provided to students over the years in John F. Guilmartin, "Basic Definitions" (course handout, Ohio State University, 1994).

³ Carl von Clausewitz, *On War*, ed. and trans. Michael Howard and Peter Paret (Princeton, NJ: Princeton University Press, 1976; first published 1832), 88–89.

⁴ Sun Tzu and Wutzu, *The Book of War: The Military Classic of the Far East*, trans. Capt E. F. Calthrop (London: John Murray, 1908), 24.

⁵ Williamson Murray and Mark Grimsley, "Introduction: On Strategy," in *The Making of Strategy: Rulers, States, and Wars*, ed. Williamson Murray et al. (Cambridge: Cambridge University Press, 1994), 1.

prime motivation for the influence of the sea on history, it spurred the development of cities along waterways and sheltered ocean anchorages along the coast as merchants and armies could more easily traverse those same routes. Ever since the first time that men went to sea in ships, strategy involved the intertwining of maritime and land affairs.

Strategists in the early days of civilization also were usually rulers as well so that military strategy and statecraft were inextricably entwined. Successful generals had no time to write systemically and logically on strategy in the abstract; even when they did, historians today recognize that “strategic thinking does not occur in a vacuum, or deal in perfect solutions; politics, ideology, and geography shape peculiar national strategic cultures. Those cultures, in turn, may make it difficult for a state to evolve sensible and realistic approaches to the strategic problems that confront it.”⁶

Considering that the logic behind strategy began with the “father of history,” Herodotus, who opened his history of the Persian War thus: “I, Herodotus of Halicarnassus, am here setting forth my history, that time may not draw the color from what man has brought into being, nor those great and wonderful deeds, manifested by both Greeks and barbarians, fail of their report, and, together with all this, the reason why they fought one another.”⁷

In examining the causes of those conflicts, Herodotus inevitably examined what the participants hoped to accomplish with their various strategies, and he described what was possibly the first overtly maritime strategy. After the first Persian invasion of Greece, Herodotus recounts



A marble Roman-era bust of Themistocles, based on a fifth-century BC Greek original, in the Museo Archeologico Ostiense, Ostia, Rome, Italy.

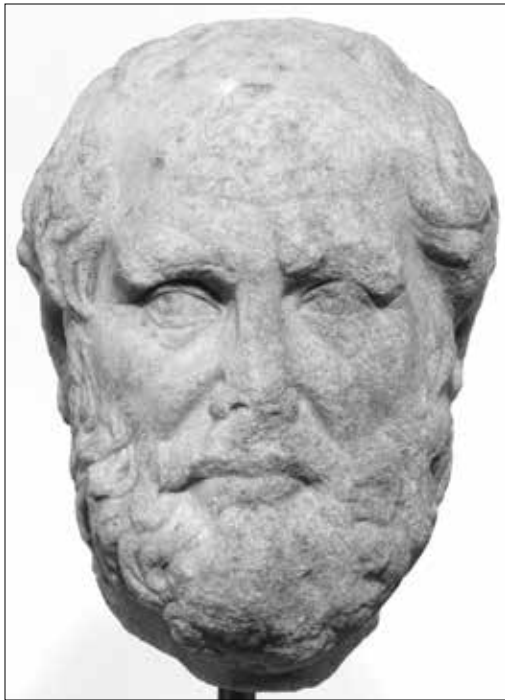
Museo Archeologico Ostiense, Rome

how the Greek strategos Themistocles first saw that the city’s path to greatness lay not in its fields but at sea; he thus convinced his fellow Athenians to take an unexpected windfall from a recently discovered silver mine and create a large fleet of triremes (oar-powered warships).⁸ And when the Persians marched on Greece, Themistocles recognized that the vast Persian army required its navy to keep it supplied. Following the Spartan defeat at Thermopylae, and when Athens seemed doomed, he convinced the Athenians to abandon their city and all of the

⁶ Murray and Grimsley, “Introduction: On Strategy,” 3.

⁷ Herodotus as quoted in David Grene, trans., *The History of Herodotus* (Chicago, IL: University of Chicago Press, 1985).

⁸ A *strategos* was an elected general in ancient Athens; there were 10 each year.



Marble bust of the ancient Greek general and historian Thucydides from the second half of the second century. Asia Minor marble, small grained.
J. Paul Getty Museum, 73.AA.36

allied Greek states to put their faith in fighting a naval battle off the coast of the island of Salamis; the resultant Greek victory crippled the Persian invasion. In Themistocles' view, "the master of the sea must inevitably be master of the empire."⁹

The Athenians, now convinced that their fleet was the primary factor in the Greek victory in the Persian Wars, built an empire based on that seapower, and when the expansion of their sphere of influence led them into conflict with

Sparta, their land power competitor, they continued to pursue the maritime strategies of Pericles. He had convinced the Athenians to pursue a defensive strategy at home, staying behind the walls they had built to protect the city and their access to the sea when the Spartans invaded Attica year after year, while their own fleets raided along the coasts and harried Sparta and its allies elsewhere. Even after Pericles perished, the Athenians continued to follow maritime strategies throughout the conflict, even surviving their own imperial overreach with the attempted conquest of Syracuse, and only succumbed after the Spartans had finally acquired a fleet of their own and pursued a counter-maritime strategy in response.¹⁰

Perhaps the first of the abstract strategists was Thucydides, a former Athenian strategist ostracized following his defeat in the war. His carefully researched history of that war includes many speeches that do not record what was actually said at the time, but rather are Thucydides' reconstructions of what should have been said. Thucydides presents his theory of statecraft and strategies in these speeches, much as his near-contemporary and fellow countryman Plato presented philosophy through dialogues. The result is that Thucydides' work has been analyzed carefully over millennia, especially during the last century, not only by historians attempting to understand the Peloponnesian War specifically, but by military theorists looking for insights into war and strategy more broadly. During the Cold War, the struggle between the maritime power

⁹ Marcus Tullius Cicero, *Letters to Atticus*, book 10 (Cambridge, Cambridge University Press, 1961), 8.4. On the Battle of Salamis as a maritime campaign and Themistocles' vital role in the war, see Barry Strauss, *The Battle of Salamis: The Naval Encounter that Saved Greece—and Western Civilization* (New York: Simon & Schuster, 2005).

¹⁰ On Athens' strategy, see Donald Kagan, "Pericles, Thucydides, and the Defense of Empire," in *Makers of Ancient Strategy: From the Persian Wars to the Fall of Rome*, ed. Victor Davis Hanson (Princeton, NJ: Princeton University Press, 2010). On the Peloponnesian War, see Donald Kagan, *The Peloponnesian War* (New York: Viking Press, 2003); Donald Kagan, "Athenian Strategy in the Peloponnesian War," in *Making of Strategy*; and Thucydides, *The Peloponnesian War* (New York: Random House, 1982).



Depicting a scene from the ancient Greek epic poem *The Odyssey*, this mosaic shows Odysseus and his men hearing the call of the sirens from aboard their galley. Always a maritime people, the ancient Greeks may be the first to pursue an expressly maritime strategy. Ulixes mosaic, second century.

Bardo National Museum, Tunisia

of Athens and the land power of Sparta was seen as a parallel to the struggle between the United States and the Soviet Union, and as a result, the study of Thucydides' strategic insights spiked in popularity.¹¹

More abstract military theorists arose during the years following Thucydides, although their work seldom differentiated between strategy and tactics. Virtually none addressed naval affairs. In the West, Publius Flavius Vegetius Renatus left us the *Epitoma Rei Militaris*, a fourth century AD work describing Roman military organization, surviving into the medieval period it greatly influenced later European military reforms. Byzantine authors left several works that combined discussion on organization, tactics, and strategy. The most famous of these treatises

was the Emperor Maurice's *Strategikon*, from the sixth century, which included the maxim, "The state benefits more from a lucky general than from a brave one. The first achieves his results with little effort, whereas the other does so at some risk."¹²

Outside of the West, Chinese works on abstract military theory were produced beginning in the Warring States period.¹³ These were organized into what has been coined the "Seven Military Classics" in the eleventh century AD, and became required reading for promotion by military officers. Included in these was the military classic generally known today as Sun Tzu's *The*

¹¹ For more on Thucydides as a strategic theorist, see Williamson Murray, "Thucydides: Theorist of War," *Naval War College Review* 66, no. 4 (Autumn 2013): 30–46.

¹² *Strategikon*, book 7, 2.94, as seen in Maurice's *Strategikon: Handbook of Byzantine Military Strategy*, trans. George T. Dennis (Philadelphia: University of Pennsylvania Press, 1984), 91. On Vegetius and the Byzantine texts, see *Vegetius: Epitome of Military Science*, trans. N. P. Milner (Liverpool: Liverpool University Press, 2011); and *Three Byzantine Military Treatises*, trans. George T. Dennis (Washington, DC: Dumbarton Oaks, 1985).

¹³ Generally considered to run from fifth to third centuries BC.

Art of War. As with the European works, none of these books looked at naval affairs specifically, and they discussed tactical and organizational issues as often as they examined strategy.¹⁴ In India, the *Arthashastra*, a treatise of multiple books in Sanskrit composed in the third century BC that focused more directly on strategy and its relationship to the goals of sovereign rulers in books 7 and 10, while the rest of the work is focused on the broader art of ruling a state. Again, naval affairs are not given much if any attention.¹⁵

In a similar manner during the Renaissance, Niccolò Machiavelli's *Dell'arte della guerra* (*Art of War*) focused on the relationship between civil and military matters and the formation of grand strategy; but as with the previous works, he avoided discussing naval affairs. The work was framed as a dialogue in which his narrator, a professional soldier, declared they will leave discussion of warfare at sea to the Venetians and Genoans, who were more practiced at fighting in that environment.¹⁶

Naval warfare in the Mediterranean remained essentially unchanged from the age of the Peloponnesian War until the Renaissance. The technological constraints of the wooden galley forced naval fleets to put ashore often, as they could not sit on station at sea for significant amounts of time. Geography in the form of sheltered landing beaches as well as winds and currents thus dominated naval affairs in ways

that precluded the sort of sea control that later naval thinkers would advocate. These unchanging technical and geographic factors allowed commanders to conduct maritime campaigns with virtually no naval assets, as Alexander the Great did when he eliminated the Persian navy as a threat by conquering all of its harbors and installations.¹⁷

But technological change was impacting all aspects of naval technology as the Age of Discovery emerged in the fifteenth century. European vessels from the various incipient maritime nations began to sail the world's oceans with increasing confidence, eventually developing into the tall sailing ships that were capable of sustained operations at sea and that boasted the largest mobile concentrations of firepower then in existence.¹⁸ These technological changes altered the maritime strategic calculus as these states looked beyond the traditional factors representing a state's latent military power.

Sir Walter Raleigh wrote in the early 1600s that, "for whosoever commands the sea commands the trade; whosoever commands the trade of the world commands the riches of the

¹⁴ Ralph D. Sawyer and Mei Mei-chün Sawyer, *The Seven Military Classics of Ancient China* (Boulder, CO: Westview Press, 1993); Sun Tzu and Wutzu, *The Book of War*; and Michael I. Handel, *Masters of War: Classical Strategic Thought* (London & New York: Routledge, 2001).

¹⁵ Roger Boesche, "Kautilya's Arthashastra on War and Diplomacy in Ancient India," *Journal of Military History* 67, no. 1 (January 2003): 9–38.

¹⁶ Niccolò Machiavelli, *The Art of War*, trans. Ellis Farnsworth (New York: Da Capo Press, 2001); and Felix Gilbert, "Machiavelli: The Renaissance of the Art of War," in *Makers of Modern Strategy*, 11–31.

¹⁷ Donald W. Engels, *Alexander the Great and the Logistics of the Macedonian Army* (Berkeley: University of California Press, 1978); J. F. C. Fuller, *The Generalship of Alexander the Great* (London: Eyre & Spottiswoode, 1958); and N. G. L. Hammond, *Alexander the Great: King, Commander, and Statesman*, 3d ed. (London: Bristol Classical Press, 1994). On the unchanging strategic calculus of Mediterranean warfare at sea and the ways it differs from later periods and Mahanian naval theory, consult Dr. John F. Guilmartin Jr., *Gunpowder and Galleys: Changing Technology and Mediterranean Warfare at Sea in the Sixteenth Century* (London: Cambridge University Press, 1974).

¹⁸ On these changes, see Roger C. Smith, *Vanguard of Empire: Ships of Exploration in the Age of Columbus* (New York & London: Oxford University Press, 1993); Carlo M. Cipolla, *Guns, Sails, and Empires: Technological Innovation and the Early Phases of European Expansion, 1400–1700* (Manhattan, KS: Sunflower University Press, 1965); and Geoffrey Parker, *The Military Revolution: Military Innovation and the Rise of the West, 1500–1800*, 2d ed. (London: Cambridge University Press, 1996).



Cornelis Claesz van Wieringen, *The Spanish Armada off the English Coast*, 1620–25. Oil on canvas. Rijksmuseum, Museum of the Netherlands, Amsterdam, SK-A-1629

world, and consequently the world itself.”¹⁹ Heavily influenced by mercantilism, the nascent British Empire began to develop a maritime strategy based on its peculiar geographic circumstances and culture.²⁰ Other maritime states at the time, such as Habsburg Spain, were forced to focus as much or more on continental land campaigns as they were on maritime affairs, but the British were able to avoid this dispersion of military resources, adopting Raleigh’s maxim and focusing on the sea as both a means of defense and an avenue to national wealth.²¹

The zenith of the sailing age of maritime power came with the naval campaigns of the end of the eighteenth century, during the French Revolution and the wars of Napoleon, when

the global maritime strategies of the British Empire were put to a stringent test. The revolution in military affairs that began during the Renaissance saw an increased rate of change as the professional armies of the *ancien régimes* transformed into the mass citizens armies of the Napoleonic wars.²² Coinciding with the Age of Enlightenment, this period celebrated the notion of genius, which was extended from scientists, mathematicians, artists, and composers to politicians and military commanders; Emperor Napoléon Bonaparte, who dominated all of Europe at the start of the nineteenth century, represented the military genius that others would attempt to emulate, and Vice Admiral Horatio Nelson, victor at Trafalgar, fulfilled the role of naval genius.

Two military writers came to dominate the study of this sea change in strategic thought,

¹⁹ Sir Walter Raleigh, “A Discourse of the Invention of Ships, Anchors, Compass, &c,” in *The Works of Sir Walter Raleigh*, vol. 8 (Oxford: Oxford University Press, 1829), 325.

²⁰ Mercantilism was the dominant school of economic thought through the eighteenth century and focused on nations maximizing their exports and minimizing their imports.

²¹ William S. Maltby, “The Origins of Global Strategy: England from 1558 to 1713,” in *Making of Strategy*.

²² The term *ancien régime* (French for old order) refers to political and social systems that dominated Europe prior to the French Revolution.



Charles Gleyre painted this portrait of Gen Antoine-Henri Jomini, Swiss theorist and author of *Treatise on Grand Military Operations* (1807) and other historical works, in 1859. Oil on canvas.
Cantonal Museum of Fine Arts of Lausanne



Karl Wilhelm Wach, *Carl von Clausewitz*, nineteenth century. Oil on canvas.
Tiha von Ghyczy et al., eds., Clausewitz on Strategy: Inspiration and Insight from a Master Strategist (New York: John Wiley, 2001)

Prussian Major General Carl Philipp Gottlieb von Clausewitz and French Lieutenant General Antoine-Henri, baron de Jomini. Veterans of the Napoleonic Wars, both men were determined to distill the essence of Napoleon's method for the use of later generations through the systemic, logical study of the theory of war. Neither spent much time considering naval conflicts, but they strongly influenced maritime strategic thought nonetheless.

Jomini's work was initially more popular, and it has had an enduring influence in how modern militaries approach conflict, focusing on prescriptive maxims or principles of war. Jomini was a great promoter of his own work, stating that "if a few prejudiced men, after reading this book and carefully studying the detailed

and correct history of the campaigns of the great masters of the art of war, still contend that it has neither principles nor rules, I can only pity them and reply, in the famous words of Frederick that 'a mule which had made twenty campaigns under Prince Eugene [of Savoy] would not be a better tactician than at the beginning'." His principles were focused more on the tactical and operational levels of warfare than the strategic level.²³

Unlike Jomini, Clausewitz passed away be-

²³ Le Baron de Jomini, *Précis de l'Art de la Guerre, ou Nouveau tableau analytique des Principales Combinaisons de la Stratégie, de la Grande Tactique et de la Politique Militaire* (Paris: Anselin Libraire and G. Laguionie, 1838); Baron de Jomini, *The Art of War*, trans. Capt G. H. Mendell (USA) and Lt W. P. Craighill (USA) (London: Greenhill Books, 1992); and John Shy, "Jomini," in *Makers of Modern Strategy*, 143–85.



Capt Alfred Thayer Mahan argued in *The Influence of Sea Power upon History* that any nation seeking to be great needed a navy and with it bases in the world to support its fleet. Oil on canvas, attributed to Alexander James, ca. 1945.

Art Collection, Naval History and Heritage Command, 65-350-FS

fore finishing his magnum opus, *Vom Kriege* (On War), which was edited and published by his widow, Marie von Clausewitz. Initially less popular as a theorist than Jomini, Clausewitz's work was dialectical rather than didactic, long, and often complicated. It also read as rather contradictory in many places, as he died before he could revise the whole so that portions written earlier would conform to his later, more mature views on the subject. Regardless of these flaws, his work has garnered immense attention and admiration as a touchstone in the study of military theory over the years, a fact he would have surely appreciated: "My ambition was to write a book that would not be forgotten in two or three years, and which anyone interested in the subject would certainly take up more than once."²⁴

Because Jomini and Clausewitz mostly agree in their discussions at the operational and tactical levels, there is not much difference in content, but Clausewitz's most important contributions come from his embrace of the unity of policy and warfare, leading to his oft repeated phrase, "War is merely the continuation of policy by other means," which is often viewed by itself, but should instead be considered as part of "a fascinating trinity—composed of primordial violence, hatred, and enmity, which are to be regarded as a blind natural force; the play of chance and probability, within which the creative spirit is free to roam; and its element of subordination, as an instrument of policy, which makes it subject to pure reason."²⁵

Where Jomini provided prescriptive principles on how to fight, Clausewitz explored an entire philosophy of warfare, defining it—its purposes and its nature—and putting those

conclusions up for rigorous examination in his monumental work; the bulk of which remained an examination of practical methods of warfare. The resulting work was prone to misinterpretation, but has remained vitally important to understanding strategy even as technology has transformed in ways neither Jomini nor Clausewitz could have imagined.²⁶

Maritime strategy's most dedicated proponent arrived in the late nineteenth century, when Rear Admiral Stephen B. Luce appointed Captain Alfred Thayer Mahan as the professor of history at the Naval War College. Mahan's father, Dennis Hart Mahan, was a professor at the U.S. Military Academy, or West Point, from 1824 to 1871; he impressed Jomini's theories on generations of cadets. His son firmly believed that, "the study of military history lies at the foundation of all sound military conclusions and practices."²⁷ He approached his new position from that perspective and developed a series of lectures on naval history that he later transformed into his landmark volume, *The Influence of Sea Power upon History, 1660–1783* (1890).²⁸

As committed to Jomini as his father had been, Mahan approached the study of naval history intent on pulling principles from it that

²⁶ Peter Paret, "Clausewitz," in *Makers of Modern Strategy*, 186–216; and Jon Tetsuro Sumida, *Decoding Clausewitz: A New Approach to On War* (Lawrence: University Press of Kansas, 2008).

²⁷ A. T. Mahan, *Armaments and Arbitration, or The Place of Force in the International Relations of States* (New York & London: Harper & Brothers, 1912), 206. It is interesting to note that three of the English-speaking world's most successful strategists and heads of state—Theodore Roosevelt, Franklin D. Roosevelt, and Winston S. Churchill—all served within the civilian leadership of their respective nation's navy, where the Roosevelts were unusually influential assistant secretaries of the Navy and Churchill was a wartime First Sea Lord. Moreover, two of those leaders—Theodore Roosevelt and Winston Churchill—also wrote exceptional works of history: Churchill's *A History of the English-Speaking Peoples* (1956–58) and Roosevelt's *The Naval War of 1812, or The History of the United States Navy during the Last War with Great Britain to which Is Appended an Account of the Battle of New Orleans* (1882).

²⁸ A. T. Mahan, *The Influence of Sea Power upon History, 1660–1783* (Boston, MA: Little, Brown, 1890).

could be applied universally to naval affairs. For example, examining the Second Punic War (218–201 BC), he decided that Hannibal's inability to destroy Rome despite victory after victory in Italy was because the Roman's retained control of the sea.²⁹ This led Mahan to the conclusion that all empires revolved around control of the sea, with the British Empire then being the greatest and most obvious example. Carefully examining the growth of British imperial power and its seapower foundations was the heart of his work, from which he extracted characteristics of a maritime state that were favorable to the building of a maritime empire. Mahan used two different definitions for *seapower*: command of the sea through naval armed force and a sort of neomercantilist view of maritime commerce, colonies, and access to markets. To achieve these forms of seapower, Mahan deduced that six factors influenced a nation's ability to develop seapower: geographical position, physical conformation, extent of territory, population, national character, and the character and policy of its government.³⁰ A prolific author, Mahan's later works repeatedly addressed the ways he believed the United States could increase its seapower through these different characteristics.

Regarding fleets, Mahan recognized that the age of steam and ironclad vessels was bereft of historical examples; however, he also understood that technology altered time-distance factors involving the delivery of force, but did not alter the underlying, fundamental maritime strategic principles. He looked carefully at the naval battles fought throughout history and extracted

²⁹ This is a highly debatable conclusion; Rome's ability to alter its constitution to overcome command difficulties and the inherent strength of its political and economic systems provided advantages that may have been insurmountable regardless of Carthaginian control of the sea. Philip A. Crowl, "Alfred Thayer Mahan: Naval Historian," in *Makers of Modern Strategy*, 450.

³⁰ Mahan, *The Influence of Sea Power upon History*, 21–82.

those principles, the most important, from his point of view, being the concentration of naval power in the form of the battle fleet, which he perceived in writings prior to the maturity of the aircraft or submarine as the battleships of the fleet. He rejected the *guerre de course* (war on commerce) strategy that the French so often employed in part because it did not allow for the concentration of naval might he considered essential.³¹

Mahan's influence upon maritime strategic thought was considerable in his lifetime; in the United States, his ideas shaped the thinking of Theodore Roosevelt, whom he befriended when the latter visited the Naval War College. Roosevelt was an accomplished naval historian himself, having written a naval history of the War of 1812 that is still considered a classic.³² It was more a case of kindred spirits supporting each other, but certainly Roosevelt's naval policies, and especially the sailing of the Great White Fleet, can be described as Mahanian.³³

Outside of the United States, Mahan influenced both the Japanese and the Germans, which were developing their own great battle fleets at the turn of the century. Mahan believed the Japanese had translated more of his work than any other nation, and despite the racism he often exhibited when discussing Japan, he singled out the Imperial Japanese Navy for successfully putting his theories into practice during the

³¹ See Crowl, "Alfred Thayer Mahan," 444–80; John T. Kuehn, "What Was Mahan Really Saying?: A Re-visitation of the Naval Theorist's Classic Work, *The Influence of Sea Power upon History, 1660–1783*," *U.S. Military History Review* 1, no. 1 (December 2014): 66–80; and Jon Tetsuro Sumida, *Inventing Grand Strategy and Teaching Command: The Classic Works of Alfred Thayer Mahan Reconsidered* (Baltimore: Johns Hopkins University Press, 1997).

³² Theodore Roosevelt, *The Naval War of 1812, or The History of the United States Navy during the Last War with Great Britain to Which Is Appended an Account of the Battle of New Orleans* (New York: G. P. Putnam's Sons, 1882).

³³ Crowl, "Alfred Thayer Mahan," 472.



In *Arrival of the American Fleet off Scapa Flow, December 1917*, Bernard F. Gribble painted the battleships USS *New York*, *Wyoming*, *Florida*, and *Delaware* steaming into the British naval base at Queenstown, Ireland, amid cheers from the men assembled aboard HMS *Queen Elizabeth*, flagship of the commander in chief, Grand Fleet, during World War I. Oil on canvas, 1928.

Art Collection, Naval History and Heritage Command, 28-003-A

Russo-Japanese War in 1904–5. Kaiser Wilhelm II stated that Mahan's works were widely read in the German fleet, and the German Navy's building program prior to World War I was certainly Mahanian in concept. As with Roosevelt, these devotees tended to use Mahan to buttress beliefs they already held.³⁴

Following World War I, new technologies and international conditions reduced the value of Mahan's maritime supremacy theories, and

his connections with American imperialism made his work increasingly unfashionable with modern strategists. But the U.S. Navy has periodically revisited his work, just as he searched the histories of the Age of Sail to understand the steam navy, modern theorist regularly find lessons for the nuclear age in the histories of the battleship age.³⁵

Mahan's works were widely read in Britain, where his broad approval of British naval policies over the centuries was appreciated, but the

³⁴ Capt A. T. Mahan, USN (Ret), *From Sail to Steam: Recollections of Naval Life* (New York: Harper & Brothers, 1907), 302–3; Sadao Asada, *From Mahan to Pearl Harbor: The Imperial Japanese Navy and the United States* (Annapolis: Naval Institute Press, 2006); and Crowl, "Alfred Thayer Mahan," 472–74.

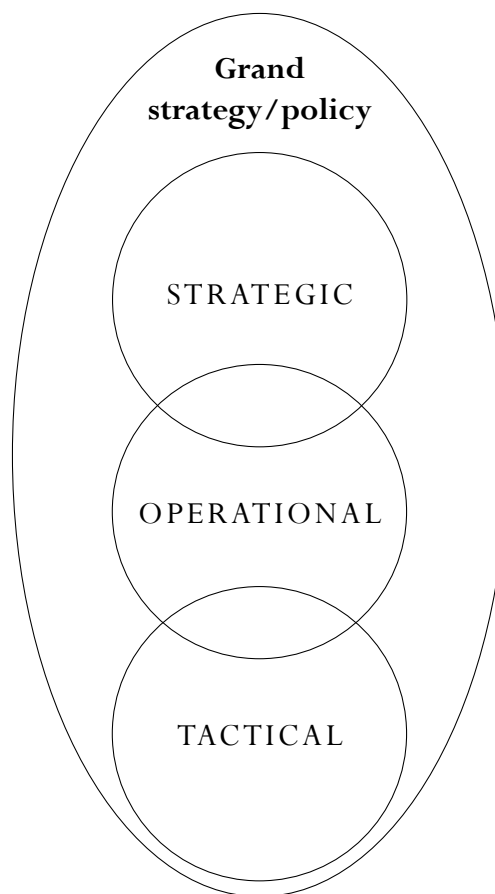
³⁵ Dr. James R. Holmes and Cdr Kevin J. Delamer, USN (Ret), "Mahan Rules," U.S. Naval Institute *Proceedings* 143, no. 5 (May 2017): 1371.

British produced their own maritime strategic theorist in Sir Julian Stafford Corbett. Like Mahan, Corbett was a historian tapped by the Royal Navy to produce works on maritime strategy; unlike Mahan, he was a civilian novelist when he began writing on naval history and strategy in 1902, which was given prominence when he was asked to give a series of lectures on the topic at the recently founded Naval War College. His civilian status prevented the Royal Navy from fully accepting his work, especially as Corbett rejected Mahan's focus on concentration and downplayed the value of battle in favor of maintaining control of the sea through widely dispersed forces. Naval officers felt that Corbett's views reduced its instinctive aggressiveness and encouraged the Royal Navy to preserve itself rather than seek battle.

Unlike Mahan, Corbett saw the land as the center of focus, and maritime power was merely a means to an end, not an end in itself. This connection with Clausewitzian concepts of policy and strategy, as well as general multi-Service approach to national strategy stood in sharp contrast to Mahan, who did not address power projection in any meaningful manner. Like Mahan, Corbett wrote before either submarines or aircraft had matured as technologies, and his work does not significantly take them into account.³⁶ With Corbett, the stage is set for the development of maritime strategy in the twentieth and twenty-first centuries in the following chapters.

Taking into account the contributions of Jomini, Clausewitz, Mahan, and Corbett to the evo-

³⁶ Michael I. Handel, "Corbett, Clausewitz, and Sun Tzu," *Naval War College Review* 53, no. 4 (Autumn 2000); and Andrew Lambert, ed., *21st Century Corbett: Maritime Strategy and Naval Policy for the Modern Era* (Annapolis: Naval Institute Press, 2017).



Levels of war.
Warfighting, adapted by History Division

lution of maritime strategic thinking throughout the nineteenth century, maritime strategist of the early twentieth century, as well as those today, were and are challenged to envision how continually evolving technology, particularly that involving kinetic and cyber weapons, as well as geopolitics, will impact the development of maritime strategy for the twenty-first century. If history is any guide, change in this realm of warfare is inevitable; but a firm grounding in the thinking that brought us here—these classics

of naval strategy—can only be gained by going back to the original source and dedicating time to their study and reflecting upon their timeless lessons.

POSTSCRIPT

When reading the following chapters, bear in mind the differences between the levels of war, as expressed in *Warfighting*.³⁷ In short, there are three levels of warfare. This work is primarily concerned with the strategic level, which es-

tablishes military and naval goals, within the nation's means in support of national policy. The operational level lies in the middle, establishing the how, when, and why for military and naval forces chosen to achieve the strategic goals. It links to the tactical level, the lowest level where military and naval forces meet in battle. All three levels are interrelated, each connecting to the others, and all influencing and influenced by the grand strategic or national policy goals that guide the conflict.

³⁷ *Warfighting*, MCDP-1 (Washington, DC: Headquarters Marine Corps, 1997), 28–32.



Anton Otto Fischer's painting depicts the first victory at sea by the USS *Constitution* over HMS *Guerriere*, 19 August 1812. Oil on canvas.
Art Collection, Naval History and Heritage Command



CHAPTER ONE

The Ascendancy of American Maritime Power

*A Historical Perspective
Culminating at Guadalcanal*

by Paul Westermeyer

The Marine Corps, from its infancy and throughout its early years, operated only at the tactical level. The Corps was born of a relatively thoughtless emulation of the Royal Navy—Royal Navy men-o-war had Marines and cannons—and so United States' men-o-war should have Marines and cannons as well. Throughout the early years of the republic, the Marine Corps continued to fulfill the same role that the Royal Marines had filled in the Royal Navy, guarding naval shore establishments, providing boarding and landing parties for the Navy's men-o-war, and occasionally reinforcing the Army during operations ashore, such as at Bladensburg, Maryland, and New Orleans in the War of 1812.

Although individual Marine officers increased the scope of their experience during the Mexican-American War and the American Civil War, the Corps as a whole during this period continued to perform its traditional tactical-level duties. In the last quarter of the nineteenth century, the U.S. Navy and Marine Corps began

to evolve as the United States became entangled in world affairs, most especially in the Pacific and the Caribbean, where the United States inserted itself in a variety of colonial ventures.

Along with rapid technological change and increasing American involvement overseas, the Navy Department responded to the rise in specialization brought about by the Industrial Revolution with its own professional training and education reforms. Rear Admiral Stephen B. Luce was at the forefront of many of these changes as the founder and first president of the Naval War College. In 1886, he appointed then-Captain Alfred Thayer Mahan as its professor of history. Following that appointment, Mahan developed his lectures into what became the groundbreaking book *The Influence of Sea Power upon History, 1660–1783* (1890) and other later works on naval strategy. Mahan's works were very popular and found special favor with the future U.S. president, Theodore Roosevelt, and other proponents of American imperialism.

Mahan's ideas were not limited to theories of sea power alone. He actively wrote about and advocated for national policies supporting his views, especially with regard to the acquisition of ports overseas that could be used as coaling stations for America's burgeoning Navy. His focus was often on the Pacific—he was a strong proponent of a canal across the Central American isthmus and he advocated for a strong Pacific fleet. In the 1890s, he was in favor of annexing Hawaii, which he saw as the key to American interests in the Pacific; he worried about Japanese influence there and sought to deny them its advantages. Mahan saw himself as an expert on the Japanese; his writing on this topic was nearly as

influential there as it was in the United States.¹

Influenced by Mahan's views on sea power, the pressure for technological change, and driven by the requirements of America's overseas expansion, the U.S. Navy was forced to evolve at a rapid rate by the close of the nineteenth century. The dominance of steam-powered ironclads equipped with ever larger guns required overseas bases at strategic points to feed their insatiable need for coal. The Navy was loathe to call on the U.S. Army to garrison and defend such installations, as they did not trust the Army to make holding the ports as much of a priority as the Navy would. The Navy wanted garrisons that would answer directly to the Navy Department. The obvious solution to the problem was employing the Marine Corps to fulfill this mission, since it was already a part of the Navy and its traditional shipboard roles were increasingly superfluous as sailors became more professional and big gunned, ironclad battleships replaced wooden-hulled men-of-war. The relatively conservative Corps leadership initially resisted such a mission, even after the landings at Guantánamo Bay during the Spanish-American War had successfully demonstrated the concept. Another influential factor was that, increasingly from 1882 on, newly commissioned Marine officers were graduating from the Naval Academy, where they drank in the theories of Mahan alongside their fellow midshipmen counterparts. This experience led to their acceptance of the Corps' newfound role of seizing and defending advanced naval bases as part of an overall national maritime strategy, seeing this mission as the surest method for protecting the Corps' continued existence.

¹ See Sadao Asada, "Mahan's Influence on Japanese Seapower," *From Mahan to Pearl Harbor: The Imperial Japanese Navy and the United States* (Annapolis: Naval Institute Press, 2006).

From 1907 to 1909, President Theodore Roosevelt incorporated Mahan's theories of the importance of sea power into his own diplomatic policy: "speak softly and carry a big stick." This was demonstrated when he ordered the Navy to send two squadrons of battleships on a worldwide goodwill cruise, with all the ships in the fleet painted in peacetime white livery. This Great White Fleet was intended to demonstrate the United States' newly acquired military power as well as its peaceful intentions; the Japanese, however, saw it as a deliberate threat that demonstrated America's ability to project its fleet into Far Eastern waters as evinced by its port visit to Yokohama, Japan.

In regard to naval strategy, the United States played little role in the First World War, leaving the formulation to the Royal Navy, which had been waging war on the high seas since August 1914. The United States contributed a battleship squadron to the Royal Navy's blockade of the German High Seas Fleet and shared in the protection of transatlantic shipping from the German submarine *guerre de course*.² Nevertheless, the conflict left the U.S. Navy and Marine Corps more convinced than ever of the value of their theories of sea power, especially in the Pacific. There, the United States and Japan faced off against each other across a vast ocean as competitors for its natural resources and the access it offered to other areas of the globe. With the First World War having swept the board clear of those who had previously contended for the region, such as the Russians, the Germans, and the French, no other European power could be expected to challenge either the United States or Japan in the region, with the exception of Great Britain. The British were still considered to have the largest navy in

the world, but their interests were too widespread to focus solely on the Pacific.

The naval arms race between Great Britain and Imperial Germany, which had preceded World War I, was widely seen as one of the causes of that conflict and the nascent naval arms race that resumed after the war, spurring the Washington Naval Conference 1921–22, and resulting in the first of a series of treaties (renegotiated in London in 1930) that were designed to limit naval armaments; in practice, the various navies shifted resources to such nascent technologies as carrier aviation and submarines, which were not as restricted as battleships by the terms of the treaties. In addition to restricting new ship construction, the treaties restricted fortification of various American and Japanese colonial possessions in the Pacific.³

Despite the limitation imposed by the treaties, tensions between the United States and Japan increased, often driven by American suspicions of Japanese actions in China and American restrictions on Japanese immigration to the United States. American and Japanese naval planners each considered the other as future antagonists since the turn of the twentieth century, and both sides developed war plans heavily influenced by Mahanian concepts on control of the sea.

Regardless of whether these plans became self-fulfilling prophecies, thoughtful American naval officers realized the United States might lose in the Far East during the early stages of any conflict with Japan, particularly since the Washington Naval Conference treaties in essence allowed Japan to build enough ships to achieve regional superiority. In the event of such a war, the United States would have to "march" across the Pacific, establishing naval bases until

²The term *guerre de course* refers to maritime warfare intended to disrupt seaborne commerce.

³"The Washington Naval Conference, 1921–1922," U.S. Department of State, Office of the Historian.

a “decisive” fleet engagement could be fought that would give the U.S. Navy control of the Pacific and allowing it to establish a blockade that would starve Japan into submission. Designated War Plan Orange, the plan was Mahanian in concept, although it differed somewhat from Mahan’s proposed solution.⁴

For the Marine Corps, War Plan Orange’s most salient feature was the requirement for the defense of its colonial possessions, such as Guam and the Philippines, and the seizure and possible defense of additional advanced naval bases across the central Pacific. Marine officers had accepted their traditional role as part of a landing force, a role that gained the Corps a new lease on life due to their successful landing and assault at Guantánamo Bay, but the First World War had provided a spectacular example of amphibious failure in the Gallipoli campaign of 1915–16. Undaunted, the Corps’ leading thinkers demonstrated remarkable insight into the relationship between the strategic, operational, and tactical levels of warfare as they approached the intellectually thorny problem of how to successfully conduct an amphibious assault against a defended beach, recognizing that War Plan Orange could only succeed if the tactical and operational problems of the amphibious assault could be overcome.

In 1920, Major General John A. Lejeune became 13th Commandant of the Marine Corps, at the same time that the Corps was becoming deeply involved in various countries throughout Central America and the Caribbean as colonial infantry. Despite this distraction, Lejeune maintained a focus on amphibious warfare, oversee-

ing the continuing transformation of the Corps’ training, organization, and equipment to prepare it for its newly intended role as an amphibious assault force. One of General Lejeune’s staff officers, Major Earl H. Ellis, wrote Operation Plan 712, *Advanced Base Operations in Micronesia*, the Corps’ first systematic look at the problems posed by War Plan Orange.⁵ At Marine Corps Schools in Quantico, Virginia, the various problems posed by amphibious warfare were studied by both faculty and students throughout the 1920s and 1930s, eventually producing the doctrines, techniques, and technologies that the Corps would utilize throughout World War II, when the United States was forced to put War Plan Orange into effect.

The Japanese attack on Pearl Harbor, Hawaii, on 7 December 1941 came as a shock but after the smoke had cleared away and the dead were buried, the Navy and Marine Corps began to carry out the plans already in place to wage war against Japan. The early defeats, including the loss of the Philippines and the Mariana Islands, were expected though no less shocking; the speed of early Japanese advances through Malaysia and Indonesia surprised everyone, including the Japanese. After the 1942 Battle of the Coral Sea, followed shortly thereafter by the Battle of Midway, put the first brakes to Japan’s headlong advance, the Marine Corps was finally given the chance to demonstrate its amphibious capability, long assumed in War Plan Orange, with its conduct of Operation Watchtower. This would be the first Allied counteroffensive in the Pacific, which would see a Marine Division of 19,000 men put ashore on the obscure island of Guadalcanal.

⁴ In 1911, when asked to comment on War Plan Orange, Mahan suggested a northern approach through the Aleutian Islands, Guam, and Japan’s Ryuku Islands. See William R. Braisted, *The United States Navy in the Pacific, 1909–1922* (Austin: University of Texas Press, 1971), 33–35.

⁵ Maj Earl H. Ellis, *Advanced Base Operations in Micronesia* (Washington, DC: Intelligence Section, Division of Operations and Training, Headquarters Marine Corps, 1921).

TRANSFORMATION A CENTURY AGO

by Norman Friedman

Naval History, 2005⁶

In 1900, the U.S. Navy was in an obvious state of flux.⁶ The most visible change was the sudden, growth of the fleet; *Jane's Fighting Ships* was listing it as the second most powerful navy in the world, a status inconceivable a decade earlier. A suddenly enlarged fleet required a vast growth in the officer corps and creation of the General Board, a permanent war-planning agency with the explicit role of devising policies based on what would be needed should war break out. [Navy Admiral] William Snowden Sims was on the verge of transforming U.S. naval gunnery; his work helped change a fleet with potential combat power into one with real combat potential. Within a few years, the naval personnel system also was transformed, again in the direction of greater capability. Much the same might be said of the drastic change in the way in which ship characteristics were determined, in accord with the needs revealed by war planning.

⁶The original article came from Norman Friedman, "Transformation a Century Ago," *Naval History* 19, no. 2 (April 2005): 32–37. Reprinted from *Naval History* with permission; copyright © 2005 U.S. Naval Institute/www.usni.org. Minor revisions were made to the text based on current standards for style, grammar, punctuation, and spelling.

The torpedo was beginning to transform the world's navies, and the U.S. Navy was buying its first modern submarine.

Yet, one kind of transformation seems to overshadow all the others. In 1900, the Navy was at the center of a deep shift in U.S. national strategy. The shift is obvious if, instead of focusing on 1900 itself, one looks at dates 15 years to either side. In 1885, U.S. national interest was concentrated on inward development, on the fate of the frontier. The U.S. Navy was beginning its revival, with construction of new steel cruisers and with measures taken to limit the further life of the obsolescent wooden fleet. This revival was clearly a limited effort; the Navy was anything but the focus of national policy.

By 1915, the U.S. Navy was the premier U.S. Service, and anyone interested in national defense took that preeminence for granted. As a measure of that attitude, we know Congress annually debated not whether to build further capital ships, but how many.⁷ The [Woodrow]

⁷The term *capital ship* refers to the Navy's larger warships, such as battleships and aircraft carriers, and are generally a leading or primary ship within the fleet.



In this lithograph, artist Thomas Birch illustrates the capture of HMS *Cyane* and *Levant* by the American frigate USS *Constitution* during the War of 1812.

Art Collection, Naval History and Heritage Command, 75-354-A

Wilson administration was about to propose the 1916 [National Defense] Act, which would have made the U.S. Navy the most powerful in the world, at least in terms of modern capital ships. National policy was outward looking in the sense that the connection between the fleet and U.S. national independence was shared widely. Something enormous had happened in 30 years.

From a technological point of view, the creation of a steel navy was essentially inevitable; no one in the 1880s could deny that the collection of wooden steam sloops was obsolescent and perhaps even risible. A glance at any contemporary reference book will show that every navy in the world went through roughly the same process of modernization. That usually meant

building a few modern warships. It absolutely did not usually mean aspiring to the first rank of sea powers. Indeed, the technological revolution of the late nineteenth century raised the cost of competing with the major sea powers, particularly with the Royal Navy. It took some special national impetus to cross that barrier. That is why, for example, the British were shocked into action when the Germans, until then almost exclusively a land power, chose to build a fleet to rival theirs. That the German effort was not seen as routine suggests that the U.S. effort, which was certainly comparable in its magnitude, was not routine either.

The key, it seems, was a new perception of what naval power could mean to the United



Watercolor of USS *New Ironsides* depicted as it appeared in 1863 by Clary Ray.
Art Collection, Naval History and Heritage Command, 45-126-Q

States. The single most important fact of naval power is that the sea is the greatest of all highways: it is far easier to move anything, particularly anything massive, by sea than it is over land. The classic quoted example is that it is less expensive to move cars from Yokohama to New York than from Detroit to New York, but one might equally point out that it is remarkable that a fully equipped air base can be moved about the sea at more than 30 knots. One could hardly do the same over the best overland highway. Much the same might be said of a squadron of inter-continental ballistic missiles. This fact of sea-borne mobility runs counter to most people's experience; to them, the sea seems a rather dangerous place, more barrier than anything else.

If the sea is dangerous, it is a moat. If it is a highway, it is a potential invasion route. Another formulation might be that if the sea is a barrier, then the United States can and perhaps should isolate itself, because it is so conveniently far from most potential sources of trouble (except, of course, the land borders with Canada and with Mexico). On the other hand, if the sea is a highway, then in some special way distances over the sea count for far less than distances overland, and the United States is quite close to Europe and Asia and quite incapable of isolating itself from whatever problems arise there. For that matter, in this vision, the future of the United States is bound up with the futures of countries connected to us by that sea route.



Leslie Arthur Wilcox, *USS Iowa in Rio de Janeiro, Brazil Harbor, 1907*. Oil on canvas.
Art Collection, Naval History and Heritage Command, 2009-152-02

Historically, Americans who lived far from the sea had little or no experience in foreign trade, so the highway aspect made little impression. The view from coastal ports was, of course, different. Inhabitants saw the fruits of overseas trade in their shops. Most of them could see the piers and the ships. For that matter, most of them came into daily contact with those arriving from overseas.

In 1885, the barrier view predominated. It might be conceded that an enemy could, if he wanted to make a supreme effort, approach the United States by sea, but most Americans in 1885 would have doubted that such an assault would be anything but desperate and relatively easy to defeat. Moreover, the most appropriate means of defense against any such attack would be a combination of mobile and fixed fortifica-

tions. The former might include small capital ships.

When the revival of the U.S. Navy began in 1883, to the extent that any maritime threat was conceded, the agreed one was a descent by one or more European powers on the U.S. coast. Much of the wealth of the country was concentrated in a few coastal cities, such as Boston, New York, Baltimore, and New Orleans. The last great foreign war the country had fought, the War of 1812, had seen the British burn Washington and assault Baltimore and New Orleans. The strategic question was how such a threat could be met at minimum cost. The accepted answer, which was not particularly explicit, was that the enemy would be held off by coastal fortifications while a small U.S. cruiser force preyed on his commerce, raising the cost

of the war. The hope was that after a time the foreign attacker would realize that the game was not worth its cost, and he would make peace. Americans of historical bent could remember a strategy of this type pursued during the War of 1812. They tended to avoid remembering just how ineffective it had been. There was little or no hope or expectation of deterrence, merely a theory of war termination, should war come. It seems unlikely that many Americans took the threat of naval attack very seriously.

Naval reconstruction was predicated mainly on the feeling that unless the U.S. Navy was rebuilt, it would be ridiculed as far weaker than major South American navies, and hence inadequate to a self-respecting country. Periodically, writers produced books describing future wars in which European fleets threatened U.S. ports with destruction unless ransom was paid, but again such speculations had little or no effect.

The barrier view had a deeper consequence. It seemed far easier to move forces over land. If Britain was the most likely future enemy, then surely the long border with Canada was a much more likely invasion route. After all, the War of 1812 had seen attacks by both land and sea. Probably it was also very significant, in the 1880s, that most Americans with military experience remembered the Civil War essentially as a land war. Naval officers remembered the blockade as the crippling blow against the South, but the land campaigns were far more prominent in the popular imagination. It seemed that in 1861–65, as in 1812–15, naval power had been auxiliary to land combat. There was little or no interest in the sort of strategic analysis that would have demonstrated the key enabling role of sea power.

In about 1886, Captain Alfred Thayer Mahan began to discuss his theory that sea power

had been central, rather than peripheral, to the world history of the past two and a half centuries. In particular, he emphasized the highway aspect of the sea as the key to understanding that history. His largely tacit point was that, given very easy transportation by sea, seaborne commerce would soon become the dominant factor in the world economy. That would be true even for largely self-sufficient countries, such as the United States, because some vital commodities would always be far less expensive abroad than at home. Given very cheap transportation, they would dominate the U.S. market. All countries ultimately would specialize, hence ultimately would be dependent on sea transportation for at least some vital commodities. This was much the message we see now as globalization. Mahan's argument was that any country dependent on the world economy must be able to secure access to the world. It could not do so if an enemy fleet dominated the seas. Mahan's greatest historical example was the Netherlands, probably the first modern state largely dependent on overseas trade for its survival. When the Dutch fleet was defeated by the British, the Dutch economy collapsed; [or] in Mahan's phrase, "grass grew in the streets of Amsterdam."⁸

Mahan had served as a naval officer in the Civil War, and presumably his faith in the economic consequences of sea power can be traced to a belief that the blockade of the Confederacy had been decisive. Indeed, his first book, published in 1883, had been an account of naval operations in the Gulf and in inland waters during the Civil War.⁹ The particular operations that Mahan recounted were involved main-

⁸ Mahan, *The Influence of Sea Power upon History*. The original quote reads: "grass grew in the streets, and in Amsterdam fifteen hundred houses were untenanted."

⁹ Cdr A. T. Mahan, *The Gulf and Inland Waters* (New York: Charles Scribner's Sons, 1883).

ly with exploiting seaborne (and river-borne) mobility rather than with blockade; but we would see such exploitation and blockade as two sides of the same coin. It does not, incidentally, seem that Mahan drew such conclusions at the time; he needed time to realize that the sea-as-highway was the key insight.

Mahan's view was radical in that few before him seem to have made the sea-as-highway argument explicitly. Most military writing of Mahan's time—indeed, most of the writing of any time—is devoted to particular battles. Sea power differs from land power in that much of its influence is indirect; ships in a blocking position can determine history, but armies tend to have to fight to make their presence count. One might imagine that the 1889 publication of Mahan's first great book, *The Influence of Sea Power upon History*, led directly to the transformation of the U.S. Navy. That was hardly the case. Mahan's insights did raise some consciousness of the significance of sea power, but he did not articulate any program, and he was not placed to have any direct influence on events.

What counted was a political decision, in the sense that the word *political* comes from the same root as *policy*. In the U.S. system, shifts in basic governmental policy must ultimately have public support. Mahan was well aware of the problem. In his first book, he contrasted two kinds of sea power. He understood British sea power to be organic, in the sense that the British political public (those responsible for electing Parliament, for example) were well aware that Britain's fate as an island power rested on its navy. No special argument about the virtues of sea power was needed. With no theoretical underpinning, the British might use their sea power more or less wisely, but they would not consider it optional.

France represented an alternative. It was not at all obvious to Frenchmen in influential positions that sea power was vital. It was expensive, and it detracted from what could be spent on the army, which fought on most of the French frontiers. Periodically, a particularly insightful French minister managed to convince the king to spend much more on the fleet, generally to counter British sea power. Enormous dividends were gained. Because the policy argument for seapower was never well enough or widely enough articulated, however, it generally did not outlast the individual involved. Mahan concluded that only a natural sea power, the economic life of which rested on the sea, could support a major fleet. His problem was that this was not quite the case with the United States, with its anemic merchant marine. In fact, however, some of those who heard Mahan's arguments realized that they did apply very much to the United States.

Benjamin F. Tracy served as secretary of the Navy in the [William H.] Harrison administration (6 March 1889–4 March 1893). Influenced by Mahan, he appreciated the potential of sea power, which made his position extremely important. Tracy formed a Policy Board, advised by but not dominated by Mahan. It submitted its report at the end of 1889, and the result was duly published the following year in the *Proceedings* of the U.S. Naval Institute. In typical nineteenth-century style, it laid out not only a broad policy but also details of the ships to be built, including drawings.¹⁰

The board argued for a new kind of strategy—a forward strategy rather than the earlier defensive concept. It proposed building an oceanic navy built around battleships rather than cruisers;

¹⁰ Benjamin F. Tracy, *Report of the Secretary of the Navy* (Washington, DC: Navy Department, 1889).



Matthew Walker, *USS Terror Monitor (BM-4)*. Watercolor on canvas.
Art Collection, Naval History and Heritage Command, 2009-152-12

one that could deal with an enemy by exploiting the same ocean highway an invader might use. This was deterrence. A few U.S. cruisers might create limited havoc; but as the Union Navy had shown decades earlier, they ultimately would be hunted down by a superior sea power. One consequence of the ongoing technological revolution was that it was becoming more expensive to produce cruisers capable of hunting down fast merchant ships. A commerce-raiding strategy would have to make do with fewer raiders, and they would be far more difficult to replace in wartime. On the other hand, a modern U.S. battle fleet could smash an enemy's seapower and thus lay both his commerce and his coast open to attack.

The board called for creation of two fleets, one for long-range offensive action and a second to shield the U.S. coast. The concept of the coast defense fleet explains why the first three modern U.S. battleships were described as coast defense battleships; only the fourth, the *USS Iowa* [BB 4], was described as oceangoing. In the past, it had taken a massive ship to carry guns sufficiently powerful to deal with enemy capital ships. Now, however, a torpedo carried by a small boat could sink an ironclad. If the cost of close-in defense could be constrained, two oceanic fleets—one for distant operations and one for mid-ocean operations—might become more affordable.

Overall, however, the board's prescription



Search for Cervera Squadron by Henry Reuter Dahl. Oil on canvas.
Art Collection, Naval History and Heritage Command, 70-638-E

called for a fleet nearly the size of that operated at the time by the dominant sea power, Great Britain. Newspaper editorials denounced such extravagance. But the board's paper was intended as the beginning of a process, not the end. It does not seem to have provoked a national debate, but it did make Mahanian ideas respectable in the United States.

The Policy Board's strategy clearly made sense, so it survived. Successive secretaries of the Navy took the new strategy seriously enough to shift the balance of U.S. naval construction, in the decade following the board's report, toward battleships. Even so, on the eve of war with Spain, the United States was far from achieving the status of a major sea power. Moreover, given the slow pace of U.S. construction and the rapid pace of naval technology, it was unlikely the United States would or could even maintain its position.

Then, in 1898, the United States fought Spain. Suddenly, the oceans seemed far smaller. Histories of the war emphasize its offensive aspects: U.S. warships seized the Philippines, and the U.S. Navy destroyed the Spanish fleet

off Cuba. Then, as now, China was seen as the great opportunity of the future, and the Philippines were, in effect, a U.S. foothold in the East. Those who favored global engagement clearly won. The unstated implication was that the world could easily engage the United States via the sea: the Policy Board's argument.

The war had another side as well. When war broke out, the Spanish fleet was in home waters. It might steam to Cuba to protect against a U.S. assault. Then again, it might be employed more indirectly. Residents of the U.S. East Coast suddenly realized there was no good reason why the Spanish battleships and cruisers would not bombard them. That sort of operation certainly would have attracted attention. The Navy Department did commission the fastest U.S. liners to take up patrol stations in the mid-Atlantic, but it is not at all clear that, without radio, they could have got word back in time for any sort of effective reaction. The most visible Navy counter to the threat was to recommission surviving Civil War monitors as harbor-defense craft. Everything more modern was needed in the active theater of war—Cuba. The United States could

afford a modern forward fleet or a modern coast defense force, but not both.

This story could, of course, be told in a very different way. The Spanish clearly valued Cuba and the Philippines. Offensive operations by the United States may well have focused their attention on both. They, too, did not know where the small but quite modern U.S. fleet would strike. They felt compelled, for example, to keep their one usable battleship in home waters (at the end of the war she was being sent East, to relieve the Philippines, but it was far too late for that). The Spanish cruisers went to Cuba, because without them the island would have been overrun instantly. In effect, Spanish action in response to a U.S. threat validated the strategy espoused by the Policy Board almost a decade earlier. The destruction of the Spanish cruisers in Cuban waters ended the threat to the U.S. mainland in a way familiar to students of decisive naval battle, though not to those citizens who wanted direct protection.

The quandary over defending U.S. cities highlighted the strategic problem the United States faced then (and, for that matter, now). Given finite resources, is it better to attempt to protect the country itself, or to deal with an enemy as far forward as possible? The Policy Board's report can be read as a statement of what it would have cost to do both (omitting the obvious implication that such a strategy would be unaffordable). It also had to be admitted, however, that coast defense was not really practicable. The U.S. coast is just too long. The local defenses built up so expensively around U.S. cities—some of which survive as deserted fortifications—were insufficient, because an enemy could land farther up the coast and take the cities from the rear. Exactly such descents figured in the future-war fiction of the time. That sort of

threat was a consequence of basic naval mobility.

In the aftermath of the war, Congress bought the battle fleet that had been proposed a decade earlier. That the United States would build and maintain a capital ship fleet, however, was hardly foreordained. As president, Theodore Roosevelt managed to buy numerous battleships; but at the time, he might have been seen as a lone visionary whose legacy would vanish after his departure. Moreover, just before he left office, a convulsion in battleship design—the dreadnought revolution—made his new ships obsolete.¹¹ Every major navy built some dreadnoughts, but most could not afford to replace their earlier ships on anything like a one-for-one basis. Before about 1906, battleship evolution had been slow enough that navies could take decades to build battle fleets. That situation did not last. Thus, for many navies, the advent of the new type of battleship ended any pretension to first class status. Not only did the U.S. Navy continue to build battleships, but it built larger and larger ones as the technology developed. This trend was so pronounced that skeptics in Congress began to ask the Navy to indicate the natural limits on such growth. Moreover, U.S. designers led the world in some important areas, such as protection (“all or nothing” armor and underwater protection) and machinery (turbo-electric drive, which was partly a matter of protection). It is true that the rate at which the U.S. Navy built dreadnoughts did not match that of the predreadnoughts, but these were much larger and more expensive ships.

The Navy did retain a coast-defense mission

¹¹ The dreadnought battleship revolution began with the arrival of the British Royal Navy's HMS *Dreadnought* in 1906. The *Dreadnought* focused on an all “big gun” armament across its main gun installations and relied exclusively on turbine propulsion for speed. The revolution resulted in all-new designs of significantly more strength, power, and firepower.



Frank Muller's *Ships of the New Navy* shows the white-hulled ships of the late nineteenth century that replaced the sailing ships of a bygone era and generally the types of ships that fought successfully in the Spanish-American War. From left to right: USS *Marietta* (PG 15), gunboat launched in 1897; USS *Puritan* (BM 1), monitor commissioned in 1896; USS *Illinois* (BB 7), battleship launched in 1898; USS *Iowa* (BB 4), battleship launched in 1896; and USS *Stringham* (TB 19), torpedo boat launched in 1899. Oil on canvas.

Art Collection, Naval History and Heritage Command, 44-006-H

after 1900, but it sought to accomplish that mission at minimum cost so the overseas offensive force could be built into an effective instrument of national power. That is why the post-1900 U.S. Navy became so interested in submarines, which offered a mobile form of defense almost impossible to counter. Yet, even including their tenders, they were far less expensive than dedicated coast-defense ships, which the United States ceased to build.

The policy shift begun in 1890 extended far

beyond the Navy. Before 1890, the U.S. vision of the world was largely dismissive. A foreign descent on U.S. shores might be conceivable, but it was far down the list of possibilities. The Policy Board report helped awaken Americans to the real possibility that foreign powers might use their fleets to cross the Atlantic, that the United States was far too underarmed to protect itself. It may be argued that this was actually a fairly new threat based on newly efficient steam engines, which by the mid-1880s finally made it

possible to build truly oceanic capital ships. For years, historians tended to dismiss fears of sea-borne invasion as inventions devised to support expensive naval construction. To some extent, the 1898 scare on the Eastern seaboard suggests that the fear was not entirely fantasy.

This brief account of the U.S. strategic problems in the early part of the twentieth century shows that the United States faced a two-ocean problem. There was no question of building a two-ocean fleet to match, however; the resources simply were not there. A one-ocean fleet had to be able to swing between the two oceans to meet emergencies.

The problem had been highlighted in 1898 by the heroic dash of the battleship [USS] *Oregon* [BB 3] from the Pacific to the Atlantic, but examination of war plans showed just how serious it was. It was not accidental that President Roosevelt, long a student of naval history, successfully pressed the construction of the Panama Canal. The canal was clearly part of the same story that began with the Policy Board.

We are still living with the sort of national strategy the Policy Board first expressed. We still try to keep strategic problems at arms' length; it is better to fight abroad than to fight at home. That view has never been unanimous, but it has been very important. The old contest between coast defense and a forward policy is visible right now in debates over the proper course of the ongoing war against terrorism.

The events of 1898, read in the light of the Policy Board paper, showed that the United States faced real threats. It was not enough merely to buy more ships. Something had to be done to make the Navy an effective weapon.

Before 1898, very little real war planning had been done, although there had been some exercises at the Naval War College. The secretary

of the Navy convened a Strategy Board to recommend policy during the Spanish-American War. Advised by Mahan, it reflected the thinking first widely spread by the Policy Board. After the war, a permanent war-planning entity, the General Board, was convened on the theory that war plans should form the basis for naval policy. In 1904, the General Board was called on to recommend that year's building program, probably partly as a way of pushing the technical bureaus of the Navy to develop an all-big-gun battleship.

On a deeper level, the combination of the continuing influence of the Policy Board and 1898 was to convince many younger officers that reform of the Navy was urgent; what would happen if instead of Spain the United States faced something more serious, like Germany? In effect, the reformers deepened the process of transformation, which had begun in 1890. Prominent among them was William S. Sims, who made his name as a gunnery expert, when guns were clearly the preeminent naval weapons. He and other young officers also managed to make the General Board, which represented the wartime operational thinking of the Navy, the main authority determining the overall characteristics of U.S. warships. Anyone reading the transcripts of General Board hearings conducted between the two World Wars will be struck by the repeated question: How does this ship contribute to the expected war with Japan? Nothing equivalent seems to have been asked before about 1900.

So, something very impressive happened between 1890 and, say, 1910. The Navy was transformed. In this particular case, one key transformation in U.S. overall policy inspired many to press forward the technical transformations that were far more visible. For example, the new battleships in some vital ways were far



Orlando S. Lagman, *Great White Fleet in Magellan Strait*. Oil on canvas.
Art Collection, Naval History and Heritage Command, 66-335-Y

in advance of their foreign counterparts. There were, to be sure, some major gaps. A fleet was more than battleships. Each year the secretary of the Navy asked for cruisers and auxiliaries, but Congress only rarely provided them, and in insufficient numbers. The feeling on the key committee may have been that it was miraculous to convince an inward-looking Congress to buy the most expensive warships, and that anything smaller could be built relatively quickly as needed.

Why did transformation work? It had two key aspects. It was cooperative in that the basic transformational concept was widely understood within the Navy. Not all understood

correctly, but enough did to carry through the transformation from the inside. It may be argued that ambition drove men such as Sims, but they could have pushed in any of a number of directions. The effect of a simple basic concept was to give Sims and many others a common direction, enormously strengthening what they did and also providing a measure against which to evaluate their efforts.

The other key aspect was that the transformation enlisted support from outside the Navy. The Policy Board study came not from a group of internal reformers, but from a politically appointed secretary. That meant he had, at least potentially, the president's ear; he would

not have entered office unless the president had wanted him. He could transmit his thinking to Congress, and only Congress could agree to a major shift in priorities.

This sort of education is the role of major

statements of naval strategy. There was really nothing like the product of the Policy Board until the statements of the maritime strategy in the 1980s.

THE COLOR PLANS, 1919–1938

by Louis Morton
Command Decisions, 1960¹²

American strategical planning in the period immediately following World War I was largely conditioned by the postwar political system and by the wide popular reaction against war. The Versailles Treaty, the Washington [Naval Conference] treaties of 1921–22, and the League of Nations (to which Germany was admitted in 1925) gave promise to the war-weary peoples of the world of an international order in which war would be forever banished. That promise seemed to many to have been fulfilled in 1928 when representatives from most of the nations in the world met at Paris to sign the Kellogg-Briand Pact renouncing war as an instrument of national policy.¹³ Though the United States was not a member of the league, American policy was closely and consciously designed to support the actions of the league in its efforts to further world peace.

During these years of disillusion with war,

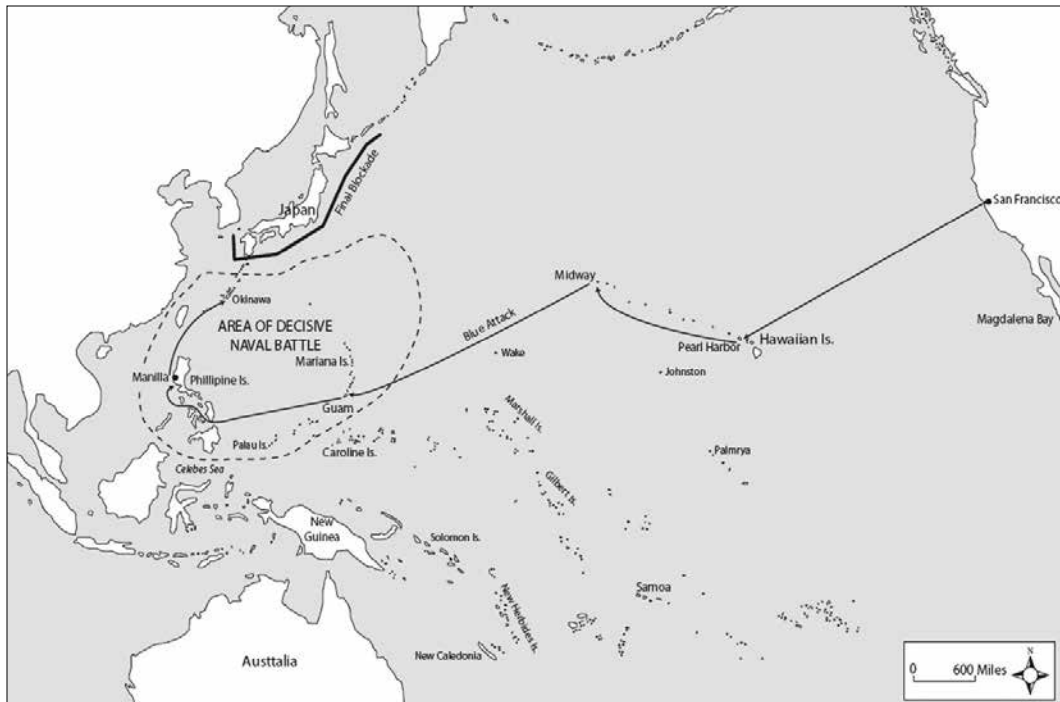
¹²The original chapter came from Louis Morton, "Germany First: The Basic Concept of Allied Strategy in World War II," in *Command Decisions* (Washington, DC: Center for Military History, 1960), 12–20. Minor revisions were made to the text based on current standards for style, grammar, punctuation, and spelling.

¹³The Kellogg-Briand Pact was formally known as General Treaty for Renunciation of War as an Instrument of National Policy.

isolationism, and congressional economy, military planning in the United States was largely theoretical. Germany had just been defeated and stripped of military power. Russia was preoccupied with internal problems and, though Communism was recognized as a menace, the Bolshevik regime was in no position to engage in military adventures. Neither France nor Italy had sufficient naval force to attempt any major operation the Western Hemisphere and had no reason to do so in any case.

Of all the powers in Europe, only Great Britain was theoretically in a position to engage the United States in war with any prospect of success. The British had extensive holdings in the Western Hemisphere from which to launch attacks on American territory and they had enough dreadnoughts and battle cruisers to obtain naval supremacy in the Atlantic. But the possibility of a contest with Britain was extremely remote, for there was no sentiment for war on either side of the Atlantic.

In the Pacific and Far East, the situation was different. Between Japan and the United States, there were a number of unresolved differences



Map of War Plan Orange in the 1920s and 1930s.

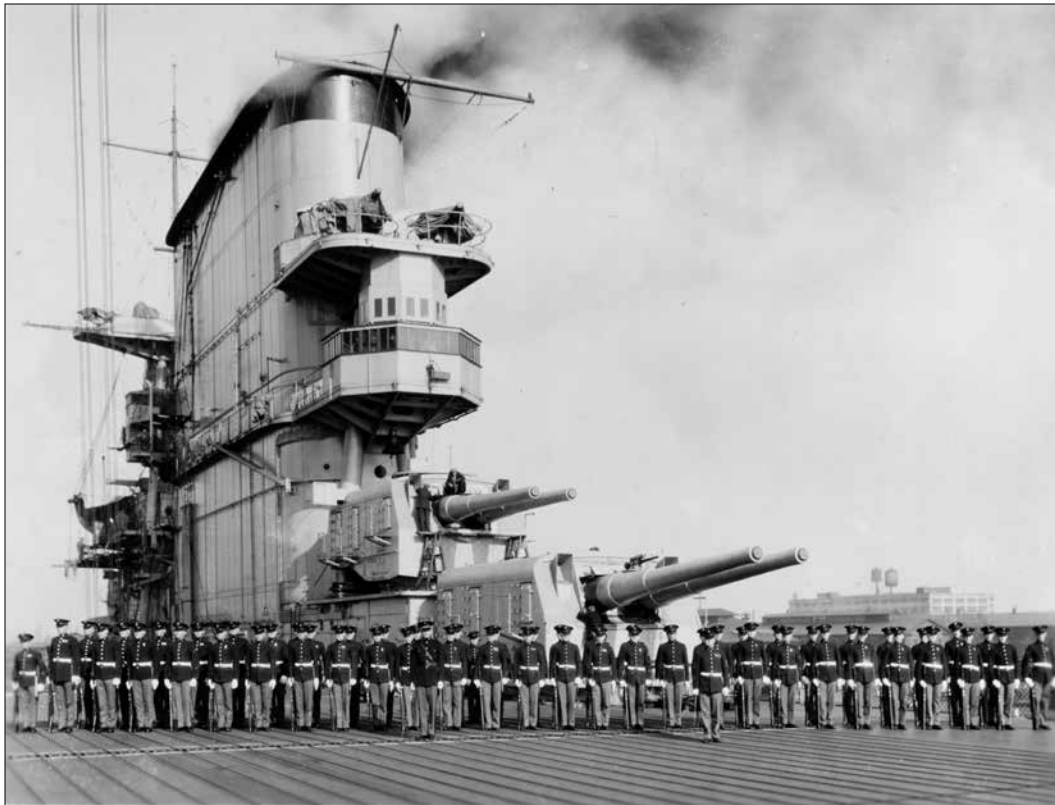
Map courtesy of U.S. Naval Institute

and a reservoir of misunderstanding and ill will that made the possibility of conflict much more likely in that area than in Atlantic. Moreover, Japan's position had been greatly strengthened as a result of the war and the treaties that followed. In the view of the planners, the most probable enemy in the foreseeable future was Japan. Thus, U.S. strategic thought in the years from 1919 to 1938 was largely concentrated on the problems presented by a conflict arising out of Japanese aggression against American interests or territory in the Far East.

The preparation of strategic war plans involving joint (i.e., Army and Navy) forces—and for all practical purposes this means the plans prepared by the American staff—was the responsibility of the Joint Board, predecessor of

the Joint Chiefs of Staff. Reorganized in 1919 to correct defects that had become apparent since establishment in 1903, the board consisted of six members. The Army Chief of Staff and the Chief of Naval Operations, their deputies, and the chiefs of the War Plans Divisions of each of the Services. To it came all matters that required cooperation between the two Services, either by referral or on the initiative of the board itself. It had no executive functions or command authority and, until 1939, reported to the War and Navy secretaries. Its recommendations were purely advisory and became effective only upon approval by both secretaries, and, in some cases, by the president himself.

The most notable improvement of the 1919 reorganization was the formation of a Joint Plan-



Marines in ships' detachments, such as this one on board the carrier USS *Lexington* (CV 2), served in major combatant ships of the prewar Navy. Many seagoing Marines were either commissioned or became senior staff noncommissioned officers during World War II.

Official U.S. Navy photo, Naval History and Heritage Command, NH 51363

ning Committee to assist the board. Consisting of eight officers, four each from the War Plans Division of the Army and of the Navy, this committee performed the detailed investigation and study required for policy decisions, preparation of war plans, and all other matters involving joint actions of the Army and Navy. It was, in effect, a working group for the Joint Board and made its reports and recommendations directly to that body.

The problems considered by the Joint Board after World War I varied widely, but the development of joint war plans constituted, as it had from 1903 to 1913, the major work of

the board, with most attention being given to a possible war with Japan-called [War Plan] Orange in accordance with the system in effect between 1904 and 1939 of designating war plans by colors, each color corresponding to a specific situation or nation. The mandate to Japan of the German islands in the Central Pacific had given that nation numerous bases astride the U.S. Fleet's line of communication and made American defense of the Philippines in the event of war with Japan virtually impossible. Moreover, in the Five-Power Naval Treaty of 1922, the United States, Great Britain, France, and Italy had promised not to fortify their Far Eastern

possessions in return for a pledge by the Japanese to restrain themselves similarly. By this agreement, Japan was virtually assured that the Philippines, Guam, and Hong Kong would not become formidable fortresses threatening the home islands. And although Japan had to accept British and American superiority in capital ships at the Washington [Naval] Conference of 1922, its naval position in the Pacific improved greatly as a result. In the years that followed, while the United States scrapped ships and Japan built them, the strength of the U.S. Fleet relative to that of Japan so declined that it is doubtful if during the 1920s and 1930s it could have met the later on equal terms in the western Pacific.

The first postwar plan for war in the Pacific, developed between 1921 and 1924, reviewed America's unfavorable strategic position and recognized Japan as the probable enemy. The strategic concept adopted by the planners in the event of hostilities was to fight "an offensive war, primarily naval" with the objective of establishing "at the earliest date American sea power in the western Pacific in strength superior to that of Japan." To do this the United States would require a base in that area capable of serving the entire U.S. Fleet. Since the only base west of Pearl Harbor large enough for this purpose was in Manila Bay, [the Philippines,] it would be essential, said the planners, to hold the bay in case of war and be ready to rush reinforcements, under naval protection, to the Philippines in time to prevent their capture. To the Army fell the vital task of holding the base in Manila Bay until the arrival of the Fleet, but the major role in any war with Japan would be played by the Navy, for success in the final analysis depended on seapower.

War Plan Orange made no provision for a landing on the Japanese home islands. Japan was

to be defeated by "isolation and harassment," by the disruption of its vital sea communications, and by "offensive sea and air operations against her naval forces and economic life." Presumably it would not be necessary to invade Japan. But the planners recognized that if they could not bring Japan to her knees by these means they would have to take "such further action as may be required to win the war."¹⁴

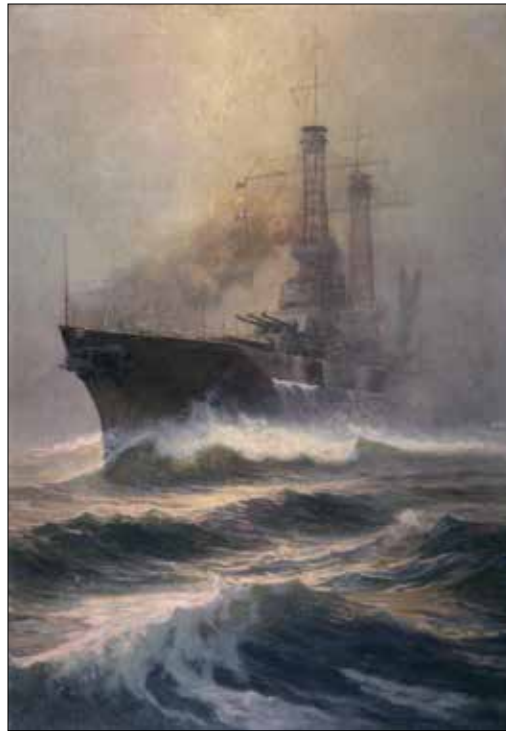
For about 15 years, the strategic concepts embodied in the Orange Plan formed the basis for most American war planning. Variations of the plan were prepared and discussed at length. Every conceivable situation that might involve the United States in a war with Japan, including a surprise air attack on Pearl Harbor, was carefully considered and appropriate measures of defense were adopted. At least half a dozen times between 1924 and 1938, the plan was revised, sometimes in response to military changes and sometimes as a result of congressional sentiment or because of the international situation. Each time, all the implementing plans had to be changed. The Army and Navy had their separate Orange Plans, based on the joint plans and complete with concentration tables, mobilization schedules, and the like. In addition, U.S. forces in the Philippines, Hawaii, Panama, and other overseas bases had their joint and Service plans, as did the defense sectors and continental commands within the United States. Rarely have plans for a war been so comprehensive and detailed, so complete on every echelon, and so long in preparation.

¹⁴ Joint Army-Navy Basic War Plan Orange, 1924, Joint Board (JB) 325, Ser. 228. After numerous drafts, the plan was completed and approved by the Joint Board and the secretary of the Navy in August 1924 and by the secretary of War the following month. The Preliminary Estimates of the Situation, Joint War Plan Orange, and other relevant studies are filed in War Plans Division (WPD) 368; JB 325, Ser. 207; JB 305, Sers. 208–9; and General Board 425, Ser. 1136.

But the United States never fought this war, for [War Plan] Orange was based on a situation that never came to pass. The Orange war envisaged by the planners was a war between the United States and Japan alone. Neither side, it was assumed, would have allies or attack the territory of a third power. It was a war that was to be fought entirely in the Pacific, with the decisive action to take place in the waters off the Asiatic coast.

These assumptions by the military strategists of the Army and Navy were entirely justified by the international situation and reflected a reasonable estimate of the most probable threat to American interests, an estimate that was shared by most responsible officials during these years. But the planners did not, indeed could not, ignore other possibilities no matter how remote. Thus, during the same years in which they labored on [War Plan] Orange, the joint planners considered a variety of other contingencies that might require the use of American military forces. Among the most serious, though one of the most unlikely, of these was a war with Great Britain alone ([War Plan] Red) which in the planners' estimate could conceivably arise from commercial rivalry between the two nations, or with Great Britain and Japan ([War Plan] Red-Orange). The latter contingency was conceded by all to present the gravest threat to American security, one that would require a full-scale mobilization and the greatest military effort.

In their study of these two contingencies, the military planners came to grips with strategic problems quite different from those presented by [War Plan] Orange. A war with Japan would be primarily a naval war fought in the Pacific. So far as anyone could foresee, there



Completed at the New York Naval Shipyard at the end of World War I, USS *New Mexico* (BB 40) escorted President Woodrow Wilson in USS *George Washington* (ID 3018) to France to sign the Treaty of Versailles. The *New Mexico* was the first U.S. Navy ship with a turbo-electric transmission, an innovation that increased engine performance while reducing its overall size requirements and weight. It proved so successful that the Navy immediately decided that all future ships would use this type of engine. Oil on canvas, Walter L. Greene, 1927.
Art Collection, Naval History and Heritage Command, 28-001-B

would be no requirement for large ground armies. There was a possibility, of course, that Japan would attack the Panama Canal, Hawaii, and even the West Coast, but no real danger that Japan could seize and occupy any of these places. In the unlikely event of a conflict between Great Britain and the United States, there was

a real possibility of invasion of the United States as well as attacks against the [Panama] Canal and American interests in the Caribbean and Latin American. In such a war, the major threat clearly would lie in the Atlantic.

Plans developed to meet the remote danger of a Red war, in contrast to Orange, called for the immediate dispatch of the bulk of the U.S. Fleet to the Atlantic and large-scale ground operation to deprive the enemy of bases in the Western Hemisphere. As in Orange, it was assumed that neither side would have allies among the great powers of Europe and Asia, and no plans were made for an invasion of the enemy's homeland by an American expeditionary force. This was to be a limited war in which the United States would adopt a strategic defensive with the object of frustrating the enemy's assumed objective in opening hostilities.

The problems presented by a Red-Orange coalition, though highly theoretical, were more complicated. Here, the American strategists had to face all the possibilities of an Orange and a Red war—seizure of American possessions in the western Pacific, violation of the Monroe Doctrine, attacks on the Panama Canal, Hawaii, and other places, and, finally, the invasion of the United States itself. Basically, the problem was to prepare for a war in both oceans against the two great naval powers, Great Britain and Japan.

As the planners viewed this problem, the strategic choices open to the United States were limited. Certainly, the United State did not have the naval strength to conduct offensive operations simultaneously in both the Atlantic and Pacific Oceans; she must adopt a strategic defensive on both fronts or else assume the strategic offensive in one theater while standing on the defensive in the other. The recommended solu-

tion to this problem—and it was only a recommended solution, for no joint war plan was ever adopted—was “to concentrate on obtaining a favorable decision” in the Atlantic and to stand on the defensive in the Pacific with minimum forces. This was based on the assumption that, since the Atlantic enemy was the stronger and since the vital areas of the United States were located in the northeast, the main effort of the hostile coalition would be made there. For this reason, the initial effort of the United States, the planners argued, should be in the Atlantic.

A strategic offensive-defensive in a two-front war, American strategists recognized, entailed serious disadvantages. It gave the hostile coalition freedom of action to attack at points of its own choosing, compelled the United States to be prepared to meet attacks practically everywhere, exposed all U.S. overseas possessions to capture, and imposed on the American people a restraint inconsistent with their traditions and spirit. Also, it involved serious and humiliating defeats in the Pacific during the first phase of the war and the almost certain loss of outlying possessions in that region.

But the strategic offensive-defensive had definite advantages. It enabled the United States to conduct operations in close proximity to its home bases and to force the enemy to fight at great distance from his own home bases at the end of a long line of communications. Moreover, the forces raised in the process of producing a favorable decision in the Atlantic would give the United States such a superiority over Japan that the Japanese might well negotiate rather than fight the United States alone. “It is not unreasonable to hope,” the planners observed, “that the situation at the end of the struggle with RED may be such as to induce ORANGE to yield



U.S. Battleship Division Nine firing during target practice, 1928.
Official U.S. Navy photo, Naval History and Heritage Command, NH 124141

rather than face a war carried to the Western Pacific.”¹⁵

This plan for a Red-Orange war was admittedly unrealistic in terms of the international situation during the 1920s and 1930s. The military planners knew this as well and better than most and often noted this fact in the draft plans they wrote.¹⁶ But as a strategic exercise, it was

¹⁵ Proposed Joint Estimate and Plan-Red-Orange, prepared in WPD (Army) and approved by Chief of Staff, 3 June 1930, as basis for joint plan, G-3 Obsolete Plans, Reg. Doc. 245-C. Additional material on Red-Orange may be found in same file 245-A through F and in WPD 3202. No joint plan was ever approved.

¹⁶ In 1923, the Army draft of Red-Orange started with the statement, “Under existing conditions a coalition of RED and ORANGE is unlikely,” and 12 years later the director of Naval Intelligence, commenting on another draft plan, stated that a Red-Orange combination was “highly improbable” in the next decade, if at all. Army Draft Red-Orange, 1923, Reg. Doc. 245-F; Director ONI to Director WPD, 27 June 1935, sub: Jt Estimate of Situation, RED-ORANGE, copy in WPD 3202. By 1935, planning for such a war had virtually ended.

of great value for it forced the military planners to consider seriously the problems presented by a war in which the United States would have to fight simultaneously in the Atlantic and Pacific Oceans. In an era when most war planning was focused on the Pacific and where Japan seemed the most likely enemy, this experience may have seemed irrelevant. But it was to prove immensely useful in the plans developed for World War II.

By late 1937, the assumptions that had given to Orange planning its prime importance during the past decade and a half had become of doubtful validity. International events had created a situation that made it increasingly unlikely that a war between the United States and Japan could be limited to these two nations. Germany, Italy, and Japan had joined hands in the Anti-Comintern Pact, and threats or direct acts of aggression

were the order of the day in Europe and Asia.¹⁷ Great Britain and France, still suffering from the prolonged economic crisis of the early 1930s and weakened by domestic conflicts, remained passive in the face of this threat, seeking to avert armed conflict by a policy of appeasement.

In the light of these developments, the Joint Board directed its planners to reexamine the Orange Plan. In its view, the existing plan was now “unsound in general” and “wholly inapplicable to present conditions.” The planners were to develop a new plan that should provide, the board specified, for an initial “*position of readiness*” along the West Coast and the strategic triangle formed by Alaska, Hawaii, and Panama. In addition, the planners were to make “exploratory studies and estimates” of the various courses of action to be followed after the position of readiness had been assumed. Clearly implied in these instructions was the injunction to consider the possibility that the United States might become involved in a European conflict while engaged in offensive operations in the Pacific.¹⁸

In less than two weeks, the Joint Planning Committee reported its inability to reach an agreement. The Army members, viewing the uncertain situation in Europe, were reluctant to underwrite offensive operations in the Pacific beyond those essential to the security of the strategic triangle and the West Coast. With the European Axis in mind, they pointed out that political considerations might require limited action and purely defensive operations in the Pacific. To uncover vital areas in the Western Hemisphere for an offensive in the far Pacific

seemed to the Army planners foolhardy indeed. Thus, their plan provided for purely defensive operations after the assumption by U.S. forces of a portion of readiness.

To the Army planners, the primary problem was to determine the kind of war the United States should fight. Should the situation dictate operations designed only for the defense of the United States or of the Western Hemisphere, then the war in the Pacific might well take on a limited character. It was impossible to determine in advance just what the situation would be, whether the United States would be involved with one or more of the Axis Powers, or even what forces would be available. It might well be, declared the Army planners, that national policy and public opinion would neither require nor support a plan for offensive operations in the Pacific.

The Navy members of the Joint Planning Committee argued that American strategy could not be limited to a purely defensive position in readiness but must aim at the defeat of the enemy. Once war began, production must be quickly increased to provide the means required both for the security of the continental United States and for offensive operations in the Pacific. Should the European Axis give aid to the enemy, the naval planners assumed, with Great Britain clearly in mind, that the United States would have allies who would provide the assistance needed by the U.S. Fleet to maintain naval superiority over Japan. “The character, amount, and location of allied assistance,” they hastened to add, “cannot be predicted.”¹⁹

The separate reports submitted by the

¹⁷ The Anti-Comintern Pact was originally made in 1936 between Germany and Japan and then between Italy, Germany, and Japan in 1937 to combat against Communist International but also specifically the Soviet Union.

¹⁸ JB to JPC, memo sub: Joint Basic War Plan ORANGE, 10 November 1937, JB 325, Ser. 617; and Col S. D. Embick for WPD, 3 November 1937, AG 225.

¹⁹ Army and Navy Members JPC to JB, 28 and 30 November 1937, sub: Joint Basic War Plan ORANGE, JB 325, Ser. 617. The Army plan is in appendix A, the Navy's in appendix B. See also, Col W. J. Krueger, draft memo, sub: Some Thoughts on Joint War Plans, 22 November 1937, AG 225.



USS *Chicago* (CA 29) is pictured here underway off of New York City during the 31 May 1934 fleet review. *Official U.S. Navy photo, Naval History and Heritage Command, NH 715*

Army and Navy members of the Joint Planning Committee put the choice between the opposing strategies squarely up to the Joint Board. The board avoided the choice by issuing new instructions to the planners on 7 December 1937. The new plan, it specified, should have as its basic objective the defeat of Japan and should provide for “an initial temporary position in readiness” for the Pacific coast and the strategic triangle. This last was to be the Army’s job; the Navy’s task would consist of “offensive operations against ORANGE armed forces and the interruption of ORANGE vital sea communications.”²⁰

Even under these revised instructions, the

²⁰ JB to JPC, directive sub: Joint Basic War Plan ORANGE, 7 December 1937, JB 325, Ser. 618.

planners were unable to agree on the best way to meet an Axis threat. Faced with another split report, the Joint Board turned over the task of working out a compromise to the deputy chief of staff and the assistant chief of Naval Operations. These two, after a month of discussion, finally came up with a new Orange Plan on 18 February 1938. This plan maintained the traditional offensive strategy in the Pacific, but it also took into account the danger of a simultaneous conflict in the Atlantic—the first time this possibility was recognized in Orange planning. On the outbreak of a war with Japan, the United States would first assume a position in readiness and make preparations for the offensive against Japan. It would then be ready to meet

any unexpected development that might arise, including an attack in the Atlantic. If none did, the Navy would then proceed to take the offensive against Japan with operations directed initially against the mandated islands and extending progressively westward across the Pacific. These

operations combined with economic pressure (blockade) would, it was believed, result in the defeat of Japan and a settlement that would assure the peace and safeguard American interests in the Far East.²¹

²¹ Joint Basic War Plan ORANGE, 21 February 1938, JB 325, Ser. 618. The plan was approved by the secretary of the Navy on 26 February and the secretary of War two days later.

EVOLUTION OF MODERN AMPHIBIOUS WARFARE, 1920–1941

by Lieutenant Colonel Frank O. Hough,
Major Verle E. Ludwig, and Henry I. Shaw Jr.
*Pearl Harbor to Guadalcanal, 1958*²²

EARLY DEVELOPMENTS

The success of the Guantánamo Bay operation and the very real possibility that the United States' new position in world affairs might lead to repetitions of essentially the same situation led high-level naval strategists to become interested in establishing a similar force on a permanent basis: a force capable of seizing and defending advanced bases that the fleet could utilize in the prosecution of naval war in distant waters—waters conceivably much more distant than the Caribbean. This in turn led to the setting up of a class in the fundamentals of advanced base work at Newport, Rhode Island, in 1901. During the winter of 1902–3, a Marine battalion engaged in advanced base defense exercises on the island of Culebra in the Caribbean in conjunction with the annual

maneuvers of the fleet. Expeditionary services in Cuba and Panama prevented an immediate follow-up to this early base defense instruction; but in 1910, a permanent advanced base school was organized at New London, Connecticut. A year later, it was moved to Philadelphia.²³

By 1913, sufficient progress had been made in advanced base instruction to permit the formation of a permanent advanced base force. Made up of two regiments—one of coast artillery, mines, searchlights, engineers, communicators, and other specialists for fixed defense, and the other of infantry and field artillery for mobile defense—the advanced base force totaled about 1,750 officers and men. In January of 1914, it was reinforced by a small Marine Corps aviation detachment and joined the fleet for maneuvers at Culebra. But the analogy between advanced base training and the amphibious assault techniques that emerged in World War II is easily overdrawn. Prior to World War I, the primary interest was in defense of a

²² The original chapter came from LtCol Frank O. Hough, Maj Verle E. Ludwig, and Henry I. Shaw Jr., "Evolution of Modern Amphibious Warfare, 1920–1941," in *Pearl Harbor to Guadalcanal: History of U.S. Marine Corps Operations in World War II*, vol. I (Washington, DC: Historical Branch, G-3 Division, Headquarters Marine Corps, 1958), 8–23. Minor revisions were made to the text based on current standards for style, grammar, punctuation, and spelling.

²³ J. A. Isely and P. A. Crowl, *The U.S. Marines and Amphibious War: Its Theory and Its Practice in the Pacific* (Princeton, NJ: Princeton University Press, 1951), 21–22.



LtCol Earl H. Ellis, seen here in a 1952 portrait by Col H. Avery Chenoweth, USMCR, was the author of Operations Plan 712: *Advanced Base Operations in Micronesia*, which became the basis for the American campaign of amphibious assault that defeated the Japanese in World War II. Oil on canvas.
Art Collection, National Museum of the Marine Corps

base against enemy attack. There was no serious contemplation of large-scale landings against heavily defended areas.²⁴

This all but exclusive concern for the defense of bases was clearly borne out by the writing of Major Earl H. Ellis. Ellis, one of the most brilliant young Marine staff officers, was among the farsighted military thinkers who saw the prospect of war between the United States and Japan prior to World War I. Around 1913, he directed attention to the problems of a future Pacific conflict. To bring military force to

bear against Japan, Ellis pointed out, the United States would have to project its fleet across the Pacific. To support these operations so far from home would require a system of outlying bases. Hawaii, Guam, and the Philippines, which were the most important of these, we already possessed. Their defense would be of utmost importance and would constitute the primary mission of the Marine advanced base force. Ellis discussed in considerable detail the troops which would be required and the tactics they should employ.

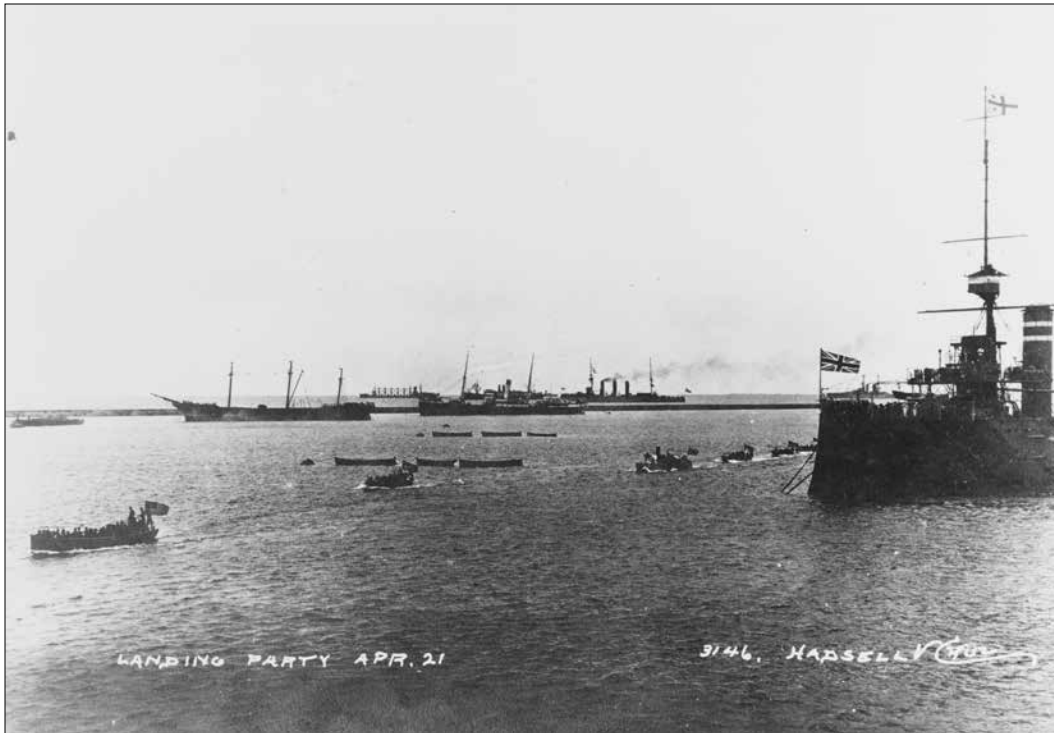
In addition to the bases already in the possession of the United States, Ellis foresaw the need of acquiring others held by Japan. To the Marine Corps would fall the job of assaulting the enemy-held territory. Although he did not discuss the problems involved or take up the tactics to be employed, Ellis foreshadowed the amphibious assault that was to be the primary mission of the Marine Corps in World War II.²⁵

The infant Advanced Base Force was diverted to other missions almost as soon as it was created. Hardly were the Culebra maneuvers of 1914 completed when the Marines were sent to Mexico for the seizure of Veracruz. The next year, they went ashore in Haiti, and in 1916, unsettled conditions in Santo Domingo required the landing of Marines in that country. Expeditionary service in these two Caribbean republics was to constitute a heavy and continuing drain on Marine Corps resources, which might otherwise have been devoted to advanced base activities.

The expansion of the Marine Corps to about 73,000 officers and men during World

²⁴ *Annual Report of the Major General Commandant of the Marine Corps, Fiscal Year 1914* (Washington, DC: Government Printing Office, 1914), hereafter *CMC Annual Report* (year).

²⁵ Earl H. Ellis, "Naval Bases" (unpublished manuscript, n.d.). The date and origin of this work and to whom it was addressed are obscure, but it appears that the work is either a lecture or a series of lectures with the following divisions: 1. Naval Bases; Their Location, Resources and Security; 2. The Denial of Bases; 3. The Security of Advanced Bases and Advanced Base Operation; 4. The Advanced Base Force.



The Marine battalion from USS *Florida* (BB 30) going ashore at Veracruz, Mexico, during the U.S. intervention on 21 April 1914. On the right is HMS *Essex*, flying from the foremast the flag of British RAdm Christopher G. Cradock, who died later in 1914 in the Battle of Coronel.

Naval History and Heritage Command, NH 42503, courtesy of LtCdr Richard Wainwright Jr., USN (Ret)

War I served as a temporary stimulant to the Advanced Base Force. In spite of the demands for manpower resulting from the sending of an expeditionary force to France, the Advanced Base Force was maintained at full strength throughout the war. By the Armistice, it numbered 6,297 officers and men.²⁶

UPS AND DOWNS OF THE 1920S

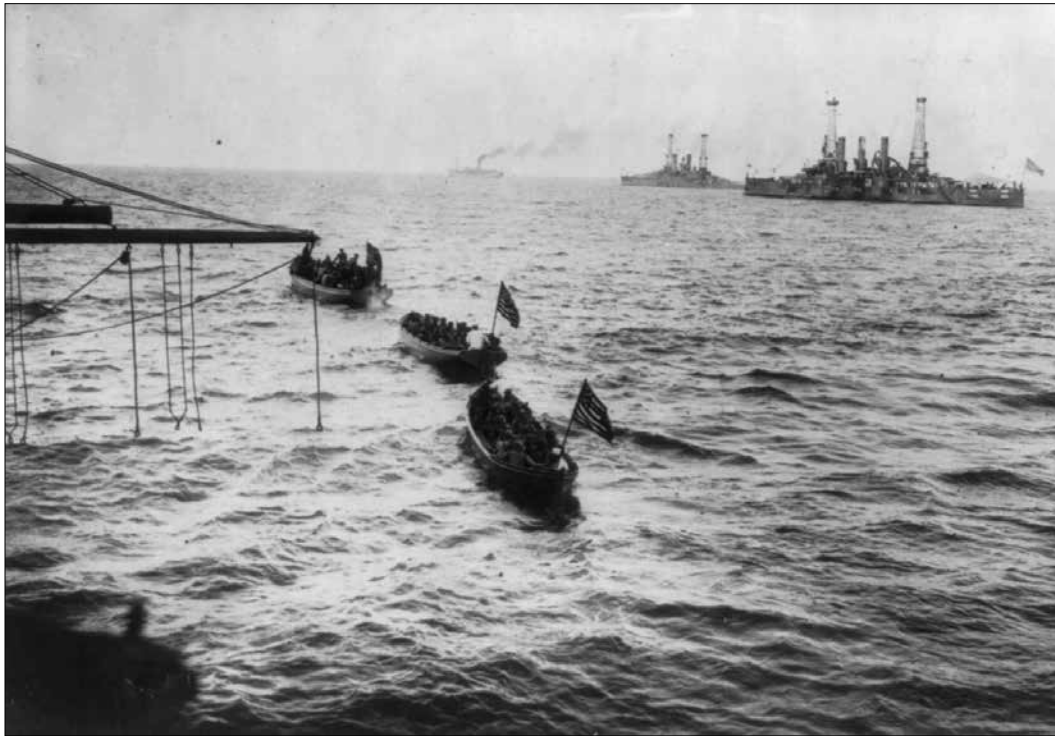
Marines returning from overseas late in 1919 picked up where they left off three years before. At Quantico, the Advanced Base Force, redesignated the [Marine Corps] Expeditionary Force

in 1921, stood ready to occupy and defend an advanced base or to restore law and order in a Caribbean republic. In that year, it included infantry, field artillery, signal, engineer, and chemical troops, and aircraft. A similar expeditionary force was planned for San Diego, [California,] but perennial personnel shortages prevented the stationing of more than one infantry regiment and one aircraft squadron there during the 1920s.²⁷

Nothing seemed changed, but delegates of the Great Powers, meeting at Versailles to write

²⁶ LtCol Clyde H. Metcalf, *A History of the United States Marine Corps* (New York: Putnam's, 1939), 456–60, 472.

²⁷ *CMC Annual Reports, 1921–29.*



Three landing craft leaving USS *Michigan* (BB 27) during the U.S. intervention at Veracruz, Mexico.
Library of Congress, LC-USZ62-4987

the peace treaty ending World War I, had already taken an action that was to have far-reaching consequences for a future generation of Marines. In the general distribution of spoils, the former German island possessions in the central Pacific had been mandated to the Japanese. [In] one stroke, the strategic balance in the Pacific was shifted radically in favor of Japan. That country now possessed a deep zone of island outposts. Fortified and supported by the Japanese fleet, they would constitute a serious obstacle to the advance of the United States Fleet across the Pacific.

Earl Ellis was one of the first to recognize the significance of this strategic shift. In 1921, he modified his earlier ideas and submitted them in the form of Operation Plan 712, *Advanced Base*

Operations in Micronesia. In this plan, Ellis stressed the necessity for seizing by assault the bases needed to project the Fleet across the Pacific. He envisioned the seizure of specific islands in the Marshall, Caroline, and Palau groups, some of which were actually taken by Marines in World War II. He went so far as to designate the size and type of units that would be necessary, the kind of landing craft they should use, the best time of day to effect the landing, and other details needed to insure the success of the plan. Twenty years later, Marine Corps action was to bear the imprint of this thinking:

To effect [an amphibious landing] in the face of enemy resistance requires careful training and preparation, to say the least; and this along Marine lines. It is not enough that the

*troops be skilled infantry men or artillery men of high morale; they must be skilled water men and jungle men who know it can be done—Marines with Marine training.*²⁸

The Commandant, Major General John A. Lejeune, and other high-ranking Marines shared Ellis' views. "The seizure and occupation or destruction of enemy bases is another important function of the expeditionary force," [Lejeune] stated in a lecture before the Naval War College in 1923. "On both flanks of a fleet crossing the Pacific are numerous islands suitable for submarine and air bases. All should be mopped up as progress is made. . . . The maintenance, equipping and training of its expeditionary force so that it will be in instant readiness to support the Fleet in the event of war," he concluded, "I deem to be the most important Marine Corps duty in time of peace."²⁹

The 1920s, however, were not the most favorable years for training in amphibious operations. Appropriations for the Armed Services were slim, and the Navy, whose cooperation and support was necessary to carry out landing exercises, was more intent on preparing for fleet surface actions of the traditional type. Still, a limited amount of amphibious training was carried out in the first half of the decade.

During the winter of 1922, a reinforced regiment of Marines participated in fleet maneuvers with the Atlantic Fleet. Their problems included the attack and defense of Guantánamo Bay, Cuba, and the island of Culebra. In March of the following year, a detachment of Marines took part in a landing exercises at Panama, and a battalion of Marines and sailors practiced a land-



Marines raise the U.S. flag over Veracruz, 27 April 1914. American troops entered the city on 21 April and stayed through November.

Library of Congress, LC-DIG-GGBAIN-15834

ing on Cape Cod, Massachusetts, that summer.

Panama and Culebra both witnessed landing exercises early in 1924, with a Marine regiment participating. This set of exercises was the high point of training reached in the 20s. It marked the advent of serious experimentation with adequate landing craft for troops and equipment. However, it was most notable for the great number of mistakes made in the course of the exercises, such as inadequate attacking forces, insufficient and unsuitable boats, lack of order among the landing party, superficial naval bombardment, and poor judgment in the stowage of supplies and equipment aboard the single transport used.³⁰

The last landing exercise of the era was a

²⁸ Ellis, *Advanced Based Operations in Micronesia*.

²⁹ MajGen John A. Lejeune, "The United States Marine Corps," *Marine Corps Gazette* 8, no. 4 (December 1923): 252–53.

³⁰ Isely and Crowl, *The U.S. Marines and Amphibious War*, 30–32.



U.S. Marines land from “whaleboats” and ships’ boats during an early amphibious landing exercise at Quantico, VA, in the 1920s.

Official U.S. Marine Corps photo

joint Army-Navy affair held during the spring of 1925 in Hawaiian waters. It was actually an amphibious command post exercise, undertaken at the insistence of General Lejeune to prove to skeptical Army officers that the Marine Corps could plan and execute an amphibious operation of greater than brigade size. A force of 42,000 Marines was simulated, although only 1,500 actually participated. It ran more smoothly than had the previous exercise, but still was handicapped by a lack of adequate landing craft.³¹

Even this meager amphibious training came to an end after 1925. New commitments in Nicaragua, in China, and in the United States guarding the mails served to disperse the expeditionary forces. By 1928, the Commandant

announced in his annual report that barely enough personnel were on hand at Quantico and San Diego to keep those bases in operation.³²

Whatever the shortcomings of the work in amphibious doctrine and technique during the 1920s, the Marine Corps scored a major triumph when its special interest in the field became part of the official military policy of the United States. *Joint Action of the Army and Navy*, a directive issued by the Joint Board of the Army and Navy in 1927, stated that the Marine Corps would provide and maintain forces “for land operations in support of the fleet for the initial seizure and defense of advanced bases and for such limited auxiliary land operations as are essential to the prosecution of the naval campaign.”³³

Further, in outlining the tasks to be performed by the Army and Navy in “Landing At-

³¹ BGen Dion Williams, “Blue Marine Corps Expeditionary Force,” *Marine Corps Gazette* 10, no. 2 (September 1925): 76–88; LtGen M. B. Twining to ACofS, G-3, HQMC, 25 January 1957, hereafter Twining letter; and BPlan JA&Nav Exercise, 1925, Problem No. 3, Blue Marine Corps Expeditionary Force, 8 January 1925.

³² *CMC Annual Report, 1928*.

³³ Joint Board, *Joint Action of the Army and Navy* (Washington, DC: GPO, 1927).

tacks Against Shore Objectives,” this document firmly established the landing force role of the Marine Corps: “Marines organized as landing forces perform the same functions as above stated for the Army, and because of the constant association with naval units will be given special training in the conduct of landing operations.”³⁴

ACTIVATION OF THE FLEET MARINE FORCE

The recognition of a mission did not create the doctrine or the trained forces to carry it out, and in 1927, neither was at hand. In January 1933, the last Marine had departed from Nicaragua, and withdrawal from Haiti was contemplated. Troops were now becoming available for training in landing operations; but before any real progress could be made, one preliminary step was essential. A substantial permanent force of Marines with its own command and staff would have to be organized for the purpose, otherwise training would be constantly interrupted by the dispersal of the troops to other commitments.

No one recognized this more clearly than the Assistant Commandant, Brigadier General John H. Russell. He assembled a staff at Quantico to plan the organization of a force that could be rapidly assembled for service with the Fleet. In August of 1933, he proposed to the Commandant that the old “Expeditionary Force” be replaced by a new body to be called either “Fleet Marine Force” or “Fleet Base Defense Force.” The new force, while an integral part of the United States Fleet, would be under the operational control of the Fleet commander when embarked on vessels of the Fleet or engaged in Fleet exercises afloat or ashore. When not so embarked or engaged it would remain under the Major General Commandant.

³⁴ Joint Board, *Joint Action of the Army and Navy*, 3, 12.

Russell’s recommendations were promptly approved by the Commandant and by the Chief of Naval Operations. The designation Fleet Marine Force (FMF) was preferred by the senior naval staffs, and the Commandant was requested to submit proposed instructions for establishing “appropriate command and administrative relations between the commander in Chief and the Commander of the Fleet Marine Force.”³⁵

This directive could well be called the Magna Carta of the Fleet Marine Force. It stated:

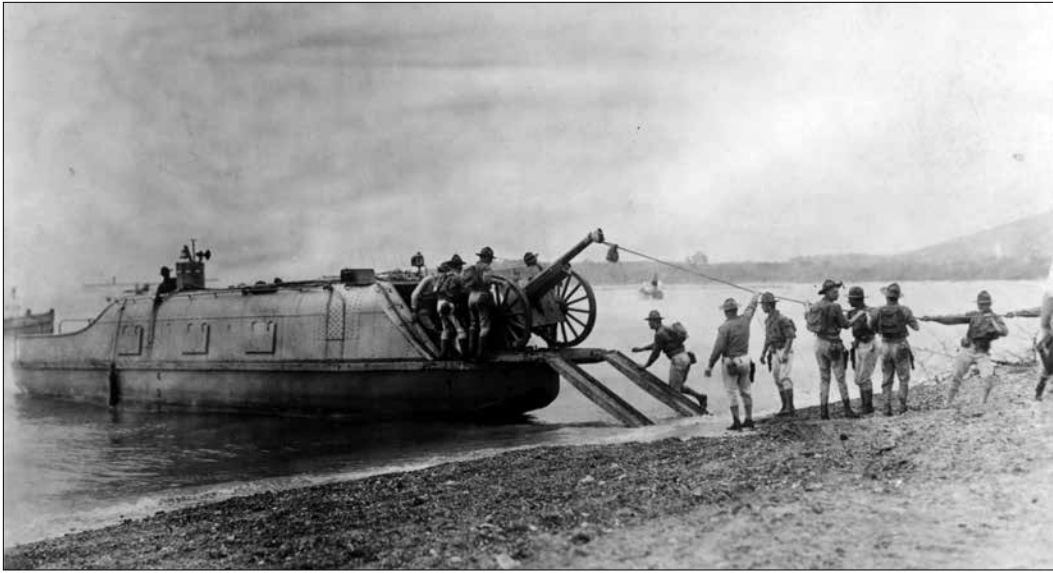
The force of Marines maintained by the Major General Commandant in a state of readiness for operations with the fleet is hereby designated as Fleet Marine Force (FMF), and as such shall constitute a part of the organization of the United States Fleet and be included in the operating force plan for each fiscal year.

The Fleet Marine Force shall consist of such units as may be designated by the Major General Commandant and shall be maintained at such strength as is warranted by the general personnel situation of the Marine Corps.

The Fleet Marine Force shall be available to the commander in chief for operations with the Fleet or for exercises either afloat or ashore in connection with Fleet problems. The commander in chief shall make timely recommendations to the Chief of Naval Operations regarding such service in order that the necessary arrangements may be made.

The commander in chief shall exercise command of the Fleet Marine Force when embarked on board vessels of the fleet or when engaged in Fleet exercises, either

³⁵ CNO letter to CMC, 12 September 33; and Isely and Crowl, *The U.S. Marines and Amphibious War*, 33–34.



During an exercise in the Caribbean, Marines land a 75mm howitzer from an amphibious tank on the island of Culebra, Puerto Rico, in 1923. An early version of the landing craft used in World War II resulted from joint Navy-Marine Corps experiments in the 1920s and 1930s.

Official U.S. Marine Corps photo, 515227

afloat or ashore. When otherwise engaged, command shall be directed by the Major General Commandant.

The Major General Commandant shall detail the commanding general of the Fleet Marine Force and maintain an appropriate staff for him.

The commanding general, Fleet Marine Force, shall report by letter to the commander in chief, United States Fleet, for duty in connection with the employment of the Fleet Marine Force. At least once each year, and at such times as may be considered desirable by the commander in chief, the commanding general, Fleet Marine Force, with appropriate members of his staff, shall be ordered to report to the commander in chief for conference.³⁶

³⁶ Navy Department General Order 241, 8 December 1933.

However significant the creation of the FMF may have been in terms of the future, its initial form was modest enough. The Commandant was obliged to report in August 1934 that the responsibility for maintaining ship's detachments and garrisons abroad, and performing essential guard duty at naval shore stations, prevented the Marine Corps from assigning the component units necessary to fulfill the mission of the FMF. At this time, the total number of officers and men in the FMF was about 3,000.³⁷

“THE BOOK” COMES OUT

With the creation of the FMF, the Marine Corps had finally acquired the tactical structure necessary to carry out the primary war mission assigned to it by the Joint Board in 1927. The next order of business was to train the FMF for the execution of its mission.

³⁷ *CMC Annual Report, 1934.*



John W. Christie's amphibious tank lands on Culebra during the U.S. Marines' 1924 winter maneuvers. The experimental amphibious tractor began a long line of test vehicles that culminated in the landing vehicle, tracked (LVT).

Official U.S. Marine Corps photo

But the training could not be very effective without a textbook embodying the theory and practice of landing operations, no such manual existed in 1933. There was a general doctrine by the Joint Board issued in 1933 and, though it offered many sound definitions and suggested general solutions to problems, it lacked necessary detail.

In November 1933, all classes at the Marine Corps Schools were suspended and, under the guidance of Colonel Ellis B. Miller, assistant commandant of the schools, both the faculty and students set to work to write a manual setting forth in detail the doctrines and techniques to be followed in both training and actual operations. Under the title, *Tentative Manual for Landing Operations*, it was issued in January 1934.

On 1 August 1934, the title was changed to *Manual for Naval Overseas Operations* and some changes were effected in the text. A few months later, this publication, now retitled *Tentative*

Landing Operations Manual, was approved by the Chief of Naval Operations for "temporary use . . . as a guide for forces of the Navy and the Marine Corps conducting a landing against opposition."³⁸ In mimeographed form, it was given relatively limited distribution within the Navy, but wide distribution within the Marine Corps. Comments were invited.

The doctrine laid down in this remarkable document was destined to become the foundation of all amphibious thinking in the United States armed forces. The Navy accepted it as official doctrine in 1938 under the title of [*Landing Operations Doctrine*] (Fleet Training Publication 167), and in 1941, the War Department put the Navy text between Army covers and issued it as [*Landing Operations on Hostile Shores*] (Field Manual 31-5).

Remarkable as it was, the Marine's amphib-

³⁸ *Tentative Landing Operations Manual* (Washington, DC: Navy Department, 1935).

ious doctrine was largely theory when it was first promulgated at Quantico in 1934. To put the theory into practice, major landing exercises were resumed. They were held each winter from 1935 through 1941 on the islands of Culebra and Vieques, [Puerto Rico,] in conjunction with fleet exercises in the Caribbean, or on San Clemente off the California coast. A final exercise of the prewar period on a much larger scale than any previously attempted was held at the newly acquired Marine Corps base at New River, North Carolina, in the summer of 1941. These Fleet landing exercises provided the practical experience by which details of landing operations were hammered out.

In light of its importance, here might be as good a place as any to consider briefly the more basic aspects of this doctrine as conceived in the original manual and modified by experience in Fleet exercises up to the outbreak of the war. Amphibious operations and ordinary ground warfare share many of the same tactical principles. The basic difference between them lies in the fact the amphibious assault is launched from the sea and is supported by naval elements. While water-borne, the landing force is completely powerless and is dependent upon the naval elements for all its support: gunfire, aviation, transportation, and communication. In this initial stage only, the naval elements have the capability of reacting to enemy action. As the landing force, however, is projected onto the beach, its effectiveness, starting from zero at the water's edge, increases rapidly until its strength is fully established ashore.

COMMAND RELATIONSHIPS

This basic difference between land and amphibious operations created a problem in command

relationships, which has plagued amphibious operations from earliest times. During the initial stage when only naval elements have the capability of reacting to enemy action, it has been generally and logically agreed that the overall command must be vested in the commander of the naval attack force. It has, however, not been so generally agreed in the past that once the landing force is established ashore and capable of exerting its combat power with primary reliance on its own weapons and tactics that the landing force commander should be freed to conduct the operations ashore as he sees fit.

The authors of the *Tentative Landing Operations Manual*, writing in 1934, evidently did not foresee that this particular aspect of command relations presented a problem that required resolution.³⁹ They simply defined the "attack force" as all the forces necessary to conduct a landing operation and added that the attack force commander was to be the senior naval officer of the Fleet units making up the attack force. His command was to consist of the landing force and several naval components, organized as task groups for the support of the landing. These included, among others, the fire support, transport, air, screening, antisubmarine, and reconnaissance groups. The commanders of the landing force and of the several naval task groups operated on the same level under the overall command of the attack force commander throughout the operation.

This initial command concept was destined

³⁹ Unless otherwise noted, the material in the remainder of this chapter is derived from *Tentative Landing Operations Manual* and *Landing Operations Doctrine* (Washington, DC: Office of the Chief of Naval Operations, 1938); 1st Marine Brigade letter to CMC, 5 June 1939 and enclosure (a); 1st Marine Brigade Flex 6 Report, "Notes from Critique for Makee Learn Problem at Culebra," 14–15 February 1940; and 2d Marine Brigade Minor Landing Exercises Report, San Clemente Island, CA, 17 April–6 May 1939.

to undergo a number of modifications and interpretations which will be discussed in this history as they occur. The first important change did not come about until toward the close of the Guadalcanal campaign.⁴⁰

NAVAL GUNFIRE SUPPORT

There is nothing new in the concept of using the fire of ships' guns to cover an amphibious landing of troops during its most vulnerable phase: before, during, and after the ship-to-shore movement. Our own history contains many examples of this technique, notably: two landings of U.S. troops in Canada during the War of 1812 (York and Niagara Peninsula, summer 1813); General [Winfield] Scott's landing at Vera Cruz in 1847 during the Mexican War; several amphibious operations during the Civil War (e.g., Fort Fisher, [North Carolina,] in 1865); and Guantánamo Bay during the Spanish-American War in 1898.

However, the evolution of modern weapons posed difficult problems of a technical nature, and the much-belabored Gallipoli operation seemed to indicate that these were insoluble. High-powered naval guns, with their flat trajectory and specialized armor-piercing ammunition, proved no true substitute for land-based field artillery, and much study and practice would be required to develop techniques that would make them even an acceptable substitute.

Nevertheless, a rudimentary doctrine concerning naval gunfire support evolved during the years between 1935 and 1941. But it evolved slowly and none too clearly. Experimentation indicated that bombardment ammunition, with its surface burst, was better suited to fire missions against most land targets, while armor-piercing shells could be employed to good effect against

concrete emplacements and masonry walls. The types of ships and guns best adapted to perform specific fire missions—close support, deep support, counterbattery, interdiction, etc.—were determined. And some progress was made in fire observation technique.

Three types of observers were provided for: aerial, shipboard, and once the first waves had landed, shore fire control parties. For the greater part of this period, the latter were made up of personnel of the firing ships, inexperienced in such work, untrained, and wholly unfamiliar with the tactical maneuvers of the troops they were supporting. Not until 1941 were trained Marine artillery officers with Marine radio crews substituted, the naval officers then serving in a liaison capacity.

Other considerations of a naval nature served as further limiting factors on the naval gunfire support concept. The necessity for the support ships to have a large proportion of armor-piercing projectiles readily available with which to fight a surface action on short notice restricted the accessibility of and limited the amount of bombardment shells carried. In turn, the probability of enemy air and submarine action once the target area became known caused much apprehension in naval minds and dictated the earliest possible departure of the firing ships from the objective. An example of this apprehension at work came to the fore early in the Guadalcanal campaign.⁴¹

Furthermore, tradition dies hard in any Service. The traditional belief that warships exist for the sole purpose of fighting other warships dates far back in history, with one of its leading exponents the great Lord [Vice Admiral Horatio] Nelson with his oft-quoted dictum: "A

⁴⁰ See Hough, Ludwig, and Shaw, *Pearl Harbor to Guadalcanal*, part VI.

⁴¹ See Hough, Ludwig, and Shaw, *Pearl Harbor to Guadalcanal*, part VI, chapter 2.



Part of the 1st Battalion, 5th Marines, landing at Firewood Bay during amphibious exercises at Cul-ebra, Puerto Rico, in February 1936.
Official U.S. Marine Corps photograph, 529463

ship's a fool to fight a fort." This supposed vulnerability of surface vessels to shore-based artillery remained very much alive in the minds of naval planners. So, they dictated that support ships should deliver their fires at maximum range while traveling at high speed and maneuvering radically—not exactly conducive to pinpoint marksmanship.⁴²

In sum, these considerations, the starting concept of naval gunfire support with which we entered World War II, added up to this: a bombardment of very short duration, delivered by ships firing relatively limited ammunition allowances of types often not well suited to the purpose, from long ranges while maneuvering at high speeds. Obviously, the best that could be expected would be area neutralization of enemy defenses during troop debarkation and the ship-to-shore movement, followed by a limited amount of support on a call basis, with this, too, to be withdrawn as soon as field artillery could be landed.⁴³

⁴² Isely and Crowl, *The U.S. Marines and Amphibious War*, 38.

⁴³ *Naval Gunfire in Amphibious Operations*, SM-67 (Quantico, VA: Marine Corps Education Center, Marine Corps Schools, 1955), 2.

Area neutralization—that was the basic concept, with deliberate destruction fire ruled out. A blood bath would be required to expunge this from “The Book.”

AIR SUPPORT

As the Marine Corps developed the various techniques contributing to a smooth landing operation, it had to give more and more consideration to the fast growth of military aviation as a powerful arm.

Even the original *Tentative Landing Operations Manual* considered the vulnerable concentrations of troops in transports, landing boats, and on the beach and called for a three-to-one numerical superiority over the enemy in the air. Later, in FTP-167, the ratio was increased to four-to-one, primarily to wipe the enemy air threat out of the skies and secondarily to shatter the enemy's beachhead defense and to cut off his reinforcements.

Considerable emphasis was placed, however, on direct assistance to the troops themselves. This included such supporting services as guiding the landing boats to the beach, laying smoke screens, and providing reconnaissance and spotting for naval gunfire and artillery. Most importantly, it included rendering direct fire support to the landing force until the artillery was ashore and ready to fire.

For this air war, employment of Marine squadrons on carriers was considered ideal but, due to a limited number of carriers, was not always a practical possibility. Planners even considered moving Marine planes ashore in crates and assembling them after the ground troops had seized an airfield.

Hence, the *Tentative Landing Operations Manual* called for the Navy to carry most of the initial air battle. Marine pilots, however, might

be employed with Navy air units. Actually, in order to exercise Marine air, most of the early training landing had to be scheduled within round trip flying distance of friendly air fields. Although, by 1940, Marine carrier training operations were becoming routine, the heavy reliance upon Navy carrier air over Marine landing lasted throughout the war.

As noted before, close coordination of air with ground received great emphasis in the Marine Corps. Even in Santo Domingo, [Dominican Republic,] and Haiti and later in Nicaragua, Marine pilots reconnoitered, strafed, and bombed insurgent positions, dropped supplies to patrols, and evacuated wounded. The *Tentative Landing Operations Manual* incorporated this teamwork into its new amphibious doctrine, and the landing exercises of the late 1930s developed aviation fire power as an important close ground support weapon. By 1939, Colonel Roy S. Geiger advocated and other Marine Corps leaders conceded that one of the greatest potentials of Marine aviation lay in this “close air support.”

The challenge became that of applying the fire power of Marine air, when needed, to destroy a specific enemy frontline position without endangering nearby friendly troops.

Refinement of this skilled technique as we know it today was slow because of many factors. There was so much for pilots to learn about rapidly developing military aviation that close air support had to take its place in the busy training syllabus after such basic drill as aerial tactics, air-to-air gunnery, strafing, bombing, navigation, carrier landings, and communications, and constant study of the latest in engineering, aerodynamics, and flight safety.

Also, whenever newer, faster, and higher-flying airplanes trickled into the Marine Corps

in the lean 1930s, they were found to be less adaptable for close coordination with ground troops than the slower, open cockpit planes that supported the patrol actions of Nicaragua.

In Nicaragua, the aviator in his open cockpit could idle his throttle so as to locate an enemy machine gun by its sound, but in the maneuvers of 1940 pilots flashing by in their enclosed cockpits found it difficult to see what was going on below or even to differentiate between friendly and “enemy” hills.⁴⁴ In Nicaragua, the Marine flier was most often an ex-infantryman, but 10 years later many of the new Navy-trained Marine aviators were fresh from college and knew little about ground tactics. The lack of a real enemy to look for, identify, and to shoot at hindered attempts at precision, especially since air-ground radio was not yet as reliable as the old slow-but-sure system where pilots read code messages from cloth panels laid on the ground or swooped down with weighted lines to snatch messages suspended between two poles.

The main key to development of close air support lay in reliable communications to permit quick liaison and complete understanding between the pilot and the frontline commander. Part of the solution lay in more exercises in air-ground coordination with emphasis on standardized and simplified air-ground communications and maps. By 1939, an aviator as an air liaison officer was assigned to the 1st Marine Brigade staff. While both artillery and naval gunfire, however, employed forward observers at frontline positions, air support control was still being channeled slowly through regimen-

⁴⁴ From Culebra came the report, “1st MAG [Marine Aircraft Group] as a whole performed in a creditable manner, although at one stage they were impartial in their attack.” 1st Marine Brigade, FLEX-6 Report, “Notes from Critique for Makee Learn Problem at Culebra, 14–15Feb40.”



Marines go ashore in an early landing craft during amphibious exercises in 1939.
Official U.S. Marine Corps photo, 526331

tal and brigade command posts.⁴⁵ In the same year, one squadron sent up an air liaison officer in the rear seat of a scouting or bombing plane to keep abreast of the ground situation and to direct fighter or dive bomber pilots onto targets by means of radio.⁴⁶ This was better but not best.

Meanwhile, war flamed up in Europe. Navy and Marine planners took note as the Germans drove around the Maginot Line with their special air-ground “armored packets” in which aviation teamed up with the fast, mobile ground

elements to break up resistance.⁴⁷ By this time, the Marines were working on the idea of placing radio-equipped “observers” on the front lines to control air support for the troops. But the leathernecks were already in the war before the first standardized Navy-Marine Corps instructions on their employment appeared.⁴⁸ Also at that time on Guadalcanal, certain infantry officers were given additional duty as regimental

⁴⁵ LtGen Julian C. Smith, interview with Historical Branch, G-3, Headquarters Marine Corps, 25 July 1956.

⁴⁶ Col R. D. Moser, interview with Historical Branch, G-3, Headquarters Marine Corps, 31 August 1956.

⁴⁷ The Maginot Line, named for France’s Minister of War André Maginot, represented the French line of defense along the border with Germany during the 1930s. It extended from La Ferté to the Rhine River and stretched along the Rhine and the Italian frontier. WD G-2 to C/S, memo I. B. 130, Air-GrdOps, 23 September 1941, tab C; and Commander in Chief, Atlantic, FLEX-6 Report, 13 June 1940, 14–15.

⁴⁸ USN, CSP-1536, 5 September 1942.

“air forward observers.” They were coached on the spot by aviators of the 1st Marine Aircraft Wing.⁴⁹

THE SHIP-TO-SHORE MOVEMENT

The ship-to-shore movement was visualized by the *Tentative Landing Operations Manual* in a manner that resembled closely a conventional attack in land warfare: artillery preparation, approach march, deployment, and assault by the infantry. It stressed that this movement was no simple ferrying operation but a vital and integral part of the attack itself and demanded a high order of tactical knowledge and skill.

The two major problems in the ship-to-shore movement are the speedy debarkation of the assaulting troops and their equipment into the landing boats and the control and guiding of these craft to their assigned beaches. To facilitate the first, the *Tentative Landing Operations Manual* directed that each transport on which combat units were embarked should carry a minimum [number of] sufficient boats to land a reinforced infantry battalion.⁵⁰ Thus, each transport and its accompanying troops would be tactically self-sufficient for the assault landing, and the loss of one ship would not be a crippling blow. To expedite their debarkation, the Marines generally went over the side via cargo nets rigged at several stations on the ship.

To solve the second major problem in the ship-to-shore movement, that of controlling and guiding the landing craft to their proper beaches, the *Tentative Landing Operations Manual* provided

for: (1) marking the line of departure with buoys or picket boats; (2) a designated control vessel to lead each boat group from the rendezvous area to the line of departure, towing the boats in fog, smoke, or darkness, if necessary; (3) wave and alternate wave guide boats; (4) each boat to carry a signboard with its assigned letter and number indicating its proper position in the formation; and (5) for a guide plane to lead the boat waves in.

The system for the control of the ship-to-shore movement was still substantially the same as prescribed in the *Tentative Landing Operations Manual* when the Marines made their first amphibious landing of World War II at Guadalcanal on 7 August 1942.

COMBAT UNIT LOADING

“Combat unit loading” of transports is the key to amphibious logistics as developed by the Marine Corps. This is a practical process designed to make supplies and equipment immediately available to the assault troops in the order needed, disregarding to a large extent the waste of cargo space which results. In contrast is commercial loading, which is equally practical in utilizing every cubic foot of cargo space available but prevents access to much of the cargo until the ship is unloaded.

Highest priority items for combat unit loading vary somewhat with the nature and problems of a particular operation. Relative priorities must be worked out with minute care. The responsibility for handling this was given to a Marine officer designated transport quartermaster (TQM) aboard each amphibious assault ship. He had to know not only the weight and dimensions of each item of Marine gear carried but had to familiarize himself with the characteristics of the particular ship to which

⁴⁹ 1st Marine Division, “Final Report on Guadalcanal Operation,” 1 July 1943, Phase V, Annex D, OPlan 2-42, 5. The directive on appointing air forward observers was dated 2 October 1942.

⁵⁰ This general concept that troops and their landing craft should be transported together to the objective area remained valid throughout the war, although at times it was necessary to deviate from it.



Troops of the 1st Marine Division conduct landing exercises from the Intracoastal Waterway along Onslow Beach at Marine Barracks New River, NC. Sketch by Vernon H. Bailey.

Art Collection, Naval History and Heritage Command

he was assigned: exact location and dimensions of all holds and storage spaces in terms of both cubic feet and deck space. This familiarity required at times accurate remeasurement of holds and loading spaces as modifications, not shown in the ship's plans, had often been made in the ship's internal structure. Initially, the *Tentative Landing Operations Manual* directed that the TQM should be an officer of the unit embarked, but such were the variations in ships that it subsequently proved more feasible to assign a Marine officer, thoroughly familiar with Marine gear, permanently to a particular ship with which he would become equally familiar through experience.

Practical experience with combat loading between 1935 and 1941 generally confirmed the soundness of the doctrines set forth in the *Ten-*

tative Landing Operations Manual. Application of these doctrines in the Fleet landing exercises was limited, however, by several factors, chiefly the lack of suitable transports. In addition, an uncertainty at times as to ports of embarkation and dates of availability of ships sometimes entangled planning procedures. As a result, there was no ideal approximation of wartime combat loading.

SHORE PARTY

One of the most serious problems encountered in early landing exercises was congestion on the beaches as men and supplies piled ashore. To keep such a situation reasonably in hand requires a high degree of control; control difficult to achieve under such circumstances, even when the enemy remains only simulated. Assault

troops must push inland with all speed not only to expand the beachhead, but also to make room for following units and equipment to land and to provide space in which personnel assigned strictly beach functions can operate.

To solve this problem the *Tentative Landing Operations Manual* provided for a beach party, commanded by a naval officer called a beachmaster, and a shore party, a special task organization, commanded by an officer of the landing force. The beach party was assigned primarily naval functions, such as reconnaissance and marking of beaches, marking of hazards to navigation, control of boats, evacuation of casualties and, in addition, the unloading of material of the landing force from the boats. The shore party was assigned such functions as control of stragglers and prisoners, selecting and marking of routes inland, movement of supplies and equipment off the beaches, and assignment of storage and bivouac areas in the vicinity of the beach. The composition and strength of the shore party were not set forth except for a statement that it would contain detachments from some or all of the following landing force units: medical, supply, working details, engineers, military police, communications, and chemical. The beach party and the shore party were independent of each other, but the *Tentative Landing Operations Manual* enjoined that the fullest cooperation be observed between the beachmaster and the shore party commander, and the personnel of their respective parties.

It was not indicated from what source “working details” for the shore party would come, but in practice, since there was no other source, the policy of assigning units in reserve the responsibility for furnishing the labor details quickly developed. This in effect, however, temporarily deprived the commander of his reserve.

No realistic test of the shore and beach party doctrine took place during the early Fleet landing exercises. Although some material was landed on the beach, it generally consisted of rations and small quantities of ammunition and gasoline. Not until 1941 were adequate supplies available and the maneuvers on a large enough scale to provide a test of logistic procedures. The results were not encouraging. “In January of 1941 . . . the shore party for a brigade size landing . . . consisted of one elderly major and two small piles of ammunition boxes,” wrote a Marine officer who “suffered” through those years. “The ship-to-shore movement of fuel was a nightmare. We had no force level transportation, [no] engineers and no supporting maintenance capability worthy of the name. In short, the combination of the parsimonious years and our own apathy had left us next to helpless where logistics were concerned.”⁵¹

Major General H. M. Smith, the landing force commander at the New River, [North Carolina,] exercise in the summer of 1941, reported that “considerable delay in the debarkation of troops and supplies was caused by lack of personnel in the Shore and Beach Parties. . . . Roughly, the supplies except for subsistence it was possible to land . . . were insufficient to sustain the forces engaged for more than three days.”⁵²

General Smith, who had a deep respect for logistics, was determined to correct these deficiencies. “It is evident,” he reported to Rear Admiral Ernest J. King, commander in chief, Atlantic Fleet, “that special service troops (la-

⁵¹ BGen Victor H. Krulak to assistant chief of staff, G-3, Headquarters Marine Corps, 5 March 1957, hereafter Krulak letter.

⁵² Commanding general, Amphibious Force, Atlantic, Preliminary Report to commander in chief, Atlantic, New River Exercise, 4–12 August 1941, 27 August 1941, hereafter Amphibious Force, Atlantic, Preliminary Report.



An Army light tank is unloaded from its landing craft during joint Army-Marine amphibious exercises at New River, NC, in August 1941.
Official U.S. Army photo (SC 125129)

bor) must be provided for these duties in order to prevent reduction of the fighting strength of battalion combat teams. . . . The present doctrine results in divided authority between shore party commanders.” He recommended that “the beach and shore party commanders be consolidated into one unit, a Shore Party, under control of the landing force.”⁵³

[A] solution to the problem of divided authority came from a joint board of Army, Navy, Marine Corps, and Coast Guard officers appointed by Admiral King. Its recommendations closely followed those of General Smith and were accepted in toto and published on 1 August 1942 and Change 2 to FTP-167. The principal changes were: (1) joining together of the beach and shore parties under the title shore party, as a component of the landing force; (2) designating the beach party commander as the assistant to the shore party commander and his advisor on naval matters; and (3) transferring the responsibility for unloading boats at the beach from the naval element to the landing force element of the shore party.⁵⁴

Headquarters Marine Corps solved the labor force problem by adding a pioneer (shore party)

battalion of 34 officers and 669 enlisted men to the Marine division.⁵⁵ This change occurred on 10 January 1942, too late for the personnel concerned to gain practical experience in large-scale exercises in the techniques of handling vast quantities of supplies or to test the adequacy of the strength and organization provided. At Guadalcanal, this lack came close to having serious consequences.⁵⁶

General Smith was not content merely to submit his shore party recommendations to Admiral King. At his direction, the logistics staff of the Amphibious Force Atlantic Fleet prepared a detailed standard operating procedure (SOP) covering all phases of logistics. Issued as *Force General Order No. 7-42, SOP for Supply and Evacuation*, it served as the basic guide to combat loading and shore party operations during the Guadalcanal operation.⁵⁷

By 7 December 1941, the Marine Corps had made long strides toward amphibious preparedness. It had a doctrine that had been tested in maneuvers and found to be basically sound. Many of the errors in implementation had been recognized and corrected; still others were awaiting remedial action when war broke out. But the simulated conditions of the maneuver ground were now to be abandoned. The Marines and their doctrine were now to submit to the ultimate test of war.

⁵³ Amphibious Force, Atlantic, Preliminary Report.

⁵⁴ Amphibious Force, Atlantic, Preliminary Report.

⁵⁵ Marine Corps table of organization D-94, 10 January 1942.

⁵⁶ See Hough, Ludwig, and Shaw, *Pearl Harbor to Guadalcanal*, part VI.

⁵⁷ Krulak letter; and Twining letter.

THE LEGACY AND LESSONS OF OPERATION WATCHTOWER

by Jon T. Hoffman

Marine Corps Gazette, 1992⁵⁸

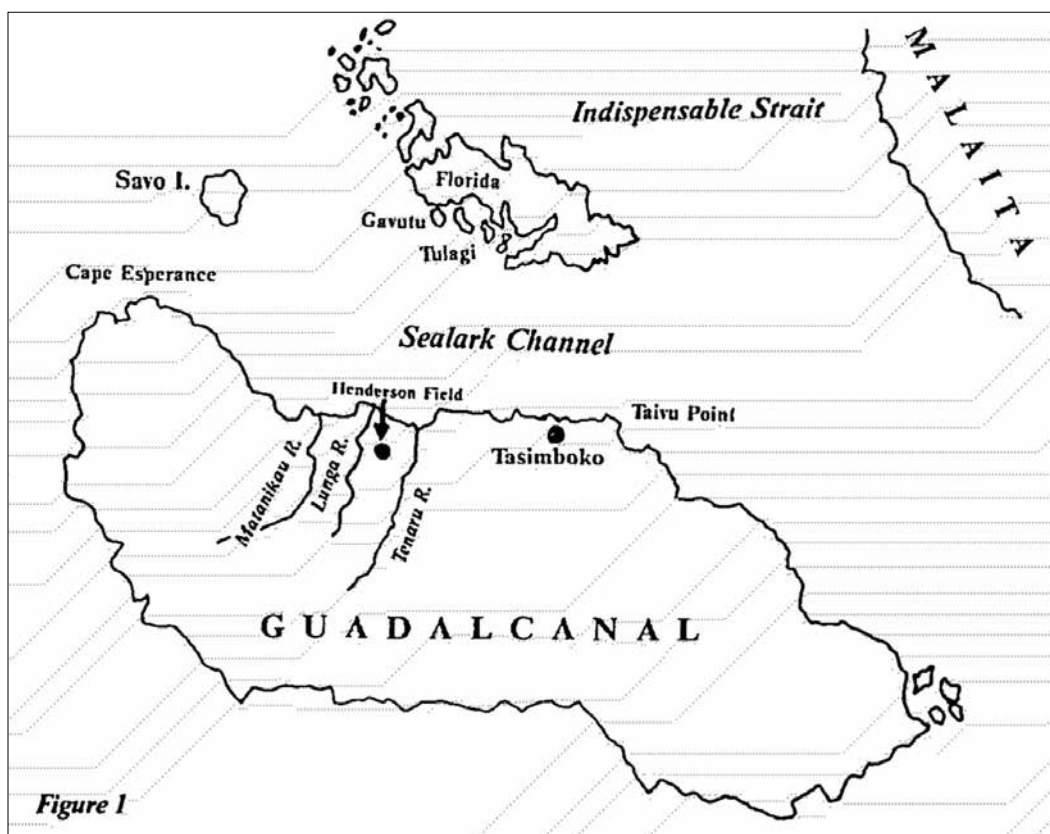
The Marine Corps takes justifiably great pride in its reputation for combat prowess, but over the years it has also been noted for its intellectual achievements. One of the premier examples in the latter category was the development of the first amphibious doctrine in the 1930s. The idea of conducting such operations was not revolutionary; men had been landing against defended shores since the time of the ancient Greeks and the Peloponnesian War. What the Marine Corps did was figure out how to overcome the problem of making a successful assault in the face of modern weaponry and improved defensive mobility. When a group of Marine and Navy officers sat down in Quantico in 1933 to formulate the Tentative Manual for Landing Operations one of their major sources of ideas was the failed Allied invasion of the Gallipoli Peninsula in World War I. They looked at that campaign to see what went wrong and how they could overcome similar difficulties. From this real-world laboratory, they

fashioned the doctrine that guided a new generation of Allies through another world war.

The Marine Corps is presently in the process of creating the force structure and doctrine that will take it into the twenty-first century. At the same time, we will be honoring the 50th anniversaries of the greatest series of amphibious operations the world has ever known, the landings that formed the backbone of Allied victory in World War II in both the European and Pacific theaters. It would be ironic if modern Marines did not use that military history to help them see their way into the future, did not copy the proven techniques of their predecessors, who used similar information to create the doctrine that won those battles in the first place. The following article is the first in a series that will look at the legacy and lessons of World War II operations to see what we can learn that may be of use tomorrow. These essays, to be published to coincide with their respective anniversaries, will cover those operations that may hold some keys to the future of amphibious warfare.

In a recent piece in the Naval Institute's *Proceedings*, analyst Norman Polmar lumped the Gua-

⁵⁸ The original article came from Jon T. Hoffman, "The Legacy and Lessons of Operation Watchtower," *Marine Corps Gazette* 76, no. 8 (August 1992): 68–73. Minor revisions were made to the text based on current standards for style, grammar, punctuation, and spelling.



Courtesy of Marine Corps Gazette

Guadalcanal landing in with several other Pacific assaults that he said “were unprecedented for their success, valor, and cost in human lives.” In this issue of the *Gazette*, another author cites the same operation as giving rise to the need for an “elite element of Marines specializing in amphibious assault.” Although Guadalcanal certainly should be remembered for hard fighting and high casualties, it is often overlooked these days that those descriptions apply only to the land campaign that followed an unopposed amphibious landing. Just as important, one must also remember that the assault on Guadalcanal was only one of several landings that took place the same day, all of them part of Operation Watch-

tower. These first American landings of the war tell us much about the state of the amphibious art in the Marine Corps at the start of World War II and may yield some useful insights into the challenges modern Marines face as we enter the twenty-first century.

The Joint Chiefs of Staff issued the directive for Operation Watchtower on 24 June 1942. The objective was to stop the southward extension of Japanese power in the Solomon Islands, a development that threatened the Allied lifeline to Australia. The initial target was Tulagi, a small island serving as a seaplane base, but evidence of construction of an airfield on nearby Guadalcanal added that larger land mass to the list.

The conjoined islets of Gavutu and Tanambogo would also be seized.

Several things complicated planning for Operation Watchtower. The item of biggest initial concern was a lack of time and intelligence. The 1st Marine Division received the assignment to conduct the operation on 25 June, just five weeks before the scheduled 1 August D-day. Little information on the targets was available and extensive efforts turned up only some old hydrographic charts, a few former residents, and similar sources. This was later supplemented with a batch of poor aerial photos. The sketchy intelligence indicated there were a few hundred enemy on Tulagi and about as many on Gavutu-Tanambogo. Planners believed there were several thousand troops on Guadalcanal. Although the estimates for the smaller islands were nearly correct, there were just 2,000 Japanese on Guadalcanal, and most of those were noncombatant labor troops, as were many of the men on Gavutu-Tanambogo.

The next set of problems centered on logistics. The ships bringing the division from the states to New Zealand were not combat loaded, nor was there enough shipping to take along all the division's supplies and equipment. There were also too few of the most modern types of landing craft. The typical variety was the already outmoded Higgins boat [landing craft vehicle, personnel (LCVP)], a wooden craft that could beach an entire infantry platoon, but which had no capability for placing heavy equipment ashore. A modified version did have a bow ramp, but this could carry only relatively small vehicles. There were a handful of more recent vintage tank lighters and an armored tracked vehicle that could actually swim and crawl ashore. The latter was seen more as a logistic vehicle that would save the manhandling of supplies

from boats onto the beach since it could drive inland directly to the quartermaster dumps.

To further complicate matters, the division was physically divided; one regiment had already landed in New Zealand, another was at sea, and most of the recently attached supporting forces were spread around the Pacific. All units would only come together at the rehearsal site just one week before D-day. Last, many of the units within the division were not well prepared for combat. Since its creation, the organization had periodically subdivided, almost like an amoeba, to provide cadres for new formations. Training and unit cohesion suffered in the process: too few experienced Marines were trying desperately to pass on their knowledge to the mass of fresh recruits.

Two men were largely responsible for creating a workable plan from this chaos: Lieutenant Colonel Gerald C. Thomas, the division operations officer, and Merrill L. Twining, his assistant. Although both saw Guadalcanal and its airfield as the primary target, they were concerned about the smaller islands. These were defended by elements of the Imperial Navy's special landing forces, Japanese Marines. More important, the troops were well dug in on terrain overlooking the limited landing sites available on the small islands. Consequently, the bigger island would receive the bulk of the Marines (about 11,000 men organized as the Guadalcanal Group). The best troops (in terms of training and leadership) would attack the smaller objectives. The 1st Raider Battalion, with 2d Battalion, 5th Marines, in support, would take Tulagi while the 1st Parachute Battalion seized Gavutu-Tanambogo. A battalion of the 2d Marines bolstered this force, styled the Northern Group, to 4,000 men. The remainder of the 2d Marines, about 3,400 men, served as the operational reserve.



U.S. Marines land on Red Beach during the invasion of Guadalcanal, August 1942.

Thayer Soule Collection, Archives Branch, History Division

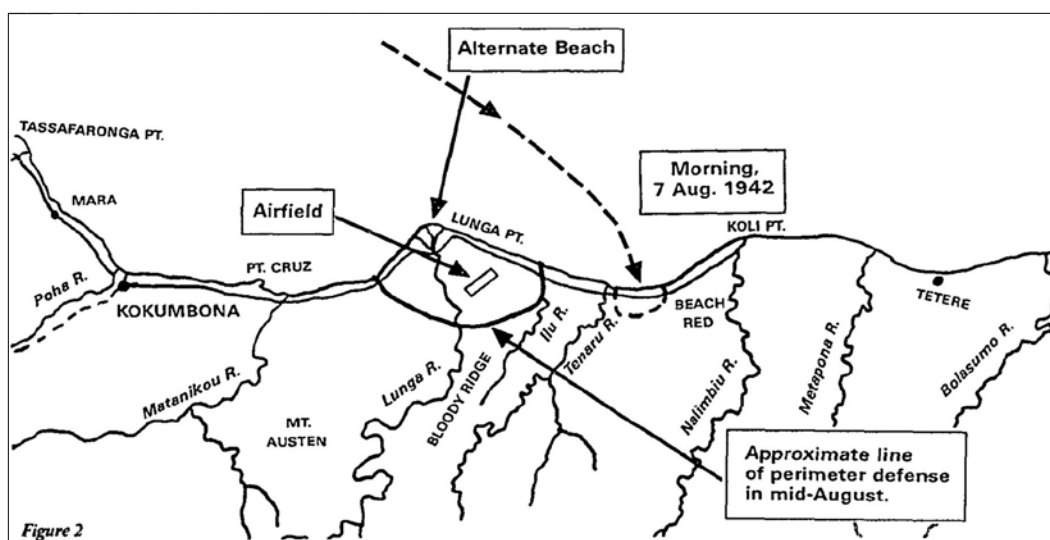
PLANNING CONSIDERATIONS

One of the main things governing the choice of landing sites was the capability of the available landing craft. Given the reliance on Higgins boats, the Marines had to come ashore where hydrographic conditions would allow the boats to operate (i.e., at generally good beaches free of any obstructions like sandbars or coral reefs). Another consideration was logistics: What facilities might be available to offload boats? How far were the landing sites from proposed inland objectives? Finally, though not necessarily last in terms of priority, was the state of enemy defenses controlling possible landing areas (figure 2).

On Guadalcanal, the argument came down to two possible choices. The first option was designated Beach Red. It was hydrographical-

ly suitable and quite large, with ample room to land a large number of boats at once. It had two drawbacks. It was concave in shape, which meant that Japanese defenders arrayed along its length would have excellent fields of fire against incoming boat waves. Marines landing here might be attacking into the interlocking fires of machine guns and heavy weapons from the front and two flanks. Moreover, it was almost four miles from the airfield. It would take time for the landing force to make its way to the main objective, and equipment and supplies dumped ashore would be far from their eventual destination (an important consideration given that the division would leave most of its trucks behind due to a shortage of shipping space.)

The alternative was a smaller beach near



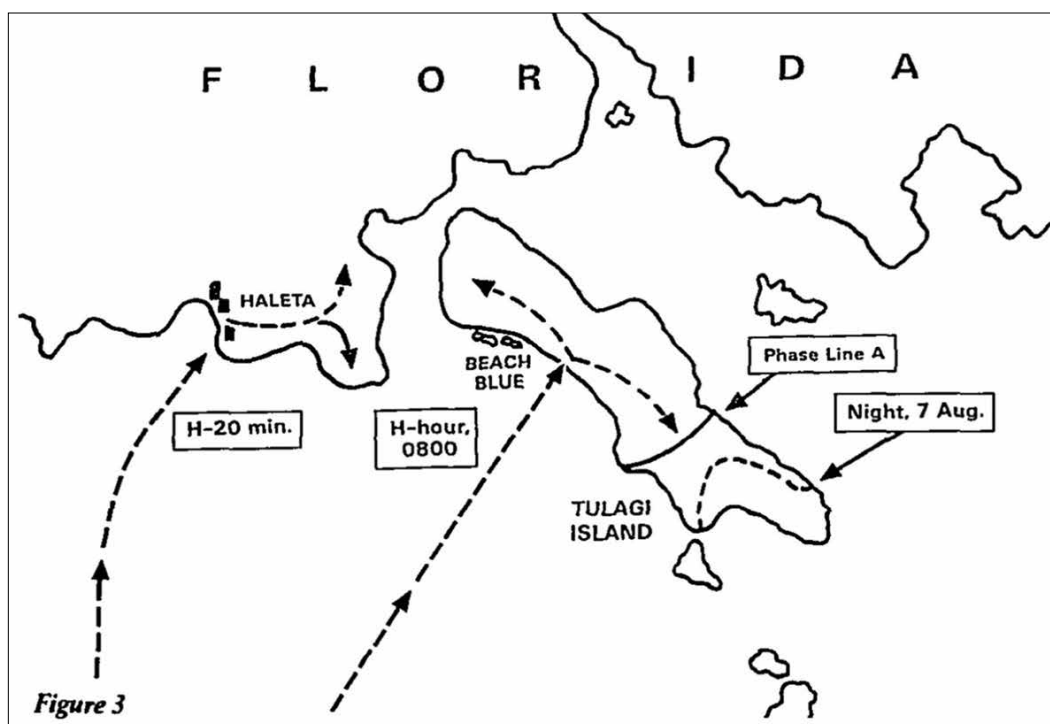
Courtesy of Marine Corps Gazette

Lunga Point. Its primary recommendation was the relatively short distance to the airfield, with obvious advantages in terms of tactics and logistics once ashore. The beach here was convex, which meant that Japanese gunners on one flank would quickly lose sight of boats landing on the opposite flank; in essence, there would be less firepower to worry about. Twining favored this site.

Thomas wanted Beach Red. The senior officer thought that “a landing at a point remote from the Lunga defenses would in all probability meet with little or no opposition.” Not only would distance from the valuable airfield reduce the likelihood of any enemy defenses, but reinforcements would take a longer time to arrive there. He also thought that a nearby river, located between the beach and the airfield, “constituted an obstacle for the protection of the more exposed right flank in the event of a counterattack early in the landing.” The river and the distance from the objective would work against the Marines once ashore, but Thomas considered subsequent operations on land less

important than just getting ashore in the first place. Thomas’ arguments eventually carried the day; it would be Beach Red. Subsequent aerial reconnaissance revealed that there were no defenses at either landing site, but the plan remained unchanged.

Tulagi was much more complicated (figure 3) It was a long, slender island, approximately 4,000 by 1,000 yards in size. Three-quarters of it consisted of a heavily wooded ridge, about 350-feet high, running from its northwest tip down the central spine of the island. The southeast tip was dominated by an even more rugged hill mass. In between was a patch of lower, generally open ground, much of it covered by coconut groves. Here were located the village, wharves, and government buildings that marked the island as the seal of British colonial administration in the Solomons. Here also were the harbor and the seaplane base that were the objective of this part of the operation. The only suitable beaches from a hydrographic standpoint were those on the northeastern side of this saddle, since the rest of the island was fringed by



Courtesy of Marine Corps Gazette

coral reefs and outcrops. Inland of these rough waters, of course, were a few feet of beach and the sharply rising high ground of the northwest ridge and the southeast hill.

Aerial reconnaissance of Tulagi revealed that the Japanese thoroughly understood these amphibious considerations. The enemy garrison had concentrated its defenses, which included strong emplacements and heavy weapons, on the obvious approach to the saddle. Again, the enemy threat dominated considerations of logistics, objective, and, in this case, even hydrography. The division planners chose a landing site about halfway up the western coast and designated it Beach Blue, though the adjective in this official title was hardly descriptive of reality. Here, the Marines expected to run into coral formations that would keep the Higgins boats 30 to 100 yards offshore. The infantry would have to wade

in and there would be no capability to land artillery, vehicles, or bulky supplies.

The initial plan actually called for a night landing on Beach Blue to be made at the end of D-day, so the raiders could get ashore under the further protection of darkness. The Navy objected to that idea due to the treacherous hydrographic conditions off Beach Blue. The resulting compromise was to go ahead with a daylight operation early on D-day, but to reinforce the Raiders with 2d Battalion, 5th Marines, and increase the supporting fires of air and naval guns. Despite the selection of a landing zone away from the enemy's defenses, the 1st Marine Division still expected a difficult fight to get ashore.

The last phase of the operation, the assault on Gavutu-Tanambogo, posed the most serious challenge. These two islets were almost entirely



U.S. Marine Corps LVT (1) amphibian tractors move toward the beach on Guadalcanal Island. This view was probably taken during the 7–9 August 1942 initial landings on Guadalcanal. The ship in the background is USS *President Hayes* (AP 39).

Official U.S. Navy photo, Naval History and Heritage Center, NH 97749

surrounded with coral outcrops; the only good landing site was a clear area near the seaplane ramps on the eastern side of Gavutu. Terrain ashore was an even more important consideration. Each tiny island was dominated by a central hill that towered over the surrounding beaches. In addition, the enemy located on each target could provide supporting fires against any assault force hitting the other island, inasmuch as the two were just a few hundred yards apart. Unlike Guadalcanal and Tulagi, the planners foresaw that any landing in the area must be of necessity, made in the face of strong resistance.

Given that Gavutu's Hill 148 was slightly taller than Tanambogo's Hill 121, [the] division decided to take the higher terrain first. The 1st Parachute Battalion would land in a column of companies at the wharf area on the east side of

Gavutu. The assault would take place at H+4 hours in order to allow fire support ships to cover the Tulagi landing first and then concentrate in support of the Parachutists. Following the seizure of Gavutu, one company of the battalion would reembark and land on Tanambogo.

EXECUTING THE PLAN

Events on D-day confirmed some, but not all of Thomas' expectations. The landing on Tulagi went exactly according to plan. The four line companies of the 1st Raiders made it ashore in two waves, received some desultory rifle and machine gun fire, but took no casualties. The units got organized and then moved down the length of the island with all four outfits abreast. The battalion held up briefly at a predesignated phase line (marked by the end of the ridge),

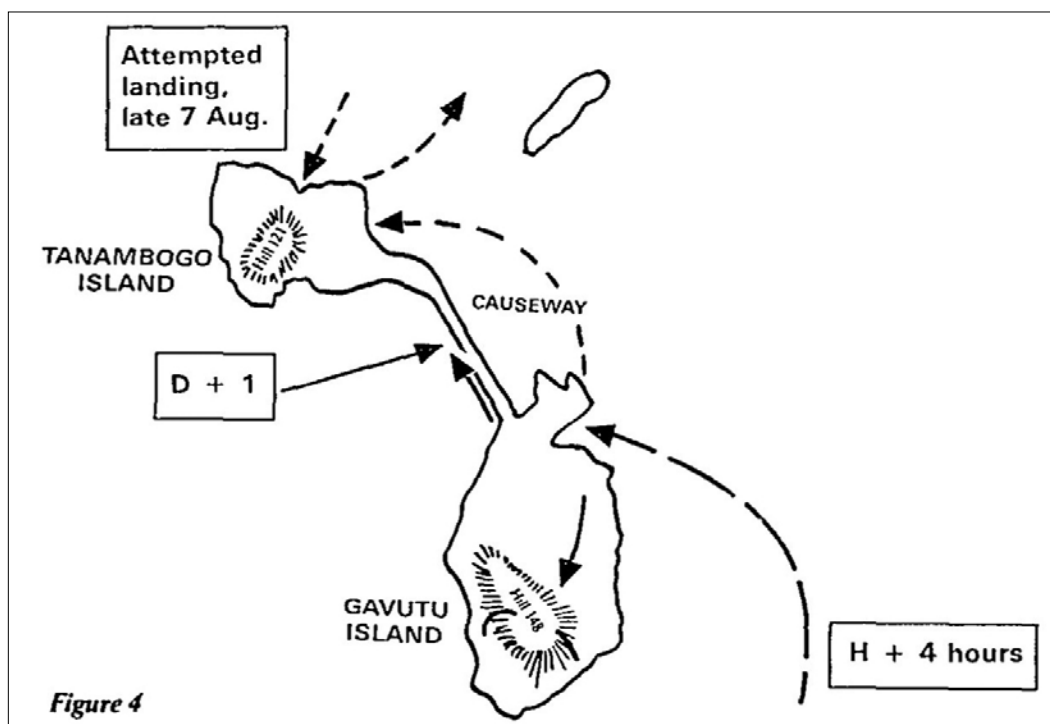


Figure 4

Courtesy of Marine Corps Gazette

while planes and the antiaircraft cruiser [USS] *San Juan* [CL 54] prepped the saddle area. When they kicked off in the assault again, the Raiders met their first real opposition. It took the remainder of the day to compress the defenders into a pocket in the hill mass at the southeast end of the island.

That night, many Japanese sortied from the area, some in classic banzai assaults, many others in the infiltration mode. The next day, the Raiders and elements of 2d Battalion, 5th Marines, attacked the remaining enemy holed up in coral caves and strong bunkers. In action that would become commonplace later in the war, the Marines had to root out the fanatical Japanese with explosives. Only 3 of the 350 defenders surrendered; the Marines lost 126 men, about one-third killed in action. Since the enemy overlooked the wharves early in the battle and Beach

Blue was totally unsuited, no significant quantities of supplies reached Tulagi until very late on the second day.

On Guadalcanal, the Marines also got ashore without enemy opposition. Here, however, rivers, jungle, and poor training slowed the advance of the 1st and 5th Marines. They did not reach the airfield until the second day, though in contrast to Tulagi, the Japanese never made any attempt to stand and fight. Logistics quickly became a tremendous problem, as the transports disgorged supplies onto the beach much faster than the underequipped and undermanned shore party could process them. Since the vast majority of the enemy garrison simply melted into the jungle during the bombardment on D-day, a landing at the Lunga beach would have worked out much better than the one at Beach Red.



LtCol John J. Capolino, *Guadalcanal*. Oil on canvas.
Art Collection, National Museum of the Marine Corps, 92-2-82

The assault on Gavutu-Tanambogo went poorly. The first wave of boats made it ashore before the defenders could recover from the relatively intense prelanding bombardment (280 5-inch shells in four minutes), but the following two waves came under heavy small arms fire even before hitting the beach (actually a concrete pier standing four feet out of the water). These two companies took 10 percent casualties in the assault. One worked its way around to the southeast and under the protection of supporting naval guns, but the last to come ashore was pinned down by fire from Hill 148 and from flanking Tanambogo. The battalion commander was one of those killed in this early phase. A call for reinforcements brought a landing by Com-

pany B, 1st Battalion, 2d Marines, on Tanambogo in the early evening, but this assault failed. Heavy fire drove off some of the boats, and most of the 30 men who made it ashore quickly withdrew. The parachutists maintained their toehold on Gavutu that night despite banzai and infiltration attacks.

Elements of 3d Battalion, 2d Marines, went ashore on Gavutu the next day to assist in the final conquest of that island, while the remainder of the battalion executed another assault on Tanambogo. This landing, supported by naval gunfire, two tanks, and an infantry attack across the causeway, succeeded in securing a portion of the island. The Japanese conducted infiltration attacks that night on Tanambogo, and the



U.S. Marines come ashore on Tulagi Island, probably during the landings there on 7–8 August 1942. *Official U.S. Navy photo, National Archives, 80-G-16485*

Marines had to reduce several caves and bunkers the next day, but the island was secured on 9 August. Of the more than 500 defenders—all but a platoon were airmen or laborers—only 20 surrendered. The Marines suffered 157 casualties, nearly one-half killed in action. A portion of these were inflicted by friendly air, which twice mistakenly attacked Marine positions on Gavutu.

ASSESSING THE LESSONS

These first American landings of the Pacific war make a useful study in contrasts. As noted at the beginning of this article, most Marines and analysts tend to think of Guadalcanal as just one of many hard-fought amphibious assaults. In reality, the planners and leaders of the 1st Marine Division went to great lengths to avoid the possibility of having to fight their way ashore. On Guadalcanal, they accepted the added logistics strain of landing far from the airfield, hoping that distance would enhance security during the initial hours of the operation. At Tulagi, they chose to make the assault against natural obstacles rather than enemy gunfire. Only on Gavutu and Tanambogo, where the minuscule size of the

objectives left no room for options, did the Marines make an opposed assault. The results were in line with those decisions; easy landings on the first two islands, heavy casualties and early reverses on the tiny islets.

The 1st Marine Division went into Operation Watchtower with an amphibious doctrine developed after years of thought and trial by error in fleet exercises. But in 1942, the planners also realized that their capabilities did not necessarily match those called for in the manuals. Naval gunfire and aerial support had yet to be tested against a real enemy in strong defensive positions. The Higgins boat was a poor assault craft since it provided no armor protection for its crew or occupants and could land only on the easiest beachhead. Most of the landing force was only partially trained, and only a handful of senior officers and noncommissioned officers had combat experience. With these limitations in mind, the division wisely decided to ignore some tenets of the doctrine and land where the enemy would pose the least interference to an operation that was already complicated enough without combat. The Marines who developed the *Tentative Landing Manual* did an outstanding job, but the ones who put it into practice were just as important, as they made the hard decisions about what they could actually achieve and what was still just theory.

How do these events apply to modern Marines? There are some parallels between that earlier period and today. In the 1930s, the Marine Corps had to develop new doctrine and technology to deal with a threat that had overwhelmed the old way of doing things. It was no longer sufficient to get into longboats and row ashore now that the enemy had machine guns, updated artillery, and a host of other deadly engines of war. In a similar fashion, we are trying



Looking from the air like a zig-zagging squadron of water bugs, troop-carrying barges land U.S. Marines on the beach of Florida Island during the initial stage of the Solomon Islands battle, 1942.

Thayer Soule Collection, Archives Branch, History Division

to adapt to changing circumstances—antiship missiles, improved sea mines, and the proliferation of other advanced weapons throughout the world. Over-the-horizon doctrine promises to alleviate some of these problems, but much of the hardware needed to make it work is still just a gleam in the eye. The Department of Defense continues to oppose the [Bell Boeing] V-22 [Osprey] and it appears that the advanced amphibious assault vehicle has met an early budgetary death.

We need to think seriously now about the prospect of bridging the gap between old weapons and ideas that no longer work and new ideas

that are still beyond practical implementation. As in 1942, the situation may not wait for everything to be in place before action is required. We have already seen that in the [Persian] Gulf, where sufficient capability reduced the amphibious assault to a mere feint. Given the current budget climate, any solution calling for more hardware is a long way from implementation. The only reasonable approach lies in doctrine and tactics.

On Guadalcanal and Tulagi, the 1st Marine Division found an answer in what we would now recognize as maneuver warfare; they simply avoided forcible entry and landed where there

was no resistance on the beach. On Gavutu and Tanambogo, they could find no similar alternative and paid for their doctrinal, logistic, and technical shortcomings in blood. If the lessons of history mean anything, Marines somewhere should be hard at work trying to figure out how we would have retaken Kuwait in the absence of Saudi concurrence. Had we been forced to depend solely on the amphibious assault, the outcome of [Operation] Desert Storm may well have been much less positive. Hopefully, modern Marines are wise enough to repeat landings like those on Guadalcanal and Tulagi and avoid those like Gavutu-Tanambogo where possible. As the 1st Marine Division's after action report counseled:

*A comparison of the several landings leads to the inescapable conclusion that landings should not be attempted in the face of organized resistance if, by any combination of march or maneuver, it is possible to land unopposed and undetected at a point within striking distance of the objective.*⁵⁹

Of course, the Japanese made that harder to do later in the war and the Marines eventually improved their capability for forcible entry. Future articles in this series will analyze that process and look at the opportunities for maneuver warfare when the enemy seemed to have all the avenues of approach covered.

⁵⁹ As quoted in Jeter A. Isely and Philip A. Crowl, *U.S. Marines and Amphibious Warfare: Its Theory and Its Practice in the Pacific* (Princeton, NJ: Princeton University Press, 1951), 9.

PRELIMINARY REPORT OF JANEX-1

*by Major General Holland M. Smith, 1942*⁶⁰

The exercise after action report that follows was authored by Major General Holland M. Smith, the Marine commander of the Amphibious Force Atlantic Fleet. This joint corps-level command was composed of the 1st Marine Division and the Army's 1st Infantry Division. Formed in June 1941 to enhance amphibious training, its focus turned increasingly to possible contingency operations in the Western Hemisphere as the threat of war loomed larger. This major exercise in January 1942, originally scheduled for New River, North Carolina (now Camp Lejeune), had been hastily switched after the war broke out to Fort Story, Virginia, to mitigate the threat of German submarines. Conducted less than seven months before the landings at Guadalcanal, it provides a glimpse into the state of amphibious readiness of U.S. forces (Navy,

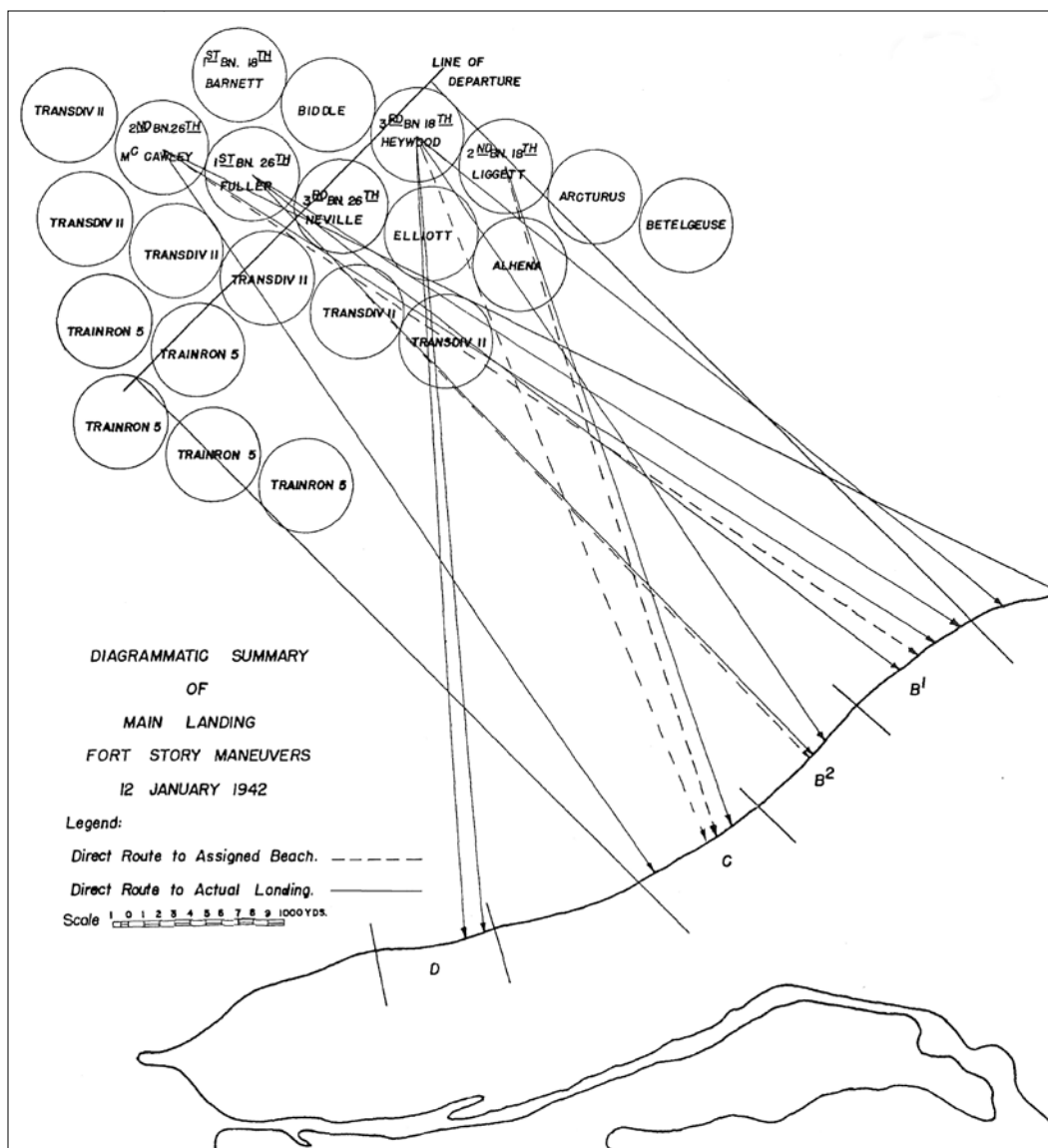
Marine, and Army), as well as ongoing debates about how best to conduct such operations. Note in particular Smith's reference in paragraph 2(a)(2) to the "three-echelon principle previously recommended," as well as his recommendation in paragraph 5 that the "transport group be made an organic unit of the Amphibious Force."⁶¹

From: Commanding General
To: Commander Train, U.S. Atlantic Fleet
Subject: Preliminary Report of JANEX-1
(Landing Exercises Lynnhaven Roads,
12–19 January, 1942)

1. In compliance with reference 9a), a fragmentary report of JANEX-5 is herewith submitted. Reports from subordinate units and umpires pertaining to this exercise have not been received, and this Headquarters is, of course, unable to submit a full detailed report.

⁶⁰ The original report came from MajGen Holland M. Smith, commanding general, to commander, Train, U.S. Atlantic Fleet, "Preliminary Report of JANEX-1 (Landing Exercises Lynnhaven Roads, 12-19 January, 1942)," 19 January 1942. Minor revisions were made to the text based on current standards for style, grammar, punctuation, and spelling.

⁶¹ Jon T. Hoffman, chief historian, U.S. Army Center of Military History



This diagram illustrates the anticipated and actual landing routes at Fort Story, VA, where the Marines conducted landing exercises on 12 January 1942 in preparation for amphibious operations during World War II. *Official U.S. Marine Corps illustration*

2. The following are considered to be of primary interest at this time.

- a. **General Plan for Landing Exercises**

- i. Reference (b), as modified by Comtrain serial 011196, 17 November 1941, directed that

two-sided landing exercises be held in the New River, North Carolina, area during January 1942. This reference directed that the exercises be based upon a designated tentative operation plan included in

Gray Plan 2, and that a forced withdrawal and reembarkation be effected. It indicated also that units of the 1st Infantry Division, reinforced by certain Marine Corps units, constitute the landing force and that elements of the 1st Marine Division be employed as the defense force. It was further directed that the Headquarters, Amphibious Force, Atlantic Fleet, participate as director control, as applied to troops.

- ii. In compliance with reference (b), control facilities were provided in the New River area, and umpire personnel for the defense force and fire marking teams were obtained through General Headquarters, U.S. Army. The Commandant, U.S. Marine Corps, assigned the staff and students of The Basic School for umpiring the landing force. The operations plan for the landing was prepared so as to closely simulate the designated, tentative landing operation plan, and partially test the three-echelon principle previously recommended—the air-tank-paratroop team designed to strike the initial blow and gain the initiative during the debarkation of the main landing force.
- iii. Reference (c), which was re-



Photo of Gen Holland M. Smith from a painting by Cdr Albert K. Murray, USNR.
Official U.S. Navy photo, Naval History and Heritage Command

ceived at this Headquarters on 5 January, 1942, canceled reference (b), and changed the locale of the landing exercises from New River, North Carolina, area to the Cape Henry [Virginia] area, and directed that the exercises be held during the period 12–20 January 1942. This reference designated Major General H. M. Smith, USMC, as director of the maneuver as it applied to troops, and ordered General Smith to designate an appropriate shore defense force, establish control facil-



MajGen Holland M. Smith, commanding general of the Amphibious Force, Atlantic Fleet, observes landing operations with his aide, Capt Victor H. Krulak, at Fort Story, VA, in the winter of 1941.

Official Marine Corps photo, 528648

ities for elements on shore, and arrange to provide the control personnel and umpires required. In compliance with this directive, arrangements were made with the Chesapeake Bay defense sector commander, General R. L. Tilton, USA, to assign mobile elements of his defense force as defense force in the Cape Henry area. These units were reinforced with Marine Corps artillery and tanks. See enclosure (A) for the composition of the landing force and the defense force.

b. Planning

- i. Reference (c) did not direct that the exercises simulate a designated operation plan, apparently because the nature of the terrain and the hydrography of the area made available in the vicinity of Cape Henry, Virginia, would not permit a logical simulation of any of our tentative operation plans. The Naval Attack Force Operation Plan (1T-42) was prepared by the naval attack force commander and contemplated landing the landing force in two echelons. The first echelon, the 1st Separate Battalion (Marines) (Rein) by one light tank company was directed to land on Beach D at H-1.5 hours. It was planned that this landing be supported by all direct support aircraft available and the major portion of the naval gunfire. The main landing was ordered for H-hour on beaches B-1, B-2, and C. All of the naval gunfire and direct support aircraft were to be placed in support of the main landing. The Naval Attack Force Operation Plan included several constructive fire support groups, which, of course, could not be considered under umpire rules.
- ii. The Landing Force Operation Plan, enclosure (B), was prepared in accordance with

- missions assigned to the landing force by the Naval Attack Force Operation Plan (1T-42).
- iii. The Defense Plan, enclosure (C), was prepared by the commanding officer, 116th Infantry. Enclosure (D) shows the disposition of the defense force in accordance with this plan.
 - iv. Umpire rules, General Headquarters, U.S. Army, were used to umpire units of the landing force, aircraft in support of the landing force, and defense force units.

c. Execution of Plans

The following comments are submitted in regard to the execution of the various operation plans:

- i. The naval attack force, including transports, anchored about 3.5 miles off the designated landing beach. This location placed a large number of these ships within range of the 155mm howitzers and 75mm guns operating as shore batteries of the defense force. In this connection, it is realized that this artificiality was necessary in order to avoid the ship traffic through the Lynnhaven Roads channel and reduce hardship to troops in the small boats by cutting down the running time from ships to shore.
- ii. H-hour was set at 1100, 12 January. The 1st Separate



The design of this Higgins landing craft, loaded with a military truck, shown here in May 1941, served as the basis for the landing craft, vehicle and personnel (LCVP).

Official U.S. Navy photo, 73812

Battalion (Rein) landed on Beach D, its assigned beach, at approximately 0920—10 minutes too early. Apparently, naval gunfire was simulated in support of this battalion in accordance with the prescribed plan. The mission of bombing and strafing attacks of enemy installations on Beach D (defense force) for five minutes prior to the landing of the initial boat wave of the 1st Separate Battalion (Rein) had been assigned to VF [Fighter] Squadron 71. This squadron failed in the execution of its mission by either arriving on station too late or misunderstanding the tactical situation. The squadron delivered its



“Wet” landing net training was conducted for 1st Division Marines off the Intracoastal Waterway at Marine Barracks New River. Note the different landing craft used in the exercise. Sketch by Vernon H. Bailey.
Art Collection, Naval History and Heritage Command

bombing and strafing attacks at approximately 0930, 10 minutes after the initial boat wave reached the beach. This bombing and strafing attack was actually delivered against the 1st Separate Battalion (Rein) instead of against the defense force.

- iii. The defense force had taken up a cordon defense in the vicinity of Beach D and, by umpire rules, had thus provided superior firepower in that locality. The director, as indicat-

ed in enclosure (E), declared the landing of the 1st Separate Battalion (Rein) to be unsuccessful. The failure to effect a landing was due, in the first instance, to the lack of sufficient fire power to neutralize beach defenses. In the second instance, had sufficient fire power been provided in the form of naval gunfire and direct support aircraft, it is probable that the bombing and strafing attacks delivered by VF Squadron 71 against the



Clambering down the side of their transport vessel, units of the 1st Marine Division and the Army's 1st Infantry Division are preparing to board their landing craft during the 1941 joint amphibious exercises conducted at New River, NC.

James Lipinski Collection, courtesy of 16th Infantry Regiment Association

1st Separate Battalion (Rein)
would have, in itself, defeated
an otherwise successful
landing.

iv. The naval contingent of one

of the shore parties, consisting
of about 30 bluejackets
from the USS *McCawley* [APA
4], landed in the vicinity of
Beach C, theoretically hostile

territory, at about 1000, one hour before H-hour, and were made prisoners of war by the shore defense force. Existing doctrine and all plans and orders contemplated that the advance units of the shore parties be sent ashore with the assault troops to which they are assigned. The landing of this contingent from the *McCawley* is indicative of either a misconception of the functional operation of shore parties or flagrant disregard of problem rules and orders.

- v. The Naval Attack Force Operation Plan (1T-42) directed that the landing force land on the indicated beaches, presumed to be B-1, B-2, and C. The Landing Force Operation Order directed that the 26th Infantry land with two battalions abreast on Beaches B-1 and B-2, and the 18th Infantry land on Beach C in column of battalions at H-hour (1100). Information now at hand indicates that not more than one of the three assault battalions landed on their assigned beaches. The major portion of the 2d Battalion, 26th Infantry, was landed about one mile to the northeast of Beach B-1 in an off-limits area, which had not been covered by either aircraft or gunfire support. The

boat groups delivered the major portion of the assault battalions on beaches in such a manner that the whole force could have been immobilized and probably would have suffered a disastrous defeat by very small defense forces.

- vi. Information now at hand indicates that some of the transports were out of position during the debarkation. This caused the crossing of boat lanes, in certain cases, during the approach of boat groups to the line of departure and beaches.
- vii. Naval gunfire was apparently simulated in support of the main landing at H-hour in accordance with the existing plan. The direct support aircraft bombed and strafed the beaches in accordance with the plan. Aircraft missions, in this instance, were executed in an excellent manner. Nevertheless, the effect of the gunfire and aircraft support was lost due to the confusion resulting from the assault battalions being landed on wrong beaches.
- viii. The defense force had occupied and strongly organized the beach on which the main landing was to have been effected. By umpire rules, the main landing failed, due to insufficient gunfire and air-



The exercises at New River included many Higgins boats. Lacking the bow ramp, these vessels were more difficult to exit than the later LCP. Here, troops struggle to hold the boat in the surf while others unload it. *James Lipinski Collection, courtesy of 16th Infantry Regiment Association*

craft support to neutralize the beach defenses. The director declared the main landing to be unsuccessful.

- ix. Only one CA [heavy cruiser] and two DDs [destroyers] were available for gunfire support on Beaches B-1, B-2, and C, and their flanks, approximately 2,300 yards. It is interesting to note that the British Navy, during a Commando raid against Maloy Island, Norway, on 26 December 1941, assigned, and actually used, the full firepower of on CL [light cruiser] and two DDs against the German garrison, which consisted of about 85 men

equipped with one light field battery and a few light anti-aircraft guns. This British gunfire was delivered over a frontage probably not more than 800 yards for eight minutes. The British raid was successful, and is an example of the amount and intensity of gunfire that is required in modern war to neutralize beach defenses just prior to the assault by the landing force.

- x. The landing on Beach D and the main landing on Beaches B-1, B-2, and C obviously failed in the first instance due to the lack of adequate aircraft and gunfire support



The landings at New River demonstrated that U.S. military amphibious operations were improving, but were not yet perfected. Here, the landing boats form in groups to wait for the movement in, but are not yet using the circling pattern seen in later operations.

James Lipinski Collection, courtesy of 16th Infantry Regiment Association

to neutralize the beach defenses actually present. In the second instance, if adequate naval gunfire and aircraft support had been provided, a successful landing would have been denied the landing force by the improper handling of landing boats, which destroyed the tactical integrity, and landed units in wrong places, some of which were approximately one mile from any of the designated beaches.

- xi. During the initial phase of the landing, the combined shore party failed to fully execute its functions. Detailed data as to the cause of this failure are not available at this time. Nevertheless, this failure during the initial stage of the

operation was in part due to the following:

- a. Insufficient training of the engineer units assigned to the shore party. The 36th Engineers, assigned as shore party engineers, had never before participated in a landing exercise. The commanding officer of this unit, Lieutenant Colonel F. B. Butler, USA, conferred with the staff at this Headquarters, and is believed to have been indoctrinated in shore party procedure. Lieutenant Colonel Butler was detached from the 36th Engineers and replaced by Colonel J. E. Wood, USA, only a few days before the unit was embarked. This officer did not have the opportunity to confer with his next subordinate commanders or conduct instruction until after arrival on the wrong beaches at Cape Henry. This unit, under Colonel Wood's supervision, began functioning in a fairly satisfactory manner on the second day of the exercise. It is again emphasized that the shore and beach parties should be combined

-
- into a single unit under the command of the landing force.
- b. The shore party engineers, the naval contingent of the combined shore party, combat units with their command posts, supplies, and equipment were not delivered on assigned beaches.
3. Although the landings on Beach D and Beaches B-1, B-2, and C were obviously unsuccessful, operations were continued on orders of the director in order that some training might be given in the continued debarkation of troops, handling of supplies, and minor tactical actions ashore. Since the area was wholly unsuited for tactical training of a unit of the size and composition of the landing force, and since a forced withdrawal could not logically be caused due to lack of time to prepare the plans and move appropriate troops units and the unsuitability of the terrain, the director issued enclosure (G) to initiate reembarkation in accordance with enclosure (H). The reembarkation began at about 1500, 13 January, and all troops with light equipment had completed reembarkation by early morning of 14 January.
 4. All heavy equipment and stores that were not reembarked in the landing area were reembarked combat loaded, at the Naval Operating Base and Army Base at Hampton Roads, Virginia.
 5. **Recommendations**
It is recommended that:
 - a. The transport group be made an organic unit of the amphibious force in order that the teamwork, between transport personnel and troops, that is necessary for success in modern warfare may be developed. The tactical effectiveness of the landing force is directly dependent upon transport troops teamwork. Unless this team functions smoothly and efficiently, the full power of the landing force cannot be developed.
 - b. A training area suitable for the conduct of training exercises of units up to and including at least a reinforced infantry regiment be procured in a sheltered area. It is thought that the area in Lynnhaven Roads, which was used in the JANEX-1 exercises is suitable for the training of a reinforced battalion. The Solomon's Island area has some possibilities for training of units up to and including a reinforced regiment; further investigation of this area should be made.
 - c. The amphibious force conduct a progressive training program, and that no large-scale exercises be conducted until the various components of the Force have achieved a reasonable proficiency in basic, elementary unit, and advanced training in amphibious exercises.
 6. A further report will be made upon receipt of reports from subordinate units and umpires.

~ H. M. Smith

Enclosure (A)
COMPOSITION OF OPPOSING FORCES

BLUE LANDING FORCE

1st Infantry Division Troops
Division Headquarters
Headquarters and Military Police Company
1st Signal Company
1st Quartermaster Battalion
1st Medical Battalion (less 1 company)
1st Engineer Battalion (less 1 company)
18th Infantry (less detachments)
26th Infantry (less detachments)
Division Artillery Headquarters
32d Field Artillery Battalion (75mm PH [pack howitzer])
33d Field Artillery Battalion (75mm PH)
Battery A, 7th Field Artillery Battalion (105mm howitzer)
70th Tank Battalion (less Company C)
29th Ordnance Company
1st Platoon, Company A, 57th Quartermaster Battalion (LM)
36th Engineer Regiment (less 2 companies)
1st Separate Battalion (Marine Corps)

RED DEFENSE FORCE

116th Infantry (less 1st and 3d Battalions)
Companies C and L, 116th Infantry
Batteries F and H, 74th CA [Coastal Artillery] (as infantry)
4th Battalion, 11th Marines (155mm howitzer)
Batteries B and C, 111th FA [Field Artillery] (75mm Gun)
Company A, 1st Tank Battalion (Marines)
1 Squadron 65th Observation Group
Battery G, 246th CA (3-inch antiaircraft)
1 Platoon Battery C, 246th CA (two 75mm guns)
Radio Intelligence Platoon, 71st Signal Company, [Amphibious Force, Atlantic Fleet] AFAF

APPROXIMATE STRENGTH	Officers	Enlisted
Blue Landing Force	516	9,836
Red Defense Force	100	230

LIEUTENANT GENERAL JOHN A. LEJEUNE BIOGRAPHY

[T]he major wartime mission of the Marine Corps is to support the Fleet by supplying it with a highly trained, fully equipped expeditionary force.

~ Major General John A. Lejeune,
lecture to the Naval War College, December 1923

Lieutenant General John A. Lejeune was born 10 January 1867 on his family's plantation in Pointe Coupee Parish, Louisiana. He secured an appointment to the U.S. Naval Academy from which he graduated in 1888, then served two years as a midshipman at sea. He was serving aboard the sloop-of-war USS *Vandalia* (1876) in March 1889 when it was wrecked in a cyclone in Apia harbor during the Samoan crisis. He was commissioned into the Marine Corps as a second lieutenant in July 1890. He commanded the Marine detachment aboard the USS *Cincinnati* (C 7) during the Spanish-American War. He later twice commanded a Marine battalion in Panama.

In 1907, he commanded Marine Barracks and Naval Prison, Navy Yard, Cavite, Philippines, and took command of the 1st Brigade of Marines in 1908. Following graduation from the U.S. Army War College in 1910, he again served in Cuba and Panama before becoming involved in the development of the advanced base regiment. He was promoted to brigadier general in

1916 and became Assistant Commandant of the Marine Corps.

Following America's entry into World War I, he deployed overseas, where he commanded the 4th Marine Brigade and the U.S. Army's 2d Infantry Division from July 1918 through August 1919. His performance commanding an Army division established that Marine Corps officers were as professionally capable as their Army peers. He was awarded the Croix de Guerre and the Légion d'Honneur by the French government and both the U.S. Army and Navy's Distinguished Service Medals for his service during the war.

In July 1920, he was appointed Commandant of the Marine Corps; during his two terms, he reinvigorated Marine development of doctrine and strategic planning and directed the Corps' transformation from a colonial infantry into an amphibious assault corps.

He retired from the Marine Corps in 1929 and became superintendent of the Virginia Military Institute, a position he held until 1937.



*MajGen John A. Lejeune, 13th Commandant of the Marine Corps, by Samuel Burtis Baker. Oil on canvas.
Art Collection, National Museum of the Marine Corps*

Throughout his career, General Lejeune remained determined to make the Marine Corps an elite fighting organization and a worthy expeditionary force for the U.S. Navy. When he

passed away on 20 November 1942, Marines half a world away on Guadalcanal were proving just how successful he had been.

FLEET ADMIRAL CHESTER WILLIAM NIMITZ BIOGRAPHY

The war with Japan had been enacted in the game rooms at the War College by so many people and in so many different ways that nothing that happened during the war was a surprise—absolutely nothing except the kamikaze tactics toward the end of the war. We had not visualized these.

~ Fleet Admiral Chester William Nimitz,
lecture at the Naval War College, 10 October 1960

Fleet Admiral Chester William Nimitz was born on 24 February 1885 in Fredericksburg, Texas. He graduated from the United States Naval Academy in 1905. His initial naval service was aboard the battleship USS *Ohio* (BB 12) and a succession of cruisers, destroyers, and gunboats. In 1908, he was court-martialed for running the destroyer USS *Decatur* (DD 5) aground under his command in the Philippines. Returning to the United States in 1909, he was trained as a submariner and took command of the 1st Submarine Flotilla, and the USS *Plunger* (SS 2). He continued to command a succession of submarines and submarine flotillas. In March 1912, he rescued a drowning sailor and was awarded the Silver Lifesaving Medal. From May 1912 to March 1913, he commanded the Atlantic Submarine Flotilla.

In 1916, he became the executive officer of the USS *Maumee* (AO 2), helping to pioneer operational underway refueling when the *Maumee* refueled the first American destroyers sailing for Europe in 1917. In 1918, he was appointed chief of staff, Submarine Force, U.S. Atlantic Fleet.

Following World War I, he held a variety of command and staff positions, shifting between cruisers, battleships, and submarines. In 1926, he established one of the first Naval Reserve Officer Training Corps units at the University of California, Berkeley. In the 1930s, he commanded the USS *Augusta* (CA 31), Cruiser Division 2, Battle Force, and then Battleship Division 1, Battle Force. In 1939, he was appointed chief of the U.S. Navy's Bureau of Navigation.

Following the Japanese surprise attack on Pearl Harbor, he was made commander in chief, United States Pacific Fleet, the position he held for the duration of World War II. Beginning with submarine and aircraft carrier raids in 1942, he masterminded the strategy that led to the Japanese retreat at the Battle of the Coral Sea and the Japanese defeat at the Battle of Midway. Following the essential outline of War Plan Orange, he then led the Pacific Fleet during its methodical march across the Pacific, decimating the Japanese naval and air forces, blockading the Japanese islands, and finally, in 1945, culminating in the defeat of the Japanese Empire.



Adrian Lamb's portrait of Adm Chester W. Nimitz in 1960. He was promoted to the Navy's newest and highest rank—fleet admiral—in December 1944. Official U.S. Navy photo of portrait rendered in oil on canvas. *Navy History and Heritage Command, KN-2578*



Commander in chief of the Pacific Fleet, Adm Chester W. Nimitz points at Tokyo, the capital of Imperial Japan, during the American island-hopping campaign in the Pacific theater of World War II. *Official U.S. Navy photo, Library of Congress Prints and Photographs Division, 2016650581*

Following the war, he was appointed Chief of Naval Operations, a position he held until 1947. Notably, he supported then-Captain Hyman G. Rickover's proposal to build the USS *Nautilus* (SSN 571), the world's first operational nuclear-powered submarine.

After retiring from the Navy at the close of 1947, he held several different academic and diplomatic positions. When he passed away in 1965, the United States Navy was unquestionably the most powerful naval force in the world, and the submarines he had first thought of as, "a cross between a Jules Verne fantasy and a hump-backed whale" were now nuclear powered and, alongside aircraft carriers, had replaced the battleship as the prime weapon for control of the sea.



Capt Leonard H. Dermott, *Harriers, A Pair*.
Watercolor on paper.
Art Collection, National Museum of the Marine
Corps, 3-1-166



CHAPTER TWO

The Expansion of Maritime Power

The Role of Naval Aviation and Submarines

by Paul Westermeyer

Not only had he placed himself beyond human laws, he had rendered himself independent, out of all reach, free in the strictest sense of the word! For who would dare chase him to the depths of the sea when he thwarted all attacks on the surface? What ship could withstand a collision with his underwater Monitor? What armor plate, no matter how heavy, could bear the thrusts of his spur? No man among men could call him to account for his actions.¹

In 1870, French author Jules Verne produced *Twenty Thousand Leagues Under the Sea*, a prophetic work inspired in part by the *Le Plongeur*, a French submarine built in 1864 that was the first powered by mechanical means (the 1863 Confederate submarine *H. L. Hunley*, the first submarine to sink an enemy vessel, was powered by the crew). The Swedish-built *Nordenfjeld I* in 1885 was the first steam-powered

¹ Jules Verne, *Vingt Mille Lieues Sous les Mers* [Twenty Thousand Leagues Under the Sea], trans. F. P. Walter (Paris: J. Hetzel, 1869–71), chapter 10.

submarine armed with torpedoes. By the turn of the century, submarines of similar design appeared throughout the navies of the world.

Verne's Captain Nemo is an undersea terrorist, using his wondrous submarine, the *Nautilus*, to attack the world's shipping in a *guerre de course* against the "great nations" of the nineteenth century.² Even conducted by only one submarine, his war on shipping was somewhat effective. But early submarines had neither the incredible cruising range of Nemo's *Nautilus*, nor could they match its underwater endurance. Prior to World War I, few naval thinkers gave much consideration to submarines, which were conceived as coastal defense vessels intended to prevent blockades or invasion. British Admiral John A. Fisher pushed British submarines in this direction, intending them as a defense for the British Isles and freeing Britain's battle fleet to achieve strategic goals away from the homeland.

The use of submarines as a commercial raider was considered impractical, since simply sinking a merchantman, especially without warning, was a violation of the laws of war codified in 1899. Submarines were too small to effectively fight merchant vessels on the surface, and they could not take aboard the ship's crews after boarding. Instead, during the early days of World War I, submarines focused on enemy naval vessels. The German Navy showed how successful these actions could be with several spectacular attacks, including the sinking of the battleship HMS *Formidable* (1898) in January 1915.

In 1915, frustrated with the progress of the war and its inability to come to grips with the Royal Navy, the German's first turned to "unrestricted submarine warfare," attempting to cut off all shipping to the British Isles initiating the

world's first submarine *guerre de course*. The initial campaign against British merchant shipping was very effective; by the time the war ended, the Allies had discovered that the only solid operational counter to the submarine was the convoy system.

During World War II, the Germans launched a second, even more effective submarine *guerre de course* masterminded by Admiral Karl Dönitz. This campaign nearly drove Britain to its knees; but in the end, the U.S. and British navies defeated the U-boats in the Battle of the Atlantic, securing the sea-lanes to Europe. But by far the most successful *guerre de course* was conducted by the U.S. Navy against Japan in the Pacific.

The Imperial Japanese Navy focused submarine operations on long-range scouting for their fleet and imposing attrition on American capital ships in an attempt to turn the odds in Japan's favor as a precondition for the Mahanian clash of battleships that the Japanese Navy expected as the culmination of the Pacific campaign. During the first year of the war, the Japanese Navy enjoyed some successes, sinking several American aircraft carriers as well as number of heavy cruisers and destroyers, but the climactic battle against the U.S. battleship fleet proved elusive. In contrast, American submarines first failed in the classic defense against the invasion mission when the submarines of the Far East Fleet failed to stop the Japanese landings in the Philippines. But with the bulk of U.S. battleships in the mud at Pearl Harbor, and aircraft carriers few in number, American submarines began a *guerre de course* against the Japanese that cut off nearly all shipping to Japan by 1945 thereby denying Japan most of the natural resources that their factories needed to produce ships, aircraft, and other arms.

Following World War II, nuclear power be-

²The term *guerre de course* refers to the practice of making war on the naval commerce of the enemy.

came the norm for submarines, finally giving them the vast endurance and range of Verne's vessel (indeed, the U.S. Navy named its first nuclear submarine USS *Nautilus* [SSN 571]). In 1959, the U.S. Navy launched USS *George Washington* (SSBN 598), its first ballistic missile submarine. Launching nuclear missiles from submarines transformed them from a purely naval asset into a maritime strategic asset capable of projecting power ashore in a way that even Jules Verne had not imagined. The addition of cruise missiles with conventional warheads to attack other vessels and shore targets gave them greater flexibility in projecting power ashore.

While some inventors had looked beneath the waves for advantage in warfare, others had looked to the clouds. Although the occasional balloon appeared for reconnaissance or artillery spotting purposes, aircraft were not a part of nineteenth-century military operations. Orville and Wilbur Wright's 1903 flight in North Carolina kick-started the aviation revolution that, during the next 10 years, became a reality for military aircraft. World War I witnessed the introduction of strategic bombing, both by Zeppelin rigid airships and massive, four-engine bombers, such as the Zeppelin-Staaken R VI, while the British converted a battlecruiser, the HMS *Furious* (47), into an aircraft carrier.

Submarine enthusiasts limited themselves to finding uses for submarines within maritime strategy, but aviation enthusiasts believed that aerial forces would dominate warfare. In *The Master of the World*, Jules Verne imagined an aircraft of great power. Its designer, Robur the Conqueror, declared that "with it, I hold control of the entire world, and there lies no force within the reach of humanity which is able to resist me, under any circumstances whatsoever."

er."³ Many aviation theorists thinkers of that era accepted enthusiastically embraced this apocalyptic vision.

The most well-known of these was General Giulio Douhet, an Italian who advocated for large fleets of bombers attacking population centers in an attempt to break their enemy's morale. The idea was best illustrated in a speech to the British House of Commons by member Stanley Baldwin in 1932, "I think it is well also for the man in the street to realise that there is no power on earth that can protect him from being bombed. Whatever people may tell him, the bomber will always get through. The only defence is in offence, which means that you have to kill more women and children more quickly than the enemy if you want to save yourselves."⁴

American airpower thinkers generally accepted Baldwin's grim view of airpower's ultimate purpose; however, budgetary realities pushed airpower thinkers such as Army Brigadier General William L. Mitchell to argue that aircraft could sink battleships, and that the Air Corps, not the Navy, could best defend the United States from invasion. Thus, the Air Force developed large, four-engine bombers for the naval strike mission that were better suited for strategic air campaigns.

In the Navy, air advocates pushed the fleet air arm's utility as a scouting and strike force, while developing ship killing aircraft of its own—most notably torpedo and dive bombers. When the long anticipated Pacific war broke out, the Navy adhered to War Plan Orange, but the battle fleet did not included battleships, as anticipated, but rather a fleet of aircraft carriers. Aircraft car-

³ Jules Verne, *The Master of the World: A Tale of Mystery and Marvel* (Paris: J. Hetzel, 1904), chapter 9.

⁴ "Mr. Baldwin on Aerial Warfare—A Fear for the Future," *Times* (London), 11 November 1932.

riers led most of the campaigns of the war in the Pacific, gaining control of the sea through a series of fleet engagements that resembled the long-sought after battleship engagements as much as the Battle of Jutland in 1916 resembled the clash at Trafalgar in 1805. Nonetheless, the essentials of the war plan that dictated the naval campaign remained unchanged.

The two great theorists of maritime strategy—Captain Alfred Thayer Mahan and Sir Julian Corbett—had not predicted the decisive

impact that submarines or aviation would have on the future of naval warfare. Both passed away before the significance of these technologies to naval warfare was clear. New naval theorists did not arise to champion these new technologies; instead, practical naval officers capitalized on the advantages provided by these innovations and applied them to the underlying principles of naval strategy that Mahan and Corbett had promulgated.

THE FUTURE OF THE SUBMARINE

by Franklin D. Roosevelt

North American Review, 1915⁵

Very long ago, man discovered that he could kill whales because he had learned by observation that these biggest of animals had to come to the surface of the ocean at frequent intervals to breathe. Knowledge of their habits has been followed by their partial extermination. Because there have been of late so many wild conceptions of the habits of the mechanical whale, the submarine, a brief description of submarines in general is perhaps necessary to a clearer understanding.

Primarily, in spite of its name, a submarine is a surface vessel, with an underwater body similar to that of other surface vessels, and propelled by twin screws. The power to drive it on the surface is developed by so-called diesel heavy oil engines or, as in some types, by steam turbines driven by oil-burning boilers. The requisite of these engines is that they may be shut off at a moment's notice, and thereafter create no heat or gases when submergence takes place. Great difficulties have been experienced with these engines in the past. The amount of space

available, the mechanical problems of developing increased horsepower, have made progress seemingly slow; but within 10 years, the submarine's surface engine has gradually grown from the size for a 250-ton craft to that for the 1,000-ton so-called seagoing type, and the speed has been increased from 12 to 22 knots an hour. At the same time, a 3- or 4-inch gun has been added to the equipment. Thus, the result in the larger modern types is a vessel of about 1,000 tons, with fair speed, light armament and no armor, with seagoing qualities inferior to those of a destroyer, and with a cruising radius at reduced speed of 3,000–4,000 miles, though longer distances could possibly be covered by using the diving tanks for additional oil storage, thereby preventing diving operations. As a surface warship, there is little to commend in these qualities: speed, protection, and offensive power are all defective; and such a ship would be at the mercy of any other surface vessel stronger than a torpedo boat.

It is, however, as an underwater craft that the submarine gains in effective fighting strength, and incidentally in that appeal to the popular imagination that, sad to say, totally lacks

⁵ The original article came from Franklin D. Roosevelt, "The Future of the Submarine," *North American Review* 202, no. 719 (October 1915): 505–8. Minor revisions were made to the text based on current standards for style, grammar, punctuation, and spelling.

war value. The moment the surface engines are shut off, and sufficient water admitted to submerge, the character alters; propelling power must of necessity become non-gas producing, [as] electric engines run by storage batteries. They are entirely separate from the oil engines and can give but slow speed—10 to 14 miles an hour—for a few hours only before it becomes necessary to rise and run on the surface in order to recharge the batteries by means of the surface engines. But the need of coming up like the whale for breath is not the only weakness: to deliver an attack sight is an essential [one], and thus far, man has discovered no means of seeing through the water. Invisibility is the source of a submarine's strength, and yet the only way an enemy can be seen in order to discharge a torpedo is by raising the "eyes" or periscope above the surface. The enemy becomes visible; but in the same act, the submarine loses its invisibility, for a periscope can be seen if the proper means of observation are maintained. As an underwater craft, then, the submarine can hide when completely submerged, in which event it cannot see and has no offensive power; it can run submerged with periscope showing, in which case it can use the torpedo if not sooner discovered; [and] it can operate at slow speed and for a few hours only without rising.

During the past century, great changes have occurred in armed ships, but they have occurred gradually. People thought in 1815 that the steam frigate *Demologos* (1814), [later renamed] *Fulton the First*, would "revolutionize" naval warfare, but nations were still building sailing frigates 30 years later. The unseaworthy [Union-built, ironclad] *Monitor* was supposed to upset all traditions, yet she was not the first ship to carry armor, and development in naval architecture was eventually along the line of ships with seagoing

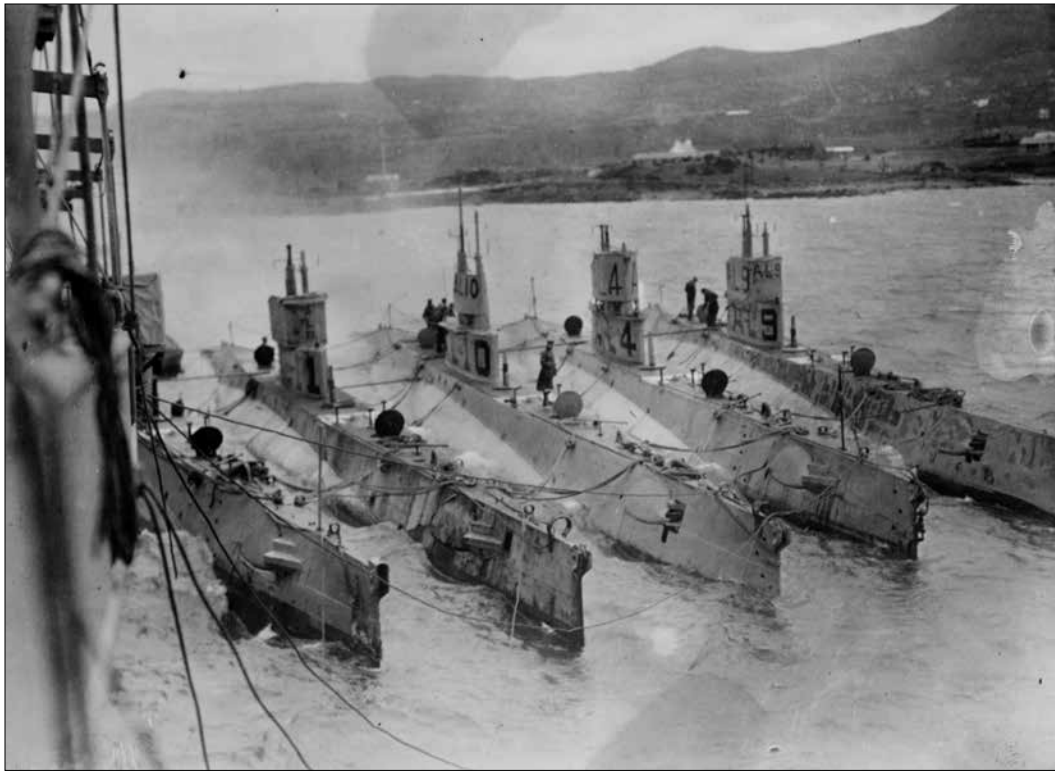


Assistant Secretary of the Navy Franklin D. Roosevelt, ca. 1920.

Library of Congress Prints and Photographs Division, LC-USZ62-11190



Until World War I, use of submarines was limited. Germany made substantive improvements to its submarines, called U-boats, and began a campaign of unrestricted warfare against all merchant shipping. This policy was one of the events that drew the United States into the war in 1917. On 17 November 1917, USS *Fanning* (DD 37) was the first U.S. Navy ship to sink a German U-boat by firing a pattern of depth charges, a tactic that became standard in antisubmarine warfare. Edwin Simmons, *Sinking of U-58 by USS Fanning, 1917*, 1920. Oil on canvas. Art Collection, Naval History and Heritage Command, 45-106-C.



L-type submarines alongside USS *Bushnell* (Submarine Tender #2) at Bantry Bay, Ireland, in 1918. These submarines are, from left to right, unidentified submarine; USS *L-1* (Submarine #40); USS *L-10* (Submarine #50); USS *L-4* (Submarine #43); and USS *L-9* (Submarine #49).

Official U.S. Navy photo, Naval History and Heritage Command, NH 51171

qualities. The torpedo boat of 20 years ago, with its great speed and self-propelling torpedo was going to put every battleship on the scrap heap, but very soon the destroyer was devised as an answer, and today has replaced the torpedo boat and taken its definite place as an integral part of the fleet. The more I study present-day naval development in the light of naval history, the more I am impressed with the slowness of evolution, with the fact that for every new weapon an antidote is found, and above all with the lesson that control of the seas means in its large sense precisely the same today as it did in the days of [Dutch Admiral Cornelis] Van Tromp or [British Admiral Horatio] Nelson. To prevent an invasion

at one given point, to conduct a raid, to destroy isolated merchant vessels has never meant naval supremacy; but to be able to keep the seven seas open for the bulk of a nation's vessels of commerce and of war, and to keep the seas closed for those of the adversary—that is what history means by the influence of seapower.

Today, I would say without hesitation that the submarine has not replaced the battleship as the principal factor in war at sea. Taking it in its existing stage of development, a submersible vessel is useful for certain purposes only. It cannot yet be called seagoing or seakeeping, [as] it is not fast; and it is extremely vulnerable. Already devices for its destruction are multiplying: the

aeroplane or dirigible can see it well below the surface; the net, the minefield, the destroyer are all being used to oppose it; and a new type of armed patrol boat is being built for the purpose of watching the sea's surface for signs of the mechanical whale that must come up. Submarine signals also, although now in the infancy of development, will doubtless soon be able to detect the presence of moving submarines and give accurately their direction and distance.

It would be, of course, not unreasonable to suppose that, while the weapons for the destruction of underwater craft are being perfected, the improvement of the submarine itself will continue. Without doubt, its size will increase, its engines, both surface and subsurface, gain in horsepower and resulting speed, [while] its radius of action grow and its seaworthiness improve. I have said nothing of the discomfort of the officers and men on the present-day vessels, or of the well-known fact that the propelling and operating mechanism is in such an experimental stage that frequent accidents occur; these are the evils of any new apparatus—witness the automobile of 15 years ago. But the time is not far distant when the “habitability” and safety from mishaps will make submarines as dependable as any other high-powered, complicated vessel of war. Two deterring factors will probably always be present in its development: the inability to see under water and the necessity of coming to the surface at short intervals.

The submarine has come to stay. It has taken its place, not as the sole weapon in naval offense and defense, but as an adjunct to other weapons. That it is useful for coast defense, for

commerce destroying, for scouting purposes, and as a part of the protection to and attacking power of a battleship fleet is established. That it alone is capable of defending a coast against invasion is claimed only by the type of people in this country to whom national defense means preventing an enemy from landing an armed force on our Atlantic or Pacific seaboard; a Chinese wall kind of defense that requires necessarily the total abandonment of Alaska, of the [Panama] Canal, of Hawaii and our other dependencies overseas, the stopping of our exports and imports and the inability to protect against aggression our citizens abroad and our well-considered international policies. In other words, free communications across the seas are just as much an integral part of our national defense as is the protection of New York Harbor. Before I became associated with our naval affairs in an official way, I had a theory that I knew much about naval strategy and warfare. But I have come very quickly to recognize that I did not; that war on the sea is a greatly complicated science, developing step by step through the faithful work of men who are trained through years of study and experience. It is therefore of interest that the very great majority of naval officers both here and abroad do not believe that the submarine has supplanted the battleship, even though the characteristics of the latter may greatly change. They hold that, as it is improved step by step, the submarine will take its place as one, but only one, of the many instruments of offense and defense on the seas; that it will fit in to its well-appointed place, and that history, with the devising of another weapon, will repeat itself.

USE OF AIRCRAFT IN NAVAL WARFARE

by Commander D. E. Cummings
U.S. Naval Institute *Proceedings*, 1921⁶

Aircraft appeared in the Great War as a new instrument of warfare. They are still a new instrument, whose development is incomplete, and imperfectly understood. In order, therefore, that their use in warfare may be developed and that officers may be enabled to employ them intelligently it is necessary to consider (a) the performances of which they may now be considered capable, (b) the limitations to which they are subject, and (c) the direction in which they may be expected to develop.

In general, aircraft are of two types: (1) heavier than air and (2) lighter than air. Heavier-than-air machines are designed to alight on land or on water; and some of each type are fitted to land, in emergency, on either element. The heavier-than-air machines in use at present are all planes.

Another type of heavier-than-air machine, known as a helicopter or gyrocopter, is in process of development, in which the propeller ro-

tates on a vertical axis. This will differ from the airplane in that it can takeoff, alight, and maneuver without maintaining a high horizontal speed component.

Lighter-than-air machines include free balloons, kite (captive) balloons, and dirigibles. The free balloon is the old circus variety that, when released, is entirely at the mercy of the wind, and that can be controlled only by tethering it and by varying the weights carried, or gas pressure in envelope. The kite balloon is a captive balloon with devices to keep it headed into the wind. The dirigible is a free balloon with motive power and steering apparatus added.

The value of aircraft in war lies in a number of factors, such as their mobility, their vision, their speed, [and] the difficulty of attacking them. They can observe places otherwise inaccessible for observation. They can operate over either land or sea, they can reach and depart from a point of vantage for observation and bombardment with great speed, they can get a bird's-eye view of the Earth's surface within their radius of vision, which angle gives them a much truer and more complete picture than a view from near the surface. In many cases, they

⁶The original article came from Cdr D. E. Cummings, USN, "Use of Aircraft in Naval Warfare," U.S. Naval Institute *Proceedings* 47, no. 11 (November 1921): 1677–688. Minor revisions were made to the text based on current standards for style, grammar, punctuation, and spelling.



Marine aviators flew from U.S. Navy carriers throughout the 1930s. Vought 02U-2 Corsairs of Marine Scouting Squadron 14 prepare to land on USS *Saratoga* (CV 3). Marine aircraft began operations from the *Saratoga* and *Lexington* in 1931.

Official U.S. Navy photo, Naval History and Heritage, NH 94899, courtesy of PHC John L. Highfill, USN (Ret)

can reach and depart from their vantage point without disclosing their presence. Their advantage of vision lies both in the angle from which they observe and in the speed with which they come and go and, sometimes, in the distance they can see.

Range of vision varies extremely according to conditions. At Philadelphia, on a hazy day, planes rose above the haze and saw Atlantic City [New Jersey], 60 miles away. On a clear day, planes at Hampton Roads [Virginia] saw ships at sea clearly, in detail, at 30 miles, and saw the smoke of Richmond, 90 miles away; while the day before, the same plane, spotting for firing ships, at a height of 1,500 feet over target could see the target but could not see even the flashes of the guns of the firing ships. No rule for visibil-

ity of or from aircraft can therefore be of great value. Haze at different altitudes may be indistinguishable from deck and yet reduce vision of aircraft materially.

The visibility of aircraft is very variable. A 100-foot flying boat operating as part of a squadron in the clear daylight weather of Guantánamo [Bay, Cuba] was completely lost sight of by a similar boat at a distance inside of five miles; while the [Navy Curtiss] NC-4 [aircraft] approaching Lisbon, silhouetted against the western sky at sunset, was picked up at a distance of perhaps 20 miles.

Generally, planes are least visible when flying low, headed directly toward or away from the observer. They are most easily picked up on a clear day with high stratus cloud formations;



John Charles Roach, *PBY-1 during Fleet Exercises in 1930's*. Oil on canvas.
Art Collection, Naval History and Heritage Command, 2012-12-02

and are difficult to pick up on the average clear day when there is a certain amount of haze. Usually, there is no smoke to give [it] away, though the smoke of the NC-4 was picked up at Lisbon before the plane. Protective coloration is not effective in the case of planes seen from below, as the visible part of them is always in shadow and looks black at a distance. Relative to ships, in most conditions, the small size of the plane makes its visibility less than its vision.

Lighter-than-air craft can be painted to be very inconspicuous under particular conditions, but under other conditions will be seen much further than they can see. Kite balloons

frequently disclose the presence of the ships carrying them long before they themselves see anything.

The tactical qualities of aircraft are generally similar to those of ships. Every aircraft is a compromise, exactly as a ship is a compromise, between the various desirable factors, the preponderance of the one or the other being governed by the requirements of the service to which the aircraft is to be put. The tactical qualities may be said to consist of speed, radius, turning circle, acrobatics, carrying capacity, minimum flying speed, size, climb, ceiling, takeoff, landing, mooring requirements, sea-

worthiness, airworthiness, [and] battery. Some of these depend to some extent on others. Thus, acrobatics depend on speed and available power, but also on properly proportioned structural strength and on rudder effect. Takeoff depends on minimum flying speed and climb, and is governed (in the case of waterborne craft) by hull shape, so that the craft cannot takeoff until it has speed enough to remain in the air, else it would hop from wave crest to crest and smash itself up. Power, weight per horsepower, and lifting area govern the capacity of a given plane.

The carrying capacity of aircraft is strictly limited by the design. This carrying capacity may be used for equipment, fuel, crew, armor, [and] armament. Thus, a bomber can greatly increase his radius by carrying extra fuel in place of his bombs, and a large machine can carry many passengers a short distance at the expense of fuel. Many extraordinary aircraft performances are therefore of limited value as indicating the practical possibilities of aircraft, inasmuch as they are accomplished by dispensing with other things that are necessary to practical work.

Aircraft have been armed with machine guns, Davis guns up to three inches, automatic cannon, up to 75mm, bombs, and torpedoes.⁷ Machine guns are mounted in small fighting machines either to fire between the blades of the moving propeller, being synchronized with it, or to fire through the hollow propeller shaft, or upon movable mounts, firing clear of propeller in any direction. Large craft usually have machine guns mounted to fire clear of the propeller in any direction. Synchronized guns must be fixed, and are aimed by aiming the aircraft.

⁷ Davis guns were experimental, recoilless weapons developed by Cdr Cleland Davis, USN, in 1910. They were intended to allow larger caliber weapons to be fired from the then flimsy aircraft of the day, but aircraft became sturdy enough to handle the recoil of larger calibers relatively quickly.

Armor has not generally been employed in the past, but is increasing. Engines, gas tanks, and pilot's seats are generally the essential points to be armored. Special means to accomplish some of the ends served by armor have been devised. Thus, nonflammable gas for balloons has been developed; gas tanks that will not leak when punctured, etc.

Aircraft are subject to certain limitations that govern the uses to which they may be put. Many of these limitations are subject to constant change as material and the knowledge of it develops. Thus, the weight which may be lifted by a plane of a given power and speed is a function of the area and efficiency of the lifting surface and of the wind resistance. In a given type of machine, as the linear dimensions increase, the ratio of useful load to gross load increases less and less rapidly, so that, beyond a certain point, increase of size can only be obtained by lightening the load, by increasing the ratio power to weight of engine, by sacrificing some tactical features, or by changing the type. All these matters are being studied constantly; engines have reduced their factors of safety to a minimum, but new types of greater power per unit of weight may be developed; new types are being studied constantly. New methods of obtaining strength with less weight and of streamlining are being developed. [Significant] increase in airplane size would seem to be dependent very largely on the development of an entirely new power plant, the present type having approached its maximum perfection. The resistance due to struts, wires, etc., known as "parasite" resistance, is a minimum on a monoplane.

One of the greatest limitations to which aircraft are now subject is life of the materials employed. The safe life of aircraft is limited by deterioration of wing fabric, struts, etc., which

cannot always be detected from the outside. Obviously that limitation will be gradually removed as materials develop. Engines can be renewed bodily at will. The average safe life of a Liberty [L-12 aircraft] engine, which in its field compares favorably with any other, between overhauls is 75 operating hours. After a total of 215 hours, they are not considered safe. That limitation also is subject to change, but not so much as in the case of the structural parts, because (a) they have already been reduced to an approximately minimum factor of safety, and (b) engine failure in the air does not in itself mean certain disaster, as failure of important structural parts frequently does, because landing can be made without power if a suitable landing place is available within effective gliding distance. Probability of structural failure is negligible. At one air station, after a year's experience, forced landing averaged 1 in 40 flights.

Aircraft are limited in their operations by the requirement that they must alight at suitable landing places. The requirements are (a) conditions that make a safe landing possible, and (b) conditions which will enable the aircraft to take-off again. In order to land, a waterborne plane must have a clear water area, smooth enough for the type of machine, free from stakes or floating debris, and clear of interferences. To takeoff again, it must have these, and in addition, a sufficient area in which to gather speed and climb clear of interference. More space is required to takeoff than to land. A land machine's requirements are similar, substituting for the water area a smooth field. In restricted areas, wind direction must be favorable, especially for taking off. Lighter-than-air machines must alight where suitable unencumbered areas with specially designed, permanent mooring equipment are available, although it will probably prove practicable to moor

out a dirigible without special equipment under favorable conditions.

Radius of action is limited by fuel carrying capacity. Possibilities exist in this line for the development of motors making more efficient use of fuel or of a more concentrated fuel or both. Another restriction to the use of some types of aircraft is their limited habitability; but that can be met in large degree where necessary, [as] the larger craft correspond to submarines in that respect.

The uses of aircraft in war include (a) scouting, (b) bombing, (c) torpedo firing, (d) spotting, (e) lookout, (f) combat, (g) escort, (h) attack on surface craft by gunfire, (i) dispatch carrying, [and] (j) transportation.

[Item] (g) is of particular value in submarine danger zones, since underwater craft can, in many cases, be clearly seen from aircraft, which can guide surface craft to the attack, point out safe courses for nonmilitary vessels, or drive the submarine under by bombing attacks or gunfire. The essence of defense against submarines is vision, which aircraft possess in the highest degree.

In the east coast of England submarine zone, large convoys passed constantly. Submarines always menaced them. Sinkings were daily occurrences. During five months of aerial patrol in this area, not a single sinking occurred in the presence of airplane patrols except one, and in that case the plane was on the surface of the water, in tow, and obviously unable to take [to] the air.

Aircraft are particularly suited for scouting work, on account of their speed and vision. They are handicapped, in this duty, by (a) their limited radius [since] they cannot expect to alight at sea and await fuel, as has been done by destroyers during the war, except under favorable condi-



Lt Christian F. Schilt received the Medal of Honor for his daring rescue of 18 wounded Marines and Nicaraguan National Guardsmen from Quilali, Nicaragua, in 1928. He joined the Marine Corps during World War I and became an aviator in 1919. Schilt served in Santo Domingo, Haiti, and Nicaragua through the 1920s. *Official U.S. Marine Corps photo*

tions or as development progresses; (b) their limited radio range, which can be increased indefinitely if the circumstances justify the carrying of the extra weight; (c) defensibility [as] due regard must be [given] to the nature of the opposition that is to be met, whether it can be beaten off or avoided, or whether visibility conditions are such that the machines can see without being seen or heard, which would be their best defense; [and] (d) reliability of motors. In machines that are operated alone over the high seas, much must be sacrificed to reliability, else the ratio of results to cost would be too low to warrant the free use of this valuable instrument.

A letter dated at Hampton Roads, 27 April

1920, speaking of the Atlantic Fleet Air Detachment, says:

We have just arrived here, yesterday, from Guantanamo, via Nuevitas, Turtle Harbor (near Miami) and Fernandina, Florida, and Southport, N.C. . . . we are anchored west of the operating base with the planes anchored just outside of the submarine basin. The people at the Air Station can't quite get it through their heads that we don't want anything from the Station, but we simply don't. These planes will be turned in to the factory. They have been in service since we got them last October, and have had about 150 hours in the air apiece. . . . From Guan-

tanamo each flight has been without casualty, except that one plane landed once for a few minutes to change a distributor head. This detachment consists of six [Felixstowe] F-5-L flying boats with two Liberty engines each; and has visited Philadelphia, Hampton Roads, Pensacola, Guantanamo, Samana Bay [Dominican Republic], Virgin Islands, and other West India Islands and intervening points.

Dirigibles are especially adapted to long distance strategical scouting, where they are not liable to meet effective aerial resistance, on account of their great radius and ability to remain in the air without consuming fuel, while planes must keep going at high speed to remain in the air. . . . (e) A further and most important consideration is the question of navigation, which will be treated in some detail below. Within its radius, the conventional methods of search by surface vessels are all open to aircraft, remembering, however, that the aircraft course and speed made good is always the resultant of its own speed and course through the air and the speed and course of the wind. Thus, a change of course may involve a difference in speed over the water of twice the velocity of the wind. If the wind is force 5, that means a 50-knot change of speed. "Scouting and screening" also gives certain methods of utilizing ship planes to increase an area searched or to decrease fuel consumption in covering a given area.

The problem of bombing aircraft is purely an application of the principles of gunnery. In gunnery, the angle of discharge of the projectile is varied to suit the relative positions and speeds and courses of ship and target, while in bombing the angle of discharge is fixed and the position of the aircraft is varied to suit the speed and course

conditions. The elements involved are (a) speed and course of aircraft relative to target, (b) altitude, [and] (c) bomb trajectory. The component of the bomb trajectory resulting from the speed of aircraft is much greater, obviously, than the corresponding element in the case of a firing ship. The bomb trajectory depends on coefficient of form and specific gravity of the bomb, and to some extent on lateral wind effect on bomb. Relative speed and course depend upon air speed and course of aircraft, direction and velocity of wind, course and speed of target. If these three, or their resultant, and the altitude can be accurately determined, the problem of bombing becomes largely one of mathematics. The tactics of bombing at sea under favorable conditions are as follows: (1) set sight for airspeed for aircraft; (2) set sight for altitude from altimeter; (3) by observation and estimate (quite accurate from air as regards course), set sight for target course and speed; (4) approach up or down wind to determine direction of wind (which may be entirely different in upper air than below). Set sight for direction of wind; (5) approach from right angles to wind to determine wind velocity. Set sight accordingly; [and] (6) approach on steady course, fire when on. This procedure, carefully followed through by a trained aircraft crew, in good air conditions, will give results whose accuracy depends entirely upon the accuracy of the instruments and sight employed and upon skill of the personnel.

Results of bombing practices under target practice conditions are of limited value as indicating actual results obtainable. In judging the figures, it should be borne in mind that:

- a. Bombs used are subcaliber. At least 10 percent greater accuracy may be expected from the full-size bomb.
- b. Present instruments are of limited

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- accuracy, and calibrating, or "bore sighting," is not always adequately carried out.
 - c. All firing is done with open sights, mechanically very imperfect. Greatly improved telescope sights are in experimental use now.
 - d. Figures are misleading, in that the target area is a circle, while the pattern is usually an ellipse.

The recent exercises against ex-German ships are of more value and indicate great hitting ability under favorable conditions.

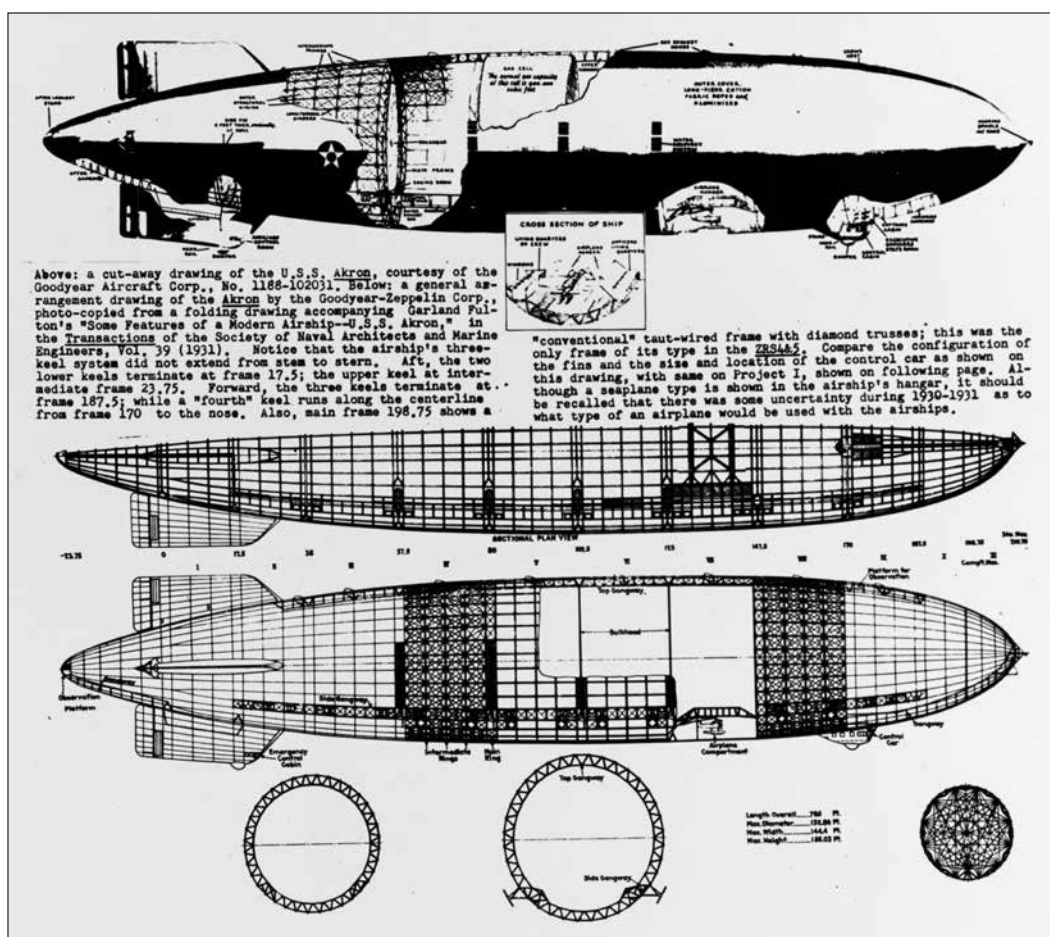
The effectiveness of a bomb depends on various factors. One is the penetration of the bomb before explosion. Another is the parts of the ship on which the explosion exerts its force. An aircraft carrier would make a very fine target in this respect, as well as in size. Another is the speed of the projectile, and herein lies a difficulty, for the speed of a bomb is due entirely to gravity. While in a vacuum the speed would increase rapidly with the height from which dropped, actually a point is soon reached where air resistance balances the force of gravity and the downward speed becomes constant. This speed has been increased by streamlining the projectile. Recent experiments at Indian Head [Maryland] show better penetration results than had been anticipated. It is to be remembered that properly fused bombs will give depth charge effects even if an actual hit is not scored.

It has been authoritatively stated that: "Experimental development of the torpedo launching from aircraft is promising and there is no reason to doubt that ships may be successfully attacked in this manner. The tactics of this attack remain to be developed, but from a mechanical point of view no difficulty need apparently be anticipated." The method of launching torpe-

does from airplanes consists in flying within a few feet of the water, heading toward the target, and releasing the torpedo, after which the torpedo behaves precisely as does any other torpedo. The attack may be masked by a barrage of smoke bombs under conditions that will make the latter effective. In getting very near the water within torpedo range, the plane subjects itself to the possibility of zone shrapnel or fused H. E. [high explosive] fire from the entire battery of surface vessels, laying guns on the horizon and training on the plane. A very effective barrage might thus be laid. Even more effective would be a "splash" barrage ahead of the plane. This method was proposed for use in the British fleet. Wings, rudders, stabilizers, etc., are [made] of fabric and would be wrecked by a splash; and the substitution of metal surfaces, as has been done in some planes, would probably not enable a plane to pass through a splash barrage. Aside from all the questions of directing the torpedo itself so that it may make a hit, it is difficult to launch one effectively. Too great height or speed will result in deranging a torpedo. Thus, when a service torpedo was recently dropped from a Martin [MB-1] bomber at 35 feet, and at high speed, the head broke off and spun in the air when the torpedo hit the water.

Comparing torpedoes with bombs as aircraft weapons, it may be considered that: (1) a large proportion of the torpedo weight is taken up by machinery, which has no destructive effect; (2) structural defense against torpedoes is highly developed; (3) zone fire and water barrage against craft within a few feet of the water and on a course giving small deflection promises many more hits than any high angle defense now in sight; [and] (4) torpedo directors are better developed than bomb sights.

The usefulness of aircraft for spotting has



Cutaway and interior structural drawings of USS Akron (ZRS 4), ca. 1931.

Naval History and Heritage Command, NH 80769, courtesy of Richard K. Smith

been recognized by both the British and the United States navies. From the experience to date it may be stated that:

- a. Aircraft, from their position, can observe the fall of shot immensely better than anyone on board ship.
- b. Aircraft can sometimes spot successfully when ship's spotters are prevented by (1) smoke screens, (2) thick weather, [and] (3) target hull-down beyond horizon.
- c. Planes have thus far proved to be

better spotting platforms than kite balloons.

- d. Planes can seek best position for observation, while kite balloons can vary position only in height. This is most important in practice.
- e. Planes, when up, do not hamper handling of ship. Kite balloons do.
- f. Communications are an absolute essential.
- g. Selective radio communication is to some extent possible to prevent

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- interference of various spotting planes. Four planes have thus communicated without interference.
- h. Spotting is best done by planes carrying two or more persons.
 - i. It is difficult, but by no means impracticable, to differentiate reasonably well between the salvos from various ships and between the targets that various ships are firing at.

Since kite balloons are much more vulnerable to attack from enemy aircraft than are planes, it may be considered that planes are the more desirable for spotting. When spotting, planes take position according to the visibility of the targets and to the effectiveness of the enemy's antiaircraft measures. Their special value for the service lies in the fact that they can take position so as to accommodate themselves to existing conditions.

For simple lookout, as distinguished from scouting, an advantage of position over ship board observer is gained by the use of kite balloons. This advantage of position enables an observer, under favorable conditions, to see a submarine better than from deck. For surface craft, and for submarines not in favorable position, the advantage of vision is frequently offset by the added visibility. For observation of channels and along shore work, they are useful. They are very vulnerable to attack from mobile aircraft due to their immobility and consequent helplessness.

Combat machines are usually small land planes of great speed, climb, and aerobatic ability, armed with machine guns for use against other aircraft. The maneuvers executed by such craft vary with the whim of the pilot, but consist generally in maneuvering to get the opponent

under a quick momentary burst of machine gun fire without getting in his arc of fire. Defense against such craft by aircraft may be by outmaneuvering them along the same line, or, in the case of large planes, by machine gun fire from a large number of machine guns capable of firing in any direction. To render this defense adequate the problem must be met of eliminating "blind spots" and in large machines placing guns to fire in absolutely all directions. Lighter-than-air craft are not defensible against combat planes, nor generally against planes of greater speed, climb, and ceiling, except that gun platforms have been rigged on top of Zeppelins, and it is probable that in future types guns will be so placed on rigid dirigibles as to be able to fire in all directions. The gunnery problem of combat planes involves such great speeds, variety of angles of approach, and quick turns that long ranges are not attempted, and sight setting is practically nonexistent, sights being designed with one fixed point and one movable, the movable one being controlled by the effective wind. Devices are usually added to assist the gunner in estimating the allowance for course and speed of the target relative to own plane. Training for this work is by means of camera guns, which photograph the target and show whether or not hits would have been scored.

Recent developments in airplane cannon seem to indicate that the use of cannon, of 1-pounder, 3-pounder, and 3-inch is perfectly practicable. No exact data is available as to the use of these guns except that it is known that a high percentage of hits can be obtained on surface targets from altitudes up to 1,000 or 2,000 feet. These are not Davis guns but automatic or semiautomatic guns of conventional type. Such guns suggest the feasibility of attacking light craft, such as submarines and destroyers. The



John Charles Roach, *Blimp USS Macon with Escort Plane*. Oil on canvas.
Art Collection, Naval History and Heritage Command, 2012-12-01

use of these guns or of machine guns to drive personnel from decks or from fire control top is also suggested as an occasionally and probably practicable method of attack.

The question of antiaircraft defense ashore and afloat differs materially for much the same reasons that gunnery differs. An essential part of any defense is a lookout sufficient to give ample warning of the presence of attacking aircraft. It would probably be impossible entirely to prevent observation of a naval base by enemy aircraft except by denying them a starting point within their radius. Operations to that end may be conducted by the use of longer radius observation aircraft with bombs or supported by sur-

face craft. The use of artillery and splash barrage against planes would be effective in the case of planes flying very close to the water as to discharge torpedoes. Against lighter-than-air craft in daylight, it is less difficult within gunnery angle ranges. The use of artillery against aircraft by ships is difficult and of limited effectiveness. Machine guns with a proportion of tracer bullets are effective within an altitude of 4,000 feet when skillfully operated. Defense of fixed positions against dirigibles and low altitude planes at night is most effective by means of curtains of streamers hung from lines supported by captive balloons. Such lines have been strung at altitudes up to 10,000 feet. The most effective defense for

fleet and most other purposes is combat planes of our own, outnumbering and out-speeding the enemy's planes.

The navigation of aircraft presents the same problem as the navigation of ships, but with some features very greatly emphasized. Thus, air currents are of unknown direction, and very speedy, so that dead reckoning frequently is entirely untrustworthy. Air currents vary in velocity and direction at various altitudes and at various places. An air indicating balloon released for observation purposes at Lisbon moved in a spiral covering 16 points of the compass before reaching 5,000 feet. With a wind of 20 knots, that means that two planes steering the same compass courses at the same air speeds from the same place but at different altitude would be 40 miles apart at the end of an hour. When landmarks are in sight, or ships, the course made good may sometimes be determined. It is sometimes possible to drop smoke bombs on the water and take observations of them. The taking of observations of the sun and stars is difficult due to inaccuracy of height of eye estimations.

This has been overcome to some extent by development of a leveling sextant, which uses a self-contained bubble for horizon. The amount of apparatus that can be carried and used is limited by weight and space considerations. Observations are difficult due to the physical inconvenience of exposure to a wind of 60 knots or more while observing.

A very great aid to navigation may at times be found when light conditions are favorable, by the character of the bottom or the depth. Thus, in southern waters, where ships are frequently piloted by eye from the top, aircraft can frequently identify characteristic formations. Isolated reefs or deep spots or sharply defined depth curves can frequently be identified and furnish excellent land or water marks.

Aircraft can also obtain fixes from radio compass stations. In so doing, owing to speed of aircraft, observations by various stations should be taken on signal at the same instant. Results within three degrees have been obtained, and this can be bettered.

LETTER FROM GEIGER TO YARNELL ON AVIATION

Major General Roy S. Geiger letter to Admiral H. E. Yarnell
11 September 1943⁸

DIVISION OF AVIATION

My Dear Admiral,

In accordance with your letter of 6 August 1943, there is enclosed herewith my considered opinion of the status which should be given aviation in our military organizations, so as to maintain the greatest efficiency in all components of national defense.

Very truly yours,

Roy S. Geiger,

Major General, USMC

Admiral H. E. Yarnell, USN (Ret)

Naval Operations,

Navy Department,

Washington, DC

1. Operations conducted to date have proven beyond a doubt the tremendous power and importance of the Air Arm. It is credited by independent action of saving England from invasion

in 1940, of the capture of Crete in 1941, of the surrender of Pantelleria [Italian island] in 1943, and of softening up Italy to such an extent that that country surrendered upon threat of invasion by ground forces. The Air Arm can pass over the defenses of a country and destroy its communications, its industries, its material, its cities, and its will to fight, as proven in the case of Italy. There is nothing that floats, submarines, destroyers, cruisers, carriers, and even battleships that cannot and have not repeatedly been sunk by aircraft. Battles are won by fire and movement. From this criterion, aircraft is by far the most potent weapon today as it easily surpasses all other arms in firepower and speed.

2. The Navy must retain control of its aircraft. With a few exceptions, aviation has played a major role and has been the deciding factor in the naval engagements of the present war. Pearl Harbor, Coral Sea, Midway, and Santa Cruz were all decided by air action.

⁸ The original article came from MajGen Roy S. Geiger to Adm H. E. Yarnell, "Division of Aviation," 11 September 1943, copy of original, Marine Corps History Division, Quantico, VA. Minor revisions were made to the text based on current standards for style, grammar, punctuation, and spelling.

3. Whether we want to admit it or not, aircraft has revolutionized the Navy. Battleships are fast becoming obsolete. Aircraft carriers are taking their place as the backbone of the Fleet. In other categories, everything within reason must be sacrificed for speed and fire-power, especially antiaircraft. The primary striking force in the Fleet will be, and is now, shipborne aircraft. Aircraft is [of] as much importance to the Fleet as the ships themselves. A Fleet without aircraft in a modern engagement will be sunk before firing a shot, except from its antiaircraft guns.
4. As aircraft has become an integral part of the Fleet and is one of its essential components, it follows without argument that the same agency, viz. The Navy Department, which controls the design, construction, equipment, training, and operation of the ships of the Fleet must likewise control naval aircraft, which is a vital component.
5. The Navy, in addition, has the responsibility of search and patrol with its surface forces. In order to coordinate all forces engaged in search and patrol, all aircraft engaged on these missions should be assigned to the Navy. Divided responsibility leads to confusion. So, there should be no restrictions as to the types of airplanes used, nor for bases used for operation, whether ashore or afloat.
6. The conclusion is reached that the Navy should retain under its direct control all aircraft afloat and all aircraft required for search and patrol at sea. Now this includes carrier, ship, and tender-based



A Marine fighter pilot stands by his plane after landing air support to men on the assault waves at Cape Gloucester, New Britain. He and many like him showed courage and grim determination in strafing the Japanese while their fellow Marines fought doggedly on the beach. Kerr Eby, *Marine Airman*, 1944. Drawing, charcoal on paper.

Art Collection, Naval History and Heritage Command, 88-159-DX, gift of Abbott Laboratories

aircraft, land-based aircraft for patrol duty when more efficient than tender-based and the necessary utility aircraft. When new developments are made, nothing should interfere with the Navy adapting types most suitable for the execution of naval tasks.

7. There should be a Department of Air



On 9 October, VMF-121 pilots were catapult launched off the USS *Copahee* (CVE 12) escort carrier and flew 350 miles north to reach Guadalcanal, where the air group based at Henderson Field for the duration of Operation Watchtower. The watercolor commemorates the actions of Marine Corps pilot Capt Joseph J. Foss. In three months of sustained combat, Foss and his group shot down 72 Japanese aircraft, including 25 credited to him. He received the Medal of Honor in recognition of his role in air combat during the Guadalcanal campaign. 1stLt Hugh Laidman, *Joe Foss' Wildcat*. Watercolor on paper.

Art Collection, National Museum of the Marine Corps, 21-1-2

on an equal footing with the War and Navy Departments. No one will dispute the necessity for a large Air Force capable of repelling any attempted invasion of the United States whether by air, land, or sea; nor of having an Air Force of sufficient size to bomb a hostile country into submission, as is now being attempted by the AAF [Auxiliary Air Force] and the RAF [Royal Air Force] in aerial operations against Germany. At times, it will be necessary for the Air Force to operate with the Army and the Navy, and at still other times,

it may function entirely independently. There appears to be no good reason why such an Air Force should belong to the Army any more than it should belong to the Navy. Nor of why the Air Force should belong to the Navy any more than the Navy should belong to the Air Force. The development of the Air Force should not be retarded by prejudice of either of the older Services, as has been the case in the development of the Army and Navy Air Services in the past. It should be free to develop under the guidance of aviators.

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8. Naval Aviation should be independent of the Department of Air. There are two reasons for this. First, naval aviation is primarily interested in a floating Air Arm having many problems to solve requiring expert naval knowledge and training. Experience has proven that a Naval Air Arm under the RAF is neglected and is an impractical organization.
 9. While this appears to be a duplication, as a matter of fact, it is not. It is a necessary augmentation which cannot be guaranteed under any other arrangements.
 10. The past and present sniping against naval aviation can be avoided by taking the following steps:
 - a. Stop building up a land-based naval air striking force. Restrict such forces to that assigned the Marine Corps, which should be no larger than sufficient aircraft to support Marine Corps troops.
 - b. Naval officers conduct air operation afloat. There are too many high-ranking naval aviation officers ashore.
 - c. Permit Air Corps and Marine officers to conduct shore-based air operations. They are trained, organized, and equipped for conducting these operations while the Navy is not. If they are, then there would appear to be a duplication of effort.
 11. It is not believed that a Department of National Defense, including the three fighting branches (Army, Navy and Air) would prove to be an efficient organization; although at first sight, it appears to be a logical organization. Such an organization would be entirely too large to function efficiently. Each of the three components—Army, Navy, and Air—is of sufficient importance to have a cabinet member at its head. Each operates in a different sphere—land, sea, air. Each has major problems unknown to the other. It is believed that the organization and control of any one of the Services is as much as one head can efficiently handle.
 12. It is appreciated that the Services have to be coordinated. In many operations, they fight as a team. This coordination can be brought about by a Joint General Staff. Provisions for the training of suitable command and staff officers should be made by the establishment of a Joint War College and by a free exchange of officers between the three Services.
- MARINE CORPS AVIATION
Major General Roy S. Geiger, USMC,
Director of Aviation
- The mission of Marine Corps Aviation is to furnish the necessary air support of the ground forces of the Marine Corp, and to provide a reserve from which the Navy may draw aviation units for service afloat on purely naval missions. Therefore, examination of the tasks assigned the ground forces will immediately disclose the tasks to be performed by Marine Corps Aviation. They are:
1. To provide the air support for the capture of advanced bases.
 2. To provide the air support for the defense of advanced bases until their



Corsairs of 2d Marine Aircraft Wing (2d MAW), Okinawa, 10 June 1945.
Official U.S. Marine Corps photo, Louis R. Jones Collection, Archives Branch, History Division

- occupation and defense is assumed by Army forces.
3. To furnish the air support necessary for the occupation and defense of areas for which the Navy is responsible.

It may appear at first sight that, in the present war, Marine Corps Aviation has been employed on missions other than those for which it is maintained. Close analysis, however, will disclose that this is not the case and that there actually has been no change of mission.

At Wake and Midway Islands, Marine Corps Aviation most ably assisted the Marine Corps ground forces in the defense of those far flung outposts of the Navy.

The seizure and defense of Guadalcanal presented a true and even better example of the employment of Marine Corps Aviation in sup-

port of ground forces of the Marine Corps. In that operation, the 1st Marine Aircraft Wing reported to the 1st Marine Division and worked closely as a team until that island was securely in our possession. When ground troops of the Marine Corps who had seized and organized the defense of Guadalcanal were relieved by Army troops, circumstances were such that Marine Corps Aviation was assigned to continue to perform the same missions for those troops as for Marine Corps troops.

Marine Corps Aviation is an integral part of the Marine Corps, and its missions are therefore essentially the same. The fact that certain temporary circumstances have arisen in this war which have necessitated its employment on like missions in support of Army troops in no wise alters this fact.

HOW WE BRIDGED A WARTIME “LEARNING GAP”

by Lieutenant Colonel Frank G. Hoffman
U.S. Naval Institute *Proceedings*, 2016⁹

Looking back after World War II, many Navy officers believed that their prewar planning was superb. “War Plan Orange persevered for 40 years and eventually won the war,” claims one noted scholar. “What more can one ask of a great plan.”¹⁰ There is no doubt that the U.S. Navy was effective eventually. But the ultimate victory was not just because of War Plan Orange or the fleet exercises that refined it.¹¹ Instead, success must be credited to the innovation and learning done by the Fleet. War Plan Orange’s envisioned blockade of Japan began much earlier than originally designed. In ordering its small submarine force to conduct unrestricted warfare, the Mahanian clashes long

expected by the U.S. Navy in the Pacific were displaced for a time. Because they did not anticipate this role for the submarine, the Navy had to learn under fire, which it accomplished with great success.

The results were eventually impressive. Outdated tactics and timid commanders were replaced by night surface attacks and aggressive officers. New technologies, including search radars and sonar, were introduced. New torpedoes and their exotic magnetic exploders were found to be flawed, and were painfully fixed. Doctrine, intelligence on shipping, and strategy were integrated into a ruthless war of attrition in the Pacific. A small part of the overall force, just 2 percent of the Navy’s personnel, sank nearly 4,800,000 tons of merchant shipping (55 percent of the war’s total) and asphyxiated Japan’s economy.¹²

Both the U.S. and Imperial Japanese navies

⁹ The original article came from LtCol Franklin G. Hoffman, “How We Bridged a Wartime ‘Learning Gap,’” U.S. Naval Institute *Proceedings* 142, no. 5 (May 2016): 22–29. Minor revisions were made to the text based on current standards for style, grammar, punctuation, and spelling.

¹⁰ Edward Miller cited by George Baer, *One Hundred Years of Sea Power, The U.S. Navy, 1890–1990* (Stanford, CA: Stanford University Press, 1994), 128.

¹¹ For details on these fleet exercises, see Craig C. Felker, *Testing American Sea Power: U.S. Navy Strategic Exercises, 1923–1940* (College Station: Texas A&M University Press, 2007); and Albert A. Nofi, *To Train the Fleet for War: The U.S. Navy Fleet Problems, 1923–1940* (Newport, RI: Naval War College Press, 2010).

¹² Ian W. Toll, *The Conquering Tide: War in the Pacific Islands, 1942–1944* (New York: W. W. Norton, 2015), 244–86. See *Effects of Strategic Bombing on Japan’s War Economy: The United States Strategic Bombing Survey* (Washington, DC: Overall Economic Effects Division, 1947), appendix table C-50, appendix table 1.



Artist Harrison Miller imaginatively renders the USS *Cuttlefish* (SS 171), commissioned in 1934, firing a torpedo while submerged, in company with a number of amberjacks, dolphins, and other fish.

Art Collection, Naval History and Heritage Command

recognized their respective strengths and weaknesses. But it was not the size of the fleets or their materiel differences that dominated. Overall, the competition in naval combat and organizational learning dominated the Pacific war. In fact, a significant “learning gap” was created in both surface and subsurface warfare.¹³ That [gap] got wider and wider as U.S. submarines adjusted to new demands, technologies, and roles.¹⁴ While the Japanese began to adapt as the war progressed, the U.S. Navy achieved what could

be called “organizational learning dominance.”¹⁵ Ultimately, it was the Navy’s learning capacity that allowed it to be so successful.

ORGANIZATIONAL LEARNING CAPACITY

Innovation literature identifies four principal attributes of highly successful learning organizations. Collectively, these facilitators constitute the most important contributors to what can be called organizational learning capacity.¹⁶

¹³ Jonathan Parshall and Anthony Tully, *Shattered Sword: The Untold Story of the Battle of Midway* (Dulles, VA: Potomac Books, 2010), 407.

¹⁴ For the conduct of that campaign, see Joel Ira Holwitt, “Execute Against Japan”: *The U.S. Decision to Conduct Unrestricted Submarine Warfare* (College Station: Texas A&M University Press, 2009), 162–82.

¹⁵ R. Evan Ellis, “Organizational Learning Dominance: The Emerging Key to Success in the New Era of Warfare,” *Comparative Strategy* 18, no. 2 (May 1999): 191–202, <https://doi.org/10.1080/01495939908403173>.

¹⁶ Derived from the theory of adoption capacity posited by Michael C. Horowitz, *The Diffusion of Military Power: Causes and Consequences for International Politics* (Princeton, NJ: Princeton University Press, 2010), 16–84.



Without a way to see the world above without surfacing, the greatest advantage of the submarine—stealth—would be lost. The design of the modern periscope is credited to Sir Howard Grubb, who developed them for the first British submarines. In this painting, Orlando S. Lagman depicts the periscope view of Japanese ships from a U.S. Navy submarine during World War II. Oil on canvas.

Art Collection, Naval History and Heritage Command, 67-018-S

Leadership. Leadership involvement at lower and medium levels of the force is evident in innovations and adaptation all through World War II in both the Army and the Navy.¹⁷ The Americans placed no restrictions on where they got good ideas and were decentralized in terms of best practices, many of which were generated from the bottom up.¹⁸

¹⁷ Paul Kennedy, *Engineers of Victory: The Problem Solvers Who Turned the Tide in the Second World War* (New York: Random House, 2013), 270; and Capt Michael D. Doubler, *Busting the Bodge: American Combined Arms Operations in France* (Fort Leavenworth, KS: Combat Studies Institute, U.S. Army Command and General Staff College, 1988), 32–34.

¹⁸ Russell A. Hart, *Clash of Arms: How the Allies Won in Normandy* (Boulder, CO: Lynne Rienner, 2001), 269, 271, 279.

A decentralized approach delegates authority for solutions to lower levels, where ideas can be rapidly discovered and implemented.¹⁹ Current research suggests that a personal attribute of leader openness is invaluable. This is manifested in intellectual curiosity, creativity, and a degree of comfort with novelty and variety. Leaders [believing] in openness search for relevant and conflicting perspectives on problems

¹⁹ Williamson Murray, *Military Adaptation: With Fear of Change* (New York: Cambridge University Press, 2011), 311; and Meir Finkel, *On Flexibility, Recovery from Technological and Doctrinal Surprise on the Battlefield* (Stanford, CA: Stanford University Press, 2011), 98–110.

and seek and value inputs regardless of rank.²⁰

Organizational Culture. A number of scholars emphasize the importance of culture to how organizations innovate or adapt.²¹ One went so far as to observe that “military culture may be the most important factor not only in military effectiveness, but also in the processes involved in military innovation.”²² Culture serves as a prism for how organizations view problems, and establishes limits to acceptable solutions. Thus, culture can be both a barrier and a facilitator of change and adaptation.²³

The literature suggests that certain cultural factors explain the greater flexibility and adaptability of military organizations.²⁴ Students of German military history, for example, credit German culture with supporting an ethos of critical thinking and analysis within its concept of *ausbildung* or professional development.²⁵ Climates of critical thinking, intellectual curiosity, and objective analyses are key to supporting the

rigorous evaluation of new ideas.²⁶ Cultures that value conformity and compliance with rules, routines, and operational praxis are rigid. Centralized and controlling cultures do not generate the conditions for creative problem solving.

Learning Mechanisms. An adaptive culture capable of inquiry must have processes to help commanders make sense of ongoing operations and to explore possible changes. One historian argues [that] “without a coherent system of analyzing what is actually happening, military organizations have no means of adapting to the conditions they face except [to] doggedly impose assumptions on reality or, even more dubiously, to adapt by guessing.”²⁷ During World War II, most armies and navies began producing after action reports to collect best practices, a practice the Germans started in World War I.²⁸

In both peacetime and during war, successful commanders or Services must also have a capacity to experiment to explore the unknown. Peacetime innovation has been correlated with cultures of critical inquiry augmented by these exercises and experiments.²⁹

But in wartime, the laboratory moves to the battlefield; success is dependent on being able to sense, interpret, and respond faster than one’s opponent. Experimentation and thus learning become largely generated on the battlefield “in contact.” Sometimes this can be done by operational units, and often by special staff sections or operations research analysts. The British be-

²⁰ Stephen J. Gerras and Leonard Wong, *Changing Minds in the Army: Why It Is So Difficult and What to Do About It* (Carlisle, PA: Strategic Studies Institute, U.S. Army War College, 2013), 8. See also Steven H. Appelbaum and Walter Reichart, “How to Measure an Organization’s Learning Ability: The Facilitating Factors—Part II,” *Journal of Workplace Learning* 10, no. 1 (May 1998): 15–28, <https://doi.org/10.1108/13665629810370012>; and John A. Nagl, *Counterinsurgency Lessons from Malaya and Vietnam: Learning to Eat Soup with a Knife* (Westport, CT: Praeger, 1996), 22.

²¹ Theo Farrell, “Culture and Military Power,” *Review of International Studies* 24, no. 3 (Fall 1998): 410.

²² Williamson Murray, “The Future of American Military Culture: Does Military Culture Matter?,” *Orbis* 43, no. 1 (Winter 1999): 90, [https://doi.org/10.1016/S0030-4387\(99\)80055-6](https://doi.org/10.1016/S0030-4387(99)80055-6); Theo Farrell and Terry Terriff, ed., *The Sources of Military Change: Culture, Politics, Technology* (Boulder, CO: Lynne Rienner, 2002), 7–8; and Elizabeth Kier, “Culture and Military Doctrine: France between the Wars,” *International Security* 19, no. 4 (Spring 1995): 65–93.

²³ Anthony J. DiBella, “Organization Theories: Perspectives on Changing National Security Institutions,” *Joint Force Quarterly*, no. 69 (April 2013): 15.

²⁴ Murray, *Military Adaptation*, 305–28.

²⁵ James S. Corum, “A Comprehensive Approach to Change: Reform in the German Army in the Interwar Period,” in *The Challenge of Change: Military Institutions and New Realities, 1918–1941*, ed. Harold R. Winton and David R. Mets (Lincoln: University of Nebraska Press, 2000), 54–56.

²⁶ Williamson Murray and Allan R. Millett, eds., *Military Innovation in the Interwar Period* (New York: Cambridge University Press, 1996), 314–28, <https://doi.org/10.1017/CBO9780511601019>.

²⁷ Murray, *Military Adaptation*, 15.

²⁸ See Robert T. Foley, “Dumb Donkeys or Cunning Foxes?: Learning in the British and German Armies during the Great War,” *International Affairs* 90, no. 2 (March 2014): 287, <https://doi.org/10.1111/1468-2346.12109>.

²⁹ Barry Watts and Williamson Murray, “Military Innovation in Peacetime,” in *Military Innovation in the Interwar Period*, 410, <https://doi.org/10.1017/CBO9780511601019.011>.



The USS *Dorado* (SS 248) firing on a derelict cargo ship for target practice during its shakedown cruise, summer 1943. Following its commissioning in the fall of that year, *Dorado* sailed for the canal zone, but never arrived. Air searches discovered oil slicks and widely scattered debris, but no specific identification was made. A German submarine was known to be operating in the area, but the actual fate of *Dorado* is unknown. Thomas Hart Benton, *Score Another for the Subs*, 1943. Oil and acrylic on board.

Art Collection, Naval History and Heritage Command, 88-159-BN. Gift of Abbott Laboratories

gan this practice in dealing with the *Luftwaffe* and U-boat challenges.³⁰ New staff structures or special task forces should also be considered a learning mechanism.³¹ Some historical examples, including the development of infiltration tactics in World War I by the German Army, were created by special units. Other examples, with the Israel Defense Force, point to using designated units as “incubators” to test new ideas

³⁰ See R. V. Jones, *The Wizard War: British Scientific Intelligence, 1939–1945* (New York: Coward, McCann & Geoghegan, 1978); and Stephen Budiansky, *Blackett’s War: The Men Who Defeated the Nazi U-Boats and Brought Science to the Art of Warfare* (New York: Vintage Books, 2013).

³¹ Matthew Alan Tattar, “Innovation and Adaptation in War” (PhD diss., Brandeis University, MA, 2011), 24.

and create knowledge under operational conditions.³²

Dissemination Mechanisms. Most military organizations have entities and processes dedicated to doctrine and distributing lessons; this can be done by bulletins or new doctrine by formal schools, or institutional-level training activities. In wartime, there is a need to rapidly acquire, process, and distribute new tactical lessons and techniques to units that have not yet

³² Raphael D. Marcus, “Military Innovation and Tactical Adaptation in the Israel-Hizbollah Conflict: The Institutionalization of Lesson-Learning in the IDF,” *Journal of Strategic Studies* 38, no. 4 (August 2015): 8–10.

had their own combat experiences.³³ Without such mechanisms, lessons learned by one ship or boat are not shared and have to be learned again, perhaps at grave cost.³⁴

THE SUBMARINE FORCE'S LEARNING CAPACITY

Leadership. The key strategic leaders in the Pacific naval war possessed credible credentials with submarines and open minds willing to test existing doctrine. Fleet Admirals Ernest J. King and Chester W. Nimitz were intimately familiar with submarines, both having commanded boats as young officers.³⁵ King commanded a division of boats, as well as the New London [Connecticut] submarine base.³⁶ He claimed to be a proponent of decentralized leadership, recognizing that the coming war required “the initiative of the subordinate” with less detail in orders on how to do something.³⁷

Nimitz, in turn, exuded calm and competence.³⁸ He commanded four different boats as a junior officer, led a submarine division, and created the submarine base at Pearl Harbor, Hawaii. He was an acknowledged expert on diesel engines, and he too would write in his profession's journal, *Proceedings*. And like King, he lec-

tured on the offensive opportunities presented by fleet submarines.³⁹

The principal officers at the operational level were Admirals Charles A. Lockwood and Ralph W. Christie. Both spent the majority of their careers in submarines and were leaders in submarine development before the war. Known as “Mr. Submarine,” Lockwood was famous for his advocacy of the long-range fleet boat.⁴⁰ Known for an informal style of leadership, he defended subordinates and reflected “loyalty down” rather than just demanding compliance.⁴¹ He was open to new ideas and actively strived to interview each returning boat captain to gain leaders like Commander Dudley W. Morton for personal interviews. Lockwood attempted to ensure he had the best information from the fighting units of his command.⁴² He would personally meet each boat as it returned to port, and would go over patrol reports with the commanders.⁴³ Lockwood's subordinates described him as “not [a] conformist and against rule book thinking.”⁴⁴ He was willing to experiment and press to get necessary changes.⁴⁵

Admiral Christie, on the other hand, effectively retarded learning in his command, and his example serves to highlight the positive impact that learning leadership from others had on the course of the war. He overcentralized his operations in Australia, and created a command climate in which he had stifled critical inquiry and

³³ See Murray, *Military Adaptation*, 262–304; Finkel, *On Flexibility*, 150–63; and Robert T. Foley, “A Case Study in Horizontal Military Innovation: The German Army, 1916–1918,” *Journal of Strategic Studies* 35, no. 6 (December 2012): 799–827, <https://doi.org/10.1080/01402390.2012.669737>.

³⁴ Thomas Mahnken, “Asymmetric Warfare at Sea: The Naval Battles of Guadalcanal, 1942–1943,” *Naval War College Review* 64, no. 1 (Winter 2011): 95–121.

³⁵ Thomas B. Buell, *Master of Sea Power: A Biography of Fleet Admiral Ernest J. King* (Boston: Little, Brown, 1980); and Walter R. Borneman, *The Admirals: Nimitz, Halsey, Leahy, and King—The Five-Star Admirals Who Won the War at Sea* (New York: Little, Brown, 2012), 26–40, 119–26.

³⁶ Buell, *Master of Sea Power*, 51–55.

³⁷ Buell, *Master of Sea Power*, 25, 31; and Borneman, *The Admirals*, 192.

³⁸ E. B. Potter, *Nimitz* (Annapolis, MD: Naval Institute Press, 1976); and Borneman, *The Admirals*, 53–65, 79–84.

³⁹ Borneman, *The Admirals*, 120.

⁴⁰ Adm I. J. Galantin, USN, *Take Her Deep!: A Submarine against Japan in World War II* (Annapolis: Naval Institute Press, 2007), 29.

⁴¹ Galantin, *Take Her Deep!*.

⁴² Anthony Newpower, *Iron Men and Tin Fish: The Race to Build a Better Torpedo during World War II* (Westport, CT: Praeger, 2006), 101.

⁴³ Charles A. Lockwood, *Sink 'Em All: Submarine Warfare in the Pacific* (New York: Dutton, 1951), 33.

⁴⁴ Theodore Roscoe, *United States Submarine Operations in World War II* (Annapolis: Naval Institute Press, 1949), 225.

⁴⁵ On his early career, see Brayton Harris, *Admiral Nimitz: The Commander of the Pacific Ocean Theater* (New York: Palgrave Macmillan, 2012), 7–65.

adaptation. Known as “Mr. Torpedo” before the war, his insistence that commanders not criticize faulty weapons in their patrol reports closed out the possibility of learning about their faults, and he relieved commanders who persisted in complaining about the troubled magnetic exploder that Christie had championed. While Nimitz had ordered their deactivation in July 1943, [by] as late as March 1944, Christie had boats trying to use the flawed exploder.⁴⁶ He failed to create or sustain a collaborative climate conducive to adaptation. Even after the war, Christie insisted torpedo performance was a function of operator and maintenance personnel, not the hardware itself.⁴⁷ Lockwood sustained a more open and tolerant command style that allowed officers to challenge doctrine and make independent judgments.

Organizational Culture. At an organizational cultural level, the submarine community had to apply its specialty within the Navy’s sense of traditionalism and its Mahanian conception of sea control.⁴⁸ War Plan Orange remained the embodied beliefs about the Navy’s principal operational challenge and how it would fight. Thus, the submarine had to fit and conform to this vision of a transoceanic drive across the Pacific to defeat the Imperial Japanese Navy. The fleet submarine, with its impressive range and 24 torpedoes, was originally designed to fit the bill, although it lacked speed.

Aside from its corporate identity and operating culture of independent command at sea, the operating culture of the submarine branch was technically focused and oriented

on problem-solving. It was by necessity a rules-based group and subjected to a common operating procedure. The older officers were the most indoctrinated by a rules-based system that focused on the reconnaissance mission of submarines but made them risk-averse in attack situations. This produced a generational tension between the more inflexible older officers and the younger officers who were less risk-averse. The former, indoctrinated by years of peacetime fleet exercises stressing conformity to an overarching “decisive fleet battle” concept, were comfortable in a control-based culture, whereas the latter were comfortable with informal command styles and stress on individual initiative that arose in the immediate aftermath of the war’s opening disasters. The new operating code for submarine warfare in the Pacific, unrestricted warfare, required a more creative/risk-taking culture.

The culture of the submarine community was somewhat different from that of the larger Navy. The officers were younger and well trained and educated. Commanders were also younger and obtained command at an earlier stage of their careers. Boat crews were also volunteers and technically competent in their ratings. Leadership was more informal and discipline could be maintained, but living and working so closely generated less formal and less hierarchical modes of leading.⁴⁹

Learning Mechanisms. The Navy’s submarine service had possibly the best after action/lessons-learned gathering process. While each boat was returning from a combat patrol, the captain or their executive officer worked full time on making a formal record of it. These reports included tactical maps of each firing

⁴⁶ Wilfred Jay Holmes, *Undersea Victory: The Influence of Submarine Operations on the War in the Pacific* (Garden City, NY: Doubleday, 1966), 311.

⁴⁷ Toll, *The Conquering Tide*, 281.

⁴⁸ RAdm Alfred Thayer Mahan, USN, *Mahan on Naval Strategy: Selections from the Writings of Rear Admiral Alfred Thayer Mahan* (Annapolis: Naval Institute Press, 1991).

⁴⁹ George Grider with Lydel Sims, *War Fish* (Boston: Little, Brown, 1958), 10–11, 55.



During World War II, the United States deployed submarines in the Pacific to prevent Japanese shipping from transporting supplies and reinforcements to the islands. The USS *Tang* (SS 306) was one of the Navy's most successful submarines until it sank due to one of its own torpedoes. Artist John Hamilton shows the submarine on its fifth and final war patrol, 24 October 1944. On that date, a malfunctioning torpedo circled back and sank it, killing most of the crew. John Hamilton, *USS Tang at Formosa*. Oil on wood. Art Collection, Naval History and Heritage Command, 89-020-R

solution on each target. On return to port, each captain would formally submit the patrol report to their immediate superior, and copies were disseminated horizontally to boats in the same squadron. This provided a means of feeding forward valuable information about the operating environment, new tactics and techniques, and on what needed to be enhanced (e.g., periscopes, radar, and, all too often, torpedoes).

In addition to the reports, each commander in the chain would review and append a formal written endorsement. These would assess each patrol as successful or not, and often publicly commend a commander for aggressiveness or rebuke one for recklessness with torpedoes. Endorsements to the war patrol reports became a tool for reinforcing best practices and produced a collective understanding.⁵⁰ Lockwood and his

staff examined every patrol report closely and strived to interview each returning boat captain to gain the latest intelligence directly from the source without filters.

Endorsements proved a way for the community at large to learn how officialdom viewed each new combat lesson and how others might view initiatives and overall boat performance. Naval historians and former commanders described them as the principal policy-making documents for the submarine fleet, by which the force's doctrinally approved "way of war" was disseminated.⁵¹

In keeping with a general willingness to try nontraditional solutions to hard problems, the American fleet commander, Admiral King, turned to operational analysis to support the

⁵⁰ VAdm James F. Calvert, USN (Ret), *Silent Running: My Years on a World War II Attack Submarine* (New York: John Wiley, 1995), 55.

⁵¹ Clay Blair Jr., *Silent Victory: The U.S. Submarine War against Japan* (Annapolis: Naval Institute Press, 2001), 77; and Calvert, *Silent Running*, 55.

antisubmarine warfare challenges in the North Atlantic. Ultimately, in April 1942, the U.S. Navy stood up the Antisubmarine Warfare Operations Research Group (ASWORG). It helped devise and refine submarine tactics, as well as best practices for sonar and convoy techniques. By August, ASWORG was making a real contribution.⁵² King credited this cell with recommendations that “increased the effectiveness of weapons by factors of three or five.” In fact, Admiral King found his learning/research support critical to success:

In the seesaw of techniques, the side that countered quickly, before the opponent had time to perfect the new tactics and weapons, had a decided advantage. Operations research, bringing scientists in to analyze the technical import of the fluctuations between measure and countermeasure, made it possible to speed up our reaction rate in several critical cases.⁵³

Ultimately, Lockwood decided to set up his own operations research shop (called the Submarine Operations Research Group [SORG]) at Pearl Harbor.⁵⁴ This team was slow to get started and adapt itself from antisubmarine work to submarine warfare. However, its insights were quickly cycled back through special reports or synthesized into tactical bulletins to the fleet.⁵⁵ Not long after his staff was augmented with the SORG, Lockwood issued his first campaign plan

and raised the priority placed on targeting Japanese oil tankers.⁵⁶ He used them well beyond their scientific disciplines as a red team as well, with appreciable influence.⁵⁷

The initial absence of an experimental staff or operations research cell slowed the pace of adaptation. Lockwood ultimately had to develop his own experiments to find out that the Mark XV torpedoes were running too deep and that the contact exploders were flawed.⁵⁸ Lockwood’s lack of his own SORG “learning team” may account for his slow investigation into the flawed torpedo.

Dissemination Mechanisms. During the course of the war, the submarine community shared its patrol reports beyond the fleet to schools, training commands, and the submarine/torpedo production facilities. Lockwood even took steps to provide his officers with copies of the war patrol reports while resting at the Royal Hawaiian Hotel [in Honolulu].⁵⁹

Reading patrol reports became a form of self-improvement or pastime reading while at sea.⁶⁰ This supports the idea that social and informal methods of distributed learning reinforce formal learning mechanisms. Not only were these war patrol reports used to feed better practices horizontally, but they were sent to the classrooms of the Submarine School as new crews were stood up.⁶¹

⁵² Montgomery C. Meigs, *Slide Rules and Submarines: American Scientists and Submarine Warfare in World War II* (Washington, DC: National Defense University Press, 1990), 58–62.

⁵³ Adm Ernest J. King, USN, “United States Navy at War: Final Official Report to the Secretary of the Navy,” U.S. Naval Institute *Proceedings* 71, no. 515 (1946): 174. Cited in Brian McCue, *U-Boats in the Bay of Biscay: An Essay in Operations Analysis* (Washington, DC: National Defense University Press, 1990), 1.

⁵⁴ For details, see Lockwood, *Sink ‘Em All*, 167–68; Peter Sasgen, *Hellcats: The Epic Story of World War II’s Most Daring Submarine Raid* (New York: Caliber, 2010), 171–73; and Edwin P. Hoyt, *Bowfin: The True Story of a Fabled Fleet Submarine* (New York: J. Wiley, 1995), 155–75.

⁵⁵ Meigs, *Slide Rules and Submarines*, 202.

⁵⁶ Holmes, *Undersea Victory*, 236.

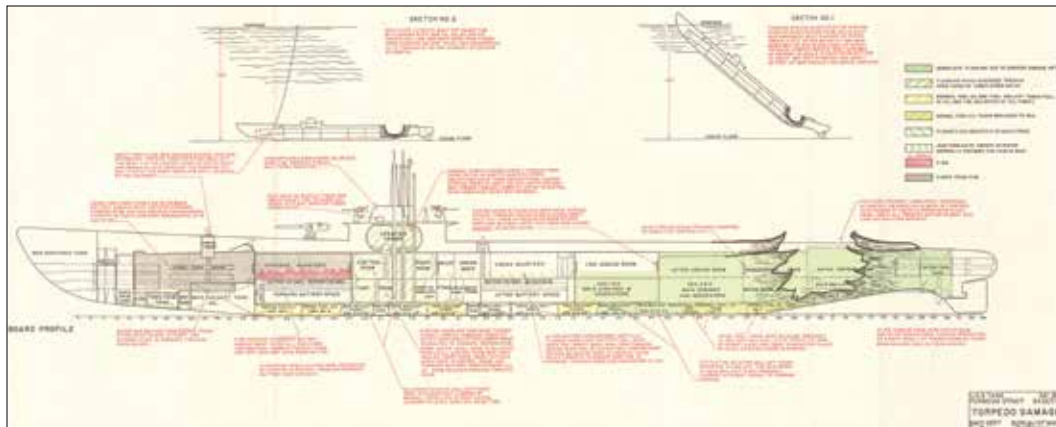
⁵⁷ VAdm Charles A. Lockwood, USN (Ret), and Col Hans Christian Adamson, USAF (Ret), *Hellcats of the Sea: Operation Barney and the Mission to the Sea of Japan* (New York: Bantam, 1988), 357.

⁵⁸ Lockwood, *Sink ‘Em All*, 112–13; Roscoe, *United States Submarine Operations in World War II*, 145–46; and Newpower, *Iron Men and Tin Fish*, 170–80.

⁵⁹ Letter, Commander SubPac, 1 November 1943, Record Group 313, Blue 443/2, A16 3 (3), National Archives and Records Administration, Washington, DC.

⁶⁰ RAdm Eugene B. Fluckey, USN (Ret), *Thunder Below!: The USS Barb Revolutionizes Submarine Warfare in World War II* (Urbana: University of Illinois Press, 1992), 201.

⁶¹ Galantin, *Take Her Deep*, 27.



Damage to USS *Tang* from its own torpedo, 1 January 1949.

Submarine Report: Depth Charge, Bomb, Mine, Torpedo, and Gunfire Damage Including Losses in Action, 7 December 1941 to 15 August 1945, vol. 1, War Damage Report No. 58 (Washington, DC: U.S. Navy Bureau of Ships, 1949)

Finally, the Navy fed lessons learned and new techniques to the fleet through short doctrine reports called *Submarine Bulletins*. The Submarine Force, [U.S.] Pacific [Fleet,] published numerous tactical submarine bulletins during the course of the war. The sub force based in Australia also issued bulletins that became an official means of recording and sharing best practices and semiofficial doctrine within the theater and the force after trial and error at sea. Patrol reports, distributed endorsements, and *Submarine Bulletins* were collectively a classic learning system based on an open feedback loop.⁶² Postwar memoirs note that these reports emphasized content to share among the community of practice.⁶³

“VICTORY IN THE CRUCIBLE OF BATTLE”

Ultimately, the U.S. submarine force made a major contribution to the naval defeat of Ja-

pan, although not the one the Navy originally planned. The postwar assessment from inside the submarine community was telling: “Neither by training nor indoctrination was the U.S. Submarine Force readied for unrestricted warfare.”⁶⁴ Rather than a campaign of cataclysmic salvos by battleships or sorties of dive bombers between opposing battle lines, it proved to be a war of attrition, learning, and military change. Commanders from that period estimate that the submarine force was operating at a level only 15 percent of its effectiveness in 1942.⁶⁵ By late 1943, the sub force was at full throttle.

The essence of this culture of learning existed throughout the Navy even before Pearl Harbor, but it strengthened as the Service quickly refocused itself to learn from actual experience at sea. As one historical account of the Pacific notes:

*Combat was a hard and unforgiving school,
but the U.S. Navy was taking its lesson to*

⁶² Meigs, *Slide Rules and Submarines*, 175; and Calvert, *Silent Running*, 54, 55.

⁶³ Grider and Sims, *War Fish*, 90; Calvert, *Silent Running*, 54–55; and Fluckey, *Thunder Below*, 201.

⁶⁴ Roscoe, *United States Submarine Operations in World War II*, 18.

⁶⁵ Capt Edward L. Beach, USN (Ret), *Submarine!: The Classic Account of Undersea Combat in World War II* (New York: Pocket Star, 2004), 20.

*heart. If the Navy did one thing right after the debacle of December 7, it was to become collectively obsessed with learning, and improving. Each new encounter with the enemy was mined for all the wisdom and insights it had to offer. Every after-action report included a section of analysis and recommendations, and those nuggets of hard-won knowledge were absorbed into future command decisions, doctrine, planning, and training throughout the service.*⁶⁶

In the end, victory was forged in the Pacific campaign by the Navy's learning capacity. Yes, the Navy outfought the Japanese, but this could only happen because its learning processes out-cycled those of the adversary so that each battle and each patrol laid a foundation for subsequent successes. Leaders and culture supported the process of learning. The obsession with learning that began in Sims Hall at Newport [Rhode Island] and continued with the fleet

exercises was a central element in the operating ethos of the fleet. This learning capacity ultimately ensured victory in the crucible of battle. Technology was a part of this learning, as the Navy absorbed updated radars and sonar, wakeless "fish," and an array of advanced defensive capabilities. They were incorporated into the fleet and ultimately refined by the operators. This learning had to be shared with the rest of the force. The Navy's learning capacity proved to be the ultimate game changer.

To promote innovation, in war and during peacetime, the Navy must once again establish dominance in organizational learning and sharpen the education and mechanisms that promote learning across the fleet. It must stimulate a new generation of young Turks to bring forth fresh ideas.⁶⁷ Our leadership must embrace and absorb disruptive thinking, experimentation, and technologies effectively to sustain its preeminence at sea.

⁶⁶ Ian W. Toll, *Pacific Crucible: War at Sea in the Pacific, 1941–1942* (New York: W. W. Norton, 2012), 375.

⁶⁷ Cdr Benjamin Armstrong, USN, "The New Young Turks," *Naval War College Review* 68, no. 4 (Autumn 2015), 108–13.



Cdr Richard H. O'Kane sat for this photograph in March 1946, shortly after he had received the Medal of Honor.

Official U.S. Navy photo, National Archives, 80-G-702334

"IT WAS OUR CHIEFS, TOO!"

"Some of them were crazy" were "hell-bent to get killed," the veterans reflected on some of the legendary submarine commanding officers of World War II. I overheard these comments some years ago when I had the honor of listening to them tell sea stories at a few submarine veterans of World War II conventions. These surprising appraisals of their leaders varied greatly but always were fascinating.

At one such gathering, I had the pleasure of meeting Clayton Oliver Decker, who served as a machinist's mate third class on board the USS *Tang* (SS 306) during the war. Decker was one of the nine who survived the ship's final war patrol. Interested in what the crew thought about their legendary commander, Richard Hetherington O'Kane, I asked, "What made *Tang* so special?" Decker answered, "Well, we had the finest skipper of the war in Dick O'Kane, but it was our chiefs, too!"

Decker's stories about the *Tang*'s chiefs' mess were remarkable. He respectfully spoke of men such as Chief Quartermaster Sidney William Jones, who had been sent to a "top-secret telephone school" in Canada prior to reporting to the *Tang*. It turned out that the school taught the young quartermaster how to operate and maintain the ST and SJ radars, a fleet submarine's second most unreliable pieces of equipment. Decker explained that Jones "had no match when it came to radar. Our radar worked!" he boasted. Embellishing a little, he said, "We could detect contacts at twice the range of any other boat." Chief Jones trained the crew to a high level of expertise, even using the radar to navigate, a novel idea at the time. Excellence in radar operations surely gave the *Tang* and O'Kane, later a Medal of Honor recipient, a sizable advantage in detecting and closing their enemies for the kill.

A SUBMARINE'S WARTIME SUCCESS

After driving to close an enemy target, our submariners often faced the biggest equipment problem on a fleet submarine, the legendary unreliability of their torpedoes. Fortunately, according to Decker, the *Tang's* torpedoman chief and later chief of boat, William Ballinger, "would have none of it." Decker lauded that "Ballinger knew his stuff, and he violated regs [regulations] and jury-rigged every torpedo." Chief Ballinger trained "the fastest torpedo reload team in the fleet," and "those torpedoes worked." With chiefs like that and a brilliant commander in Richard O'Kane, it is no surprise that the *Tang* was credited with sinking 33 ships, the most of any submarine during the war. Decker did not talk much longer, as he teared up at the very mention of Ballinger. Later, I was told that Decker was the last to see Ballinger alive. After firing their last shot, the *Tang* crew's joy at the thought of returning home quickly turned to despair as their final torpedo circled back. Unfortunately, the torpedo worked all too well, striking a devastating blow that instantly killed more than half of the crew, including Chief Jones. Decker followed Ballinger's lead as they opened the ballast tanks, allowing the ship to rest somewhat level on the bottom of the Formosa Strait.

Chief Ballinger, his head bleeding profusely, then began to calmly prepare the remaining crew to escape. Japanese destroyers began depth charging their position. After carefully guiding Decker and others through the escape procedures, Ballinger later followed them up from the deep. Arriving on the surface just next to Decker, Ballinger endured extraordinary pain and struggled violently to survive. His lungs likely had exploded during the ascent. Watching Ballinger die haunted Decker. He always wondered why he survived and "not Billy." Clayton Decker, Richard O'Kane, and seven others were picked up by the Japanese and brutally tortured in a prisoner-of-war camp before returning home to tell their story.

Perhaps that is the answer to Decker's question: for we would not know all this had he not survived. We would not be reminded that a submarine's wartime success belongs not only to the innovative, bold leadership of skippers like O'Kane but also to everyday heroes like Decker and to the terrific chiefs who trained them—leaders such as Chiefs Ballinger and Jones, who demanded that the *Tang's* equipment perform reliably and that the crew always be ready to fight. Clayton Oliver Decker joined his shipmates on eternal patrol on 24 May 2003.

~ Captain David Adams,
U.S. Navy

THE FUTURE EMPLOYMENT OF NAVAL FORCES

by *Fleet Admiral Chester W. Nimitz*
Marine Corps Gazette, 1948⁶⁸

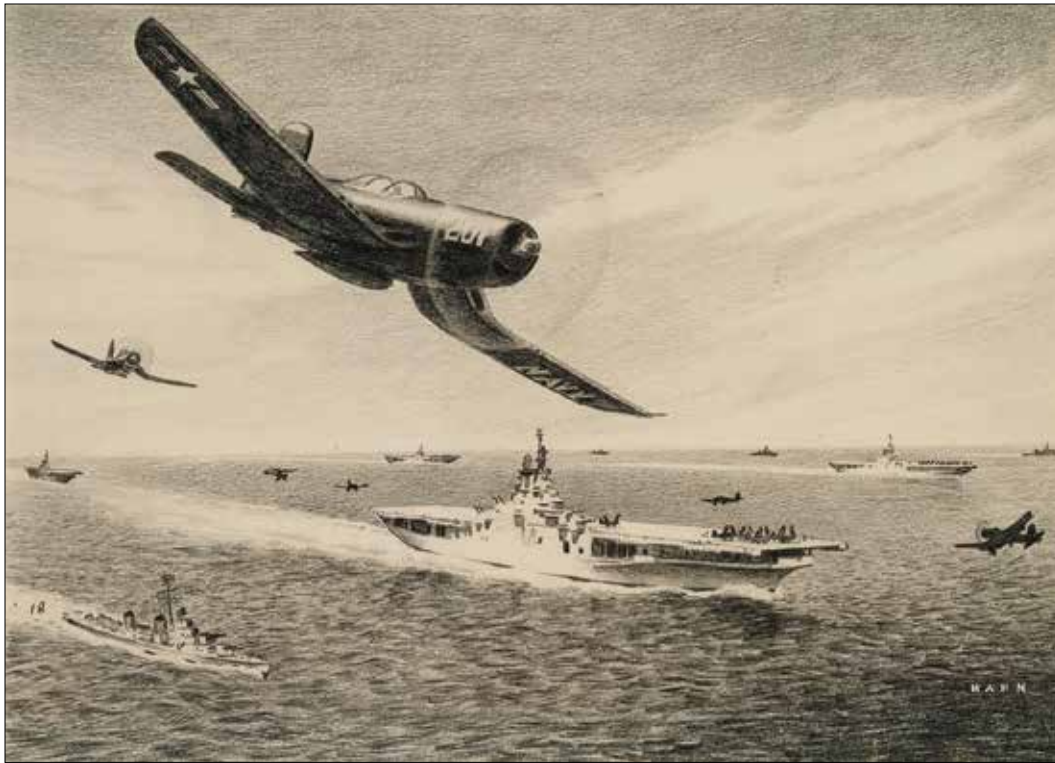
On the day of his departure from the Navy Department, Fleet Admiral Chester W. Nimitz, USN, forwarded to the secretary of the Navy the following paper, prepared in his office, expressing his views on the function of the naval forces in maintaining the future security of the United States.

Sir Walter Raleigh declared in the early seventeenth century that “whosoever commands the sea, commands the trade; whosoever commands the trade of the world, commands the riches of the world, and consequently the world itself.” This principle is as true today as when uttered, and its effect will continue as long as ships traverse the seas. That this period extends beyond the foreseeable future is apparent when it is realized that the 100,000 long tons of cargo that 44 ships can transport from San Francis-

co to Australia monthly would require for the same purpose 10,000 four-engine [Consolidated] C-87 [Liberator Express] airplanes manned by 120,000 highly trained personnel, plus 89 sea-going tankers to provide gas along the route and at the far end of the run.⁶⁹ Cargo carrying aircraft will no more replace vehicles of the same type on the seas than they will those on land. In fact, cargo-carrying ships will become increasingly important to the United States both in peace and in war. Our national resources in petroleum products alone are inadequate for the prosecution of a long war. A realistic appraisal of the requirements in materiel for this nation to engage in war shows that an uninterrupted stream of imports will be essential, and that the volume of these imports is such that they must come by sea.

⁶⁸ The original article came from Chester W. Nimitz, “The Future Employment of Naval Forces” *Marine Corps Gazette* 32, no. 3 (March 1948): 36–39. Minor revisions were made to the text based on current standards for style, grammar, punctuation, and spelling.

⁶⁹ The British ton, or the *long* ton, equals 2,240 pounds, and the U.S. ton, or the *short* ton, equals 2,000 pounds. Both measurements are defined in the same way: 1 ton is equal to 20 hundredweight. It is the definition of *hundredweight* that differs; in the United States, 100 pounds equals a hundredweight, while in Britain 112 pounds equals a hundredweight. To distinguish between the two tons, the smaller U.S. ton is called short, while the larger British ton is called long.



Corsairs return to the fleet after strikes against targets in North Korea. Attacks on reinforcements and supply convoys behind enemy lines kept Chinese and North Korean armies perpetually short of men, food, and ammunition. The effort eventually ended the massive Communist offensives into South Korea. Herbert C. Hahn, *Task Force*, ca. 1951. Drawing, pencil on paper.

Art Collection, Naval History and Heritage Command, 88-191-R

The United States possesses today control of the sea more absolute than was possessed by the British. Our interest in this control is not riches and power as such. It is first the assurance of our national security, and second, the creation and perpetuation of that balance and stability among nations that will ensure to each the right of self-determination under the framework of the United Nations organization.

Our present control of the sea is so absolute that it is sometimes taken for granted. As a result, there is a faulty tendency, under the assumption that any probable enemy in a future war possesses only negligible apparent fleet strength, to give no major offensive role to the

Navy—only a supporting role and the prosecution of antisubmarine warfare. Opposing fleets have been eliminated, it is reasoned, hence ours should be reduced to a mere support force and its appropriations transferred to certain types of aircraft, which would be the answer to all our problems of offense and defense. The answer is not so simple. Technology in warfare, as in all else, has simplified some details but has greatly complicated the aggregate. The submarine and the torpedo, far from eliminating combatant surface ships, produced the depth charge, sonar and electronic sounding, and the antisubmarine aircraft that, in two wars, have successfully defeated them. Similarly, the airplane in its ap-



Rough weather securing of aircraft and related support equipment aboard a carrier, 15 July 1956.
Official U.S. Navy photo, K-20637, National Archives

plication against naval forces has already given creation to the proximity fuse, homing missiles, electronic ranging and gun control, and carrier attack aircraft which, during World War II, repeatedly defeated concentrations of Japanese land-based aircraft wherever encountered.

Our present undisputed control of the sea was achieved primarily through the employment of naval air-sea forces in the destruction of Japanese and German seapower. It was consolidated by the subsequent reduction of these nations to their present impotence, in which the employment of naval air-sea forces against land objectives played a vital role. It can be perpetuated only through the maintenance of balanced naval forces of all categories adequate to our strategic needs (which include those of the non-totalitarian world), and which can flexibly adjust to new modes of air-sea warfare and which are

alert to develop and employ new weapons and techniques as needed.

A report made in 1657 by one of [Oliver] Cromwell's admirals that: "After we destroyed the ships we plied our guns against the forts" indicates that the purpose of achieving seapower and the recognized practice of applying pressure against an enemy wherever they can be reached by naval forces has not changed from that day to this. The basic objectives and principles of war do not change. The final objective in war is the destruction of the enemy's capacity and will to fight, and thereby force them to accept the imposition of the victor's will. This submission has been accomplished in the past by pressure in and from each of the elements of land and sea, and during World War I and II, in and from the air as well. The optimum of pressure is exerted through that absolute control obtained by actual physical occupation. This optimum is obtainable only on land where physical occupation can be consolidated and maintained. Experience proves that while invasion in some form of adjacent sea areas, covering air spaces, or enemy territory itself is essential to obtain decisions in war, it is sometimes unnecessary to prosecute invasion to the extent of occupying a nation's capital or other vital centers. Sufficient of their land, sea or air territory must be invaded, however, to establish the destructive potential of the victor and to engender in the enemy that hopelessness that precedes submission. The reduction of Japan is a case in point.

Naval forces have always played a vital and often deciding role in warfare by invading adjacent sea areas to project their pressure on enemy territory. Before the invention of gun powder, in the days of Greece and Rome, there was no such thing as a "fleet in being." Naval forces were built as they were needed, and the transport had

equal standing with the man-of-war. The latter served to clear the narrow seas for the transport to discharge its force of troops and weapons upon enemy territory where the decision was obtained. In the long history of British domination of the seas, it is safe to say that the Royal Navy fought as many engagements against shore objectives as it did on the high seas. Singularly, it was the defeat by his shore batteries of a Royal Navy squadron off Toulon that gave Napoleon early in his career a disdain for British seapower. It was this same British seapower, in the form of a light blockade, which denied world intercourse to him but assured it to his enemies, and in the victories of Copenhagen, the Nile and Trafalgar, which was the controlling factor in his eventual defeat. Also, the great British strategic bastion of Gibraltar was captured in 1704 by a force of Royal Marines and seamen landed from a naval squadron that had first pounded the Spanish garrison into a state of confusion and despair.

The naval history of our own Civil War is a vivid portrayal of the employment of naval forces against an enemy without a fleet. Naval forces were a controlling factor in the Confederate defeat and in shortening the war. The Confederate States had no fleet. They were a consolidated land power with the advantage of interior lines and the possession of several large sea and river ports affording access to world commerce which they vitally needed. The Federal States outlined their naval missions as (a) the blockade of southern ports along a coastline of more than 3,000 miles; (b) the reduction, in conjunction with the Army, of Atlantic and Gulf strongholds; and (c) the occupation and control of the Mississippi and its tributaries. The blockade was established and soon Confederate commerce, as such, ceased. Naval operations started on the western rivers

in the first year of the war—November 1861. They were mainly in conjunction with the Army but frequently objectives were accomplished by naval gun and mortar fire alone. By April 1862, with the passage of [Admiral David G.] Farragut's squadron past the Mississippi entrance forts and the capture of New Orleans, the Confederate States had been sealed on the western, Gulf, and Atlantic boundaries. It is safe to state that had they been unmolested by seapower, and had they received money, troops, and munitions from Europe, South America, and Mexico, they might well have consolidated their secession.

The development between World Wars I and II of naval aviation provided naval forces with a striking weapon of vastly increased flexibility, range, and power. The development and use of this weapon in World War II against both sea and land objectives is one of the great achievements in modern warfare. It spearheaded our Pacific attack. First, it swept the sea of all naval opposition. Then it became the initial striking weapon in the capture of Guam, Saipan, and Iwo Jima—the advanced bases from which long-range bombers were able to strike the vital centers of the empire. Finally, like the British squadron in 1657, our Navy “after destroying the ships plied its guns against the Forts” and participated directly in the destruction of those vital centers on Okinawa and the home islands by gunfire and bombing; in spite of the concentration of Japanese air power, our Navy made possible the success of our gallant ground forces.

In all of these operations the employment of air-sea task forces demonstrated the ability of the Navy to concentrate aircraft strength at any desired point in such numbers as to overwhelm the defense at the point of contact. These operations demonstrate the capability of naval carrier-



On 3 August 1958, USS *Nautilus* (SSN 5710) completes Operation Sunshine, passing through the North Pole and becoming the first ship to reach the geographic North Pole submerged. Albert K. Murray, *USS Nautilus SSN-571*, 1959. Watercolor on paper.

Art Collection, Naval History and Heritage Command, 88-195-HL

based aviation to make use of the principles of mobility and concentration to a degree possessed by no other force.

In addition to the weapons of World War II the Navy of the future will be capable of launching missiles from surface vessels and submarines, and of delivering atomic bombs from carrier-based planes. Vigilant naval administration and research is constantly developing and adding to these means. In the event of war within the foreseeable future, it is probable that there will be little need to destroy combatant ships other than submarines. Consequently, in the fulfillment of long accepted naval functions and in conformity with the well-known princi-

ples of warfare, the Navy should be used in the initial stages of such a war to project its weapons against vital enemy targets on land, the reduction of which is the basic objective of warfare.

For any future war to be of sufficient magnitude to affect us seriously it must be compounded of two primary ingredients: vast manpower and tremendous industrial capacity. These conditions exist today in the great land mass of Central Asia, in East Asia, and in Western Europe. The two latter areas will not be in a position to endanger us for decades to come unless they pass under unified totalitarian control. In the event of war with any of the three, we would be relatively deficient in manpower. We should,

therefore, direct our thinking toward realistic and highly specialized operations. We should plan to inflict unacceptable damage through maximum use of our technological weapons and our ability to produce them in great quantities.

Initial devastating air attack in the future may come across our bordering oceans from points on the continents of Europe and Asia as well as from across the polar region. Consequently, our plans must include the development of specialized forces of fighter and interceptor planes for pure defense, as well as the continued development of long-range bombers. Offensively, our initial plans should provide for the coordinated employment of military and naval airpower launched from land and carrier bases, and of guided missiles against important enemy targets. For the present, until long-range bombers are developed capable of spanning our bordering oceans and returning to our North American bases, naval airpower launched from carriers may be the only practicable means of bombing vital enemy centers in the early stages of a war.

In summary, it is visualized that our early combat operations in the event of war within the next decade would consist of:

Defensively:

- a. Protection of our vital centers from devastating attacks by air and from missile-launching submarines.
- b. Protection of areas of vital strategic importance, such as sources of raw materials, our advanced bases, etc.
- c. Protection of our essential lines of communication and those of our allies.
- d. Protection of our occupation forces during reinforcement or evacuation.

Offensively:

- a. Devastating bombing attacks from land and carrier bases on vital enemy installations.
- b. Destruction of enemy lines of communication accessible to our naval and air forces.
- c. Occupation of selected advanced bases on enemy territory and the denial of advance bases to the enemy through the coordinated employment of naval, air and amphibious forces.

Of the above activities or functions there are certain ones that can be performed best by the Air Forces and certain others that can be performed best by the Navy—it is these two Services that will play the major roles in the initial stages of a future war. The 80th Congress took cognizance of this fact when, in the National Security Act of 1947, it specifically prescribed certain functions to the Navy, its naval aviation and its Marine Corps. In so doing, the Congress gave emphasis to the fact that the organizational framework of the military Services should be built around the functions assigned to each Service. This is a principle that the Navy has consistently followed and is now organized and trained to implement.

Defensively, the Navy is still the first line the enemy must hurdle either in the air or on the sea in approaching our coasts across any ocean. The earliest warning of enemy air attack against our vital centers should be provided by naval air, surface, and submarine radar pickets deployed in the vast ocean spaces that surround the continent. This is part of the radar screen that should surround the continental United States and its possessions. The first attrition to enemy airpow-



Arthur Beaumont, *USS Forrestal CVA-59 and USS Okanogan APA-220*, 1968. Watercolor on paper.
Art Collection, Naval History and Heritage Command, 2009-128-01

er might be by short range naval fighter planes carried by carrier task forces. Protection of our cities against missile launching submarines can best be effected by naval hunter-killer groups composed of small aircraft carriers and modern destroyers operating as a team with naval land-based aircraft.

The safety of our essential trade routes and ocean lines of communication and those of our allies, the protection of areas of vital strategic importance such as the sources of raw material, advanced base locations, etc., are but matters of course if we control the seas. Only naval air-sea power can assure this.

Offensively, it is the function of the Navy to carry the war to the enemy so that it will not be fought on United States soil. The Navy can at present best fulfill the vital functions of devastating enemy vital areas by the projection of bombs and missiles. It is improbable that bomber fleets will be capable for several years to come of making two-way trips between continents, even over the polar routes, with heavy loads of bombs. It is apparent then that in the event of war within this period, if we are to project our power against the vital areas of any enemy across the ocean before beachheads on enemy territory are captured, it must be by



USS *Ranger* (CV 61) was one of four *Forrestal*-class supercarriers built for the U.S. Navy in the 1950s. R. G. Smith, *USS Ranger*, 1969. Oil on canvas.
Art Collection, Naval History and Heritage Command, 88-160-FF

air-sea power, by aircraft launched from carriers, and by heavy surface ships and submarines projecting guided missiles and rockets. If present promise is developed by research, test, and production, these three types of air-sea power operating in concert will be able within the next 10 years critically to damage enemy vital areas many hundreds of miles inland.

Naval task forces including these types are capable of remaining at sea for months. This capability has raised to a high point the art of concentrating airpower within effective range of enemy objectives. It is achieved by refueling and rearming task forces at sea. Not only may the necessary supplies, ammunition, and fuel be replenished in this way but the air groups them-

selves may be changed. The net result is that naval forces are able, without resorting to diplomatic channels, to establish offshore anywhere in the world, air fields completely equipped with machine shops, ammunition dumps, tank farms, warehouses, together with quarters and all types of accommodations for personnel. Such task forces are virtually as complete as any air base established. They constitute the only air bases that can be made available near enemy territory without assault and conquest; and furthermore, they are mobile offensive bases that can be employed with the unique attributes of secrecy and surprise, which attributes contribute equally to their defensive as well as offensive effectiveness. Regarding the pure defense of these mobile air

bases, the same power projected destructively from them against the enemy is being applied to their defense in the form of propulsion, armament, and new aircraft weapons whose development is well abreast the supersonic weapons reputed to threaten their existence.

It is clear, therefore, that the Navy and the Air Force will play the leading roles in the initial stages of a future war. Eventually, reduction and occupation of certain strategic areas will require the utmost from our Army, Navy, and Air Force. Each should be assigned broad functions compatible with its capabilities and limitations and should develop the weapons it needs to fulfill these functions, and no potentiality of any of the three Services of the military establishment should be neglected in our scheme of national defense. At the same time, each Service must vigorously develop, in that area where their functions meet, that flexibility and teamwork essential to operational success. It should also be clear that the Navy's ability to exert from its floating bases its unique pressure against the

enemy wherever they can be reached—in the air, on sea, or on land—is now, as it has been, compatible with the fundamental principles of warfare. That our naval forces can be equipped defensively as well as offensively to project pressure against enemy objectives in the future is as incontrovertible as the principle that every action has an equal and opposite reaction.

In measuring capabilities against a potential enemy, due appreciation must be taken of the factors of relative strength and weakness. We may find ourselves comparatively weak in manpower and in certain elements of aircraft strength. On the other hand, we are superior in our naval air-sea strength. It is an axiom that in preparing for any contest, it is wisest to exploit—not neglect—the element of strength. Hence, a policy that provides for balanced development and coordinated use of strong naval forces should be vigorously prosecuted in order to meet and successfully counter a sudden war in the foreseeable future.

THE INFLUENCE OF AVIATION ON THE EVOLUTION OF AMERICAN NAVAL THOUGHT

by Dr. David R. Mets

The Paths of Heaven: The Evolution of Airpower Theory, 1997⁷⁰

The [frame] of mind of the officer corps of the U.S. Navy is sometimes deemed Neanderthal, sometimes progressive and, less often, radical. This chapter revisits the history of recent naval theory and doctrine to evaluate this perception and the impact of the coming of aviation on the general attitudes of the naval profession in America from the beginning of flight to the end of World War II. Previous chapters have all dealt with the impact of World War I on the theory of airpower, usually in a continental war context. They went on to study its development in the interwar period. This chapter briefly looks at naval thought at the onset of aviation, which serves as a baseline. It continues with changes brought on by World War I and interwar evolution, and thence to the impact of World War II on the Navy's outlook.⁷¹

⁷⁰ The original article came from Dr. David R. Mets, "The Influence of Aviation on the Evolution of American Naval Thought," in *The Paths of Heaven: The Evolution of Airpower Theory*, ed. Col Phillip S. Meilinger (Maxwell Air Force Base, AL: School of Advanced Air Power Studies, Air University Press, 1997), 115–50. Minor revisions were made to the text based on current standards for style, grammar, punctuation, and spelling.

In large part, naval air theory was formed in the decade after the great carriers USS *Lexington* [CV 2] and USS *Saratoga* [CV 3] came online at the end of 1927. That is precisely the decade in which the thinking at the Air Corps Tactical School was in its most formative phase, and that is the subject of another chapter.

The examination of each era starts with the general worldview and then considers the ways in which naval officers believed that international conflicts could be settled. It then discusses the general attitude on the proper objectives of a navy in the process, the standard methods employed in naval warfare, and changing views on the ideal organization of forces for war and their employment in international conflict. The study closes with an estimate of the state of naval thinking in all those categories as the nation approached the reorganization of its national security structure in the late 1940s. Hopefully, comparing that state with the initial one will yield some additional insight into the impact of aviation on naval thinking.



To control and coordinate antisubmarine warfare in the Atlantic during World War II, Adm Ernest J. King established the Tenth Fleet. This included development of tactics and technology that ended the U-boat menace. In this dramatic presentation of a sea-sky battle, a Grumman TBF Avenger torpedo bomber, bomb bay doors open, leaves death in its wake as it zooms away from a conclusive attack on a surfaced enemy submarine. Naval planes from escort aircraft carriers wreaked havoc on submarine wolf packs attacking Atlantic convoys, and they virtually blasted them from the ocean for many months. Bombers were fitted with depth charges, one of which is pictured exploding off the U-boat's beam here. Robert Benney, *The Kill*, 1942. Oil on board. Art Collection, Naval History and Heritage Command, 88-159-AP, gift of Abbott Laboratories

NAVAL ATTITUDES AT THE ONSET OF THE AGE OF FLIGHT

The collective attitude of the mainstream of the Navy at the dawn of aviation was fairly well developed. The Service was thoroughly convinced that the world was made up of nation-states and that conflict of one sort or another was natural among them. The premise of Clausewitz—that war was an instrument of state policy—was well understood and accepted. In the words of Commander Patrick N. L. Bellinger, who graduated from Annapolis in 1907 and the Naval War

College in 1925, “War is a political action. . . . Even when armies and fleets are not employed, their existence and the possibility of their use constantly influence the action of governments. They are instruments of statecraft. The policy of countries must necessarily be controlled by their governments, and strategy from the naval and military point of view, must be subservient to policy.”⁷²

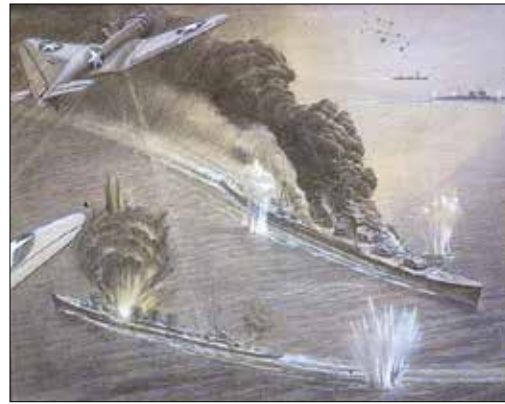
However much one identified the thought of Alfred Thayer Mahan with that of Antoine-Henri de Jomini (if that is supposed to mean that the adherents look upon war as a science that

has natural laws that always apply and that there exists an eternal validity to principles of war), plenty of officers understood fog and friction. There were repeated assertions that both doctrine and any statement of principles were more than guides—certainly not invariable rules that one could not violate. The officer corps was thoroughly familiar with Mahan; for some, both the man and his works [had been well read as] Mahan had been Admiral William A. Moffett's skipper when Moffett served aboard the USS *Chicago* (1885) in the 1890s.⁷³ Furthermore, it was convinced that, for the United States at least, command of the sea remained the primary objective and that its exploitation could come later, through blockade or invasion. For Mahan and most of his followers, the fundamental method for achieving command was offensive—seeking out the enemy main battle fleet and destroying it.⁷⁴ Significantly, they gave a great deal more attention to achieving command of the sea than to exploiting it.

The officer corps was coming out of a period of very rapid technological advance. It had witnessed the coming of torpedoes, submarines, and destroyers—all of which had been touted as revolutionary and none of which, in the collective mind, had turned out that way.⁷⁵ The necessity for decentralized command, initiative among junior and midlevel commanders, and doctrine that tended to create a common vocabulary and outlook was widely accepted.

METHODS OF CONFLICT RESOLUTION

Little questioned was the idea that command of the sea would be won in a single great clash between the main battle lines and that all other elements would necessarily play an auxiliary role. Notwithstanding Clausewitz's assertion



A month after striking the Coral Sea, the Japanese launched an all-out assault against Midway Island in what was obviously intended as the first step of a grand attack on Hawaii and the continental United States. The Navy was ready, and the pilots from naval aircraft carriers inflicted a major sea defeat on two great converging forces northwest of Midway. On the last day of the battle, the two heavy cruisers *Mogami* and *Mikuma* were attacked by American forces. The *Mogami* was heavily damaged but escaped, while the *Mikuma* was not so lucky. In the end, the enemy lost four aircraft carriers, at least two heavy cruisers, and a number of light cruisers, destroyers, and transports—all by aerial attack. Griffith Baily Coale, *Attack on Japanese Cruisers Mogami and Mikuma from Air*, 1942. Charcoal on paper.

Art Collection, Naval History and Heritage Command, 88-188-AG

that, in land warfare at least, the defensive was the stronger form of war, the Navy (and Army and Marine Corps as well) probably voiced an overwhelming preference for the offensive in both strategy and tactics.⁷⁶ Doubtless, the civilian attitude in isolationist America in the wake of the mayhem of World War I made it impolitic to dwell on this stance in public.

Practically all officers were graduates of the Naval Academy, the bulk of the senior-most officers had been through the Naval War College, and on the eve of World War I, some of the ju-



William F. Draper's *Hangar Deck of Carrier* shows sailors preparing for a strike on Palau in the Pacific Ocean during World War II. Oil on canvas, 1944. Art Collection, Naval History and Heritage Command, 88-189-EB

niors were well indoctrinated through correspondence courses.⁷⁷ There was a rather strong commitment to the idea that both study and practical experience were vital to understanding naval war. On the eve of the first air war, both the United States Naval Institute and its publishing organ, *Proceedings*, were more than a generation old. Senior and middling officers took a real interest in this journal as a forum for professional discourse—Mahan and Stephen B. Luce, the founder of the Naval War College, were both well published in its pages. The Naval Academy was one of America's first and leading engineering schools; still, the historical approach to the study of war and seapower was common—even before Mahan.⁷⁸ No one questioned the idea that the Navy constituted the first line of defense.

IDEAL ORGANIZATION FOR WAR

The effectiveness of the bureau organization was often debated, and the notion that the planning and operations functions should remain para-

mount and governed by a professional naval officer was very strong. Previously divided into line and engineering categories, a division that had caused much difficulty, the officers of the Navy found themselves reunified, first in the curriculum at the Naval Academy and then on the line of the Navy—both before 1900.⁷⁹ Strong sentiment favored avoiding such divisions.⁸⁰

At the beginning of the era of flight then, the U.S. Navy's officer corps tended to consider the world as being made up of nation-states always in conflict, sometimes at war, and never recognizing any superior authority. Achieving command of the sea remained the first objective for naval forces; that done, a variety of naval measures could help in realizing the nation's goals ashore. As yet, little thought existed about radical changes in the relationship of the Navy to the rest of the U.S. national security structure. Most thinking held that one should be a naval officer first and a deck or engineering officer second—that the officer corps should be a monolithic whole. Even Lieutenant Commander Henry C. Mustin argued before World War I that, to be competent as a naval aviator, an officer would need a comprehensive knowledge of the duties of the surface mariner. Because acquiring that knowledge took so long, he believed that trainees for aviation must come from the line of the Navy.⁸¹ Though, in time, Mustin would argue otherwise, the organizational implication of his belief was that one should refrain from further attempts at specialized corps (notwithstanding the continued existence of the Marine Corps), despite the fact that the fleet itself was organized along functional lines according to ship type. Some members of the officer corps felt that the bureau chiefs were too independent and that the creation of the office of Chief of Naval Operations (CNO) was a good thing. As

for the employment of navies, the consensus was that decision would come through a great sea battle between battleships and that all other vessels and organizations existed to support the main battle line.

EVOLUTION OF AMERICAN NAVAL AIR THINKING BEFORE PEARL HARBOR

Naval aviators had experimented with aviation in combat against Mexico even before World War I.⁸² Pilots had made landings and takeoffs from ships as well, and people harbored serious questions about whether the main air effort would lie with airships (lighter-than-air), flying boats, or shipborne airplanes.⁸³ The Navy had substantial experience with aviation in World War I, both in overwater antisubmarine patrol and land combat on the western front. None of that was part of major fleet action in open ocean. Henry Mustin, one of the first wave of Navy flyers, was only one of many men who brought back perceptions of air war from Europe.⁸⁴ As with the Army's Air Service, however, one could draw no definitive inferences because technology was still in its infancy, and none of the exploits even approached being decisive.⁸⁵ Only the Battle of Jutland resembled the Mahanian great battle; but because of its indecisiveness, its implications remained unclear.⁸⁶ Aviation played little role in that battle, and its impact on the antisubmarine war was significant but not decisive. Aircraft forced submarines to remain submerged and, by closing the Strait of Dover, imposed the long trip around Scotland on them. The consequent reduction of the time on station lowered the number of U-boats in the German Navy.⁸⁷ At the end of the war, Britain's Royal Navy did possess three aircraft carriers, but the U.S. Navy had none. The brief American

participation and the preoccupation of Europeans with the agony of the land war left little time to do much development work in naval aviation or to reach definitive conclusions.⁸⁸

Largely because of the institutional culture, aviation affected the thinking of the Navy in an evolutionary, rather than a revolutionary, way. This statement does not suggest that the technology of naval warfare evolved on a steady, smooth curve. Only that thought about the use of the Navy as a whole to help achieve national objectives changed in a gradual way, with neither long periods of stagnation nor obvious discontinuities. On the other hand, as suggested by Dr. Gary Weir, scientific and technological innovation—dependent in part on sudden inspirations by inventors and scientists—probably can be characterized more as a sawtooth process with a generally progressive trend.⁸⁹ Certainly, the general outlook was not radical; yet, it is also probably fair to say that insofar as strategic thinking was concerned, neither was it reactionary. The line officers of the Navy may have been reluctant to shed the ideas proven in the past, but they had adjusted to the coming of steam and armor and (with the British Navy) had led the world in the development of modern gunnery and fire control.

In part, external pressures forced the line officers of the Navy to accept change. One factor was the Five-Power [Naval Limitation] Treaty of 1922, which drove the Navy to embrace aircraft carriers more rapidly than it might otherwise have done.⁹⁰ A second was the implicit threat that if the Navy itself did not move smartly into the era of flight, then the upstart Air Service and, later, the Air Corps would gather maritime aviation unto itself.⁹¹ As yet, only a few officers, such as Admiral William S. Sims and Admiral William F. Fullam, questioned whether the car-

rier or the battleship would be the capital ship of the future—a question that remained open until after Pearl Harbor.

METHODS OF CONFLICT RESOLUTION

One sees a sample of the [frame] of mind of the earliest crop of aviators in a lecture delivered by Commander Patrick Bellinger at the Naval War College in the summer of 1924. He allowed that naval aviation had other roles, such as cooperation with the Army in coast defense, but clearly his concentration remained on aviation as an adjunct to the fleet.⁹²

Despite the presence of many skeptical mossbacks not disposed to change, some naval officers did not need external prods to revise their thinking—Sims and Moffett, for example.⁹³ However, notions that one might bypass the great sea battle through a direct air attack on the enemy's economic, cultural, and moral fabric appeared infrequently among their published and unpublished writings.

Such interpretations appeared only because the writer (e.g., Captain George C. Westervelt in 1917 and Admiral William Pratt in 1926) questioned the morality of such operations and the validity of [Italian General Giulio] Douhet's notion that attacks on civilian morale would be humane because they would end the war quickly and thereby eliminate the danger of another misery in the trenches. Westervelt, even in 1917, showed considerable insight in suggesting that in the short term, the German attacks may have had military value in that they diverted very considerable military potential from the fighting front for the largely futile defense of London. In the long term, however, he speculated that Germany might come to regret it. He thought the attacks might even toughen British civilian

morale on the one hand and, on the other, act as a stimulus for greater and more destructive reprisals on the Germans by British and French air forces.⁹⁴

At the end of World War I, the General Board of the Navy—made up of a group of the Service's senior most officers, necessarily nonaviators at that time—advised the secretary on fundamental issues affecting the life of the organization. In 1919, before Mitchell's bombing tests, the board held formal hearings and explicitly advised the secretary that the integration of aviation into the fleet was of the highest priority.⁹⁵

Further, one should not infer that all the logic was on the side of the aviators and that the "gun club" was irrational in its arguments.⁹⁶ Had the flying boat proven practical in timely reconnaissance and spotting support in mid-ocean areas in the 1920s, it might have been a better solution to the air problem than either catapult-launched or carrier-launched aircraft. Indeed, flying boat technology was much more mature than that of the other craft, and aircraft operated from catapults or platforms atop turrets probably would have reduced the fields of fire as well as the volume and rate of fire of the main armament. (Although aerial observation would radically enhance the accuracy of fire, more might be lost than gained.) Moreover, it was hard to imagine ever developing the means of recovering such catapulted aircraft without stopping the ship—clearly suicidal in the presence of enemy surface ships or submarines.⁹⁷

On the other hand, if one accepted the assumption that the decision in war would come through use of the battleship fleet's guns, then the provision of aerial spotting through aircraft carriers, which could recover their "birds" while under way, would introduce another whole class of ships to the Navy line. This would come at a

time when funding and manning were insufficient to take care of the requirements that already existed. Flying boats, featuring long-range and a developed technology, could provide both scouting and spotting without that new line of ships (and one could greatly expand their areas of coverage by the use of tenders easily converted from ships already in the Navy). The flying boats, in fact, had just achieved enormous prestige by crossing the Atlantic in 1919. They did not inhibit the execution of the primary mission of the battleships and did not compete for funds and people nearly as much as carrier planes and their required ships.

Numerous aviators would support that reasoning. Bellinger, one of the most prominent, clearly was not skeptical of the value of shipboard aviation. He did not see much of a future for kite balloons or nonrigid airships, but he saw great value in shipboard aircraft supporting the battle line once air forces had achieved command of the air. Still, in 1924, he perceived enormous potential in the development of long-range flying boats.⁹⁸ Moreover, notwithstanding the great promise and glamour of the initial operations of the *Saratoga* and *Lexington*, those operations involved many difficulties, and their security with the fleet posed constraints on the offensive preferences of the commanders.⁹⁹

Many people made similar arguments in favor of airships. Thus, the thinking of the gun club was not nearly as Neanderthal as it might appear to observers looking back from the post-Pearl Harbor period. The common flaw to that thinking was that, if a force had no carrier aircraft, an enemy with carrier planes could deny the use of the air over the battle area to the farmer's catapult airplanes, flying boats, and lighter-than-air craft and thus could produce an enormous advantage for his own battle fleet.



During World War II, battles were won by the side that was first to spot enemy airplanes, ships, or submarines. To give the Allies an edge, British and American scientists developed radar technology to “see” for hundreds of miles, even at night. Dwight Shepler, *The Spider and the Fly—USS Hornet*, 1945. Oil on canvas.

Art Collection, Naval History and Heritage Command, 88-199-GN

Decisiveness would arise from the fact that the side with air superiority would be able to take its enemy under concentrated, accurate fire at long ranges and during impaired visibility while the other side could not.¹⁰⁰

WORLDVIEW: CONTINUITY AND CHANGE

From about 1906, we considered the Japanese a potential enemy, though continuing some war games with a Japanese-British enemy alliance until well after World War I.¹⁰¹ After the demise of German Admiral Alfred von Tirpitz's fleet at Scapa Flow, both the games and the thinking increasingly concentrated on a Pacific war against Japan, although we did not completely discount war against the British.¹⁰² Captain Yates Stirling Jr. provided us with a near-classical statement in Mahanian terms. In an article published in 1925, he painted a worldview in which seafaring capitalist nations had to have overseas trade to survive; to do that, they had to protect that

trade with navies; those navies would have to have battleships to command the sea or part of it; and only Japan and Great Britain were in the game. Although Stirling more clearly identified Japan as a potential enemy, he plainly asserted that competition with Great Britain was inevitable and that only the statesmanlike work of the Washington treaties promised to contain that competition.¹⁰³ In post-World War II terms, all of this constituted a “realist” worldview.

From the early 1920s, the war college games and fleet maneuvers came to feature surprise air attacks on Pearl Harbor and the Panama Canal, but the ultimate decision would always arise from a great clash between the main surface fleets. Even the aviators, whose first task was to kill the enemy carriers, gave at least lip service to the idea that the final decision would come from the great gun battle. The bomb-carrying capability of carrier aircraft in the 1920s and early 1930s was so limited that many aviators understood that the chances of decisive attacks on armored vessels were strictly limited; not until the late 1930s could dive-bombers employ 1,000-pound weapons at significant distances. Until late in the game, then, many aviators were persuaded that the gun battle might indeed be decisive.¹⁰⁴

ORGANIZING FOR WAR

Creation of the office of the CNO in 1915 improved naval organization. Gradually, the traditional power of the bureau chiefs declined, relative to that of the CNO. Some flyers, such as Henry Mustin, called for the creation of a separate aviation corps; however, other flyers and most of the nonflyers were against it, notwithstanding the Marine Corps precedent.¹⁰⁵ This attitude resulted in part from lingering bad memories about the nineteenth-century

dichotomy between line officers and engineering officers, as well as a feeling that such a move would play into the hands of the Air Service’s William Mitchell and his followers. The aviators were satisfied, at least to some extent, with the foundation of the Bureau of Aeronautics in 1921. Some of the senior officers of the Navy had opposed the congressional proposal for the bureau, but in large part the heat generated by Mitchell changed their minds.¹⁰⁶ Its first chief, Rear Admiral William Moffett, was not a pilot, but he went immediately to Pensacola, Florida, and completed the observers’ course there. Popular among the flyers, he was also a successful battleship commander; had served once on a ship whose skipper was Mahan himself, as noted above; and had attended the Naval War College while Mahan was assigned there.¹⁰⁷

From the outset, under Moffett’s guidance, the appearance of a new bureau—in fact, a superbureau—complicated the internal organization of airpower. Moffett did not confine his activities to technical and procurement functions, as did the other bureau chiefs. He cast a wider net, including personnel issues such as assignment policy and promotions for aviators. This brought him into conflict with the other bureaus, especially with the Bureau of Navigation, which had traditionally managed personnel policy for all naval officers. This tension continued, growing all the way up through and beyond the tenure of Rear Admiral John Towers at the helm of the Bureau of Aeronautics well into World War II.¹⁰⁸

From the earliest days, military men in all the Services began groping for a way to properly integrate aviation into the national security force structure. As it turned out, the Army flyers would choose a more or less independent path that resulted in the creation of the U.S. Air

Force in 1947. The Navy's flyers and almost all of its sailors favored integrating airpower with seapower. One such sailor, Rear Admiral Nathan C. Twining, wrote to Captain Henry Mustin in 1919, stating tentatively that he felt airpower should be kept in the Army and Navy. He saw some possibilities in distant air raiding, but thought that should be part of the mission of the land army. He argued, however, that the most urgent task of all was developing aviation's capabilities in spotting and scouting.¹⁰⁹

Six years later, Captain George C. Westervelt, then manager of the Naval Aircraft Factory in Philadelphia (though not an aviator himself), expressed a similar idea with no sugar coating or hedging:

*They [the aviators] are in the Navy, of the Navy, and wish to remain there. They firmly believe that the air arm is an inherent portion of the Navy; that, as a Naval air arm, it is helpless without the Navy, and that the Navy would be helpless without it. In imagination many of them, doubtless, project themselves into the future and see the time when the air arm of the Navy will be its paramount arm, and when the surface ships will get their orders from the Commander-in-Chief flying above them, but they still see these combined elements of their country's power as the Navy, and themselves as officers of the Navy.*¹¹⁰

Westervelt had visited Britain during World War I, and, undoubtedly, the Royal Navy was an influence on him and the entire U.S. Navy—as it always had been. The story about the influence of the Royal Air Force (RAF) on U.S. Army aviators is well known. Mitchell's visits with [Marshal of the RAF] Hugh Trenchard during World War I are well documented.¹¹¹ Perhaps less well

known is the negative impact of the RAF on the U.S. Navy. The British integrated their naval and land-based airpower into a separate air force in 1918 and kept it so organized up to 1937. From 1918 forward, it was an article of faith in the U.S. Navy that that decision had been a mistake and proof that an independent air force would be bad for the United States. Without arguing the virtues of the [British Submarine] Spitfire, [RAF] Fighter Command, Taranto [Italy], and victory over the [German KMS] *Bismarck* and the U-boats, it is clear that the stout opposition to the idea in the U.S. Navy had its origins long before the RAF could possibly have had the deadly effects attributed to it. To cite one example, in testifying to the General Board of the Navy on 23 August 1918, Commander H. C. Dinger asserted, "Personally, I don't see how there could be any argument. They [the British] must have both Naval and Army aviation. Of course, these are only my personal views. The amalgamation in England seems to have had a very bad effect."¹¹²

In the wake of the commissioning of the USS *Langley* (CV 1) in the early 1920s, articles in *Proceedings*, as well as Naval War College papers and lectures, paid increasing attention to the implications of aviation.¹¹³ This increased sharply after the great ships *Saratoga* (CV 3) and *Lexington* (CV 2) came online late in 1927. No doubt, Navy people endlessly fought and refought the Battle of Jutland on the game boards at Newport and in the pages of *Proceedings*, but they also wrote many articles on aviation as well.¹¹⁴

PROPER NAVAL OBJECTIVES IN WAR

Even in the articles on aviation, usually the climax came in a big gun duel. Analogous to the Army experience on the western front, the most



Planes of Task Force 77 pass over the fleet in the bright waters of the Japan Sea. Herbert C. Hahn, *Flight*, c. 1951. Drawing, pencil on paper. Art Collection, Naval History and Heritage Command, 88-191-AA

strident demand for a capability to command the air came from the most committed surface gunners. It became clear to battleship captains that aerial spotting so enhanced the power of the big gun that an admiral who lost that spotting capability found himself at a huge disadvantage.¹¹⁵ The corollary to that principle, as on the western front, was that one had to make every effort to protect free use of the air over the battle and to deny it to the enemy. Thus, hardly anyone in any of the Services needed much persuasion that command of the air remained a paramount consideration. In 1926, Admiral Pratt himself argued that it was a primary function of naval aviation.¹¹⁶

Although in the 1930s mainstream thought seldom wavered from the idea that the primary and final instrument of victory would be the battleship, it held that Japan would refuse battle until the combat power of the U.S. Navy had been diminished by projecting itself all the way across the Central Pacific. Most strategic thinkers felt that the Navy could minimize this weakening if the U.S. offensive went across the central (in-

stead of the north or south) Pacific, invading and building up island bases as it went (as opposed to making one giant leap that would force the Japanese Navy to come out and fight for the sea when the Americans arrived in the vicinity of the Philippines). Carrier airpower would always be a scarce commodity. In those days, people deemed land-based airpower a formidable threat. Without air bases to protect the line of communications and naval bases to attenuate the erosion of sea power as it projected farther across the Pacific, the defeat of the Japanese fleet on the other side remained improbable.¹¹⁷

In all of this, aviation had two main functions. First, it would enhance the effectiveness of the cruisers and destroyers of the scouting fleet through reconnaissance. Second, it would enhance the effectiveness of the battle fleet through conducting reconnaissance, spotting the fall of shot, and defending against the enemy's carrier airpower (usually through sinking or disabling enemy carriers.)¹¹⁸ Sometimes, aircraft might attack battleships, but usually they sought to slow them down so that the plodding American battleships could catch up with the speedier Japanese dreadnoughts to administer decisive blows with their guns.¹¹⁹ Not long before his death, Admiral Moffett spoke of using offensive carrier aircraft in exactly that way to facilitate the great sea battle.¹²⁰ Even up to the eve of World War II, aviators who delivered lectures at the Naval War College on the uses of airpower were clearly reluctant to claim too much for airplanes versus battleships.¹²¹

To a large degree, students of the intellectual history of any military force must grapple with an eternal problem: Was the glass half full or half empty? Much of the final judgment necessarily resides in the eye of the beholder. Charles Melhorn and Curtis Utz have demon-



Task Force 77 systematically destroyed hundreds of bridges in North Korea. Herbert C. Hahn, *Scratch One!*, ca. 1951. Drawing, colored pencil on paper.

Art Collection, Naval History and Heritage Command, 88-191-BA

strated that declared policy and doctrine do not always match the undeclared worldview of the decision makers of any organization.¹²² To some extent, the articulation of official doctrine inevitably lags. Sometimes, acquisition policies indicate the difference between declared doctrine and the undeclared vision of the future. They both show that the Navy *did* make progress in aviation between the armistice and Pearl Harbor; in fact, there were almost as many carriers as battleships under construction on 7 December 1941. Those “flattops” under construction were close to double the size of the USS *Ranger* [CV 4]—the first American carrier designed as such from the keel up.

The task force idea developed well before the onset of war, having its genesis even before

the initial “fleet problems” of the late 1920s, in which the *Saratoga* and *Lexington* participated.¹²³ In the late 1930s, the deck loads of carriers had changed substantially in an offensive direction before they were thrust into battle. Thus, naval aviators of the period and their earliest biographers and historians possibly exaggerated the weight of U.S. Navy conservatism for a number of reasons.¹²⁴ One was physical: dive-bombers in 1930 could not carry bombs big enough to penetrate battleship armor far enough to threaten the enemy battle line; by the end of the decade, they could.¹²⁵ Clark Reynolds, long a leader in the history of naval aviation, provides a recent sample of the “half empty” part of the metaphor: “The rigid conservatism of the so-called Gun Club of battleship admirals stood in his

[Moffett's] way at every turn."¹²⁶ Clearly, "rigid conservatism" can be in the eye of the beholder; Moffett himself had been a first-class battleship captain.

On the eve of war, then, the worldview of the naval officer corps had not changed much from the realist perception of the international environment held at the beginning of World War I.¹²⁷ Few people in the Navy felt that the initial objective ought to be anything other than command of the sea, which would yield the capability for exploitation in a variety of ways, such as invasion or blockade. Nor did they lend much support to the idea of bypassing sea battles, blockades, or invasions in favor of a direct attack on the morale or industrial vital targets of an enemy.

Sentiment remained strongly opposed to a separate air force and strongly in favor of the Navy's having its own air arm. Mitchell had not persuaded many people in the sea Services of the desirability of a unified department of defense. As regards internal organization, war at sea involving the use of aircraft required a task organization that put ships with varying functions under a single commander and that sought to achieve a specific goal. Everyone agreed that aircraft were a major asset in sea warfare but differed on the question of their employment—whether in auxiliary or independent roles or both. Those favoring the offensive role for aircraft argued that the aircraft carrier would be the capital ship in the future and that all other elements of sea power should train and organize to support the air arm.

As to employment in battle, aircraft would first assure air superiority—ideally by sinking enemy carriers—and then provide reconnaissance, as well as spotting and damaging battleships to slow them down for the great sea battle,

to be concluded by our own battleships. This vision of surface sailors received decreasing favor from aviators as the interwar period wore on. For the most "advanced" aviators, aircraft would win command of the sea by sinking enemy carriers, and then the air arm would turn to exploitation through mining or supporting an invasion.

THE TEST OF WAR: THE PACIFIC CAMPAIGNS

How did the experience of World War II modify this [frame] of mind? The war did nothing to change the worldview of the line officers of the Navy—as with the leaders of all the other Services, they were very much of the realist persuasion. It also did little to change the perception that command of the sea was the first goal, but the means of achieving it went through a transformation.

Pearl Harbor confirmed the Mitchell tests of 1921 that aircraft could sink unmoving, undefended dreadnoughts. The destruction by land-based airpower of the [HMS] *Prince of Wales* [53] and the [HMS] *Repulse* [1916]—both capital ships and both under way—had a far greater psychological impact on both the Navy and the American public. This, combined with the fact that precious few battleships remained with which to test the old notions in combat, led to the rapid acceptance of the carrier task force as the principal instrument of sea power.¹²⁸

OBJECTIVES

Notwithstanding the fact that implementation in war differed from that envisioned, the preferred strategy of the Navy remained the same. Air battles instead of battleships won command of the sea, but the Central Pacific thrust with island hopping and base development remained the strategy. The Joint Chiefs of Staff did not have

the power or the inclination to force the Navy into another choice—or to persuade [General] Douglas MacArthur in the Southwest Pacific area to join the Navy’s strategy. It worked rather as planned, with the remnants of the Japanese fleet coming out to fight the final battles west of the Mariana Islands in the summer of 1944, and then again during the invasion of Leyte in October.¹²⁹

The aviators had wound up pushing for a great sea battle at the time of the Marianas, and Admiral Raymond Spruance, the surface sailor, deemed his primary mission the protection of the amphibious operation and not the destruction of what remained of the Japanese fleet. Similarly, the main criticism of Admiral William Halsey came from the surface sailors who thought he should have been tied to the landing forces at Leyte rather than seeking the destruction of the Japanese carriers—in a decoy role, as it turned out.¹³⁰ In a larger sense, though, one may infer that practically everyone involved remained persuaded that Mahan was right when he reasserted that he who commands the sea commands the world. In the words of Paul M. Kennedy,

The Second World War saw the full arrival and exploitation of this revolutionary (air) weapon and the fulfillment of the prophecies of Douhet, Mitchell, Trenchard and the others that aircraft were vital to achieve dominance over land and sea theatres. As such, this did not invalidate Mahan’s doctrine that command of the sea meant control of those “broad highways,” the lines of communication between homeland and overseas ports; but it did spell the end of the navy’s claim to a monopoly role in preserving such sea masteries. And the Admiralty’s established belief that a fleet of battleships provided the



Planes of Attack Squadron VA-702, USS *Boxer*, in a bombing raid on Hamhung, April 1951. Herbert C. Hahn, *Skyraiders*, ca. 1951. Drawing, colored pencil on paper.

Art Collection, Naval History and Heritage Command, 88-191-B1

*ultimate force to control the ocean seaways was made to look more old-fashioned than ever—and very erroneous and dangerous.*¹³¹

The naval officer corps remained committed to the idea of exploitation through blockade rather than invasion, but it was overruled, and amphibious planning was under way when nuclear weapons came along to precipitate Japanese surrender.¹³²

Even earlier, on the eve of World War II, the aviators among the naval leaders were beginning to rattle the gates to high command. However, tension had existed throughout the conflict between them and the old guard. Some of the principal decision makers like Ernest King and William Halsey did have wings, even pilot wings, but most of them had gone through flying school as senior officers and had never served as crew members at the squadron level. They were deemed Johnny-come-latelies to the flying business and therefore unable to understand air war as well as the pioneers; the chief one of whom

had been at the head of the Bureau of Aeronautics when war came: John Towers. He aspired to high operational command throughout the war but was kept from it, mostly by Admiral King himself. Of the early aviators, only Marc Mitscher made it to such a level as a task force commander under the Fifth Fleet. Meanwhile, Halsey the Johnny-come-lately, Admiral Chester Nimitz the submariner, and Spruance the cruiser sailor, had been sent by King to implement the important decisions of the Pacific war, most of which were made by the CNO himself.

THE POSTWAR ATTITUDE ADJUSTMENT

It is probably fair to assert that the naval officer corps emerged from World War II with much the same worldview of international politics as it had held before 1914. Clearly, the “Wilsonian dream” had proven a mirage and many officers, if not most, were skeptical that the “one world” envisioned in the United Nations would fare any better. The substantial skepticism toward disarmament and arms control of the interwar period remained.¹³³

METHODS OF CONFLICT RESOLUTION

The line officers of the Navy came out of the war with a strong notion that the carrier battles and the island invasions had been decisive and that the Navy remained the first line of defense, despite growing doubts on the latter point among Army airmen, Congress, and the public. As a corollary, the carrier admirals believed they would have to govern the Navy. They would never completely dominate the apex of the hierarchy, but they were well on the road to becoming the most equal among equals.¹³⁴ Not until the fighting concluded did King and

Nimitz send Towers to his seagoing command to take over the Fifth Fleet from Spruance, who replaced Nimitz in command at Pearl Harbor but soon moved on to the Naval War College. Towers then came to Pearl Harbor to take charge, as commander in chief of Pacific Command, the principal striking arm of the Navy.¹³⁵

Naval aviators were coming of age in 1945, and at the Navy’s moment of glory, a substantial part of it agreed that carrier aviation was and would continue to be the core strength of the Service, notwithstanding the fact that no naval threat existed anywhere in the world. Further, the United States Strategic Bombing Survey concluded that the submarine in its unrestricted, independent campaign against Japanese maritime traffic, combined with strategic bombing of the home islands, had been decisive. This use of the submarine had not been formally articulated in interwar naval theory and in fact had been rejected by U.S. diplomats at the Washington [Naval] Conference of 1921–22 as a morally illegitimate use of the weapon. (As noted above, though, officers playing enemy commanders had explored the idea in war games and informally during the periodic Submarine Officers’ Conference.)

Too, naval leaders came away with the impression that the [Boeing] B-29s [Superfortress] had not been very cooperative in supporting either the Okinawa operations or the mining campaign.¹³⁶ They viewed the bombing of the Japanese homeland as a waste of time, even though their carrier admirals also had targeted the airframe and engine industries in Japan at the end of the war. Increasingly in the last two years of the war, Navy flyers found their targets ashore. Traditionally, in the abstract at least, the very purpose of gaining command of the sea was to influence events ashore.¹³⁷ Attention given



Joseph Binder's compelling painting *3 Jets Flying over Destroyer* highlights naval aviation in U.S. Navy recruitment posters of the 1950s. Acrylic on illustration board.

Art Collection, Naval History and Heritage Command, 68-084-A-10

to the possible use of airpower directly against the sources of enemy power was minimal in the Navy prior to 1941. As the war neared its end, however, especially after command of Twentieth Air Force in the Pacific was kept out of the hands of the theater commanders, naval line officers gave a great deal more thought to the idea of strategic bombing.

ORGANIZATION FOR WAR

Increasingly, naval officers voiced their concerns about the morality of strategic bombing because of the harm to civilians, notwithstanding the harm done by blockade. In addition, the war made it clear that command of the air was a prerequisite in strategic as well as tactical operations, but it was difficult or impossible to achieve in the former because of the long ranges involved. Until escort aircraft could fly all the way to the target, the bomber could not get through, or so the argument went in naval circles.¹³⁸ The implications of the coming of nuclear weapons were as yet little explored, and the result of all these factors left the naval officer corps in a state of flux, without a clear vision of its future and its purpose for one of the rare times in the twentieth century. This situation led to an institutional identity crisis that remained unresolved until a decade had passed.¹³⁹

One problem for the Navy was that it had complete command of the sea, and nobody could challenge it. What could it use that command for? The new potential adversary was the Soviet Union, but it had no surface navy. Nor did it have any significant dependency on overseas raw materials or food vulnerable to blockade.¹⁴⁰ The idea of an amphibious landing against the whole Eurasian world island was preposterous, and both Napoleon and Hitler had made the idea more so in any event. The United States

was coming out of two decades of serious deficit spending, and William Mitchell's idea of getting the job done with one air force instead of a two-ocean navy—especially an air force equipped with nuclear weapons—was highly attractive to President Truman, the Congress, and the public in general. Doing this in a unified department of defense would eliminate much duplication and make available more ample funds for domestic purposes.¹⁴¹

Attempts to resolve the dilemma were made in the unification [National Security] Act of 1947 and the Key West and Newport conferences of the following year. However, they really did not achieve much. Back in the days of William Mitchell, most of the Navy's officer corps had been dead set against a single military department containing all the services. But during World War II, some senior officers thought that unification might have some merit. Admiral Nimitz was one of them; but toward the end of the war, he and the rest of the mariners closed ranks against it.¹⁴² Led by [Secretary of the Navy] James V. Forrestal, the tactics entailed avoiding a head-on attack on the issues of unification and a separate air force because support for them was too strong; indeed, the president favored unification. Thus, the approach was to limit the function of a secretary of defense to powers of "coordination," avoid opposing a separate air force directly, but try to constrain its functions as much as possible. Especially important as a goal was assuring the Marine Corps and the Navy of their own air arms, completely independent of any autonomous air force.

Minority opinions inside the Navy (e.g., that of Admiral Daniel V. Gallery) proposed that since all the old visions were obsolete, the Navy ought to take over the Air Force's strategic bombing role because the Navy could do

it better.¹⁴³ The legislation had emerged rather as envisioned by Forrestal, but neither that nor the subsequent Key West and Newport “agreements” calmed the waters. Perhaps the subsequent [Convair] B-36 [Peacemaker] debate was a manifestation of the insecurity of naval leaders, and the main outlines of a more stable Navy worldview and vision for its future started to take shape only later as a result of the Korean War and the reversal of the decline of defense spending. Also having an effect were the march of technology that resulted in the miniaturization of nuclear weapons; the Soviet acquisition of nuclear technology; the coming of the nuclear submarines; and the submarine launched ballistic missile (SLBM).¹⁴⁴

The Navy’s internal organizational issues had largely been laid to rest. The powers of the CNO had been further consolidated under the wartime leader, Admiral King, when he was appointed to that office and at the same time retained the title of commander in chief of the U.S. fleet. The flyers had become firmly integrated into the upper ranks of the Navy, and little agitation remained for a separate naval air corps.¹⁴⁵

VISIONS OF EMPLOYMENT IN WAR

The vision to emerge in the mid-1950s held that the United States could exploit its command of the seas with a revised naval role; one that had both a strategic and conventional dimension. The Navy could use its carriers as it had in the Korean War for power projection ashore. They would have nuclear weapons, not to take over the strategic bombing mission, but to facilitate the maritime campaign by targeting against Soviet submarine bases and the like.

The SLBM would give new life to the un-

derwater arm of the Navy, even in the absence of a potential enemy with a significant surface naval or merchant marine dependency. It had the beauty of being perfectly suited to the second-strike deterrent role the United States valued. That is, Polaris missile boats were invulnerable enough to ride out the first strike, yet their accuracy was not deemed sufficient to threaten a first strike themselves, thus they added to deterrent stability. Further, the great transfer of submarine technology, doctrine, and equipment from Germany to the Soviet Union at the end of World War II, combined with the contemporaneous change in antisubmarine warfare (ASW) technique, assured the future of the attack-boat portion of the submarine force.¹⁴⁶ Thenceforward, one of the chief antisubmarine weapons would be submarines. The line officers’ preference for the offensive again received expression in the notion of attacking the Soviet underwater forces well forward in their home waters with ASW submarines and at their bases with naval air forces, soon to be armed with nuclear weapons.¹⁴⁷

By the late 1950s, the reappearance of the naval nuclear camel’s nose under the Air Force’s strategic tent was not as threatening as it had been in Admiral Gallery’s version of the late 1940s. The new conception called for a strategic triad, two legs of which would belong to the Air Force (ICBMs and heavy bombers) and all of which were vital to deterrence and nuclear stability. The Air Force, moreover, was no longer the new kid on the block and therefore had more confidence in its own role.¹⁴⁸ The Navy’s new vision proved remarkably durable, and recent writings from *The Maritime Strategy* to *From the Sea* are really little more than a change in emphasis.¹⁴⁹



Artist's conception of the aircraft carrier proposed by the administration in 1978 for inclusion in the fiscal year 1980 Navy shipbuilding program. This 62,500-ton ship would have a length of 912 feet and an extreme width of 256 feet. It would be capable of operating all present and planned types of carrier aircraft. S. L. Morison, watercolor, 1978.

Naval History and Heritage Command, NH 88035

IMPACT OF AVIATION ON NAVAL AIR THOUGHT

Aviation had not really changed the worldview of most of the Navy's officer corps by 1947. In a generic way, the primary objective of navies remained command of the sea, although not much of a challenge to the hegemony of the U.S. Navy existed at that point. Exploitation through mining and blockade came out of the war with new prestige, at least to seamen. Even

though the Navy had little enthusiasm for the invasion of Japan, the success of amphibious operations across the Pacific reaffirmed that mode as another way of exploiting command of the sea. On the eve of the unification debate, such support as had existed for either a separate air force or a unified defense department was much diminished among officers who had fought the war in the Pacific and in Washington. Internally, the task method of organization had the

prestige of success in recent combat behind it.

The most significant change in naval thought had come in the employment of naval forces to achieve command of the sea. Battleships and other surface vessels found themselves largely relegated to supporting roles, as anti-aircraft platforms in carrier task forces and as fire-support platforms for amphibious task forces. The aircraft carrier had become the capital ship in command of sea operations and that change was widely accepted by Navy people. They also gave more thought to the value and limitations of strategic bombing, mostly the latter. Notwithstanding the conclusions of the U.S. Strategic Bombing Survey, the idea that one could coerce nations without first defeating their armies and navies did not receive wide support within the Navy. The survey emphasized the great value of the submarine campaign in the Pacific war but, clearly, the prestige of the air arm overshadowed that of the submariners.

In the end, then, aviation apparently integrated itself into the Navy and its thinking, mostly in the realm of method rather than objective. The environment for military conflict remained similar in many ways, and nation-states still responded most clearly to coercion by military force. The naval vision still largely maintained that one first had to apply force to the armed forces of an adversary, and only later directly to the territory or other values after achieving command of the sea, the air, and the land approaches. At sea, the method of applying that force had changed, in that the carrier had become the capital ship, and the rest were to lend support. This implied that the postwar reorganization should not change our national security structure radically and that the Navy should certainly retain its own air arm. Even though naval aviators had risen to commanding heights of

the sea service, the opposition of surface sailors was not as reactionary as sometimes pictured. Further, it seems fair to picture the intellectual style of the Navy as tending neither toward the reactionary nor the radical but an evolutionary or progressive [frame] of mind.

NOTES

71. I agree with Carl Builder that the personification of institutions entails serious limitations and that there can be no all-inclusive "Navy mind" any more than a "military mind." Thus, any insight emerging from this chapter can be no more than a tendency or an approximation—if that much. Acknowledgment is particularly important in this case. Although I graduated from the U.S. Naval Academy and before that had an aviation rating in the enlisted Navy, all that was more than 40 years ago, and I have had little to do with naval history or naval aviation since then. I have received very important assistance for this chapter from distinguished experts in the field of naval history. Dr. Gary E. Weir set up a discussion seminar for an early draft of this work at the Washington Navy Yard in October 1994. Among the historians in that group were Dr. Jeffrey G. Barlow and Curtis A. Utz, and the session was a most productive one for me. Barlow's book and Utz's thesis were important aids. I also received significant insights from Dr. Clark G. Reynolds of the College of Charleston and Dr. William F. Trimble of Auburn University, the biographers of Adm John H. Towers and William A. Moffett, respectively. Their work went far beyond mere professional courtesy. Dr. Evelyn M. Cherpak, head of the Naval Historical Collection at the Naval War College, not only was expert and most cooperative in optimizing my research effort at Newport but also read an early draft of this work and rendered significant assistance. Ms. Alice S. Creighton and Ms. Mary Rose Catalfamo were also most impressive in maximizing the effect of the research time I had available at the Special Collections Division of the Nimitz Library at the U.S. Naval Academy. Other important readers who helped were my colleagues—Professor Dennis Drew, Dr. Hal Winton, and Col Rob Owen—Dr. Alexander Cochran and RAdm William T. Pendley, as well as Dr. Mark R. Shulman; Cdr Joe Tarlton, USN (Ret); Frank Uhlig; and Col Barry Watts, USAF (Ret). The original idea for the chapter was largely that of my boss, Col Phillip S. Meilinger, the former dean of the School of Advanced Airpower Studies and the general editor of this book. His support was generous and essential to the project.
72. Cdr P. N. L. Bellinger, USN, "Policy" (thesis, Naval War College, 1925), in Naval War College History Collection, Newport, RI, hereafter NWC History Collection.
73. William F. Trimble, *Admiral William A. Moffett: Architect of Naval Aviation* (Washington, DC: Smithsonian Institution Press, 1993), 29–30.

74. Charles M. Melhorn, *Two-Block Fox: The Rise of the Aircraft Carrier, 1911–1929* (Annapolis: Naval Institute Press, 1974), 22–23; Kenneth J. Hagan, *This People's Navy: The Making of American Sea Power* (New York: Free Press, 1991), xi–xii; and Clark G. Reynolds, “The US Fleet-in-Being Strategy of 1942,” *Journal of Military History* 58, no. 1 (January 1994): 107–18. Reynolds explains that, even in the fleet-in-being strategies, the British and U.S. approaches emphasized the preference for offensive applications.
75. Capt George C. Westervelt, USN, “Statement of Captain G. C. Westervelt (CC) U.S.N. before President's Aviation Commission, (Morrow Board, 1925),” copy in E. E. Wilson Papers, Special Collections, box 22, Nimitz Library, U.S. Naval Academy, Annapolis, MD, hereafter USNA Special Collections.
76. One among many who held this opinion was John Towers, one of the Navy's original aviators, who later explained that the carrier was weak defensively, which made it inherently an offensive weapon. See John H. Towers, “The Influence of Aircraft on Naval Strategy and Tactics” (thesis, Naval War College, 7 May 1934), Record Group 13, NWC History Collection. Six years later, he was still arguing in terms that Mahan would not have found objectionable. In “Naval Aviation Policy and the Bureau of Aeronautics,” *Aero Digest* 36 (February 1940): 34–38, he states that United States' well-being depends on free use of the seas, that a navy must command the essential part of the sea (achieved through offensive operations against the enemy naval fleet), and that aviation exists primarily to support those offensive operations. For an equally clear preference by another of the early flyers, see P. N. L. Bellinger, “Lecture Delivered by Commander P. N. L. Bellinger, Aviation, 1 Aug 1924,” NWC History Collection, 12, hereafter Bellinger lecture.
77. William S. Sims, “Cheer Up!: There Is No Naval War College,” 1916, Sims Papers, box 74, Library of Congress.
78. Robert Seager II, *Alfred Thayer Mahan: The Man and His Letters* (Annapolis: Naval Institute Press, 1977), 347. Mahan was only one of the most prominent officer-historians; he reached the presidency of the American Historical Association in 1902, after his many historical writings on the history of seapower had achieved worldwide notice. See also Philip A. Crowl, “Alfred Thayer Mahan: The Naval Historian,” in *Makers of Modern Strategy*, 444–54. The U.S. Naval Institute was established in the 1870s, as was its journal *Proceedings*, which from the earliest times contained many articles of a historical nature. See Philip A. Crowl, “Education versus Training at the Naval War College: 1884–1972,” *Naval War College Review* 26, no. 3 (November–December 1973): 2–10. Carl H. Builder, *The Masks of War: American Military Styles in Strategy and Analysis* (Baltimore, MD: Johns Hopkins University Press, 1989), 18, also argues that the Navy, above the other Services, values tradition; I suppose that has some affinity for a historical approach to things. See also Commo Stephen B. Luce, USN, “War Schools,” U.S. Naval Institute *Proceedings* 9 (1883): 633–57; and RAdm W. V. Pratt, USN, “The Naval War College,” U.S. Naval Institute *Proceedings* 53 (September 1927): 937–47.
79. See William E. Simons, *Liberal Education in the Service Academies* (New York: Columbia University Press, 1965), 52–53, for more about the line-engineer controversy at the Naval Academy.
80. Trimble, *Admiral William A. Moffett*, 4, 7, 67; and Capt Mark Bristol, USN, Office of Naval Aeronautics, Washington, DC, letter to secretary of the Navy, subject: Proposed Program, 16 August 1915, Henry Mustin Papers, box 7, Library of Congress.
81. LCdr Henry C. Mustin, USN, “Tile Naval Aeroplane,” ca. 1915, Mustin Papers, box 6, Library of Congress.
82. Commanding officer [Henry Mustin], U.S. Navy Aeronautic Station Pensacola, FL, letter to Office of Aeronautics, 28 June 1914, Mustin Papers, box 7, Library of Congress. In this letter, Mustin makes technical recommendations based on naval air experience on the Vera Cruz expedition. See also director of naval aeronautics to Chief of Navy Operations, “Annual Report on Aeronautics,” 19 January 1916, Mustin Papers, box 7, Library of Congress.
83. Melhorn, *Two-Block Fox*, 8–16, 27–35. For pre-World War I explorations of these issues, see Capt (later Adm) Mark L. Bristol, director of naval aeronautics, to Chief of Naval Operations, “Annual Report on Aeronautics,” 19 January 1916, hereafter Bristol letter; and LCdr Kenneth Whiting, USN, aboard the USS *Seattle* (ACR 11), letter to commander, destroyer force, 16 March 1917, Whiting Papers, USNA Special Collections.
84. Capt Henry C. Mustin, USN, to the secretary of the Navy, “Aviation Organization in Great Britain, France and Italy,” 25 August 1919, Mustin Papers, box 3, Library of Congress.
85. RAdm William S. Sims to Chief of Naval Operations, subject: United Air Service, 1 February 1921, Sims Papers, NWC History Collection; Capt T. T. Craven, “Naval Aviation,” U.S. Naval Institute *Proceedings* 46 (January 1920): 181–91; Craven, “Naval Aviation and a United Air Service,” U.S. Naval Institute *Proceedings* 47 (March 1921): 307–21; Craven, “Aviation,” lecture, 5 August 1919, NWC History Collection; Cdr D. E. Cummings, “Use of Aircraft in Naval Warfare,” U.S. Naval Institute *Proceedings* 47 (November 1921): 1678–688; Capt Nathan C. Twining, USN, to Capt Henry C. Mustin, USN, 24 December 1919, Mustin Papers, box 9, Library of Congress; Mustin, “Aviation Organization”; and USN General Board to the secretary of the Navy, “Future Policy Governing Development of Air Service for the United States Navy,” 23 June 1919, Mustin Papers, box 7, Library of Congress.
86. In “Technology, Culture, and the Modern Battleship,” *Naval War College Review* 45 (Autumn 1992): 83, Jon Tetsuro Sumida argues persuasively that weapons systems can have important results without winning great battles, as with the British fleet in World War I.
87. As Adm Nimitz testified, Jutland was studied up one side and down the other in the aftermath of World War I. See Cdr Chester W. Nimitz, “Thesis on Tactics” (thesis, Naval War College, 28 April 1923), NWC History Collec-

- tion. For interesting contemporary views from outside the naval establishment on the implications of Jutland, especially the bombing tests of the 1920s, see Maj William C. Sherman's chapter on the future of naval aviation in *Air Warfare* (New York: Ronald Press, 1926), in which he argues that the war provided even less of a historical database for speculations on the future of naval aviation than was true for Army airpower. For a contemporary notion that keeping submarines submerged rather than damaging them was the most important contribution of aviation, see Capt C. Gilbert More, Royal Navy, "Aviation Abroad," in U.S. Navy General Board, Proceedings of the General Board, 23 May 1918, Record Group 80, reel 12, M1493, 1918, National Archives, Washington, DC. See also Kenneth Hagan and Mark Shulman, "Putting Naval before History," *Naval History* 9 (September/October 1995): 24–29.
88. Director of naval aeronautics to Chief of Naval Operations, "Annual Report on Aeronautics," 19 January 1916, Mustin Papers, box 7, Library of Congress.
 89. Gary E. Weir, Naval Historical Center, Washington Navy Yard, Washington, DC, interview by author, 6 October 1994.
 90. Gerald E. Wheeler, *Admiral William Veazie Pratt, US Navy: A Sailor's Life* (Washington, DC: Department of the Navy, 1974), 193–201; Ernest Andrade Jr., "United States Naval Policy in the Disarmament Era, 1921–1937" (PhD diss., Michigan State University, 1966), 1–12; Thomas H. Buckley, "The United States and the Washington Conference, 1921–1922" (PhD diss., University of Indiana, 1961), 19–21, 130; and Stephen Roskill, *Naval Policy between the Wars*, vol. 1, *The Period of Anglo-American Antagonism, 1919–1929* (New York: Walker, 1968), 310. Writing at the time of the Vietnam War, RAdm Daniel V. Gallery was only one of many people who looked askance at arms control but who nonetheless thought that the Five-Power Treaty helped push carrier development along. See unpublished article, Gallery Papers, box 31, USNA Special Collections.
 91. Craven, "Aviation," 20. In this lecture, Craven reported that he understood that the Royal Navy had lost its aviation to the RAF precisely because it had not moved vigorously to develop it itself. The same idea is one of the themes of Alfred F. Hurley, *Billy Mitchell: Crusader for Air Power* (Bloomington: Indiana University Press, 1964, 1975), viii, wherein he suggests that Mitchell was an important catalyst for progress in naval aviation. See also Gerald E. Wheeler, "Mitchell, Moffett, and Air Power," *Airpower Historian* 8, no. 2 (April 1961): 79–87; Melhorn, *Two-Block Fox*, 56, 57; Capt N. E. Irwin, testimony, U.S. Navy General Board, "GB Proceedings 80," 5 March 1919, reel 13, M 1493, 1919, National Archives, 177; and William M. McBride, "Challenging a Strategic Paradigm: Aviation and the US Navy Special Policy Board of 1924," *Journal of Strategic Studies* 14, no. 1 (February 1991): 74–75, <https://doi.org/10.1080/01402399108437440>.
 92. Bellinger lecture, 2.
 93. For information on Sims, see, among many others, Wheeler, *William Veazie Pratt*, 149; Hagan, *This People's Navy*, 255–58; David F. Trask, "William Snowden Sims: The Victory Ashore," in *Admirals of the New Steel Navy: Makers of the American Naval Tradition, 1880–1930*, ed. James C. Bradford (Annapolis: Naval Institute Press, 1990); and Elting E. Morison, *Admiral Sims and the Modern American Navy* (Boston: Houghton Mifflin, 1942). For information on Moffett, see Trimble, *Admiral William A. Moffett*; Thomas C. Hone, "Navy Air Leadership: Rear Admiral William A. Moffett as Chief of the Bureau of Aeronautics," in *Air Leadership: Proceedings of a Conference at Bolling Air Force Base, April 13–14, 1984*, ed. Wayne Thompson (Washington, DC: Office of Air Force History, 1986), 83–113; and Clark G. Reynolds, "William A. Moffett: Steward of the Air Revolution," in *Admirals of the New Steel Navy*, 374–87. Lesser known was RAdm William F. Fullam, whose papers are in the Library of Congress, as are those of Adm Sims. Moffett's papers are at the Naval Academy (microfilm copy at USAF Historical Research Agency, Maxwell Air Force Base, AL). For a seminal piece on the subject, see Stephen Peter Rosen, "New Ways of War: Understanding Military Innovation," *International Security* 13, no. 1 (Summer 1988): 135–67, <https://doi.org/10.2307/2538898>; and especially Rosen, *Winning the Next War: Innovation and the Modern Military* (Ithaca, NY: Cornell University Press, 1991), 58–70, 76–80, 130–47, 234–50.
 94. As Melhorn shows, the U.S. Navy observers in Britain during World War I were aware of the German zeppelin operations, both against the Royal Navy and against London, and Mitchell and others brought the idea for such operations before the Navy's General Board and the rest of the Navy right after the war. See Melhorn, *Two-Block Fox*, 35, 40. One of the others was Maj B. L. Smith, USMC, and Cdr Kenneth Whiting. See testimony, U.S. Navy General Board, "GB Proceedings 80," reel 12, M 1493, 1918, National Archives, 99; and testimony, U.S. Navy General Board, "GB Proceedings 80," 10 March 1919, reel 13, M 1493, 1919, National Archives, 1951, respectively. In a report on a trip to Europe that same year, Capt Henry Mustin discussed Italian ideas on strategic bombing and British experience with a separate air force. See "Aviation Organization in Great Britain, France, and Italy," 25 August 1919; and Capt Henry Mustin, "Abstracts of Interviews Held with Authorities in Great Britain, France and Italy," 1 October 1919, Mustin Papers, box 3, Library of Congress, which gives the views of Hugh Trenchard [Marshal of the Royal Air Force] and Sir David Beatty [admiral of the fleet]. Two years earlier, Capt George Westervelt, USN, kept a diary of his trip to England in which he speaks of the relative invulnerability of the Germans bombing London and their "barbarity" in doing so. See "Off to War," diary, E. E. Wilson Papers, box 22, USNA Special Collections, 27; and Adm William V. Pratt, USN, "Some Aspects of Our Air Policy: An Argument from the Viewpoint of American Principles and of the Law," February 1926, Record Group 4, NWC History Collection. The staff presentations at the Naval War College increasingly included allusions to the possibility of air attack against enemy

- industry or civilian morale—or the possibility of such attacks on the United States—as independent air missions, but the emphasis was on airpower as an integral element of naval power. See “The Employment of Aviation in Naval Warfare,” staff presentation, Naval War College, September 1937, Record Group 4, NWC History Collection; and “The Employment of Aviation in Naval Warfare,” staff presentation, Naval War College, September 1940, Record Group 4, NWC History Collection. One suspects that the contemporary experience with airpower in the Spanish Civil War and Ethiopia provide the stimulus for those remarks.
95. Jeffrey G. Barlow, *The Revolt of the Admirals: The Fight for Naval Aviation, 1945–1950* (Washington, DC: Center for Naval History, 1994), 3; see also U.S. Navy General Board, “G Proceedings 80,” reel 13, M 1493, 1919, National Archives, wherein we clearly see the impossibility of determining how much of the enthusiasm of the General Board for aviation arises from progressive analysis and how much from Mitchell’s efforts, even at this early date. For the formal report of the board, see Adm Charles J. Badger, USN, senior member present, General Board of the Navy, to the secretary of the Navy, “Future Policy Governing Development of Air Service for the United States Navy,” 23 June 1919, General Board no. 449, Mustin Papers, box 7, Library of Congress.
 96. In 1909, Sims argued that hitting a moving ship from considerable height was an impractical proposition; in 1921, he reversed himself to argue that bombing from a considerable height could result in devastating hits on moving ships and that “this [the lethal area about a target vessel] could not easily be missed by a well-trained pilot.” William Sims to “Turner,” Norfolk, VA, 19 June 1909, Sims Papers, box 47, Library of Congress; and William Sims to VAdm Mark Kerr, Royal Navy London, 29 September 1921, Sims Papers, box 47, Library of Congress. As it turned out, his first prediction in 1909 was the more accurate, for it was most difficult to hit a moving ship in the Pacific war from altitude, and most of the damage was done by torpedoes and dive-bombers (and kamikazes), all of which had to come too close to the vessels for comfort. See also Cdr Logan Cresap’s testimony, 23 September 1918, U.S. Navy General Board, “GB Proceedings 80,” reel 13, M 1493, 1918, National Archives, 1074; and McBride, “Challenging a Strategic Paradigm: Aviation and the U.S. Navy Special Policy Board of 1924,” 72–89; as well as an aviator’s description of these things in Cdr P. N. L. Bellinger, USN, “Tactics” (thesis, Naval War College, 9 May 1925), NWC History Collection; or a submariner’s conception in Nimitz, “Thesis on Tactics.”
 97. For a good source on some of this evolution, see Adm William H. Standley, “Naval Aviation, an Evolution of Naval Gunfire,” U.S. Naval Institute *Proceedings* 78 (February 1952): 251–55.
 98. Bellinger, “Aviation,” 4, 6–7, 13–15; see also Standley, “Naval Aviation, an Evolution of Naval Gunfire,” 251–55.
 99. Francis L. Keith, “Steps toward Naval Readiness: An Examination of United States Fleet Problems” (unpublished ms, University of Maryland, 1976), 29–30. Copy provided to author by Curtis Utz, Defense Intelligence Agency.
 100. Melhorn, *Two-Block Fox*, 9, 21–54. For a discussion of the decisiveness of air superiority in connection with spotting for the battle line and the associated techniques, see [Henry Mustin?], “The Use of Airplanes for Observation of Fire of the Battle Line,” [1920?], Mustin Papers, box 8, Library of Congress. RAdm J. K. Taussig, USN, “The Case for the Big Capital Ship,” U.S. Naval Institute *Proceedings* 66, no. 7 (July 1940): 929–40, gives an articulate argument for the orthodox view on the eve of Pearl Harbor. For an excellent shorter summary, see Norman Friedman, *U.S. Aircraft Carriers: An Illustrated Design History* (Annapolis: Naval Institute Press, 1983), 8–9. For early views on the subject, see George C. Westervelt, “Aviation Situation Abroad,” testimony to U.S. Navy General Board, “GB Proceedings 80,” reel 11, M 1493, 1917, National Archives, 240.
 101. Baer, *One Hundred Years of Sea Power*, 90.
 102. Melhorn, *Two-Block Fox*, 24–25; and Baer, *One Hundred Years of Sea Power*, 93, 120.
 103. Capt Yates Stirling Jr., USN, “Some Fundamentals of Sea Power,” U.S. Naval Institute *Proceedings* 51, no. 6 (June 1925): 889–918.
 104. On war gaming against the Japanese, see Cdr James A. Barber Jr., USN, “The School of Naval Warfare,” *Naval War College Review* 22, no. 4 (April 1969): 19–96; LtCdr Thomas B. Buell, USN, “Admiral Raymond A. Spruance and the Naval War College: Part 1—Preparing for World War II,” *Naval War College Review* 24, no. 3 (March 1971): 30–51; Crowl, “Education versus Training at the Naval War College,” 2–10; Edward S. Miller, *War Plan Orange: The U.S. Strategy to Defeat Japan, 1897–1945* (Annapolis: Naval Institute Press, 1991); and RAdm William S. Sims, USN, “The United States Naval War College,” U.S. Naval Institute *Proceedings* 45, no. 9 (September 1919): 1485–493. On maneuvers, see Archibald D. Turnbull and Clifford L. Lord, *History of United States Naval Aviation* (New Haven, CT: Yale University Press, 1949), 270–81; Keith, “Steps toward Naval Readiness”; RAdm John D. Hayes, USN (Ret), “Admiral Joseph Mason Reeves, USN (1872–1948),” *Naval War College Review* 25, no. 1 (November 1970): 54–55; and Eugene E. Wilson, “The Navy’s First Carrier Task Force,” U.S. Naval Institute *Proceedings* 76, no. 2 (February 1950): 159–69. For a view that submarines and aircraft would undermine the position of the battleship, although command of the sea remained a paramount consideration, see RAdm W. F. Fullam, USN (Ret), “Statement of Rear Admiral W. F. Fullam to the Aircraft Investigating Committee of Congress,” draft, 1924, Fullam Papers, box 7, Library of Congress. In a 1977 interview from USNA Special Collections, Adm John Thach recalls that he had participated in mock attacks on Panama on his first cruise on the *Saratoga* in about 1931. In “The Influence of Aircraft on Naval Strategy and Tactics” (thesis, Naval War College, 7 May 1934), Record Group 13, NWC History Collection, 3, Capt John H. Towers, USN, remarked that “one should in the beginning of his study definitely eliminate

- from his mind the idea that aircraft will revolutionize naval warfare.”
105. Trimble, *Admiral William A. Moffett*, 67; Westervelt, in “Statement of Captain G. C. Westervelt,” also argued in 1925 for the creation of a separate aviation corps within the Navy, though he was resolutely opposed to any separate air force.
 106. Barlow, *The Revolt of the Admirals*, 4.
 107. Trimble, *Admiral William A. Moffett*, 67–86; Clark G. Reynolds, *Admiral John H. Towers: The Struggle for Naval Air Supremacy* (Annapolis: Naval Institute Press, 1991), 176; and Reynolds, “William A. Moffett,” 374. Theodore Taylor, *The Magnificent Mitscher* (New York: W. W. Norton, 1954), 88–89, shows that Mitscher shared the harsh feelings on the parts of some aviators toward their seniors who went to flight training as senior officers, seemingly to preempt the top commands in naval aviation without having paid their dues.
 108. Reynolds, *Admiral John H. Towers*, 319, 432; and Trimble, *Admiral William A. Moffett*, 7–8.
 109. RAdm Nathan C. Twining, USN, USS *New Mexico* (BB 40), at San Pedro, CA, to Capt Mustin, USS *Aroostook* (CM 3), 24 December 1919, Mustin Papers, box 7, Library of Congress.
 110. Westervelt, “Statement of Captain G. C. Westervelt.”
 111. Hurley, *Billy Mitchell*, 24–25.
 112. Cdr H. C. Dinger, USN, “Aviation Abroad,” testimony, U.S. Navy General Board, 23 August 1918, “GB Proceedings 80,” M 1493, 1918 National Archives. In “Aviation Organization in Great Britain, France, and Italy,” report to the secretary of the Navy, 25 August 1919, Mustin Papers, box 3, Library of Congress, Capt Mustin expressed a contrary view. He remarked on a general tendency toward centralization of the management of airpower, including naval airpower, in approving terms. He also cited that the main opposition to the Air Ministry and the RAF in Britain lay within the ranks of the Royal Navy. See also Cdr J. L. Callan, USNRF, to Capt Henry Mustin, USN, “Memo for Captain Mustin,” 3 July 1919, Mustin Papers, box 3, Library of Congress, which reports of their visit to the HMS *Furious* and the captain’s advice urging that the United States not follow the British example.
 113. VAdm F. W. Pennoyer Jr., USN (Ret), “Outline of US Carrier Development, 1911–1942,” draft, 17 December 1968, E. E. Wilson Papers, binder 7, USNA Special Collections.
 114. The following *Proceedings* articles courtesy of U.S. Naval Institute. LtCdr H. T. Bartlett, USN, “Mission of Aircraft with the Fleet,” *Proceedings* 45, no. 5 (January 1919): 729–41; Craven, “Nava Aviation,” 181–91; Craven, “Naval Aviation and a United Air Service,” *Proceedings* 47, no. 3 (January 1921): 307–21; Cdr D. E. Cummings, “The Air Detachment,” *Proceedings* 46, no. 6 (January 1920): 891–94; Craven, “Use of Aircraft in Naval Warfare,” *Proceedings* 47 (November 1921): 1677–88; Lt Forrest P. Sherman, “Naval Aircraft in International Law,” *Proceedings* 51, no. 12 (October 1925): 258–64; Sherman, “Air Warfare,” *Proceedings* 52 (January 1926): 62–71; Sherman, “Some Aspects of Carrier and Cruiser Design,” *Proceedings* 56, no. 11 (November 1930): 997–1002; Lt DeWitt C. Ramsey, USN, “The Development of Aviation in the Fleet,” *Proceedings* 49, no. 9 (September 1923): 1395–417; Lt Logan C. Ramsey, “Aircraft and the Naval Engagement,” *Proceedings* 56, no. 8 (August 1930): 679–87; Lt Logan C. Ramsey, “Bombing versus Torpedo Planes,” *Proceedings* 57, no. 11 (November 1931): 1509–15; Lt Logan C. Ramsey, “Air Power Is Sea Power,” *Proceedings* 67, no. 7 (July 1941): 921–26; Cdr H. M. Kieffer, USN, “Control of the Seas by an Air Department,” *Proceedings* 51, no. 12 (October 1925): 2265–70; RAdm Bradley A. Fiske, “The Warfare of the Future,” *Proceedings* 47, no. 2 (February 1921): 157–67; LtCdr H. B. Grow, USN, “Bombing Tests on the Virginia and New Jersey,” *Proceedings* 49, no. 12 (January 1923): 1087–98; Grow, “Tactical Employment of Naval Aircraft,” *Proceedings* 50, no. 3 (March 1924): 341–51; Cdr Jerome C. Hunsaker, USN, “The Navy’s First Airships,” *Proceedings* 45, no. 8 (January 1919): 1347–68; David S. Ingalls, “Naval Aviation Today and in Prospect,” *Proceedings* 56, no. 10 (October 1930): 891–94; Capt A. W. Johnson, USN, “Aviation in Coast Defense,” *Proceedings* 51, no. 9 (September 1925): 1652–66; “Admiral Moffett Claims All Sea Flying for Navy,” Professional Notes, *Proceedings* 50 (August 1924): 1364–74; Lt Franklin G. Percival, USN (Ret), “Elements Contributing to Aerial Superiority,” *Proceedings* 57, no. 4 (April 1931): 437–47; Capt Yates Stirling Jr., USN (a submariner), “The Place of Aviation in the Organization for War,” *Proceedings* 52, no. 6 (June 1926): 1100–10; Stirling, “Some Fundamentals of Sea Power,” 899–918; Lt Frank W. Wead, USN, “Naval Aviation Today,” *Proceedings* 50, no. 4 (April 1924): 561–74; Henry Woodhouse, “The Torpedoplane: The New Weapon which Promises to Revolutionize Naval Tactics,” *Proceedings* 45, no. 5 (January 1919): 743–52; and Eugene E. Wilson, “The Navy’s First Carrier Task Force,” *Proceedings* 76, no. 2 (February 1950): 59–69. Although this listing is not a complete survey, it is certainly massive enough to indicate that air-mindedness was more than a whim of the editorial staff or the mere output of a particularly prolific splinter group within the Navy.
 115. See Cdr Kenneth Whiting, testimony on 8 March 1919, U.S. Navy General Board, “GB Proceedings 80,” reel 13, M 1493, 1919, National Archives, 195.
 116. Melhorn, *Two-Block Fox*, 37–38; and Bristol letter. Though then in charge of the Office of Naval Aeronautics, Bristol was not an aviator, and he made the above analogy explicit two years before the United States entered World War I. On the general acceptance of the notion of the primary need to command the air, see Pratt, “Some Aspects of Our Air Policy.” For an example as early as 27 March 1919, see Cdr John Towers and Adm A. G. Winterhalter, remarks, U.S. Navy General Board, “GB Proceedings 80,” reel 14, M 1493, 1919, vol. 2, National Archives, 364.
 117. Miller, *War Plan Orange*; Buell, “Admiral Raymond A. Spruance and the Naval War College,” 40–46; and Lou-

- is Morton, "War Plan Orange: Evolution of a Strategy," *World Politics* 11, no. 2 (October 1958–July 1959): 221–50, <https://doi.org/10.2307/2009529>. For an explanation by one of the primary actors, see briefing paper, William A. Moffett Collection, part 2, item J, USNA Special Collections, probably done in preparation of the U.S. delegation to the London Naval Conference of 1930. For a contemporary discussion of how it worked in practice, see Adm John H. Towers, "Strategic Employment of Naval Forces as the Essential Element of World War II in the Pacific," draft speech, n.d., Towers Papers, box 4, Library of Congress. There was some dissent to the idea and to the generally held preference for the offensive, as in RAdm W. F. Fullam, USN (Ret), "The Passing of Sea Power: And the Dawn of a New Naval Era in which Battleships Are Obsolete," McClure's, June 1923, Fullam Papers, box 7, Library of Congress.
118. Bellinger, "Tactics," 12.
 119. Keith, "Steps toward Naval Readiness," 20, 31; Barlow, *The Revolt of the Admirals*, 8; and Robert L. O'Connell, *Sacred Vessels: The Cult of the Battleship and the Rise of the U.S. Navy* (Boulder, CO: Westview Press, 1991), 301.
 120. See Bellinger, "Tactics."
 121. E. B. Potter, *Bull Halsey* (Annapolis: Naval Institute Press, 1985), 136. See "The Employment of Aviation in Naval Warfare" (staff presentation, Naval War College, September 1937), 44, Record Group 4, NWC History Collection, which proclaims it "unnecessary to open the controversial subject." In his Naval War College thesis of 1934, Capt John H. Towers, World War II spiritual head of the entire naval aviation community, remarked that "the generally accepted object of Naval Strategy is to gain and maintain control of the sea. There may be qualifying phrases, such as 'in the vital area' or 'in the theatre of operations' etc. The purposes of gaining and maintaining control are: to stop enemy trade while your own trade has freedom of movement, to deny overseas operations to the enemy, and be able to conduct them yourselves. . . . It [the carrier's] missions can and should be varied, dependent upon the character of the operations, but in the final battle, its primary mission should be support of the battle line." See Record Group 13, Naval History Collection, 13; additional copy in Towers Papers, box 4, Library of Congress.
 122. See Melhorn, *Two-Block Fox*; and Curtis A. Utz, "Carrier Aviation Policy and Procurement in the U.S. Navy, 1936–1940" (master's thesis, University of Maryland, 1989), 2.
 123. Keith, "Steps toward Naval Readiness," 2, 28, 39. For a first-person account of the development of the task force idea and carrier aviation in general, see Pennoyer, "Outline of US Carrier Development, 1911–1942."
 124. Melhorn, *Two-Block Fox*; Curtis A. Utz, "Carrier Aviation Policy and Procurement in the U.S. Navy, 1936–1940" (master's thesis, University of Maryland, 1989); Potter, *Bull Halsey*, 137; and Rosen, *Winning the Next War*, 58.
 125. Baer, *One Hundred Years of Sea Power*, 143.
 126. Reynolds, "William A. Moffett," 379.
 127. Adm Frederick J. Horne, USN, "Kiwanis Club, 27 Oct 38," draft speech, Horne Papers, box 2, Library of Congress. In this speech, Horne renders what I deem a near-classical expression of Navy officers' general worldview; it appears to have been prepared for presentation by Adm Horne.
 128. Clearly, the idea of independent carrier task forces antedated Pearl Harbor and the lost battleships, having its genesis in part in the annual fleet exercises dating from the late 1920s. See Turnbull and Lord, *History of United States Naval Aviation*; Hayes, "Admiral Joseph Mason Reeves," 54–55; Reynolds, *Admiral John H. Towers*, 272, 292; Reynolds, "The U.S. Fleet-in-Being Strategy of 1942," 109–11; and Paul M. Kennedy, *The Rise and Fall of British Naval Mastery* (New York: Scribner, 1976), 305.
 129. "It is quite possible that ORANGE resistance will cease when isolation is complete and before steps to reduce military strength of ORANGE soil are necessary. In either case the operations imposed upon BLUE will require a series of bases westward from Oahu, and will require the BLUE Fleet to advance westward with an enormous train, in order to be prepared to seize and establish bases." Nimitz, "Thesis on Tactics," 35; and Baer, *One Hundred Years of Sea Power*, 127.
 130. Buell, *Master of Sea Power*, 182–97, 468–73; E. B. Potter, *Nimitz* (Annapolis: Naval Institute Press, 1970), 271; LtCdr Thomas J. Cutler, USN (Ret), "Greatest of All Sea Battles," *Naval History* 8, no. 5 (September/October 1994): 10–18; Jack Sweetman, "Leyte Gulf," *U.S. Naval Institute Proceedings* 120, no. 10 (October 1994): 56–58; and Milan N. Vego, "The Sho-1 Plan," *U.S. Naval Institute Proceedings* 120, no. 10 (October 1994): 61–63.
 131. Kennedy, *The Rise and Fall of British Naval Mastery*, 303.
 132. Buell, "Preparing for World War II," 45; Potter, *Bull Halsey*, 346; and Towers, "Strategic Employment of Naval Forces."
 133. Melhorn, *Two-Block Fox*, 21; Capt W. D. Puleston, USN (Ret), "The Probable Effect on American National Defense of the United Nations and the Atomic Bomb," *U.S. Naval Institute Proceedings* 72, no. 8 (August 1946): 1017–29; see the paper expressing the views of Fleet Adm Nimitz on the function of naval forces in maintaining the future security of the United States in Chester W. Nimitz, "The Future Employment of Naval Forces," 1947, Whitehead Papers, box 648, Special Collections, National Museum of Naval Aviation, Pensacola, FL; Adm Arthur W. Radford, USN, "Statement of Arthur W. Radford, Admiral United States Navy, Commander-in-Chief Pacific Fleet before the Armed Services Committee of the House of Representatives Investigating the B-36," [1949?], Halsey Papers, box 51, Library of Congress; Adm Raymond A. Spruance, "Statement by R. A. Spruance, Admiral, US Navy, Retired, Delivered before the House Armed Services Committee," [1949?], Halsey Papers, box 51, Library of Congress; and Adm John H. Towers, USN, draft speech (1951–53), Towers Papers, box 4, Library of Congress.
 134. Friedman, *U.S. Aircraft Carriers*, 3.
 135. Reynolds, *Admiral John H. Towers*, 507–45; "Aircraft Carrier" (staff presentation, Naval War College, 4 February

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136. Thomas B. Buell, *The Quiet Warrior: A Biography of Admiral Raymond A. Spruance* (Annapolis: Naval Institute Press, 1987), 385–86; "Statement by R. A. Spruance," 10–11; Potter, *Nimitz*, 356; and W. D. Lanier Jr. "Victory and the B-29s," U.S. Naval Institute *Proceedings* 72 (December 1946): 1563–567.
 137. Barlow, *The Revolt of the Admirals*, 292.
 138. RAdm Ralph A. Ofstie, USN, "Statement of Ralph A. Ofstie to the Armed Services Committee of the House of Representatives," n.d., Halsey Papers, box 51, Library of Congress, hereafter Ofstie statement; Buell, *The Quiet Warrior*, 350, 353, 354, 367; Potter, *Nimitz*, 372, reports that Nimitz also had his reservations about city bombing; and Steven L. Rearden, *History of the Office of the Secretary of Defense*, vol. 1, *The Formative Years, 1947–1950* (Washington, DC: Office of the Secretary of Defense, 1984), 415.
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 140. Frank Uhlig Jr., *How Navies Fight: The U.S. Navy and Its Allies* (Annapolis: Naval Institute Press, 1994), 286–87.
 141. Donald Edward Wilson, "The History of President Truman's Air Policy Commission and Its Influence on Air Policy, 1947–1949" (PhD diss., University of Denver, 1978); George M. Watson Jr., *The Office of the Secretary of the Air Force* (Washington, DC: Center for Air Force History, 1993), 35–78; Ofstie statement; and Friedman, *U.S. Aircraft Carriers*, 19–21.
 142. Potter, *Nimitz*, 402.
 143. RAdm Daniel V. Gallery, USN (Ret), *Eight Bells, and All's Well* (New York: W. W. Norton, 1965), 228–29. The roots of Air Force–Navy/Marine Corps rivalry far antedate Gallery and even the Mitchell bombing tests, as shown in the testimony of the pioneer Marine Corps aviator Alfred A. Cunningham to the General Board on 5 February 1918 with his comment, "You [the USN] could have the field [an Army Air Service base in wartime Florida] for the training of these fighting pilots and you won't have to depend on the charity of the Army, which is very unpleasant." See U.S. Navy General Board, "GB Proceedings 80," reel 12, M 1493, 1918, National Archives.
 144. Gallery, *Eight Bells, and All's Well*, 217–35; Watson, *The Office of the Secretary of the Air Force*, 35–78; Rearden, *History of the Office of the Secretary of Defense*, 385–422; George T. Hodermarsky, *Postwar Naval Force Reduction, 1945–50: Impact on the Next War* (Newport, RI: Center for Naval Warfare Studies, Advanced Research Department, Naval War College, 1990), 1–69, copy in Air University Library, Maxwell Air Force Base, AL; and Uhlig, *How Navies Fight*, 286–87.
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 149. Adm James D. Watkins, USN, *The Maritime Strategy* (Annapolis: Naval Institute Press, 1986); John J. Mearnsheimer, "A Strategic Misstep: The Maritime Strategy and Deterrence in Europe," *International Security* 11, no. 2 (Fall 1986): 3–57; Sean O'Keefe, "Interview: Be Careful What You Ask For," U.S. Naval Institute *Proceedings* 119 (January 1993): 73–76; Gen Carl E. Mundy, USMC, "Coping with Change: The Department of the Navy and the Future," *Strategic Review* 22 (Winter 1994): 20–24; and Geoffrey Till, "Maritime Power in the Twenty-First Century," *Journal of Strategic Studies* 17 (March 1994): 176–99.

SUBMARINES

Key to the Offset Strategy

by Rear Admiral W. J. Holland Jr.
U.S. Naval Institute *Proceedings*, 2015⁷¹

On 3 September 2014, Secretary of Defense [Charles T.] “Chuck” Hagel, warning that China and Russia are “pursuing and funding long-term, comprehensive military modernization programs,” to include fielding an array of capabilities “designed to counter traditional U.S. military advantages,” promoted an “offset” strategy. Rather than wading into a symmetrical duel with the military modernization of potential opponents, he advocated employing technologies and associated operational skills that impose disproportionate costs on any competitor; specifically:

key investments in submarines, cyber, next-generation fighter and bomber aircraft, missile defense, and special operations forces—putting a premium on rapidly deployable, self-sustaining platforms that can defeat more technologically advanced adversaries. Undersea capabilities that can

*deploy and strike with relative freedom of movement and decision will continue to be a vital part of the mix.*⁷²

As an analyst with the Center for Strategic and Budgetary Assessments some 20 years ago, now-Deputy Secretary of Defense Robert O. Work promoted submarines as the basis for a strategy that sought to exploit U.S. advantages in technologies for which there was no peer. Work viewed submarines as the prime example of investing in a weapon system in which the United States possessed a clear advantage with a lead that could grow faster than a potential adversary could match. Rather than trying to respond to an opponent’s strengths, an “offset” strategy seeks to impose on such a competitor burdens that will require more time and resources than it can muster. This cost-imposing strategy’s goal is not just victory in war but deterrence by making

⁷¹ The original article came from Rear Admiral W. J. Holland Jr., USN (Ret), “Submarines: Key to the Offset Strategy,” U.S. Naval Institute *Proceedings* 141, no. 6 (June 2015): 22–29. Minor revisions were made to the text based on current standards for style, grammar, punctuation, and spelling.

⁷² Secretary of Defense Chuck Hagel, “Defense Innovation Days Opening Keynote” (speech, Southeastern New England Defense Industry Alliance, Newport, RI, 3 September 2014). Emphasis added.

evident the costs to compete and the prospect of a likely defeat in the event of war.

Any future conflict in the open ocean will start with submarines. For the immediate future no country will have the capacity and capability to deploy an armada to contest the sea in the face of the overwhelming superiority of the U.S. Navy. Even should such a navy appear, there will be no “fleet actions.” Any war at sea will be fought between submarines and such antisubmarine adversaries as can be assembled. In the words of historian and commentator John Keegan:

*command of the sea in the future unquestionably lies beneath rather than on the surface. . . . Consider the record of the only naval campaign fought since 1945, that of the Falklands in 1982. From it two salient facts stand out: that the surface ship can barely defend itself against high-performance, jet propelled aircraft and that it cannot defend itself at all against a nuclear powered submarine.*⁷³

Recognition of the preeminence of American seapower is evident in the proliferation of submarine forces around the world. Even small countries investing in a navy elect submarines as their naval weapon system of choice. Many, if indeed not most, of those countries building navies and investing in submarine forces are friends or allies. Their submarines are not aimed at American carriers. Others, however, with nascent or resurrecting submarine forces, are devoted to efforts that threaten U.S. dominance at sea.

“ONLY THE FIRST STEP”

But a simple selection of hulls is only the first

step in creating an effective submarine force. Developing such a capability requires serious investment of money, intellect, people, and time. Development takes years or even decades to create the kind of capability that Germany, Japan, the United States, and Great Britain wielded in World War II. Attempts by smaller countries to produce an effective submarine force have foundered on lack of resources, failure to enlist and retain skilled people, and an inability to construct and sustain the logistics infrastructure necessary to create and then maintain these complex machines. Some Western countries have been successful in building and maintaining an effective submarine force, but only in small numbers and not without difficulty. Canada, Germany, and Australia, for example, all have admitted their inability to man all the submarines that they have in commission.

The United States, on the other hand, has a major force of submarines manned by experienced crews, practiced in the operations at sea and in the far corners of the world. These are supported by a construction and maintenance infrastructure that is the envy not just of other navies but of other parts of the U.S. Navy as well. The submarines this force operates are the world’s quietest and most technologically advanced. More important, behind this force is a training establishment that not only instructs a steady stream of new personnel but provides advanced training in maintenance and operations including realistic simulators in which submarine operational tactics are practiced daily. Finally, still smarting from the ineffective torpedoes of World War II, the Americans shoot real torpedoes regularly, including proof-testing war shots.

To properly employ submarine forces of whatever size requires leaders that grasp the

⁷³ John Keegan, *The Price of Admiralty: The Evolution of Naval Warfare* (London: Hutchinson, 1988), 324.



Underway supporting maritime security operations and theater security cooperation efforts in the U.S. Sixth Fleet area of responsibility, USS *Scranton* (SSN 756) pulls into Augusta Bay, Sicily, to receive supplies and personnel. Monica Allen-Perin, *USS Scranton, Augusta Bay, Sicily 2011*, 2011. Watercolor.
Courtesy of the artist and RequestAPrint

unusual nature of their operations—the limitations as well as the capabilities of these ships and crews. Ships that “intentionally sink” do not follow the norms for other seagoing vessels. In World War II, the Japanese failed to employ to their full capability talented crews and well-built submarines because the leadership of these forces rested with admirals experienced in battleship operations and conditioned to expect decisive battle between surface fleets. The lack of experience and understanding in the senior Imperial Japanese Navy leadership often resulted in deploying submarines as if they were surface

ships, as scouts and supply vessels. Despite their misemployment, Japanese submarines scored a number of significant blows. On 15 September 1942, the torpedo spread from the *I-19* [Type B submarine] that sank the aircraft carrier USS *Wasp* (CV 7), fatally damaged the escort destroyer USS *O’Brien* (DD 415), and put the battleship USS *North Carolina* (BB 55) out of action for months has to be at least close to the most significant score from a single submarine salvo in history.

German and U.S. submarine operations in World War II benefited not just from lead-

ers who knew and understood such actions but from command climates that for the most part encouraged honest reports and critical self-examination. Such climates are not erected overnight or come as a result of classroom instruction. They take time, energy, and personal investment to create. Regular and sustained operations at sea are a vital ingredient not only to hone the ability of the individual ships' crews to conduct their affairs but also to set the expectations of the command and staff personnel as they learn and exercise their functions. The limits of radio communication with submarines requires advanced planning, a climate of mutual understanding, and trust that comes about only with personal investment and routine practice. As difficult and time-consuming as they are to create, these climates can be fatally damaged by senior leadership that disabuses reporters of bad news, ignores symptoms of trouble or distress, or hogs credit for successes rightly achieved by subordinates. Societies that are based on rigid caste systems, have formal class hierarchies, or must conform to rigid political straitjackets have difficulty creating and maintaining such command-and-control characteristics. But any navy that expects to effectively employ its submarines requires these distinctive attributes.

The operational military effort involved in a strategy to dominate the sea is a return to Alfred Thayer Mahan's classic dictum that the first aim of the Navy is to destroy the enemy's fleet.⁷⁴ Before 1945, this meant major fleet actions but today any such action is exceedingly unlikely. As demonstrated in the Falkland Islands campaign, the ability of nuclear-powered submarines to dominate the ocean surface means that, in future conflict, warships will be widely dispersed

and the most important parts of a fleet will be stealthy. Engagement will be defined by the ability to locate individual units and bring them to battle. The historical parallel is the cruiser warfare of the War of 1812 and World War I rather than the major fleet actions of Trafalgar or Jutland. But the goal remains the same: the first aim of a Navy in war is destruction of the enemy fleet.

Whatever the name, this effort is offensive submarine warfare. The operational aim at the heart of the strategy is to position submarines in the coastal and near-ocean areas of a potential enemy as a crisis builds and, should war break out, to quickly sink all opposing surface warships and submarines. War games have demonstrated the great advantage of "flooding the littorals with SSNs [attack submarines]." Properly operated, submarines become a national maritime resource, not simply a component of a battle group or the launcher of land-attack missiles.

THE PITFALLS

Here lie pitfalls within the Navy itself. Submarines have themselves become primary anti-submarine weapon systems. Their presence and performance as part of a task group have built an aura of security and a confidence that, when so assigned, threatening submarines will not appear undetected. This record is admirable but creates a situation that can dilute the primary task in the event of war. Commanders' demands for submarines to be assigned to protect their task groups subvert the primary attribute of conducting unrestricted warfare against the enemy's forces in waters that otherwise are not open or accessible to others. The proper employment of submarines is as a major force to be wielded as a unit—dispersed and widely distributed under an operational command whose task is to "sweep

⁷⁴ Alfred T. Mahan, *Naval Administration and Warfare* (Boston: Little, Brown, 1918), 5.



Official Navy artist DM2 Robert Malin recorded the U.S. Navy's role in RIMPAC, a biannual fleet exercise in the Pacific Ocean intended to enhance the tactical capabilities of participating units in major aspects of maritime operations at sea. In 1998, the exercise took place in the waters off Hawaii and included participants from six Pacific nations. The United States contributed more than 50 ships, 200 aircraft, and 250,000 military men and women from all Services. Robert Adam Malin, *Up Periscope*, 1998. Acrylic on illustration board. Art Collection, Naval History and Heritage Command, 98-110-F

the seas." Destruction of the enemy fleet is the goal; protecting our own fleet by eliminating the threat is a beneficial byproduct.

The second difficulty in properly using American submarines in times of war rises from their new role as arsenal ships. Recent wars and related actions against shore targets have seen employment of submarine-launched missiles in significant numbers, not because the submarine is the best-fitted launch platform or situated

within an enemy surveillance and strike zone too dangerous for surface ships. Submarine-launched weapons are used because they are there. Surface-ship launchers outnumber the submarines' in most situations, but such launchers are also homes for antimissile and antiair weapons. Where such threats may exist, the number of land-attack weapons in the surface fleet is substantially reduced, often leaving submarines as a significant source of land-attack missiles.

Combatant commanders with eyes focused on objectives and targets on the land are likely to want to add the land-attack weapons on board submarines to those available for attacking targets ashore at the expense of assigning their host submarines to efforts at sea.

For at least the duration of the period in which maritime dominance is being contested, submarines should be employed in pursuing elimination of the enemy navy—a task for which they are singularly fitted. In this early phase, submarines should be used as missile shooters only when they are the only launchers within range of high-priority targets or when the attack needs to be launched from an otherwise impossible azimuth. Once maritime dominance is established, submarine missile shooters can then be positioned where most advantageous in regard to time of flight and direction of attack considerations.

Nuclear propulsion not only allows the submarine to operate under the cloak of invisibility, but it powers the ability to reposition quickly without a logistics train and for a long duration. These are all incalculable advantages in any time-constrained situation. This logistic-free tail allows dispatch of submarines singly or in numbers on short notice and with little buildup or fanfare. Among the advantages arising from this is an opportunity to learn the environment first and to find the most advantageous positions in relation to expected threats and geography.

GREAT FLEXIBILITY

Flexible submarine deployments can be accomplished without adding to the tensions surrounding a crisis, and with no notice or with subtle direct evidence if such is to our advantage. Early major deployments before the commencement of hostilities give the combatant commanders

the assets to execute attacks and interdiction from the first moment of a war. This “freedom of movement and decision” that Secretary Hagel found so important is inherent in nuclear-powered submarines. This ability to enter the area of conflict without notice provides an additional benefit in that any opponent of the United States must assume that American submarines are always present on his littoral and across his maritime pathways.

Because nuclear power adds this dimension of logistic flexibility and rapid reaction, the capability to redeploy America’s total force of submarines on short notice places great stress on any potential opponent. Such an adversary must count on facing *all* active U.S. submarines within days. In any crisis the first forces to arrive at the scene are of great tactical importance and strategic significance. When those forces are not only powerful, but stealthy, the effect is multiplied by uncertainty concerning their location and strength. Regular operations by submarines in these waters are a necessary ingredient in this aspect of submarine warfare—not only to train crews but to establish the expectations that, should conflict occur, the American submarines will be on-scene early.

The potential peer maritime competitor appears to be developing an antiaccess/area-denial strategy based on a suspected land-based ballistic missile and an undefined ocean surveillance and targeting system aimed at large ships at sea. While the difficulties in creating and then operating such a system are enormous, its deployment might threaten major capital ships (read aircraft carriers). But a strategy based on such a system does not address the threat to the adversary’s navy and maritime assets from submarines. In the words of defense analyst and former Assistant Secretary of the Navy Seth Cropsey:

*As a hedge against China's anti-access strategy, submarines are matchless. . . . So long as submarines remain stealthy, they bypass the age-old technological cat-and-mouse game of countering an adversary's technology and in turn being countered.*⁷⁵

While this recognition is well understood by those with submarine experience, the annunciation by a nationally recognized figure who has no investment in the submarine force signals the wide awareness of the asymmetric advantages of submarines, now and in the future.

One necessary ingredient in the success of an offset strategy is the potential competitor's

recognition of these aspects of the contest. Establishing this perception is not accomplished by ships in harbor, much less ships on the building ways. Sustained operations at sea and regular visits to the neighborhoods populated by potential opponents create the impressions on which to lay the ground work to effect the strategic objective. By the end of the Cold War, most public utterances of officers of the Soviet Navy acknowledged the omnipresence of the Western powers' submarines. That impression was one of the keys to their adaptation of defensive tactical operations—and to the success of the 1981 *Maritime Strategy*.

⁷⁵ Seth Cropsey, "A Naval Disaster in the Making," *Weekly Standard*, 6 October 2014.

A NEW NAVAL ERA

by Admiral Jonathan W. Greenert and General James F. Amos

U.S. Naval Institute *Proceedings*, 2013⁷⁶

We are faced today with an uncommon array of military challenges and opportunities. At home, we are experiencing financial constraints as our nation seeks to get its fiscal house in order. Overseas, instability continues in the Middle East and North Africa, Iran pursues nuclear weapons, and maritime territorial disputes persist in the East and South China Seas. At the end of more than 12 years at war, the continuing drawdown of our troops in Afghanistan provides an opportunity to reset our force and refocus our efforts on emerging challenges. We intend to leverage this combination of factors to revise how our Navy-Marine Corps team trains, operates, and fights.

We have been here before. In fact, we have been here repeatedly throughout our history. Between the two World Wars, treaty limits on the number of battleships and improvements

in aviation technology drove development of the aircraft carrier, creating the ability to project power over the long distances of the Pacific theater. The same period sparked new ideas for maneuver at sea and led to the development of amphibious capabilities. In the Korean War, we demonstrated the asymmetric advantage that rests with a force that can use the sea as maneuver space to repeatedly outflank a land-bound opponent. Later, the Cold War produced maritime strategic concepts and sea-control capabilities focused on countering the blue-water maritime threat posed by the Soviet Navy. And in the aftermath of the Cold War, we shifted our operational focus to expeditionary capabilities that could influence events ashore as described in the maritime strategies . . . *From the Sea* and its encore, *Forward . . . From the Sea*. Our shared naval heritage is not to push back on the trends we encounter, but instead to leverage the opportunities they present.

We understand that this is a time of unsettling change for our military. Like our predecessors, however, we will use this situation as an

⁷⁶The original article came from Adm Jonathan W. Greenert, USN, and Gen James F. Amos, USMC, "A New Naval Era," U.S. Naval Institute *Proceedings* 139, no. 6 (June 2013): 16–20. Minor revisions were made to the text based on current standards for style, grammar, punctuation, and spelling.



From left, Army Chief of Staff Gen Raymond T. Odierno, Chief of Naval Operations Adm Jonathan W. Greenert, Marine Corps Commandant Gen James F. Amos, and Air Force Chief of Staff Gen Mark A. Welsh III testify on Capitol Hill in Washington on 7 November 2013 before the Senate Armed Services Committee.

Official U.S. Navy photo, courtesy of Peter D. Lawlor

opportunity to shape the future naval force to sustain its relevance and affordability. We are optimistic about our ability to do this because our visions as Chief of Naval Operations and Commandant of the Marine Corps are already closely aligned. We both see a future naval force that thinks together, plans together, trains together, and deploys together on a wide range of ships. Our forces will combine surface, undersea, aviation, expeditionary, cyber and space capabilities; we will deploy them in flexible packages that can be applied to many different contingencies.

Like today, our future naval force will be where it matters, when it matters, by maintaining a robust forward presence and appropriate readiness. Where our diplomatic interests are threatened or our citizens are at risk, this integrated naval force will provide the ability to intervene. It will create options for operational commanders and buy time for national decision makers. This naval force will be essential for preserving peace, building partner capacity, providing humanitarian relief, and preventing

war through the deterrent effect of credible combat power. Where conflict escalates, naval forces will have the tools necessary to gain access from the sea, to fight, and to win.

The Department of Defense is embarking on a review of our strategy, investments, and objectives in the context of the emerging fiscal and security environment. We will similarly think anew about how we fight as a naval force. The nature of warfare as a competing clash of wills may not change, but the evolution of its character is relentless. We can expect our foes to be cunning and creative; they will take every action to exploit our weaknesses and limit our strengths. We must be just as wily, just as cunning, developing and employing the asymmetric capabilities of a naval force that can fight across traditional domain seams. In the coming era, it will be necessary to outthink our enemies as much as outfight them.

SECURITY CHALLENGES IN A MARITIME ERA

We are a maritime nation. Our prosperity and that of our partners and allies is underpinned by global systems of trade, finance, information, and security that depend on free access to the “commons”—ungoverned spaces on the sea, in the air, in space, and in cyberspace. Our *Defense Strategic Guidance, Sustaining U.S. Global Leadership: Priorities for 21st Century Defense*, stressed the importance of the commons and informs our effort to reevaluate how the Navy and Marine Corps will operate and fight in the future.⁷⁷

The ability to efficiently move large quantities of goods and commodities makes sea lanes the most heavily used and most econom-

⁷⁷ *Defense Strategic Guidance, Sustaining U.S. Global Leadership: Priorities for 21st Century Defense* (Washington, DC: Department of Defense, 2012).

ical routes of trade. Cyberspace, in the physical form of undersea fiber-optic cables, carries an even greater value for trade through financial transactions and information. These routes converge at strategic maritime crossroads such as the Straits of Hormuz and Malacca or the Suez Canal. In these waters, and the littoral regions that surround them, political instability or regional aggression can threaten our citizens, allies, or interests.

The maritime crossroads and littorals are areas of increased economic, political, and cultural activity where nations, communities, and ideas intersect, making them frequent locations for friction and conflict. Because of their importance to global economics and security, even small-scale disruptions at the crossroads can have effects that are felt globally. For example, the Arab Spring and ongoing Syrian violence arose in part from the intellectual and economic trends at maritime crossroads throughout the Mediterranean, Red Sea, and Persian Gulf, while the instability these events create ripples throughout the global political and economic system. Our diplomatic facilities in the littorals are highly visible targets in an environment where victory is sometimes measured in media ratings. Pirates, traffickers, and terrorists exploit the concentration of shipping and other traffic at the maritime crossroads and in the littorals to steal, hijack, or coerce their prey.

Maritime crossroads and our allies near them are vulnerable to military and economic disruption by regional actors seeking to shift balances of power. The development and proliferation of advanced conventional weapons, including long-range precision-strike and sea-denial capabilities, are designed to challenge the ability of the United States or its allies to project power in defense of our shared interests.

We will not allow that to happen. Responding to these challenges must be reflected in our force design and strategy.

A TEAM SPORT

Historically, naval forces have existed for two purposes: to control the seas and to use that control to project power ashore. The mandate for both of these purposes continues. This effort is a team sport, and the Navy and Marine Corps are full of all-star players. The fiscal and security challenges in this new era demand we do a better job of operating and fighting as a team.

Achieving our shared vision of the future naval force requires analysis and new thinking about the ways and means of employing naval power. Now more than ever, the Navy-Marine team must better integrate its capabilities to be effective. The principle of single-battle describes the linkage of every action in a campaign to a common objective. Future naval leaders will not confront events in the littorals as carefully segregated specialists, but instead will combine all the tools of naval power projection into campaigns designed to present our enemies with a series of dilemmas.

The changing set of challenges in the emerging security environment requires a naval team that is smoothly integrated and easily adaptable to new situations. We must replace rigid command structures that are ad hoc, are not scalable, and do not support widely dispersed operations with more flexible structures. We will need to develop integrated operating concepts for our forces, field them with more compatible equipment, and then deploy them in innovative force packages. A one-size fits-all approach to naval-force packaging must be evaluated against our most-likely security challenges. Creativity and original thought must be encouraged.



Commandant of the Marine Corps James Amos addresses members of the media at the short takeoff/vertical landing joint strike fighter demonstration at Naval Air Station Patuxent River, MD, on 29 July 2011.

Official U.S. Marine Corps photo

We need to remove seams that have an impact on our ability to fight as a naval team. We will complement more flexible command structures with habitual Navy-Marine Corps relationships that allow naval groups and task forces to more rapidly adapt and employ all the capabilities at their disposal. Marine planners must understand Fleet operations and the challenges of maintaining the readiness of capital ships, and how our preparation for and conduct of expeditionary missions are affected as a result. Navy staffs, especially those who employ our amphibious capabilities, will have to understand and practice employment of Marine capabilities across the range of military operations. From our perspective, the naval force of today is short of that standard.

EXPLOITING THE CHANGING ENVIRONMENT

Fortunately, the most pressing challenges our Services face require intellectual effort and cultural change rather than large programmatic adjustments. Our initiatives will require some investments to support more effective Navy-Marine Corps integration, but the cost will be well within our anticipated budgets. Our situation bears a striking parallel to the period between World Wars I and II. During that time, the Navy turned to the General Board to guide the Fleet's effort to develop new capabilities and experiment with new concepts to employ air power and submarines. Today, the Naval Board of senior leaders from the Marine Corps and the Navy meets regularly for much the same pur-

pose. It will oversee our intellectual effort to achieve shared warfighting development in the naval Services.

We do not have to go far to find imperatives for innovation and improvement of our naval warfighting capabilities. Here are some priority examples that the Naval Board, and our innovators across the force, will consider:

- a. Assess our force-design and deployment models through the lenses of forward presence, deterrence, and crisis response in order to better align the core capabilities of the naval force to be immediately relevant to the geographic combatant commanders. We will evaluate and experiment with Marine detachments on ships other than amphibious vessels such as afloat forward staging bases (AFSB), destroyers, littoral combat ships (LCS), mobile landing platforms (MLP), and joint high-speed vessels (JHSV). We will also explore the integration of shore-based Marine detachments, small craft, and riverine operations into our delivery of naval forces.
- b. Create better linkages between our Marine and Navy theater-component commander staffs to gain unity of effort within the naval force. As part of this effort we will also evaluate combined Navy-Marine Corps staffs at maritime operations centers to produce more responsive mechanisms for the deployment of naval forces. A combined effort will be necessary to craft maritime campaign plans as described in the new *Maritime Security Cooperation Policy* recently approved

by the U.S. Navy and Marine Corps. Under this plan, maritime component commanders will articulate their needs for day-to-day theater shaping and crisis response in the form of integrated naval force packages as opposed to individual units.⁷⁸

- c. Improve the ability of our expeditionary forces to address the need for widely dispersed presence while still being able to aggregate for larger-scale operations. Split amphibious ready group (ARG) operations are routine today, but their logistics support and command-and-control systems and processes are ad hoc. Our amphibious ships are not equipped with the right communication and self-defense systems for independent operations, and many of the capabilities of the Marine expeditionary unit/ARG team are not severable to create smaller formations with equivalent capabilities. Our naval command and control organizations are not well designed or practiced at scaling up from independent operations to large-scale contingencies, especially those that involve traditional “Navy” forces such as carriers along with traditional “Marine” forces such as amphibious ships, and Marine air-ground task forces (MAGTF). We will identify the right equipment and loading for our amphibious ships to support independent operations. We will experiment with both the carrier strike group’s compos-

⁷⁸ *Maritime Security Cooperation Policy: An Integrated Navy-Marine Corps-Coast Guard Approach* (Washington, DC: Department of the Navy, 2013).



A Lockheed Martin F-35B Lightning II approaches the amphibious assault ship USS *Wasp* (LHD 1) as the guided-missile destroyer USS *Dewey* (DDG 105) transits alongside on 18 April 2018, following an expeditionary strike as part of Certification Exercise in the Philippine Sea.

Official U.S. Navy photo, courtesy of MCI Daniel Barker

ite warfare commander and MAGTF command-and-control constructs to find the most effective methods for a range of power projection options.

- d. Develop new approaches for large-scale Marine expeditionary crisis response operations that address shortfalls in the size of our traditional amphibious ship fleet and provide more flexibility in how we organize, load, and offload people and materiel. The naval team must have concepts and training that support smooth and practiced scalability of the expeditionary elements of the Fleet. We will incorporate new platforms such as the LCS, AFSB, MLP,

JHSV and large medium-speed roll-on/roll-off ships into our concepts for these operations. This has implications for our command-and-control arrangements, our organization and for how we equip these new platforms.

- e. Combine some elements of our concept-development and training-and-education organizations to support more effective innovation and experimentation within the naval force. Building on our current effort with the Navy Warfare Group and the Marine Corps' Ellis Group, we will forge persistent linkages between our operating forces, fleet training groups, concept developers, and warfare development centers. Continuous and highly visible interaction across both Services will replace episodic interaction. This linkage will be reinforced with organized campaigns for progressive war gaming, experimentation, and exercises. Increasing the frequency of our warfighting development interactions among professionals from a variety of communities will serve as an additional catalyst to innovation.
- f. Build our own Fleet experience and that of our partners through major exercise series including Rim of the Pacific, Bold Alligator, and Dawn Blitz. For example, the next Dawn Blitz exercise will include Japanese forces. We will guide these events with the concept development and experimentation work above. Each exercise will use Service-coordinated objectives that are clearly defined, progressive in de-

velopment, and focused on gaining improved integration of U.S. and international capabilities.

Defining and achieving our vision for future naval operations will be iterative, building on concept development, experimentation, and operational experience. Like pursuing a track at sea, we will be affected by set and drift, forces that will take us off our desired course. We must gain the institutional and personal resilience that enable us to embrace new opportunities and seek solutions despite the currents that might work against us.

History has many examples of how our naval forces innovated operationally and tech-

nologically to win. As the nation adjusts its military to new strategies and new levels of defense investment, the Navy-Marine Corps team will play an even greater role in forward presence, crisis response, regional deterrence, and building the foundations of collective security for the global maritime commons. Our ability to swiftly respond to the demands of a wide range of contingencies makes us an indispensable element of the joint force. As naval Service chiefs, we are fully committed to the changes necessary to adapt to the emerging fiscal and security environment. Together, the Navy and the Marine Corps will remain forward-deployed, ready for crisis, and engaged to preserve the peace.

GENERAL ROY STANLEY GEIGER

BIOGRAPHY

I do not believe that anyone claims that Aviation acting alone is able successfully to combat and to defeat an Army or a Fleet. It is able to inflict heavy damage, or to offer invaluable assistance; but it cannot alone capture and hold ground or control the sea. Therefore, it is not an Independent Army; but is one of the components of an Army or of a Fleet.

~ Captain Roy S. Geiger⁷⁹

General Roy S. Geiger was born on 25 January 1885 in Middleburg, Florida. He attended a state college in Florida and earned a law degree from Stetson University before enlisting in the Marine Corps in 1907. He served at the Marine Barracks in Washington, DC, and after passing a series of examinations was commissioned into the Marine Corps in 1909. During his first seven years as an officer, he served in a series of typical billets aboard various naval vessels and then in Marine forces occupying Nicaragua, where he first saw action, and China. In 1916, he was sent to Naval Air Station Pensacola for flight training, where he was designated Marine Aviator No. 5 in June 1917. Later explaining his shift to aviation, he said, “Oh, I just wanted to fly, that’s all.”⁸⁰

During World War I, Geiger commanded a squadron of the 1st Marine Aviation Force,

which was attached to the U.S. Navy’s Day Wing, Northern Bombing Group. This force flew bombing missions against German submarine bases on the Belgian coast, and he later received the Navy Cross for “distinguished service in the line of his profession.”

Between the wars, Geiger commanded a Marine squadron in Haiti then went on to serve in multiple staff positions and attend the U.S. Army’s Command and General Staff School and later both the Army and Navy War Colleges. From 1931 to 1935, he served as the officer in Charge, Marine Corps Aviation.

In 1941, he received an assignment to the Office of the Chief of Naval Intelligence, which sent him first to the London and then to the Mediterranean, where he observed British combat operations in Gibraltar, Malta, and Tobruk, Libya. On his return, he was made commanding general of the 1st Marine Aircraft Wing.

In 1942, Major General Geiger took his wing to Guadalcanal, where he became the head of the “Cactus Air Force,” all of the Allied aircraft operating from Henderson Airfield. He con-

⁷⁹ Navy Department, Office of Naval Operations, Washington, to Capt Geiger, letter, 15 December 1919, Subject: A Separate Air Force, Folder 15, Box 1, PC 312, Archives Branch, Marine Corps History Division, Quantico, VA.

⁸⁰ Roger Willock, *Unaccustomed to Fear: A Biography of the Late General Roy S. Geiger, USMC* (Princeton, NJ: R. Willock, 1969).



Gen Roy S. Geiger, seen here at the rank of colonel in 1937, was a four-star general who served in both world wars. During World War II, he became the first Marine Corps general to lead an army-size force.
Official U.S. Marine Corps photo, Roy S. Geiger Collection, Archives Branch, History Division

ducted the aerial defense of the island, and the subsequent elimination of Japanese from it. He received his second Navy Cross for his service commanding the Cactus Air Force.

Returning to the Solomon Islands in November 1943, he commanded the I Amphibious Corps in the northern Solomons. His command was later redesignated the III Amphibious Corps, and he led it in the capture of Guam and then Palau in 1944. In 1945, he led his corps, as part of the Tenth Army, in the assault on Okinawa. On 18 June 1945, Lieutenant General Simon Bolivar Buckner, commander of the Tenth Army, was killed by Japanese artillery. Major General Geiger took command of Tenth Army for the

next five days. After Okinawa, he was promoted to lieutenant general and given command of Fleet Marine Forces, Pacific. He was the only Marine Corps representative at the formal Japanese surrender.

On 23 January 1947, he passed away from lung cancer. General Geiger was one of the few Marines in World War II to command both ground and aerial forces, one of the few to hold joint commands, and the only Marine to command a field army in combat. In his decades of service, he saw the Corps transform from a small force of naval infantry into today's combined arms, air-ground team.

ADMIRAL HYMAN G. RICKOVER

BIOGRAPHY

All men are by nature conservative but conservatism in the military profession is a source of danger to the country. One must be ready to change his line sharply and suddenly, with no concern for the prejudices and memories of what was yesterday. To rest upon formula is a slumber that, prolonged, means death.

~ Admiral Hyman G. Rickover⁸¹

Admiral Hyman G. Rickover was born on 27 January 1900 in Przasnysz, in what was then Russian Poland. He immigrated to the United States in 1906. He graduated from the United States Naval Academy in 1922 and served aboard various surface vessels for the first years of his career, primarily in engineering. He attended the Naval Postgraduate School and while there earned an MS in electrical engineering from Columbia University. He then transferred to submarines, serving on the USS *S-9* (SS 114) and the USS *S-48* (SS 159) before briefly taking command of the minesweeper USS *Finch* (AM 9) briefly in 1937. He was then designated an engineering officer, where he would serve in this capacity throughout World War II primarily in the Electrical Section of the Bureau of Ships, ensuring that ship repair and building operated efficiently.

In 1946, he was involved in the design of nuclear propulsion for U.S. Navy ships, quickly

becoming a proponent of the idea. He was assigned to command the Nuclear Power Division of the Bureau of Ships. In February 1949, he was assigned to the Atomic Energy Commission's Division of Reactor Development and Technology and assigned as director of the Naval Reactors Branch, where he led the effort to develop USS *Nautilus* (SSN 571), the first operational nuclear-powered submarine.

For more than 30 years, Rickover controlled the nuclear Navy, famously insisting that every officer considered for posting to a nuclear-powered vessel be interviewed by him personally, which amounted to more than 14,000 interviews during his decades of service.

On 31 January 1982, Rickover was finally forced to retire from the United States Navy after 63 years of service. He was the longest serving naval or military officer in United States history. Known as the "Father of the Nuclear Navy," Rickover's career highlighted the importance of planning and engineering in naval strategy.

⁸¹ Adm Hyman G. Rickover, "Address" (speech, U.S. Naval Postgraduate School, 16 March 1954).



In mid-1955, when this photograph was taken, RAdm Hyman G. Rickover was then, and for many years afterward, in charge of the Navy's nuclear power program in the Bureau of Ships.

Official U.S. Navy photo, National Archives, 80-G-K-18497



A Sikorsky MH-53 Pave Low helicopter from the USS *New Orleans* (LPH 11) begins the laborious task of clearing a channel through a minefield in the northern Persian Gulf off the shores of Kuwait. John Charles Roach, *Minesweeping Gulf Style*, 1991. Oil on canvas board.

Art Collection, Naval History and Heritage Command, 92-007-Y



CHAPTER THREE

Maritime Power in Crisis Response

*From the Nuclear Era
to Hyperwar*

by Paul Westermeyer

Someday, not too far distant, there can come streaking out of somewhere (we won't be able to hear it, it will come so fast) some kind of a gadget with an explosive so powerful that one projectile will be able to wipe out completely this city of Washington. . . . I think we will meet the attack alright [sic] and, of course, in the air. But I'll tell you one thing, there won't be a goddam pilot in the sky! That attack will be met by machines guided not by human hands, but by devices conjured up by human brains.

~ General Henry H. Arnold, 1943¹

The nuclear explosions at Hiroshima and Nagasaki, Japan, marked the opening of the nuclear age, but they did not represent the onset of nuclear strategy. Rather, they represented the ultimate expression of Italian General Giulio Douhet's air bombardment strategy, as there were only a limited

¹ Jacob Neufeld, *The Development of Ballistic Missiles in the United States Air Force, 1945–1960* (Washington, DC: Office of Air Force History, U.S. Air Force, 1990), 35.

number of bombs initially available that could only be delivered by manned bombers; and at first, only the United States possessed nuclear technology.²

Nuclear strategy was born on 29 August 1949, when the Soviet Union detonated its first nuclear device, so now two nations possessed the weapons. Other nations soon followed, as the British detonated their first nuclear device in 1952, the French in 1960, and the Chinese in 1964. The development of the hydrogen bomb, first detonated in 1952, led to weapons an order of magnitude greater in destructive power than the bomb dropped on Hiroshima; the scope of nuclear warfare's expanded beyond traditional strategic theory in response to the increasing range and lethality of nuclear weapons. It grew even more complicated with the launching of the USS *George Washington* (SSBN 598) in 1959, the world's first nuclear armed ballistic missile submarine. Nuclear strategy primarily revolved around deterrence, but some believed the weapons could be employed operationally or even tactically. Others argued that there was no essential difference between nuclear and non-nuclear military strategy, as the same underlying principles applied. Regardless, the shadow of nuclear war hovered over all international conflict, shaping the dynamics involved and limiting confrontations in unprecedented ways.³

Further separating nuclear strategy from

airpower theory was the development of the intercontinental ballistic missile, with the Soviet Union first successfully launching one in 1957, and the United States following with a successful missile test in 1958. The early days of the missile programs quickly became inextricably intertwined with the "space race," as similar technology was used to launch spacecraft as well.

In maritime strategy, Mahan had argued, the function of technology is to alter time-distance factors rather than strategic principles. Thus, he strove to draw strategic principles for the Age of Steam from the history of the Age of Sail (and earlier, if one considers the "galley age" as distinct from the Age of Sail). The onset of the Nuclear Age a half-century later seemed set to disrupt that; not only did it introduce weapons of previously unimaginable power, it also expanded exponentially the cruising duration of naval forces through nuclear power. In addition to nuclear powered submarines, the first nuclear power aircraft carrier, USS *Enterprise* (CVA[N] 65 now CVN 65) was commissioned in 1961.

Nonetheless, U.S. Navy and Marine Corps strategists believed this posed no fundamental change to underlying maritime strategic principles, only operational and tactical challenges. Ships still needed bases, and fleets remained the best method for projecting power across the seas. For the Marine Corps, nuclear weapons posed a significant threat to the viability of amphibious assault. Following General Geiger's advice, the Commandant formed a Special Board in 1946, under Major General Lemuel C. Shepherd Jr., to examine the difficulties involved and propose solutions. Following the board's recommendations, the Corps focused on the concept of vertical envelopment via helicopter

² As described in the introduction to chapter 2, Gen Douhet advocated for large fleets of bombers attacking population centers in order to break the enemy's morale.

³ On nuclear strategy, see Lawrence Freedman, "The First Two Generations of Nuclear Strategists," in *Makers of Modern Strategy*, 725–78; Michael Carver, "Conventional Warfare in the Nuclear Age," in *Makers of Modern Strategy*, 779–814; and Colin S. Gray, "Strategy in the Nuclear Age," in *The Making of Strategy*, 579–614. On nuclear strategy identical to military strategy, see Edward N. Luttwak, *Strategy: The Logic of War and Peace* (Cambridge, MA: Belknap Press of Harvard University Press, 1987), 68–174.

assault, allowing for increased mobility and the dispersion of the landing force. Just as it had in the 1930s, the Corps found a way to keep the amphibious capability alive.⁴

The “nuclear triad” of strategic bombers, intercontinental ballistic missiles, and ballistic missile submarines kept the U.S. Navy in the strategic calculus even as it found itself with no peer competitors following the Second World War. The greatest conventional naval threat came from the Soviet Union. In the event of a Soviet blitzkrieg into Western Europe, the U.S. Navy anticipated protecting convoys delivering troops, equipment, and supplies to Europe, and thus expected to refight World War II’s Battle of the Atlantic against Soviet submarines and long-range, four-engine bombers firing air-to-surface guided missiles. But the Soviets were also challenging America throughout the world in the Cold War, forcing the United States to use its vaunted sea power to project power assurance.⁵

In terms of naval technology, the latter half of the twentieth century resembled the latter half of the nineteenth century. Naval technology underwent a radical shift in the latter half of the twentieth century, as it had a century earlier; aging gunned battle ships were replaced by guided missile cruisers and destroyers as the primary surface combatant. The range of aircraft increased by orders of magnitude, and naval warfare moved beyond broadsides at any range. And, as in the nineteenth century, the changing technology was unaccompanied by many conflicts between major naval powers, making

it difficult for naval strategists to judge which technological changes would have the most impact. Only a handful of conflicts, all relatively short and involving relatively few forces, provided any guidance: the 1982 Falklands War between Great Britain and Argentina, and the 1987–88 Tanker War between the United States and Iran. During the same decade, the Navy realized it needed a new strategic vision that would allow the United States to exploit its sea power. This led to the *Maritime Strategy*, first formally published in 1984.⁶

In recent decades, the rate of technological change has continued exponentially. The Gulf War of 1990–91 closed out the 1980s with the United States displaying operational and tactical naval virtuosity. Guided missiles fired from submarines and surface vessels accurately struck targets hundreds of miles inland as precision-guided ordinance struck Iraqi tanks and emplacements. Drones and satellites provided reconnaissance and precise geographic locations for American navigation as well as targeting weapon systems.

Since the Gulf War, the internet has exploded in scale; it is now nigh ubiquitous across the planet, allowing cyberspace to join space, air, sea, and land as domains of human conflict. The technologies that first saw widespread use during the Gulf War are now widespread across the globe. But following the action/reaction strategic logic of Edward N. Luttwak, combatants lacking technological abilities have sought alternative methods for striking at their foes—most commonly with basic explosive technology.

⁴ See Gen Geiger’s letter following the Bikini Atoll tests later in this chapter. For more on the Shepherd board, see LtCol Kenneth J. Clifford, *Progress and Purpose: A Developmental History of the United States Marine Corps, 1900–1970* (Washington, DC: History and Museums Division, Headquarters Marine Corps, 1973), 71–77.

⁵ On Soviet Cold War strategy, see “Admiral Gorshkov and the Soviet Navy” later in this chapter.

⁶ On maritime strategy, see John B. Hattendorf and Peter M. Swartz, ed., *U.S. Naval Strategy in the 1980s: Selected Documents* (Newport, RI: Naval War College Press, 2008); and Richard E. Hegmann, “In Search of Strategy: The Navy and the Depths of the Maritime Strategy” (PhD diss., Brandeis University, 1990).

gy employed in sophisticated ways following a strategy of terrorism.⁷

Consequently, the Navy and Marine Corps still face the traditional problems of maritime strategy—the need to maintain sea lanes and

bases while retaining the ability to project power ashore—but they also face asymmetrical technological threats in a rapidly changing technological and political environment.

⁷ See Edward N. Luttwak, *Strategy: The Logic of War and Peace* (Cambridge, MA: Belknap Press of Harvard University Press, 1987), 3–68.

LETTER FROM GEIGER TO COMMANDANT VANDEGRIFT ON BIKINI ATOLL ATOMIC TESTS

21 August 1946

From: Lieutenant General Roy S. Geiger,
U.S. Marine Corps
To: The Commandant of the Marine Corps
Subject: Report on Able and Baker Atomic
Bomb tests held at Bikini, July 1946⁸

1. In compliance with orders, I witnessed the tests mentioned above and desire to render this report of impressions gained thereby.
2. There are many facts concerning the bomb and the tests that were not made known to me, such as quantity and availability of raw materials used in the construction of the bomb, feasibility of mass production, feasibility of mass attacks with the bombs, feasibility of use as a missile, weight [of bomb], height

at which bomb was released, height of explosion in test Alpha, depth of explosion in test Baker, and many other pertinent features. It is evident, therefore, that this report is based solely on knowledge gained by witnessing the explosion and making a hurried survey of damage done afterward, for the most part, from a distance.

3. It was noted in test Able that, with few exceptions, target ships were not damaged structurally, except those very near the bomb. Superstructures, especially stacks, antennas, radio, radar, and life rafts, were seriously damaged at a considerable distance. Many fires were started, mostly from Army gear, such as tents, etc., placed on decks. Navy equipment, for the most part nonflammable, is not believed to have been the cause of starting many fires. Army field equipment, such as field guns, antiaircraft guns, tanks, tractors, and the like placed on deck, did not appear to have

⁸ The original document came from LtGen Roy S. Geiger to Commandant of the Marine Corps, "Report on Able and Baker Atomic Bomb Tests Held at Bikini, July 1946," 21 August 1946, copy of original, Marine Corps History Division, Quantico, VA. Minor revisions were made to the text based on current standards for style, grammar, punctuation, and spelling.



Painted from the perspective of Bikini Island, this study shows the clouds towering over the ships of the target fleet. Although the artist, Charles Bittinger, was at the test, he was not on the island as no one was allowed within five miles of the atoll during the blast. Charles Bittinger, *Start of Able Bomb*, 1946. Oil on canvas board. Art Collection, Naval History and Heritage Command, 95-129-D

been damaged. It is believed that such equipment placed in a fortified area would not be damaged by an atomic air burst. Personnel, however, would suffer prohibitive casualties and fire control, communications, radar, buildings, etc. would be demolished. Ammunition in target ships was not detonated or destroyed. Gasoline fires were started.

4. Examination of the target ships after test Baker was not permitted, except at a distance because of the persistent presence of radioactivity. Judging from

the number of ships sunk, its destructive effect was tremendous. The presence of gamma rays for days after the explosion would be fatal to personnel.

5. Under the assumption that atomic bombs can be produced in large quantities, that they can be used in mass attacks against an enemy objective, and that our probable future enemy will be in possession of this weapon, it is my opinion that a complete review and study of our concept of amphibious operations will have to be made. It is quite evident that a small number of atomic

bombs could destroy an expeditionary force as now organized, embarked, and landed. Such a force might not fare so badly on the high seas, if properly dispersed.

6. Naturally, the first thought and immediate necessity is to develop counter-measures. The ones known today are air superiority, destruction of the bomb prior to reaching its objective, and destruction of enemy plants that make the bomb. Others may be developed.
7. It is my opinion that future amphibious operations will be undertaken by much smaller expeditionary forces, which will be highly trained and lightly equipped, and transported by air or submarine, and movement ac-

complished with a greater degree of surprise and speed than has heretofore been visualized. Or that large forces must be dispersed over a much wider front than used in past operations. With an enemy in possession of atomic bombs, I cannot visualize another landing such as we executed at Normandy or Okinawa.

8. It is trusted that Marine Corps Headquarters will consider this a very serious and urgent matter and will use its most competent officers in finding a solution to develop the technique of conducting amphibious operations in the Atomic Age.

~ Roy S. Geiger

ADMIRAL GORSHKOV AND THE SOVIET NAVY

by Dr. Donald Chipman
Air University Review, 1982⁹

Never in peacetime history has a nation expanded its navy as rapidly as have the Soviets in recent years. Every month, new submarines, destroyers, and frigates join the Soviet Navy, while aircraft carriers, cruisers, and vessels of all types continue to roll out of the Russian shipyards.¹⁰ In contrast, 30 years ago, the Soviet Navy was primarily a coastal defensive force with few major surface combatants. Then, in the 1960s and 1970s, the Soviets underwrote an aggressive ship construction program and began deploying their navy to the far corners of the world. Today, some experts believe the United States Navy's "narrow margin of superiority is gone."¹¹ Others think that the Soviet Navy has the capacity to dominate any maritime environment they choose: surface, subsurface, or air.

Of the various ways to describe the Soviet Navy, one approach is to consider the policies of the most remarkable admiral of our time, Admiral of the Fleet of the Soviet Union, Sergei G. Gorshkov (b. 1910). Not since Admiral Alfred Thayer Mahan (1840–1914), United States Navy, has any individual so dominated naval policy as has Gorshkov. Gorshkov's ingenuity was in his ability to promote the belief that Russia's future lay at sea. He successfully challenged the conventional dogma that classified Russia as only a land power and supplemented this with his sea power doctrine. With Gorshkov's help, the Soviet military has suddenly developed a keen desire to dominate the maritime frontier.

For more than 25 years, Gorshkov has influenced Soviet naval doctrine. In the same length of time, the United States has had nine different Chiefs of Naval Operations. In 1956, just after assuming power, Nikita S. Khrushchev decided to scrap most of the Soviet Navy's large surface combatants. Soviet Admiral of the Fleet Nikolai G. Kuznetsov disagreed so strongly

⁹ The original article came from Dr. Donald Chipman, "Admiral Gorshkov and the Soviet Navy," *Air University Review* 33, no. 5 (July–August 1982): 28–47. Minor revisions were made to the text based on current standards for style, grammar, punctuation, and spelling.

¹⁰ The NATO designation for the Soviet aircraft carriers *Leningrad* and *Kiev* is antisubmarine cruisers.

¹¹ "U.S. Has Lost Sea Superiority, Navy Men Say," *Washington (DC) Star*, 6 February 1981, 3.



Map of Pacific theater.
Adapted by History Division

ly that he was fired and replaced by Gorshkov.¹² Eventually, Gorshkov survived Khrushchev to become one of the world's foremost strategists and architect of the new assertive Soviet Navy. Although Gorshkov is now more than 70 years old and destined to retire, his ideas will continue to dominate future Soviet naval doctrine and maritime strategy.

¹² Nikita Khrushchev, *Khrushchev Remembers: The Last Testament*, ed. and trans. Strobe Talbot (New York: Little, Brown, 1974), 28–34.

Recently, Gorshkov's writings appeared in the Soviet Naval Digest, *Morskoy Sbornik*.¹³ These articles were followed by one of the most comprehensive naval publications since Mahan's *The Influence of Seapower upon History, 1660–1783* (1918), Gorshkov's book *The Sea Power of the*

¹³ Sergei G. Gorshkov, *Red Star Rising at Sea*, trans. Theodore A. Neely Jr. and ed. Herbert Preston (Annapolis: Naval Institute Press, 1974).

State (1977).¹⁴ The *Morskoi Sbornik* articles and this book emphasize one constant Gorshkov theme: Russia is a maritime nation, and its destiny will depend upon the seas.

Today, after 25 years in which Gorshkov has controlled Soviet naval policies, there is ample evidence of his success. Russian ships are found in all parts of the globe, and their influence on United States military strategy is apparent. Thus, it is appropriate to view the Soviet naval threat in terms of Gorshkov's doctrine. His use of Soviet Navy history, his assessment of the constraints challenging his navy, and his outline of the various Soviet naval missions provide a common theme by which to evaluate this new maritime threat.

SOVIET NAVAL HISTORY

Like Mahan, Gorshkov used history to demonstrate the necessity for a strong navy. Drawing on various history lessons, Gorshkov suggested that most Russian czars failed to use seapower properly. The exception was Peter the Great, whom Gorshkov credits with the founding the first Russian fleet. About 1700, Peter decided to build a navy. He hired Dutch and English engineers to construct these first Russian ships. Soon, the Russians were at war with Sweden. In a series of Baltic Sea battles, the Russians successfully drove Sweden from the region.¹⁵ Since Peter was one of the few czars who understood seapower, Gorshkov often quoted him: "Every potentate who has only ground forces has only one hand; yet whoever has a navy, too, has both hands."¹⁶

¹⁴ S. G. Gorshkov, *The Sea Power of the State* (Oxford: Pergamon Press, 1979).

¹⁵ RAdm E. M. Eller, "Russia's Road to the Sea, Peter I to Napoleon," in *Red Star Rising at Sea*, 11–21.

¹⁶ Michael W. Gramer, "Admiral of the Fleet of the Soviet Union, an Operation Code and Thematic Analysis" (unpublished manuscript, Naval Postgraduate School, Monterey, CA, 1975), 116.

After Peter, no czar contributed significantly to Russian naval development. In 1853, for instance, the Russians were defeated by the French and English navies and subsequently forbidden to have a fleet in the Black Sea.¹⁷ Misuse of the navy continued into the twentieth century. In 1904 and 1905, the Japanese overwhelmed the Russians in two major naval battles. Initially, the Japanese surprised and fatally crippled the Russian Pacific Fleet at Port Arthur in the Yellow Sea. Gorshkov researched this surprise attack and included it in his doctrine, calling this a tactic of "The Battle of the First Salvo."¹⁸ In a second battle, the Japanese sank the Russian Baltic Fleet in the Tsushima Strait.¹⁹ Thus, concluded Gorshkov, the czars did not understand how to develop or deploy their navy, and they suffered for this deficiency. With the advent of the Bolshevik Revolution, Gorshkov had to tread lightly, trying to indicate navy deficiencies yet not offend any of the Communist elite. He accomplished this by overlooking naval ineffectiveness and concentrating on the Marxist-Leninist concerns for a strong navy. Since the navy's activities were inconsequential in World War I. Gorshkov had to search for something significant to praise. He decided to stress the loyal Communist theme, pointing out that Russian sailors were the first to join the Bolshevik Revolution "The cruiser *Aurora* and the minelayers *Amu* and *Khoper*," stated Gorshkov, "took up station in the Neva [River] to bombard the Winter Palace," proving that the navy was the first military service to join the revolution.²⁰

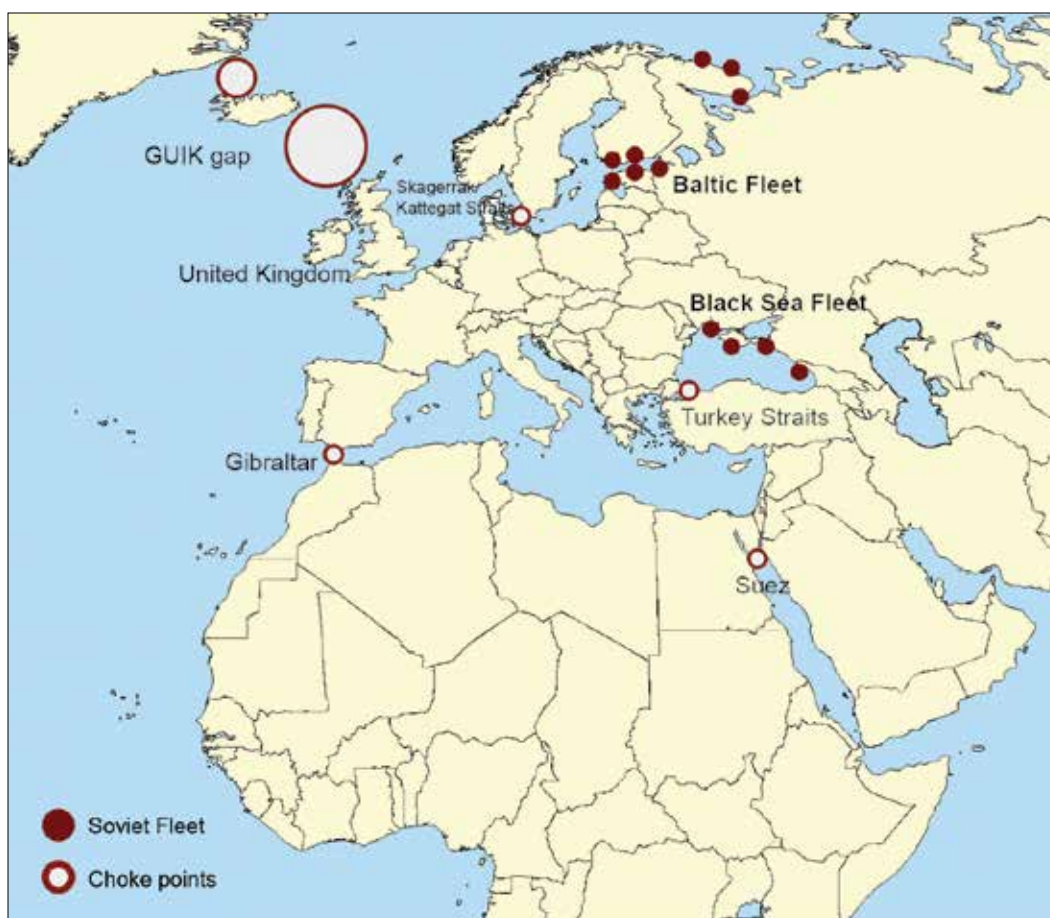
Not until 1937 did the Communists begin rebuilding their navy. At the time, Germany was rearming, and [Joseph] Stalin decided to prepare

¹⁷ Gorshkov, *The Sea Power of the State*, 81.

¹⁸ Gramer, "Admiral of the Fleet of the Soviet Union," 94.

¹⁹ Gorshkov, *The Sea Power of the State*, 91.

²⁰ Gorshkov, *The Sea Power of the State*, 125.



Map of Atlantic theater.
Adapted by History Division

for war. By the beginning of World War II, the Soviets had one of the world's largest submarine forces.²¹ Yet the navy's help was seldom needed, for there were only a few naval battles in the Black Sea area. Often the Soviets would take sailors off the ships, hand them guns, and send them to the army. According to Gorshkov, more than 400,000 enlisted personnel and officers were sent to the ground forces, including sever-

al naval detachments from the Baltic Sea Fleet, to help defend Leningrad.²² Gorshkov's leadership was about the only bright light in Soviet naval operations during World War II. With a naval squadron in the Black Sea, he distinguished himself in landings on the Kerch Peninsula and later helped liberate the Ukraine, Romania, Bulgaria, and Hungary.²³ By this time, Gorshkov was

²¹ VAdm J. F. Calvert, "The Soviet Navy Rebuilds, 1928–41," in *Red Star Rising at Sea*, 65–75.

²² See "The Soviet Navy in the Great Patriotic War," in *Red Star Rising at Sea*, 89–96.

²³ "The Soviet Navy in the Great Patriotic War," 95.

31 years old and had attained the grade of rear admiral. According to Gorshkov, World War II proved the need for a balanced military, one that included a strong Soviet Navy.²⁴

After World War II, there were modest efforts to rebuild the Soviet fleet. Yet, with more than 50 percent of the Russian industrial capacity destroyed, these efforts were delayed. Initially, with the help of captured German technology, the Soviets began building some new attack submarines.²⁵ However, [it was] not until the arrival of Krushchev and the elevation of Gorshkov to admiral of the fleet [that] plans for a powerful Soviet Navy [were] proposed. Gorshkov's first task was to convince the Communist Party that a powerful navy was not only a necessity, it was a part of the Russian heritage. The Russian land power doctrine, stated Gorshkov, was nothing more than imperialist propaganda designed to keep the Soviets from the seas. Russia has the world's longest maritime frontiers, and the Russian people have always loved the sea. It is Soviet manifest destiny, argued Gorshkov, that the nation should go to sea.²⁶

So, in using the lessons of history, Gorshkov established the fundamental rationale for the development of the current Soviet Navy. The doctrine's seeds were planted, ship designs were drawn, and plans for a powerful Soviet Navy were established. Calling his navy "the Faithful Helper of the Army," Gorshkov began the process of convincing the Communist Party of the necessity of building a large fleet. These ideas were soon reinforced when in 1962 the United States Navy blockaded Cuba, denying Russian access. After this, more and more So-

viet military funds found their way into naval development.²⁷

SOVIET NAVAL CONSTRAINTS

In thinking through the various challenges for a strong Soviet Navy, Gorshkov faced three basic constraints: ice, chokepoints, and distance. To begin with, most of the Soviet naval fleets are located at high latitudes. The Northern Fleet is located along the Kola Peninsula coast, with a principal port at Murmansk [, northwestern Russia,] and in the White Sea at Archangel. Archangel, in particular, is closed with ice for about six months each year. The Baltic Sea Fleet, located at Kronstadt Naval Base [, Kotlin Island,] and Riga [, Latvia], is also constrained since ice closes these ports about three months a year; at times, the ice is so thick that the Russians can drive trucks across it. The Black Sea Fleet, of course, does not have ice problems. The Pacific Fleet, located at Vladivostok and Petropavlovsk, is also dogged with ice for several months each year.²⁸ Historically, because of these ice problems, the Russians have sought warm-water ports.

To overcome the ice, Gorshkov has developed one of the world's foremost icebreaker fleets.²⁹ These ships are diesel powered and break channels into and out of the main ports. Yet, despite this capability, ice-clogged ports are a major problem, [and] one not easily corrected.

A second major constraint for the Soviet fleets consists of the choke points through which Soviet ships must pass. In the Pacific Ocean, just north of the Japanese Islands, lies the La Perouse Strait, which hinders the Soviet Pacific Fleet's ability to gain access to the ocean. Toward the

²⁴ Gorshkov, *The Sea Power of the State*, 148.

²⁵ Don East, "The Evolution of the Soviet Navy as an Instrument of Foreign Policy" (unpublished report, Air Command and Staff College, Maxwell Air Force Base, AL, 1980), 20.

²⁶ Eller, "Russia's Road to the Sea, Peter I to Napoleon," 22.

²⁷ Gramer, "Admiral of the Fleet of the Soviet Union," 60.

²⁸ David Fairhall, *Russian Sea Power: An Account of Its Present Strength and Strategy* (Boston, MA: Gambit, 1971), 18.

²⁹ John Moore, ed., *Jane's Fighting Ships, 1980-81* (New York: Grolier Publishing, 1980), 537.



Edward L. Cooper, an artist working as a visual information specialist for the Defense Intelligence Agency, portrays a Soviet *Delta III*-class nuclear-powered ballistic missile submarine firing SS-N-18 Stingray missiles. The *Delta III* submarine was 155 meters long, had 16 missile firing tubes, and carried SS-N-18 nuclear missiles. Edward L. Cooper, *Soviet Delta Submarine Firing SS-N-19 Missile*, 1987. Lithograph.
DIA Military Art Series: The Threat in the 1980s, Defense Intelligence Agency

south of the Japanese Islands lies the Tsushima Strait through which the Soviets must pass to move down the China coast. Together, these two Pacific choke points in time of war could prove to be extremely critical.

In the Atlantic, the Greenland, Iceland, United Kingdom (GIUK) gap is another major choke point. Although this area looks porous, in fact, it is well patrolled. Other choke points are more confined. The Skagerrak [and] Kattegat straits, the Turkish straits, Gibraltar, and Suez restrain the Soviets from easy access to the oceans.

In time of war, these choke points could become critical.³⁰ For instance, during World War I, the United States, working with the British, planted more than 100,000 mines in an area just west of the Skagerrak strait. This great North Sea minefield effectively contained the German U-boat threat.³¹ Today, this option is available.

The third major constraint is related to the

³⁰ Adm Harry D. Train, CSN, "Sea Link 80 Remarks" (paper presented at the Sea Link 1980 Conference, Annapolis, MD, 19 June 1980). Adm Train is the Supreme Allied Commander, Atlantic.

³¹ F. P. Potter, *The Naval Academy: Illustrated History of the United States Navy* (New York: Thomas Y. Crowell, 1971), 142.

deployment of ships in the Pacific and Atlantic oceans. Once there, the Soviets have trouble replenishing their fleets. Their tendency to build small vessels limits the amount of supplies they can carry and thus the time they stay on station. Many of their larger ships do not have at-sea reload capabilities so they must return to port for supplies. Realizing this as problem, the Soviets have worked on their sea replenishment techniques.³² Recently, a new replenishment-type ship has come on line to help overcome this deficiency. This class of vessel is called the *Berezina*, a 40,000-ton multipurpose ship with six replenishment stations and helicopter capabilities.³³ Another way in which the Soviets are overcoming this replenishment problem is by acquiring overseas ports. For instance, they can replenish their ships in Cuba, Angola, South Yemen, and in one of the finest harbors in all of the Pacific Ocean, Cam Ranh Bay [, Vietnam].³⁴

Ice, choke points, and distance comprise the basic constraints that Admiral Gorshkov designed his new ships to overcome. Icebreakers help open the winter ports, and ships of the *Berezina* class offer ways to circumvent the effects of choke-points and long-distance cruises.

SOVIET NAVAL MISSIONS

Within the last few years, the Soviet Navy has increasingly moved away from its coasts to the blue waters of the oceans. In so doing, the Soviets have changed their naval strategy from a basically defensive one to a more assertive forward

deployment posture. During the 1960s, the first phase of this transformation took place. Initially, the Baltic, Northern, and Black Sea fleets progressively extended their spheres of influence out of their traditional deployment areas. The Black Sea Fleet began deploying into the eastern Mediterranean while the Northern Fleet journeyed into the mid-Atlantic. By the early 1970s, the Soviets were deploying to the Cuban and South African areas and into the Indian Ocean. Thus, by the late 1970s, Soviet naval deployment patterns were clearly established.³⁵

As the Soviets moved farther from their coasts, there was a subsequent shift in mission priorities. While there are many different ways to label these missions, most would agree that there are four basic types. The first Soviet naval mission is "sea presence," which accounts for the peaceful use of naval ships in foreign areas. The second mission is "sea control," and this involves antisubmarine warfare and interdiction. The third mission encompasses amphibious warfare and is labeled "power projection." The last mission is "deterrence," and it involves the use of ballistic missile submarines.

Sea Presence Mission

Sea presence is the newest of all the various Soviet naval missions. Gorshkov spent a great deal of effort convincing the Communist Party that, unlike the army, the navy is extremely influential during peacetime. In other words, the work of the navy exceeds traditional military roles. As a historian, Gorshkov was well aware of the ways in which the United States used its ships to influence foreign policies.³⁶ "Speak softly and carry a big stick," Theodore Roosevelt's admo-

³² *Understanding Soviet Naval Developments* (Washington, DC: Office of the Chief of Naval Operations, Department of the Navy, 1978), 22.

³³ Keith A. Dunn, "Power Projection or Influence: Soviet Capabilities for the 1980s," *Naval War College Review* 32 (September–October 1980): 31–47.

³⁴ Michael T. Kaufman, "U.S. Naval Buildup Is Challenging Soviet Advances in Asia and Africa Supremacy at Sea," *New York Times*, 19 April 1981, 1.

³⁵ Michael McGwire, "The Rationale for the Development of Soviet Seapower," U.S. Naval Institute *Proceedings* 106, no. 5 (May 1980): 155–83.

³⁶ Gorshkov, *The Sea Power of the State*, 245–53.

dition, became an accepted truism within the Soviet naval hierarchy.

Consequently, with the goal of increasing Soviet prestige abroad, the navy began deploying ships to the coastal waters of other nations. Warships sailed for such ports as Cienfuegos, Cuba; Conakry, Guinea; and Berbera, Somalia. Often, Soviet ships would dock in these countries and send their crews ashore to organized sports and other programs. Usually these visits were timed to coincide with some significant military event. For example, a recent Soviet visit to Mozambique just happened to occur about the same time the South Africans announced they were moving fighter aircraft to the common border area.³⁷ Through these visits, Gorshkov noted, the navy serves as an important instrument of peacetime policy while protecting the USSR and supporting national wars of liberation.³⁸

A significant part of the sea presence mission is fulfilled by Soviet merchant ships. With more than 1,700 merchant ships, most of which are relatively new, the Soviets have opened trade with many other countries. One of the unique features of these merchant ships is their ability to convert to a wartime mission quickly.³⁹ Generally, these ships are small and were constructed to convert to military supply ships if needed. According to Admiral Gorshkov, the merchant fleet is now a major constituent of the Soviet naval force.⁴⁰

Fishing trawlers comprise another element of the sea presence mission. The Soviets have one of the world's largest fishing fleets, with approximately 4,000 ocean-going vessels.⁴¹ In terms

of tons of fish caught, they rank second to Japan.⁴² The Soviets also have 50 or so intelligence-gathering ships, called AGIs, that look very much like the fishing trawlers.⁴³ These AGIs are often seen monitoring traffic near U.S. Navy bases in Scotland, Spain, and Guam. Frequently, other AGIs are sighted off the East and West coasts of the United States, where they play an active part in relaying intelligence data to the Soviet Union.

Thus, by placing their warships in strategic territorial waters and by using their merchant ships and trawlers, the Soviets influence the daily activities of foreign nations. The overall purpose of the sea presence mission is well summarized in Gorshkov's statement:

*Friendly visits by Soviet seamen offer the opportunity to the people of the countries visited to see for themselves the creativity of the socialist principles in our country, the genuine parity of the people of the Soviet Union and their high cultural level. In our ships they see the achievements of Soviet science, technology and industry. Soviet mariners, from rating to admiral bring to the people of other countries the truth about our socialist country, our Soviet ideology and culture and our Soviet way of life.*⁴⁴

Sea Control Mission

The sea control mission is based on broad Soviet military doctrine and foreign policy objectives. These involve, first of all, the avoidance of war, but if war comes, the Soviets plan to win.⁴⁵ Thus, Gorshkov has promoted a more assertive navy, one that will move out from the coastlines and into the oceans to challenge the West. The

³⁷ "Soviets Send Warships to Mozambique," *Chicago Tribune*, 24 February 1981, 12.

³⁸ Gorshkov, *The Sea Power of the State*, 39.

³⁹ *Understanding Soviet Naval Developments*, 51–53.

⁴⁰ Gorshkov, *The Sea Power of the State*, 39.

⁴¹ Moore, *Jane's Fighting Ships*, 123–55.

⁴² *Understanding Soviet Naval Developments*, 55.

⁴³ Moore, *Jane's Fighting Ships*, 521–22.

⁴⁴ Gorshkov, *The Sea Power of the State*, 252.

⁴⁵ McGwire, "The Rationale for the Development of Soviet Seapower," 155–83.

mission of these forward-deploying Soviet ships is to counter the West's sea-based strike force and interdict sea lanes of communication. Gorshkov is quite specific in this objective:

*The imperialists are turning the world ocean into an extensive launching-pad, less dangerous in their view to their countries as compared with land, of ballistic missiles, of submarines and carrier aviation trained on the Soviet Union and the countries of the socialist community. And our navy must be capable of standing up to this real threat.*⁴⁶

In other words, the Soviets are sending their ships out to gain and maintain command of a large sea area and deny the enemy this extensive launching pad. In this type of mission, argued Gorshkov, the enemy must be countered in the air, on the surface, and below. Thus, arose the need to build multipurpose ships with antisubmarine warfare capabilities. In 1967, the first of these ships was completed, the *Moskva*, followed by a second ship in 1968, the *Lenin-grad*. The design resembles a cruiser bow with a carrier stern. The *Moskva* displaces approximately 17,000 tons and is propelled by steam. It is well armed carrying 18 [Kamov] Ka-25A Hormone helicopters, antisubmarine rockets, torpedoes, and antiaircraft guns. In 1976, a new class of Soviet aircraft carriers was launched. It was the *Kiev*, followed by a second carrier the *Minsk*. Unlike earlier carriers, these have angle decks that stretch the length of the ship. Both are steam propelled and displace approximately 37,000 tons. The *Minsk* is extremely well armed, with weapons that reach out to [more than] 250 miles. An enemy ship trying to attack the *Minsk* would have to maneuver through five concentric circles of weapons beginning 250 miles out and



Gene Klebe, *Soviet Guided Missile Frigate*. Watercolor. Art Collection, Naval History and Heritage Command

continuing to the bow, where 500-rounds-per-second Gatling guns would take effect. As with earlier carriers, the *Minsk* has a series of weapon systems designed to be effective against enemy ships, submarines, and aircraft. One of the unique aspects of the *Minsk* is the torpedo tubes on either side of the bow region. Yet, of all the weapons on board, the [Yakovlev] Yak-36 Forger vertical take-off and landing (VTOL) aircraft is the most versatile. Usually, there are about 18 Forgers on each aircraft carrier, complementing about the same number of Hormone helicopters. The Forger uses two engines to take off and then a third to cruise out from the ship. Each Forger carries an assortment of rockets, machine guns, bombs, and air-to-surface missiles.⁴⁷ Although building aircraft carriers is a relatively new Soviet program, they plan to launch two more within the next few years.

Complementing the aircraft carriers in the sea control mission are the various surface combatants. The newest and most sophisticated of these is the battlecruiser *Kirov*. This ship is approximately 860 feet long and displaces about 23,000 tons. It is similar to a World War II pock-

⁴⁶ Gorshkov, *The Sea Power of the State*, 280.

⁴⁷ *Understanding Soviet Naval Developments*, 21.

et battleship, and it is nuclear powered, providing great staying power and long range. It has several weapon systems similar to the *Minsk* but with a much more advanced surface-to-air anti-aircraft capability and surface-to-surface anti-ship capability. Recently, Rear Admiral Sumner Shapiro, director of United States Naval Intelligence, had this to say about the *Kirov*:

*The Kirov is by far, the most heavily armed multipurpose combatant in the Soviet inventory. Its own long-range anti-ship cruise missiles will significantly enhance its ability to strike allied warships.*⁴⁸

Smaller than the *Kirov* are the various Soviet naval cruisers. Late in 1962, the Soviets sent to sea the first *Kynda*-class guided-missile cruiser. On board this ship, the most sophisticated weapons system is the SS-N-3 [Shaddock] antiship cruise missile (equivalent to the land-based SA-8) with a 200-mile range. A follow-on Soviet cruiser called the *Kresta* was launched in 1967. This *Kresta*-class cruiser displayed new Soviet technology. The *Kresta Is* were primarily antisurface warfare-oriented while the second generation, the *Kresta IIs* assumed more of an antisubmarine role. The weapons on the *Kresta IIs* include a sophisticated SS-N-14 [Silex] anti-submarine missile, torpedoes, twin anti-aircraft missiles, and a helicopter. Aside from the *Kresta*, one of the newest Soviet cruisers is the *Kara*. This ship is propelled by a gas-turbine engine, which is capable of approximately 35 knots. In terms of weapons, it carries approximately the same systems as the *Kresta IIs*.⁴⁹

The use of destroyers in the sea control mission centers around the Soviet's *Kashin*

and *Krivak* vessels. In the late 1960s, the gas-turbine, guided-missile destroyers, the *Kashins*, were launched. With anti-aircraft missiles, anti-submarine rockets, torpedoes, and mines, pound for pound these ships were considered some of the most heavily armed vessels afloat. With gas-turbine engines, the *Kashins* were capable of moving through the seas at 35 knots. The *Kashin*-class was followed by the *Krivak*-class, which was launched in the early 1970s. Unlike the *Kashins*, this ship does not have the bow-mounted anti-ship missile launchers. Instead, it is configured for an antisubmarine mission carrying various antisubmarine missiles, rockets, mines, and torpedoes.⁵⁰ Reports indicate that the Soviets have launched two very powerful new destroyers called the *Sovremennyy*-class and the *Udaloy*-class.⁵¹

While destroyers, cruisers, and aircraft carriers conduct their functions on the surface, attack submarines and cruise missile submarines complement these ships with their subsurface activities. The Soviets operate about 190 attack submarines, most of which are diesel-electric powered, providing quiet maneuverability. About one-third of these attack submarines are nuclear powered. The *November*, *Echo*, *Victor*, *Foxtrot*, and *Tango*-classes are their primary attack submarines. The principal weapons are the antisubmarine and antiship torpedoes. Some of the newer vessels have rocket-propelled antisubmarine weapons.⁵² Recently, the Soviets launched a new class of attack submarine, the *Alfa*. Although little is known about the *Alfa*, reports indicate that it is built of titanium alloy and has an underwater speed greater than that of any submarine in the world. One U.S. naval officer claimed that when

⁴⁸ Stephen Webbe, "Soviet Navy a 'Growing Challenge' to West," *Christian Science Monitor*, 3 March 1981, 6.

⁴⁹ *Understanding Soviet Naval Developments*, 80–91.

⁵⁰ *Understanding Soviet Naval Developments*, 85–90.

⁵¹ Drew Middleton, "Soviets at Sea: New Ships for Distant Bases," *New York Times*, 25 January 1981, 3.

⁵² *Understanding Soviet Naval Developments*, 33.

an *Alfa* submarine came down off the coast of Greenland, he tried to intercept it but was left standing behind. "She walked away from us," he commented. "We estimate her speed at around 50 knots submerged and she can dive to 2000 to 3000 feet."⁵³

A second type of submarine used in the sea control mission is the cruise missile submarine. The *Charlie*-class is the newest of these, and it is nuclear powered. Its weapons systems consist of eight short-range, 60-nautical-mile antiship cruise missiles that are fired while submerged. Its underwater launch capability makes this craft one of the most potent antiship submarines in the Soviet Navy.⁵⁴ Lately, the Soviets have built an extremely large guided missile submarine capable of launching 24 antiship missiles, with a range of approximately 250 miles.⁵⁵ Like the *Charlie*-class, these missiles are fired while the ship is submerged. The classification of this new submarine is *Oscar*. With their *Oscar*, *Charlie*, and *Alfa* submarines, the Soviets have approximately 260 vessels to provide submerged sea-control capability.⁵⁶

Complementing both the surface and sub-surface elements, the Soviets possess several classes of naval aviation capabilities. The [Tupolev] Tu-5 Bear-D, for instance, is used for long-range reconnaissance. It is a turboprop aircraft and quite often flies on trips to Cuba, Cam Ranh Bay, and West Africa. In addition, the Soviets use the [Ilushin] Il-38 May for maritime antisubmarine patrol. The prime strike force in the Soviet naval aviation consists of some 290 [Tupolev] Tu-16 Badger aircraft that are fitted

with antiship cruise missiles with an effective range of about 150 miles.⁵⁷ As the Badgers are retired from the navy, the Soviets are replacing them with the new [Tupolev Tu-22M] Backfire bombers. The twinjet Backfire is a supersonic aircraft with variable swing-wing configuration. Recently, several Backfires joined the Pacific Fleet in Vladivostok. This aircraft carries a very sophisticated air-to-surface antiship cruise missile with an effective range of approximately 300 nautical miles. With refueling capabilities this aircraft can fly up to 2,500 nautical miles out into the Atlantic or Pacific.⁵⁸

Thus, with the surface combatants, submarines, and naval aircraft, the Soviets are quite capable of seeking out enemy forces and destroying them. In a conflict, the West's aircraft carriers and ballistic submarines are the prime targets. Although the Soviets have spent a great deal of money on developing antisubmarine techniques, most naval experts believe they do not have the capability to pinpoint U.S. submarines. Yet each year, as the Soviets launch sophisticated weapon systems such as the *Kirov*, *Oscar*, and *Alfa*, the technological gap narrows.

Power Projection

The power projection mission is a function of the naval infantry's capabilities. As a student of history, Admiral Gorshkov was impressed with the United States Marine Corps assaults at Saipan, Guadalcanal, Okinawa, and Iwo Jima. Yet, in comparison to the United States Marine Corps, which numbers approximately 180,000, the 12,000-man Soviet naval infantry is small. There is, however, at least one naval infantry

⁵³ "Soviets Planning Advances in Maritime Capabilities," *Aviation Week & Space Technology*, 16 March 1981, 18.

⁵⁴ William J. Ruhe, "Soviet Navy Threatens Mideast," *Defense Electronics*, February 1981, 75–80.

⁵⁵ "Soviets Planning Advances in Maritime Capabilities," 18.

⁵⁶ *Understanding Soviet Naval Developments*, 33–34.

⁵⁷ *Understanding Soviet Naval Developments*, 99–100.

⁵⁸ Clarence A. Robinson Jr., "Soviet Moves Spark Defense Support," *Aviation Week & Space Technology*, 21 January 1980, 74–91.



The lead ship of the USSR's 65,000-metric ton *Kuznetsov*-class aircraft carriers, the *Tbilisi*, is being fitted out in the late 1980s in Nikolayev Shipyard. This carrier marked an evolutionary advance in naval capabilities over 37,100-metric ton *Kiev*-class carriers then operating with the Soviet fleet. Brian W. McMullin, *Soviet Tbilisi-Class Carrier at Nikolayev*, 1987. Lithograph.

DIA Military Art Series: The Threat in the 1980s, Defense Intelligence Agency

regiment on each of the major Soviet fleets.⁵⁹

In contrast to its United States counterpart, the Soviet naval infantry has very little staying power or organic firepower. If naval infantry were committed to combat, it would have to be reinforced within four or five days. Soviet doctrine indicates that the naval infantry is intended to be used as shock troops spearheading an assault, closely followed by the ground forces.⁶⁰ Recent reports of Soviet naval infantry exercises in the Kuril Islands north of Japan confirm

the speculation that the prime targets of these troops are shores bordering the various choke-points.⁶¹

Complementing the Soviet naval infantry are the amphibious assault ships. The Alligator tank landing ship is a typical vessel used for this power projection mission. Propelled by diesel, this ship is relatively small, displacing about 4,500 tons. In 1978, the Soviets launched a new amphibious ship, the *Ivan Rogov*[-class]. It is twice the size of the earlier ships and can launch amphibious vehicles from its open bow doors.

⁵⁹ *Understanding Soviet Naval Developments*, 37.

⁶⁰ Dunn, "Power Projection or Influence," 31–47.

⁶¹ Robinson, "Soviet Moves Spark Defense Support," 81.

In addition, it carries helicopters. Among the various small assault landing vehicles to launch from the bow are the hovercrafts, such as the *Aist*, which can carry the naval infantry ashore at speeds of 50 knots.⁶²

The small naval infantry is one of the few elements of the Soviet military that are not powerful. In a conflict, these troops would most likely be sent ashore to capture the Dardanelles or the Kattegat straits and then wait for rapid reinforcement. Yet, with the arrival of the *Ivan Rogov*, there are indications that Gorshkov is planning to strengthen the power projection mission.

Deterrence

Of all the Soviet naval missions, deterrence is by far the most important, according to Gorshkov. In his book, he labels the deterrence mission as “fleets against shore” and has this to say:

*The traditional operations of fleet against fleet which. Since ancient times, have been characteristic of the struggle against sea communications of the opposing sides, are now being used in a new, decisive sphere—operations of a fleet against shore. This trend in the operational and strategic use of the fleet is becoming increasingly prominent and assuming the features of the main field of operations of a fleet, governing all others at all operational levels.*⁶³

This total reliance on the submarine-launched ballistic missile (SLBM) began in earnest during the early 1960s, according to Michael McGwire, authority on the Soviet Navy. In a sense, the rapid buildup of the Soviet ballistic missile fleet began as a reaction to the deployment of Polaris submarines by the United States.

⁶² Moore, *Jane's Fighting Ships*, 513–17.

⁶³ Gorshkov, *The Sea Power of the State*, 221–22.

The Soviets and the West define deterrence somewhat differently. The Soviets hope their ballistic capabilities will be sufficient to dissuade an aggressor, which, of course, is deterrence in the traditional sense. But a crucial distinction lies in the Soviets' belief that if war should come, their armed forces must recover from an initial strike and fight on for victory. In such a scenario, submarine forces would play a significant role.⁶⁴

Basically, current Soviet ballistic missile submarines are categorized as either theater nuclear or intercontinental nuclear. The first category centers on the older ballistic missile submarines, while the latter includes the newest vessels. During the early 1960s, the Soviets began building the *Hotel* and *Golf*-class ballistic missile submarines. Initially, these submarines had to surface to launch their missiles. After some modification, these submarines became capable of submerged launchings. The *Hotel*-class submarine was first built in 1958. It is nuclear-powered and carries three SS-N-5 missiles. Following the *Hotel*, the Soviets built the *Golf*-class submarine. It is diesel-powered and also carries three SS-N-5 missiles. The effective range of these SLBMs is about 700 miles. With this short range, the *Golf* and *Hotel* would have to transit undetected through the GIUK gap. To avoid this, the Soviets use the *Golf* and *Hotel*-class submarines as theater nuclear weapons. That is, these submarines are assigned targets in the European area, thereby nullifying the need to transit any choke point. From their patrols in the Southern Baltic and Southern Norwegian Sea, the *Hotel* and *Golf*-[class] submarines become an effective theater nuclear force.⁶⁵

⁶⁴ McGwire, “The Rationale for the Development of Soviet Seapower,” 155–83.

⁶⁵ Floyd D. Kennedy Jr., “Theater Nuclear Encirclement, Soviet SLBMs Targeted on Western Europe,” *National Defense* (February 1980): 42–45.



A Marine Corps Hawker Siddeley AV-8A Harrier and two U.S. Navy McDonnell Douglas F-4N Phantom II fighters intercept a Soviet Tupolev Tu-95 in 1977.

Official U.S. Navy photo

In the late 1960s, the Soviets began launching a series of larger ballistic missile submarines called the *Yankees* and *Deltas*. In the period between 1968 and 1977, the Soviets placed a priority on submarine construction. Each year, they constructed approximately 10 new submarines, of which 6 were ballistic missile submarines.⁶⁶ The first of these vessels were the *Yankee*-class submarines. The *Yankee* is nuclear powered and carries 16 SS-N-6 missiles. Each missile is nuclear-tipped and has an approximate range of 1,600 miles. The follow-on class of submarines constructed in the early 1970s was the *Delta*. The *Delta* is nuclear powered and carries 16 SS-N-8 missiles, each with multiple independently targeted reentry vehicles and a range of approximately 4,200 miles. This means that the *Delta* can sail undetected off the Rola Peninsula coast or in the Okhotsk Sea and target practically any part of North America.⁶⁷ According to *Jane's*

Fighting Ships, 1980–81, the Soviets have about 70 ballistic missile submarines of all classes.⁶⁸

Even with 70 ballistic missile submarines, the Soviets have not slowed down their construction program. Reports indicate they are building the world's largest ballistic missile submarine, the *Typhoon*. Estimates indicate that the *Typhoon* will displace about 25,000 tons, making it more than twice the size of the *Delta*-class submarines. In addition, this submarine will carry 20 long-range missiles, each with a multiple independently targeted warhead. The effectiveness of this new submarine, comments Admiral Shapiro, is enhanced by the fact that it, like the *Delta*, can operate in the security of the Soviet home waters.⁶⁹

When the *Delta*, *Yankee*, and *Typhoon* are evaluated in conjunction with the Soviets' land-based missiles, the effectiveness of their strike capabilities is quite impressive. Their theater nuclear and intercontinental nuclear capabilities comprise the basic functions of the deterrence mission.

Soviet Naval Personnel

Weapons without manpower are useless, so it would be well to consider those who operate the Soviet weapon systems. Like their American counterpart, the Soviet naval officer is well trained and highly skilled. Typically, he is a volunteer, carefully selected, and professionally motivated. When he qualifies, the young officer is educated in either surface-warfare subjects or naval engineering courses. The engineering officer is rather specialized, while the surface warfare officer performs the line functions. Naval aviators are trained by the Soviet Air Force. After completing basic training, the surface

⁶⁶ McGwire, "The Rationale for the Development of Soviet Seapower," 155–83.

⁶⁷ *Understanding Soviet Naval Developments*, 35–36.

⁶⁸ Moore, *Jane's Fighting Ships*, 123–55.

⁶⁹ Webbe, "Soviet Navy a 'Growing Challenge' to West," 4.

warfare officer joins a ship, where he will earn his specialty rating by standing watch and learning his division duties. His responsibilities to his sailors consist of teaching them the technical specialties, their ship duties, and caring for their ideological well-being. Thus, working as a manager, technician, instructor, and loyal Communist Party member, the junior officer is quite busy during his first sea duty tour.

To gain command, the midlevel officer must broaden his career from a specialist to a generalist through a series of sea tours with the fleets, serving in different professional capacities. If he is selected for command, he will first serve as an executive officer and then succeed to command. Certification for command comes after a series of ship-handling tests. At one time or another, most senior officers attend the war college, A. A. Grechko Naval Academy, where undoubtedly they study about the American naval threat. Overall, the officer corps is technically competent, well-motivated, and a formidable adversary.⁷⁰

Enlisted personnel are usually drafted from various Soviet Union regions. Typically, the Soviet sailor is a conscript with limited training and little career motivation. He begins his tour by attending a nine-week basic training course, after which he is sent to sea to learn shipboard skills. At sea, the Soviet sailor's life is strictly regimented and closely supervised. While many of the new Soviet ships provide fair living conditions, they are not known for their comfort or habitability. On shipboard, time is specifically planned. For instance, idle chitchat, card playing, or other frivolous activities are curtailed in favor of political lectures by the ship's propagandist. From early morning through the night, the Soviet sailor's day is completely scheduled:

⁷⁰ *Understanding Soviet Naval Developments*, 41–45.



A Vought A-7E Corsair II of Attack Squadron 27 intercepts a Soviet Ilyushin IL-38 patrol aircraft that was flying in the vicinity of the carrier USS *Coral Sea* (CV 43) steaming in the northern Arabian Sea, ca. 1979. Such scenes were common during the Cold War as Soviet aircraft sought to keep track of U.S. carriers around the world.

Official U.S. Navy photo, National Museum of Naval Aviation, NNA.1996.7075.030

Reveille is at 0600 followed by calisthenics at 0630: breakfast at 0700 and turn-to or political classes from 0800 until 1300 when lunch is served. Following the noon meal, the crew turns-to until dinner at 1800. Between 1800 and taps at 2300, either more political lessons, ship's work or "constructive" recreational time is scheduled.⁷¹

The technical skills of the enlisted sailor are quite limited. Each sailor is usually responsible for only one shipboard task, such as maintaining a specific piece of equipment or painting the bow. Advancement comes after a specific time in service and is automatic. For the first year of the three-year hitch, the sailor is paid about \$10 a month, while in his last year he may make about \$30 a month. With low pay and few privileges,

⁷¹ JO2 Don Wheeler, "Life in the Soviet Navy," *All Hands*, May 1977, 22–25.



An air-to-air left-side view of a Fighter Squadron 1 Grumman F-14A Tomcat aircraft escorting a Soviet Tupolev Tu-142 Bear-D maritime patrol aircraft, March 1987.
Official U.S. Navy photo, National Archives, DN-SC-87-04325

only about 10 percent of the enlisted force reenlist. For those who do, the rank of *michman* (warrant officer) becomes a goal. With the constant rotation of sailors, senior enlisted personnel are in chronically short supply.⁷² This lack of technically qualified senior enlisted personnel is one of the few weaknesses of an otherwise strong Soviet naval force.

What, then, is the purpose of this rapid peacetime buildup of Soviet naval power? Sir John Moore, editor of *Jane's Fighting Ships, 1980–81*, had this to say:

It is hardly surprising that the USSR, a determined State, with increasingly imperialistic ambitions, has watched the process of American self-immolation with the same

*satisfaction that it has the industrial dismemberment that has followed in the wake of labour and management upheavals in Western countries. Although suffering from its own internal problems, economic, demographic and agricultural, the Soviet Union has maintained a basic aim of world domination which allows an impressive continuity in military planning.*⁷³

Indeed, Admiral Gorshkov is quite explicit in defining naval operational goals: "The sea power of our country is directed at ensuring favorable conditions for building communism."⁷⁴ Sooner or later, he argued, the United States

⁷² *Understanding Soviet Naval Developments*, 41–45.

⁷³ Moore, *Jane's Fighting Ships*, 123.

⁷⁴ Gorshkov, *The Sea Power of the State*, 284.

will have to realize they no longer control the seas.

In terms of numbers, the Soviet Navy compares favorably with the U.S. Navy. Discounting the NATO allies, the United States has only about half the ships the Soviets possess. The Soviets outnumber the United States in surface combatants, attack submarines, and ballistic missile submarines. Yet, as Supreme Allied Commander, Atlantic Command, Admiral Harry D. Train II has pointed out, numbers alone are only part of the assessment. The Soviet Navy is deficient in several categories. In comparison to the United States, the Soviets' naval aviation is vulnerable. They have fewer aircraft carriers providing little or no sea-based tactical air support, while their land-based planes have limited flexibility. Second, while the United States Navy can sustain combat operations at sea for long periods of time, the Soviets cannot. Third, without long-range staying power, the Soviet power projection mission is limited.⁷⁵ In the Soviets' antisubmarine programs, they are apparently

lagging in acoustical detection capabilities but are attempting to make up the deficiency with space-based optical and radar systems. Reports indicate they have not made much progress here.⁷⁶

Yet added all together, the Soviet Navy remains a sea power of great magnitude. If past Soviet naval developments continue into the future, their navy will be increasingly involved in maritime operations around the world. Into the 1980s, there are signs of no letup in the Soviet shipbuilding program. Certainly, the Soviet acceptance of Gorshkov's theoretical doctrine of sea power substantiates previous naval policies and will sustain these efforts for decades. Indeed, Admiral Gorshkov emerges as a twentieth-century Mahan, "the articulate advocate of sea power as a vital, indispensable, attribute of real power status."⁷⁷ And just as the U.S. Air Force was called on to perform maritime operations in Vietnam, there is an increasing probability that our Air Force will be needed to counter this growing Soviet naval threat also.

⁷⁵ Train, "Sea Link 80 Remarks," 1–9.

⁷⁶ McGwire, "The Rationale for the Development of Soviet Seapower," 155–83.

⁷⁷ Adm Elmo R. Zumwalt Jr., "Introduction," in *Red Star Rising at Sea*, 1–2.

ONE TELEPHONE CALL GETS IT ALL

Maritime Prepositioning for Crisis Response Enhancement

by General Paul X. Kelley

Sea Power, 1984⁷⁸

Maritime prepositioning operations have become a reality. We have added a new capability to the nation's maritime arsenal, and we are expanding that capability almost daily as ships come on line and as combat ready Marine Amphibious Brigades, complete with weapons, equipment, and personnel, are earmarked for this employment in support of our country's military strategy. Today and in the future, we can call on these forces, on a moment's notice, to translate naval strength and readiness into meaningful, flexible response.

As I have stated many times—in congressional testimony and in speeches before the Navy League and other audiences—the nation's security, economic prosperity, and political vitality are inextricably linked to our ability to control the seas. The seas both separate us from and link us to our allies and our potential enemies. And the seas provide us lines of com-

munication to international markets and to the natural resources of the world, including the numerous strategic raw materials vital to our military posture and our nation's economic wellbeing. Fortunately, our national leaders recognize the need for policies and programs assuring U.S. and allied control of the seas and have, largely for that reason, adopted a strategy that calls for maritime strength—a strategy designed to assure the United States and its allies a clear margin of maritime superiority at the points of decision.

Balanced naval forces are the key to implementing this maritime strategy. Those forces must be capable both of influencing events on the seas and of extending that influence ashore for offensive and defensive purposes. The best in powerful, fully modern, surface, subsurface, and aviation forces are required as are, if forcible entry is called for, strong and ready amphibious forces for projecting our ground and air power. Our Marine Air-Ground Task Forces (MAGTFs)—composed of command, ground combat, aviation combat, and combat service

⁷⁸The original article came from Gen Paul X. Kelley, "One Telephone Call Gets It All: Maritime Prepositioning for Crisis Response Enhancement," *Sea Power* 27, no. 12 (November 1984): 23–34. Minor revisions were made to the text based on current standards for style, grammar, punctuation, and spelling.

support elements—are structured specifically for such employment, with the highly mobile, combined-arms Marine Amphibious Brigade (MAB) perhaps the most likely instrument available to act as the cutting edge.

The key to combat success is getting the MAB there soon enough to fight, and heavy enough to win. In this regard, recent initiatives aimed at revitalizing our forces have been right on target. The “600-ship Navy” calls for, among other things, an amphibious force capable of lifting the assault echelons of both a Marine Amphibious Force (MAF)—the Division/Wing/Force Service Support Group Team—and a MAB. Now, the advent of maritime prepositioning provides yet another, and complementary, capability either to project power abroad or to demonstrate national resolve with naval forces.

MARITIME PREPOSITIONING: THE CONCEPT

In preparing for maritime prepositioning operations, the supplies (30 days’ worth) and most of the equipment required for a powerful MAB are loaded aboard specially designed merchant vessels that are chartered and commanded by the Navy; these maritime prepositioning ships (MPS) are then deployed to what are considered potential areas of conflict in which U.S. forces might become involved. If and when required, the ships proceed to a beach or port in the expeditionary area, perhaps secured by a 2,000-man forward-deployed Marine Amphibious Unit (MAU); some 16,500 Marines and sailors are airlifted to nearby airfields at the same time. Meanwhile, the tactical aircraft of the MAB’s aviation combat element flight-ferry to the area of employment.

Equipment and supplies are quickly off-

ONE PHONE CALL	
GROUND COMBAT	AVIATION COMBAT
Infantry	Close air support
Armor	Deep air support
Artillery	Antiair warfare
Ground	Air
reconnaissance	reconnaissance
Antiarmor	Helicopter support
Mechanization	Air electronic warfare
Ground electronic warfare	Inflight refueling
<ul style="list-style-type: none"> Fully integrated air-ground command and control system Integrated logistics support with 30-day self-sustainability Engineer support Medical support 	

loaded from the MPS ships and married up with appropriate units. Now combat ready, the brigade moves on to its assigned objectives. It has arrived (anywhere in the world), soon enough (within five days after the ships are offshore), and heavy enough (in terms of both firepower and sustainability) to *win*.

HISTORICAL PERSPECTIVE: EMPHASIS ON STRATEGIC MOBILITY

The trend of events in the late 1970s and early 1980s reaffirmed the turbulent nature of international affairs in today’s world and highlighted the limited capacity of the United States to commit, on short notice, credible general purpose forces to contingencies abroad.

Recognizing these facts, the defense focus



Sailors and Marines offload humvees from the Military Sealift Command maritime prepositioning ship USNS *1st Lt Jack Lummus* (T-AK 2011) onto a causeway ferry as they perform a maritime prepositioning force offload during Freedom Banner Exercise at Sattahip Naval Base, Thailand.

Official U.S. Marine Corps photo, courtesy of PFC Nathaniel J. Henry

turned to rapid deployment forces, and a search began to determine viable, and affordable, ways to improve national responsiveness by increasing our strategic mobility capabilities. Several different possibilities were considered and found wanting, at least in part:

- A dramatic increase in amphibious lift was rejected as plainly too expensive.
- Increased reliance on in-service commercial shipping also was considered not feasible; analyses showed that exclusive reliance on commercial shipping alone would be insufficient for *rapid* contingency response.
- The concept of *land* prepositioning was, and is, suitable for defense of a stable ally such as Norway; but land prepositioning ties our capabilities to

specific locations and cannot provide a global capability.

- Total reliance on airlift, even if coupled with the development of new large cargo aircraft, was rejected because it would have been prohibitively expensive and would not have provided the required sustainability.

Even as those alternatives were being considered, Marine and Navy planners were developing a “Maritime Prepositioning” concept that would embrace the advantages of the readiness, firepower, and mobility of the MAB, the quick response of strategic airlift, and the sustainability and heavy lift provided by commercial shipping. That concept was found both viable and attainable; therefore, in August 1979, the sec-

retary of defense directed the procurement of specially designed maritime prepositioning ships that would be loaded with the weapons, equipment, and supplies needed by a Marine Amphibious Brigade.

From the outset, it was apparent that a maritime prepositioning capability could meet both the long-term and immediate needs of the National Command Authority (NCA); plans were adopted to provide that capability the Indian Ocean, where it was most needed, as soon as possible. As a result, the Near-Term Prepositioning Force (NTPF) became a reality in the summer of 1980. In the force are seven vessels; unmodified, off-the-shelf commercial ships dedicated to Navy and Marine Corps operations and configured to support a MAB composed of 11,200 personnel.

With the NTPF in place, the Navy and Marine Corps team went to work to provide the long-term capability the secretary of defense had called for. The result was the development of a coordinated set of “building blocks” that, when put together, make maritime prepositioning operations both possible and effective.

FROM CONCEPT TO ACTION: MARITIME PREPOSITIONING BUILDING BLOCKS

The MPS MAB

Success in maritime prepositioning operations relies on the combat capability of the MAB—and each MPS MAB packs a punch: with 53 tanks, 36 artillery pieces, 96 heavy antitank weapons, 109 assault amphibian vehicles, [Ratheon MIM-23] Hawk and [Ratheon FIM-92] Stinger anti-aircraft missiles, and more than 140 aircraft. It is the most powerful brigade ever assembled by the Marine Corps. The current program provides for three such MABs in the MPS program.

The Ships

Thirteen merchant ships will support the three MABs in the MPS program. Chartered by the Navy for assignment to the Military Sealift Command (MSC) and organized into three squadrons, they will be loaded with the weapons equipment, and supplies needed to sustain the MABs in combat for 30 days. Five new ships are being constructed to meet the special MPS needs, and existing vessels are being converted to provide the rest of the sealift required. Each of 13 MPS ships (T-AKX [roll-on/roll-off] by designation) will have, among other special features: container and “break bulk” storage spaces; liquid storage spaces for fuel, lubricants, and potable water; large capacity vehicle decks; stem and side ramps; and a helicopter landing platform capable of handling helicopters as large as the heavy-lift [Sikorsky] CH-53E Super Stallion. Most important of all, perhaps, the MPS ships will carry lighters on board that give them a self-offload capability—a capability that can be called on in stream and under adverse weather conditions.

In addition to the T-AKXs, four other ships being converted from their original merchant ship configurations two hospital ships (T-AHs) and two aviation logistics support ships (T-AVBs) could contribute significantly to the capabilities of the MPS force. Each T-AH will provide more than 1,000 beds and 12 operating rooms, and thus offer a full range of medical and surgical care. Each T-AVB will transport and house an aviation intermediate maintenance activity (IMA).

By transporting the large number of maintenance vans and spares that are too expensive to preposition but are required to support the aviation combat element of the MAB, the T-AVB will save up to 160 strategic airlift sorties.

Another advantage is that the IMA can be made partially functional aboard ship while the T-AVB is still en route to the objective area. Like the T-AKXs, the T-AHs and T-AVBs will be assigned to the Military Sealift Command and will be civilian-crewed.

In connection with this aspect of the program, I am most pleased to point out that the dependence on and utilization of our country's merchant shipping has enhanced our overall national sealift capability and already has contributed to the revitalization of the nation's shipping industry and Merchant Marine.

The Navy Support Element

Vital pier-side and instream offload services will be provided by a Navy support element (NSE) composed of detachments from an amphibious construction battalion, a cargo handling and port group, an assault craft unit, and a beach master unit, as well as special warfare personnel for beach survey, obstacle clearance, and ship antiswimmer defense. Some 900 sailors will be a part of this important command—another confirmation of the naval character of the MPS force.

Airlift: Getting the Fly-in Echelon There

The Military Airlift Command (MAC) can get the fly-in echelon of both the MPS MAB and the Navy support element to the probable area of operations in time to influence the action. Indeed, when the T-AVB is used, only 249 MAC airlift sorties or fewer, as more [Lockheed] C-5 Galaxy transport aircraft and [McDonnell Douglas] KC-10 Extender refueling/cargo aircraft become available will be required to deploy the MAB and NSE to a contingency area. Were it not for the MPS ships, more than 4,500 sorties over weeks, or even months depending

upon the percentage of MAC lift made available, would be required to move this powerful force.

Organization and Employment

Maritime prepositioning forces are assigned to appropriate unified commanders. Their fleet commanders will have operational control, with the responsibility for administrative functions retained by the Fleet Marine Force commander (for the Marine forces) and by the MSC (for the ships themselves).

A Naval Task Force (NTF) will be established for a specific maritime prepositioning operation. Generally analogous to the Amphibious Task Force, the NTF will consist of an MPS MAB, an NSE, and an MPS squadron (e.g., escort vessels, a T-AVB, and a T-AH also could be assigned). In most cases, the NTF commander will be a Navy flag officer, and the MAB will remain under his operational control at least until the MAB becomes combat-capable; at that point, it could come under the operational control of another commander for operations ashore.

Assigned Forces

Two MABs already have been embarked for maritime prepositioning operations. The 6th MAB at Camp Lejeune, North Carolina, is associated with the first maritime prepositioning ship squadron; the MAB and squadron will reach an operational capability before the end of this year and will be located in the Atlantic theater. The previously mentioned NTPF is now the responsibility of the 7th MAB at the Marine Corps Air Ground Combat Center, Twentynine Palms, California. That MAB will come on line, along with the second ship squadron, for MPS operations in the Indian Ocean late next year as the NTPF is deactivated. I will assign the third MAB shortly; it will be associated with the third



A light amphibious recovery craft, or LARC, travels up the stern ramp of an underway Military Sealift Command maritime prepositioning ship. The LARC, working in conjunction with prepositioning ships, transported water from island to island in the Maldives following the devastation caused by a tsunami.
Official U.S. Navy photo, Military Sealift Command

squadron and become operational in the Pacific during 1986.

CRISIS RESPONSE NOW AND FOR THE FUTURE

The speed and flexibility of maritime prepositioning provide our National Command Authorities a variety of new crisis-response capabilities. One telephone call to the Joint Chiefs of Staff gets the following:

- *Superior combat power.* With its powerful mix of ground and aviation assets, the MPS MAB can tackle any of a number of potential adversaries. For example, it would counter a mechanized force

by employing its formidable combination of ground- and air-delivered weapons, including that most potent tank-killer of all, its own tanks. No reinforcement is needed to obtain these broad capabilities.

- *Rapid global response.* From their forward location, the MPS ships can quickly reach many potential expeditionary areas. Depending on where that forward location is, the MPS MAB will be combat-ready within 10 days or less for employment virtually anywhere in the world.
- *Superior tactical mobility.* Once opera-

tionally ready, the MPS MAB will not be restricted to employment in the immediate vicinity of the reception beaches (or ports) and airfields. With 109 assault amphibian vehicles and 32 heavy and medium-lift helicopters, it can rapidly move the assault elements of its three infantry battalions to the area where they are most needed.

- *Thirty-day sustainability.* An immediate, massive strategic lift for resupply will not be required to ensure the battlefield success of the MPS MAB. The heavy-lift capability of the MPS ships, augmented by a T-AVB and a T-AH, will provide the brigade with all it needs for the entire first month, including ammunition, food, fuel, water, medical supplies, spare parts, and other combat consumables.

Such a force will be capable of myriad tasks that take advantage of the strength and readiness of our Navy and Marine Corps. Whether used independently or to provide reinforcement to other U.S. or allied forces; whether called on for political-military signaling, deception, or actual combat, maritime prepositioning operations could be employed to:

- Occupy and defend advanced naval bases, or areas bordering key choke points along sea lines of communications.
- Establish positions for use by land-based tactical aircraft to enhance fleet air operations.
- Effect an economy of force deployment during a developing crisis, thus forestalling the need for larger forces and assault operations.

- Put ashore a sizable mechanized combined-arms force to support a land campaign.
- Provide early support—both “tooth” and “tail”—to amphibious operations.

Insofar as this last capability is concerned, I would like to emphasize several points. MPS forces can of course never be expected to replace amphibious forces for power projection when forcible entry is required. They can, however, be used in amphibious situations. The two capabilities are complementary; I can envision crisis situations where one or two amphibious MABs and an MPS MAB, perhaps along with a forward-deployed MAU, could quickly come together to form a formidable MAF at the place of decision.

Another point needs to be made in regard to the way that maritime prepositioning enhances the security of our nation. As with amphibious forces afloat, forward-deployed MPS ships can allow us to show resolve without committing forces on foreign shores. Indeed, the mere movement of the ships in a time of crisis would send a subtle signal that neither our potential enemies nor our allies could ignore; and yet, just the presence of the ships, without troops, offshore in international waters cannot be considered provocative.

With maritime prepositioning operations, the Navy and Marine Corps team moves into a new era of cooperation and interaction for increased crisis response capability. The traditional strength and readiness of our naval Services, expressed in this innovative way, represent employable seapower that can, when called on, rapidly and positively influence the destiny of our nation and the entire free world. Of this, I am firmly convinced.

RESTLESS STRATEGY

Alfred Gray's Philosophy of Warfighting

by Thomas G. Mahnken and A. Bradley Potter

Philip Merrill Center for Strategic Studies, June 2018⁷⁹

INTRODUCTION

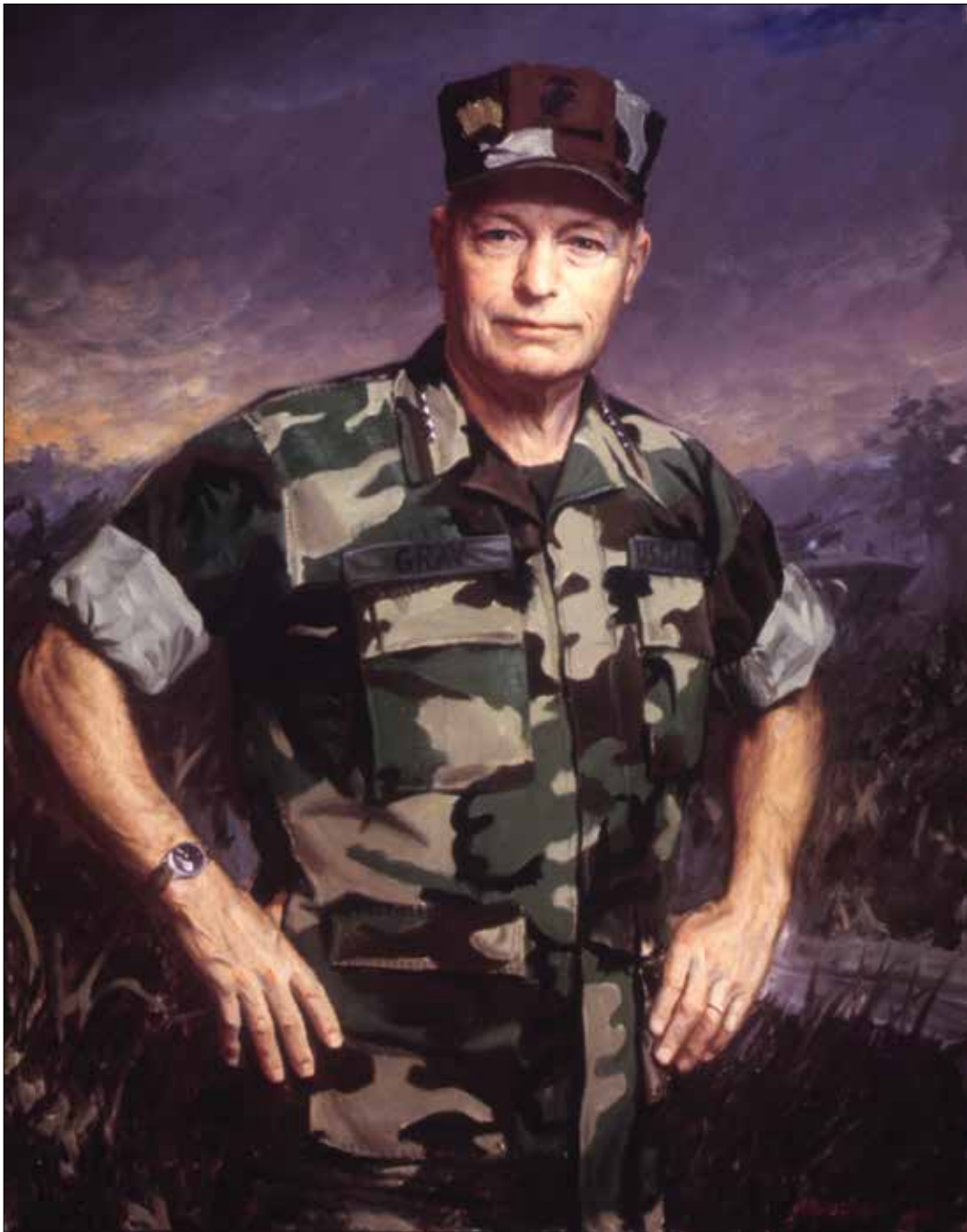
Some strategists are known less for original ideas than for refining long-standing concepts and bending them toward practical application. Marine Corps General Alfred M. Gray Jr. (Ret) is just such a strategist. Today, his influence is deeply embedded across the American military, not just the Corps he once led as Commandant, because he advanced and implemented a set of concepts that defined a generational debate over warfighting. This essay aims to tell Gray's story as an American strategist, especially within the context of maneuver and asymmetric warfare.

Gray's strategic vision has four central features. The first, and perhaps the most closely associated with him, was the concept of maneuver warfare, the notion that military force is

especially potent when units are highly mobile, decentralized, and capable of independent sustained operations against threats ranging from numerically superior conventional opponents to insurgents. The second was the need to counter asymmetric threats and terrorism, a topic that rose to prominence following the 1983 Beirut [Marine] barracks bombing, while the third focused on the importance of sustaining a professional military education program for Marines of all ranks and the inculcation of a common warrior ethos among them. Gray was so dedicated to scholastic efforts that one commentator contends that the decorated general will be remembered foremost as the "Professional Education Commandant."⁸⁰ Finally, Gray heartily supported the development and deployment of new technologies to support his emphasis on maneuver warfare and asymmetric threats, yielding a mobile Marine Corps that was technologically capable of realizing his vision for maneuver warfare and special operations.

⁷⁹ The original report came from Thomas G. Mahnken and A. Bradley Potter, *Restless Strategy: Alfred Gray's Philosophy on Warfighting* (Washington, DC: Philip Merrill Center for Strategic Studies, 2018). Minor revisions were made to the text based on current standards for style, grammar, punctuation, and spelling. The authors would like to thank George Flynn, Frank Hoffman, Tom O'Leary, and Terry Terriff for their thoughtful comments on earlier drafts of this paper. We especially appreciate Gen Alfred M. Gray Jr. (Ret) for allowing us to interview him for this project.

⁸⁰ Col Gerald Turley, USMCR (Ret), *Journey of a Warrior: The Twenty-ninth Commandant of the U.S. Marine Corps (1987–1991): General Alfred Mason Gray* (Bloomington, IN: iUniverse, 2012), 359.



Gen Alfred M. Gray Jr. departed from other Commandants by wearing camouflage in his official portrait by Peter Egeli. This wardrobe choice underscores his belief that the Commandant, despite their position, was a Marine among Marines.

Art Collection, National Museum of the Marine Corps

The myths surrounding these four lines of effort, often propagated by a host of earnest admirers, sometimes shroud the true features of Gray's strategic thinking.⁸¹ Further complicating matters, the general was part of a larger community of thinkers in and out of government during the 1970s and 1980s that was developing ideas about maneuver warfare and thinking about future threats to the United States. In the end, however, it was Gray who operationalized this style of warfare for the twenty-first century, integrating it with emerging technologies and educational approaches in an effort to meet nascent threats at the end of the Cold War. He was not the sole author of the strategic insights associated with these four lines of effort in the U.S. Marine Corps, but Gray was the man who took theoretical debates and acted on them to transform the forces under his command. We argue that this is an important strategic achievement all its own.

This essay focuses on the legacy of Alfred Gray as a practitioner of strategy. Wrapped up in this are aspects of his Marine leadership, record as a commander, and iconoclastic approach to implementing his vision, although we do not explore these in exhaustive detail. Nor do we cover the political battles in Washington over the mission and funding of the Marine Corps in the 1970s and 1980s or attempt a more general military history of this period. We do touch on debates surrounding the intellectual development of maneuver warfare, especially since they are intertwined with Gray's efforts to implement it in the Marine Corps, but we do not attempt to settle the history of these matters. Instead, the essay remains carefully centered on Gray him-

self: his life, thinking, and lasting influence on American approaches to the practice of strategy.

Toward this end, we first sketch Gray's career, focusing especially on his time as a general officer. We next turn to the important influences on his strategic outlook, especially those people and ideas that seemingly shaped his thinking. Gray's views on the theory and practice of strategy make up the third section and in turn set up a discussion about his contributions to strategy. Finally, we consider the legacy of these contributions and evaluate their success relative to the challenges of his day. Linking this entire story is a sense of restlessness on the part of the general: on the battlefield, on the training ground, in the classroom, and among a community of what Gray would call his "warriors." "Take what you get, make what you want," Gray would often tell his subordinates.⁸² His restless pursuit of a particular strategic vision for the U.S. Marine Corps was true to this dictum.

BIOGRAPHICAL SKETCH— A MARINE'S MARINE

From an early age, Alfred M. Gray Jr. read newspapers his father brought home from the New York to Washington rail line on which he worked as a conductor. The news of the day spurred lively conversations among the New Jersey family—no small thing for an intellectually curious boy born in 1928 and peering over the precipice of coming global economic and military calamities.⁸³ From a vantage point later in life, Gray would identify these newspapers and conversations as the earliest seeds of his thinking about

⁸¹ Earl J. Catagnus Jr., "The Intellectual Warrior," U.S. Naval Institute *Proceedings* 140, no. 11 (November 2014): 36–41.

⁸² Paul Otte, *Grayisms: And Other Thoughts on Leadership from General Al Gray, USMC (Ret), 29th Commandant of the Marine Corps* (Arlington, VA: Potomac Institute Press, 2015), 20.

⁸³ Alfred M. Gray, interview with Thomas G. Mahnken and A. Bradley Potter, 30 October 2017, hereafter Gray October interview.



Maj Alfred M. Gray Jr. stops in Hawaii en route to Vietnam to show Gen Victor H. Krulak, commanding general, Fleet Marine Forces, Pacific, the Travis Trophy awarded by the National Security Agency to the 1st Radio Battalion for their contribution during the assault on Khe Sanh.

Photo courtesy Gen Alfred M. Gray Jr.

the wider world and how countries interacted in it.⁸⁴

Equally important to early reading, however, were his experiences on the sports field. Athletic, Gray attended Lafayette College [Pennsylvania,] on a football scholarship, playing a sport in which he not only excelled, but also from which he received his earliest education in leadership.⁸⁵ But an injury in 1950 sapped the

financial support of his athletics. He soon enlisted in the Marine Corps at the outbreak of the Korean War, following in the footsteps of many young men from home that he admired from the baseball diamond and the football field.⁸⁶

Immediately following his basic training at Parris Island [South Carolina], the freshly minted Marine quickly deployed as part of an amphibious reconnaissance platoon to the Pacific. Gray's time as an enlisted man, however, was

⁸⁴ Gray October interview.

⁸⁵ Gray October interview.

⁸⁶ Gray October interview.

short lived. In 1952, he received his commission as a second lieutenant and proceeded to serve two tours on the Korean Peninsula, first as a reconnaissance infantry officer and then as an artillery officer before moving on to new assignments. Following these initial deployments, he transitioned to a signals officer position and spent until 1961 in Asia and the Pacific engaged in signals intelligence activities, leading teams of radiomen who were intercepting communications throughout the region for exploitation by U.S. forces.

Once war in Vietnam erupted, Gray found himself serving multiple tours in South Vietnam between 1964 and 1969 in artillery and communications roles.⁸⁷ He subsequently commanded the 1st Battalion, 2d Marines, Battalion Landing Team, a unit with that he conducted many of his earliest air-ground exercises, before heading to back to Asia as the commander of Camp Hansen in Okinawa, Japan. Following this command, Gray famously played a central role in the final evacuation of U.S. embassy in Saigon in 1975, destroying sensitive communication equipment in the hours before the North Vietnamese overran Saigon. This action earned the now Colonel Gray his fourth bronze star.

By 1977, Alfred Gray was a brigadier general dual-hatted as the commander of 4th Marine Amphibious Brigade (MAB) and the Landing Forces Training Command (LFTC) at Camp Le-



Commandant of the Marine Corps Gen Louis H. Wilson Jr., BGen Alfred M. Gray Jr., and LtGen Samuel Jaskilka on the occasion of Gray's promotion to the rank of brigadier general.

Photo courtesy Gen Alfred M. Gray Jr.

jeune, North Carolina.⁸⁸ With direction to think about how Marines would be trained and an operational unit under his command, he embarked on a series of activities that would inform his later reforms of the Marine Corps. Perhaps most importantly, he brought the 4th MAB to Europe to play in NATO exercises, where he began experimenting with maneuver warfare and better integrating Marine Air-Ground Task Force (MAGTF) actions.⁸⁹ These exercises helped Gray to begin socializing maneuver warfare concepts among junior officers who would subsequently help spread them throughout the Marine Corps.

Gray next took over as the director of De-

⁸⁷ For the best available account of Gray's life up to this point see, Scott Laidig, *Al Gray, Marine: The Early Years 1950–1967*, vol. 1 (Arlington, VA: Potomac Institute Press, 2013).

⁸⁸ The 4th MAB was a middle-size MAGTF (~14,000 Marines) responsible for deploying in response to contingencies throughout Europe, the Middle East, and Africa. MAGTFs are the Marine Corps' combined arms configuration and feature four elements: command, ground combat, air combat, and combat support. Today, MAGTFs come in three sizes: the smallest called a Marine Expeditionary Unit (MEU), a middle size Marine Expeditionary Brigade (MEB, formerly known as MABs), and the largest called a Marine Expeditionary Force (MEF). Regardless of size, they are all capable of autonomous, combined-arms operations for limited periods of time.

⁸⁹ Turley, *Journey of a Warrior*, 17–20.



BGen Alfred M. Gray Jr., commanding general, 4th Marine Amphibious Brigade, participates in a briefing aboard the amphibious command ship USS *Mount Whitney* (LCC 20), 8 September 1976. The *Mount Whitney* served as flagship during the allied Exercise Teamwork '76.

Official U.S. Navy photo, National Archives, courtesy of Phl Joe Leo

velopment Command, one of the three components of the Marine Corps Development and Education Command (MCDEC) in Quantico, Virginia, during the fall of 1978.⁹⁰ Gray helped MCDEC become the hub for designing how Marines would fight future wars while identifying the equipment they would need for these battles. It was an environment in which Gray could begin implementing the lessons he had learned from exercises in Europe and a series of academic studies from the mid-1970s in which he had been a part.⁹¹ There, the Assistant Com-

mandant of the Marine Corps, General Robert H. Barrow, who was soon to be tapped for the Corps' top job, instructed Gray to improve several aspects of how Marines operated. Broadly, these efforts fell into four categories: enhancing mobility; strengthening the antimechanized and antitank capabilities of Marine infantry; improving intelligence, surveillance, and reconnaissance (ISR); and developing special operations capabilities.⁹² During his time at MCDEC Gray helped procure the light armored vehicle (LAV). This new platform offered Marines the mobility essential to the growth of maneuver warfare in the Corps; in particular, the fast, rubber-tired vehicles enabled a highly mobile light infantry, the ability protect flanks, and later, following the Gulf War, would be used to project reconnaissance teams deep into enemy territory.⁹³ These were all important advancements for an organization that had never before had its own indigenous mechanized capability.

After more than two years in Quantico, Gray was promoted to the rank of major general and assumed command of the 2d Marine Division at Camp Lejeune in June 1981. With an entire division now at his disposal, Gray vigorously incorporated maneuver warfare and special operations into the division's training and exercise schedule. During this period, Gray faced one of the darkest moments in the history of the Marine Corps—the bombing of the Beirut [Marine] barracks in October 1983. True to his own maxim “look out for your fellow Marines,” Gray personally orchestrated much of the Marine Corps' response to the bombing that had

⁹⁰ Today, this organization is known as the Marine Corps Combat Development Command (MCCDC).

⁹¹ Turley, *Journey of a Warrior*, 121–32.

⁹² Terry Terriff, “Fields of Fire” (paper presented at the International Studies Association Annual Convention: Exploring Peace, Atlanta, GA, March 2016), 25; Gray interview; and Turley, *Journey of a Warrior*, 121–22.

⁹³ Frank Hoffmann, correspondence with the authors, 26 March 2018.



A U.S. Marine Corps Grumman EA-6A Intruder (BuNo 147865) from Marine Tactical Electronic Warfare Squadron 2 flying over Marine Corps Air Station Cherry Point, NC, on 1 December 1978.
Official U.S. Marine Corps photo, National Archives, courtesy of SSgt Jomp

claimed the lives of more than 200 men under his command, taking special care to support and communicate with the families of fallen and injured Marines.⁹⁴ The death of so many Marines under his command left such an impression on the general that he offered to resign. In 1984, not long after this trying experience, Gray was promoted to the rank of lieutenant general and named commanding general, Fleet Marine Forces, Atlantic (FMFLANT) where he quickly began to institutionalize his transformational goals for all Marines east of the Mississippi River, especially relating to maneuver warfare.

Gray's ultimate appointment as Commandant of the Marine Corps was something of a surprise. The short list under consideration by

⁹⁴ For Gray's own recollection of his efforts to respond to the bombing see, MajGen Alfred M. Gray Jr., USMC, interview by Benis Frank, Marine Corps Oral History Program, 26 May 1984, Box 2, Folder 6, Gerald R. Turely/Alfred M. Gray Research Collection (GRC), Archives Branch, History Division.

Secretary of Defense Caspar W. Weinberger and incoming Secretary of the Navy James H. Webb during the winter of 1986–87 did not include his name, although Webb, a decorated Marine veteran of the Vietnam War, was concerned about the state of the Marine Corps and looking to shake things up. However, Gray impressed both Weinberger and Webb during meetings to discuss the leading candidates and ways of improving the Corps. As Webb later recalled, "I brought Al Gray back three times, not to interview him for commandant, but because he had such a grasp on the spiritual problems of the Corps."⁹⁵ The young and unconventional secretary of the Navy wanted a new direction, and the gruff man from New Jersey was his pick. Although outgoing Commandant General Paul X. Kelly had his own successor in mind, Webb secured

⁹⁵ Thomas E. Ricks, *Making the Corps* (New York: Scribner, 1997), 142.



Maj John T. Dyer Jr.'s *Tragic Monument—Beirut, Lebanon*, 1983 captures the twisted metal and rubble marking the spot where an explosives-laden truck demolished the battalion landing team headquarters building at the Beirut International Airport.

Art Collection, National Museum of the Marine Corps

Weinberger's support and Gray earned the nod. On 28 June 1987, the U.S. Senate unanimously approved Gray as the 29th Commandant of the Marine Corps. In a somewhat unceremonious turn, Gray was unable to move directly into the Commandant's House at the Marine Barracks in southeast Washington, DC, because the building was undergoing major renovations. Instead, he started his tenure as Commandant living out of a small Washington area hotel.⁹⁶

Regardless of his initial lodgings, Gray was an active Commandant and held the post at a no-

table moment of transition in American history. The Cold War ground on toward its unexpected end, the Goldwater-Nichols [Department of Defense Reorganization] Act transformed the Joint Chiefs of Staff, and new threats, especially from terrorist groups, loomed on the horizon. The Marine Corps had reconstructed its foundations after the dark years of the mid- to late-1970s; now, Gray saw "that his mission was to help the Marine Corps recover its self-confidence and sense of importance."⁹⁷ The general would travel across the world visiting "his" Marines and

⁹⁶ Gray October interview.

⁹⁷ Allan R. Millett, *Semper Fidelis: The History of the United States Marine Corps* (New York: Simon and Schuster, 1991), 632.

spreading his particular vision, especially about the importance of a “warrior philosophy” among all those in the Corps.⁹⁸ Perhaps the most lasting aspect of his tenure as commandant was the publication of Fleet Marine Forces Manual 1, *Warfighting* (FMFM-1), a codification in many ways of his warrior philosophy, but even more, the institutionalization of the maneuver warfare and special operations concepts he had refined in earlier commands.

On 30 June 1991, Gray’s term as Commandant came to a close. He retired from the Marine Corps, having served in uniform for more than 41 years. In the years following his retirement, Gray remained active in a host of think tank, nonprofit, and corporate activities, continuing to advocate for the universality of decision-making concepts associated with maneuver warfare.

IMPORTANT INFLUENCES— BENDING EXPERIENCE TOWARD PRACTICE

General Gray’s views on the theory and practice of strategy find their roots in his professional and personal experiences. In the broadest sense, Gray’s time in the Marine Corps was atypical compared to that of many other senior Marine officers, and it offers context for his interest in maneuver warfare, special operations, professional military education, and technology.⁹⁹ Although most of the officers of his generation fought in Korea and Vietnam, Gray stood out from his peers in how he aimed to learn military lessons from these first-hand battlefield experiences, buttressing these lessons with an extensive reading of military history.¹⁰⁰

⁹⁸ Turley, *Journey of a Warrior*, 287.

⁹⁹ Catagnus, “The Intellectual Warrior,” 36–41.

¹⁰⁰ Terriff, “Fields of Fire,” 23.



Commandant of the Marine Corps Gen Alfred M. Gray Jr.’s official portrait in camouflage utility uniform.

Official U.S. Marine Corps photo

He also differed from most Marine general officers because he rose up from a private’s bunk to the Commandant’s House through a series of atypical assignments. His earliest days as an enlisted reconnaissance Marine gave way to intelligence work and artillery assignments as an officer, most of which were spent abroad in various parts of Asia in both peacetime and wartime. Gray later filled increasingly complex command positions, but unlike many senior Marines, he also filled assignments charged explicitly with improving how Marines fought. If “unique” could ever be applied to the career of a Marine Corps Commandant, it would apply to Alfred Gray.

The long arc of Gray’s career suggests something about the origins of his views on strategy. For example, it appears that his earliest

years as a reconnaissance Marine in Korea may have informed his views on the importance of intelligence in supporting combat operations; after all, to reconnoiter a position, the young Gray needed to know what his commanders had in mind, consider the potential obstacles to operations of varying scales, and identify the type of information needed to make those operations successful.¹⁰¹ Following the Korean War Armistice, Gray spent time in northern Japan as the sole America officer working alongside local Japanese officials on local governance and security issues. Gray reflected on this period some years later, concluding that he learned an especially valuable lesson from this assignment: that treating people the way they should be treated offers huge advantage—plans are more readily carried out by loyal subordinates and partners.¹⁰² Gray credited these initial years working in small teams of Marines with teaching him another lesson: that many things can get done when one does not worry about who gets the credit.¹⁰³ These two lessons informed his leadership for years to come, and insofar as leadership plays a central role in his thinking on maneuver warfare, offer a kind of bedrock to his views on strategy.

Gray's subsequent time in Vietnam surely influenced his views on the use of military force, as it did many of his generation, and during his time in Southeast Asia he was already experimenting with field implementation of some maneuver warfare concepts. For example, while in command of an artillery battalion in Goi Linh, he would instruct his men to disperse after nightfall before North Vietnamese Army forces began to bombard their positions. At first light, Gray and

his men would return to their posts and open barrages of their own.¹⁰⁴ From these kinds of direct combat experiences, Gray and a small cadre of officers deliberately sought concrete lessons for the future. Like B. H. Liddell Hart reflecting on the Somme [France] and other bloody battles of World War I, they were eager to get beyond attrition warfare, fight smarter, and explore how maneuver might offer an alternative.¹⁰⁵ Gray and this cohort of junior and mid-grade officers stressed the interactive nature of warfare. They wanted the Marine Corps of the future to pay closer attention to influencing the enemy's mindset when devising operations rather than just focusing on strict adherence to standard operating procedures for massing firepower. Moreover, these officers believed that the Corps should move away from the linear formations embraced by then-current doctrine and toward emphasizing mobility as a means of putting an enemy at a disadvantage. The Corps needed to develop leaders who could lead from the front and adapt to changing tactical conditions, just as they had done in Vietnam.¹⁰⁶ All of these insights would feature prominently in Gray's future advocacy of maneuver warfare in the Marine Corps and inform his understand of special operations.

Although the roots of Gray's maneuver warfare concepts lay in his experience during the Korean and Vietnam wars, they increasingly found shape in exercises featuring air-ground operations during his command of the 1st Battalion, 2d Marines, Battalion Landing Team. Taking place in Turkey and at the Marine training facility in Twentynine Palms, California, these efforts saw the innovative Marine leader

¹⁰¹ Catagnus, "The Intellectual Warrior," 36–41.

¹⁰² Gray October interview.

¹⁰³ Gray October interview.

¹⁰⁴ We thank Tom O'Leary for relaying this insightful anecdote to us.

¹⁰⁵ We appreciate Frank Hoffman stressing this point to us.

¹⁰⁶ Terriff, "Fields of Fire," 16–17.

pushing the boundaries of acceptability in the post-Vietnam Corps, challenging his men to think in terms of rapid, deep penetrations of enemy territory rather than methodical set-piece battles.¹⁰⁷ In addition to testing and refining his ideas about maneuver warfare, Gray began concurrently exploring what would later become the Marine Corps Special Operations Capable (SOC) program by conducting special operations exercises in a way that would become a hallmark of his later commands. These early efforts prompted Rear Admiral George Milligan, the commander of the flotilla to which Gray was attached at the time, to later remark, “It seems as if Al Gray saw such a future special training capability back as early as 1972.”¹⁰⁸ The future Commandant would continue to talk about the formative influence of these exercises for years to come, drawing clear lines from these efforts to his later Marine Corps reforms.¹⁰⁹

The mid-1970s also brought other important strategic influences into Gray’s life, namely congressional staffer William S. Lind, Marine lieutenant colonel and Vietnam veteran Michael D. Wyly, and retired Air Force Colonel John R. Boyd, among others. Gray first met Lind in 1976 when the latter was helping the Marine Corps with a variety of field activities. The congressional staffer was highly critical of senior Marine leaders who he saw as stymied by old ways of doing business, a characterization that earned him the opprobrium of more than a few general officers. Specifically, Lind was a rabid proponent of maneuver warfare concepts and boasted a healthy following among young Marine officers eager to move on from Vietnam. He was also a leader in the so-called “military reform”



A Boeing-Vertol CH-46 Sea Knight helicopter from Marine Heavy Helicopter Squadron 362 (HMH-362) picks up a Marine reconnaissance team during the 1977 NATO Exercise Display Determination in Turkey. Maj John T. Dyer, *Recon Retrieval*, “*Display Discrimination*.” Acrylic on linen.

Art Collection, National Museum of the Marine Corps, 1-4-417

movement that argued that the U.S. armed forces should invest in large numbers of less sophisticated (and less costly) weapon systems than those the Services traditionally favored.¹¹⁰

Michael Wyly, who by 1980 was leading tactics instruction at the Marine Corps’ Amphibious Warfare School in Quantico, Virginia, was another important member of the maneuver warfare movement and well-known to Gray

¹⁰⁷ Gray October interview; and Catagnus, “The Intellectual Warrior,” 36–41.

¹⁰⁸ Turley, *Journey of a Warrior*, 69–70.

¹⁰⁹ Gray October interview.

¹¹⁰ See, for example, Thomas G. Mahnken, *Technology and the American Way of War since 1945* (New York: Columbia University Press, 2008), 125–26.

who would later appoint him vice president of Marine Corps University.¹¹¹ Wyly, in turn, was connected with John Boyd, the father of the observe-orient-decide-act (OODA) loop approach to decision making. The OODA loop was a means to execute decisions faster than an enemy and consequently open up battlefield advantages. Boyd would become a respected thinker among Marines, and his approach would ultimately become a staple of Marine Corps training across all levels of leadership. These four men formed the backbone of the maneuver warfare movement in the U.S. Marine Corps for years to come.

Boyd's work was particularly influential. Writing in 1980 in the pages of the *Marine Corps Gazette*, Lind argued that Boyd's work provided the "theory of maneuver warfare," especially with its focus on psychologically dislocating an enemy through a more rapid decision-making process.¹¹² Lind, who would later write the *Maneuver Warfare Handbook* in 1985, went on to argue that maneuver warfare was well suited to the U.S. Marine Corps provided its leadership could accept and adjust to this alternative style of thinking.¹¹³ Wyly, meanwhile, popularized many of the same ideas among mid-grade officers through his lectures at the U.S.

Army War College. However, as of the early 1980s, none of the people associated with this effort "had a clear conception of how or in what way these fit into an overarching, coherent concept for warfighting."¹¹⁴ This task would fall to Gray, who used his extensive series of

exercises to socialize many of the ideas all four men shared and who steadily worked to institutionalize features of them within portions of the Corps, especially those associated with training and equipping Marines for the future.

Some debate surrounds just who among these early proponents of maneuver warfare was most central to its development and adoption by the Marine Corps.¹¹⁵ This issue is likely impossible to settle.¹¹⁶ Each of these men advocated similar changes following the Vietnam War and worked to spread a new type of thinking among the senior military and political leaders shaping the future Marine Corps. What we can say with some certainty is that Alfred Gray was the central figure in operationalizing the maneuver warfare concepts that were circulating in intellectual circles and was essential to overcoming the bureaucratic challenges associated with institutionalizing the new style of warfare. Before meeting Boyd, Gray was already thinking in terms consistent with what would ultimately be called maneuver warfare, and according to one scholar, it may be best to think of Boyd's work providing the "conceptual framework that fit Gray's early ideas."¹¹⁷ All of the men associated with the movement were learning from one another, recasting their ideas to take in the latest advances among them, and then striking back out into the defense community to challenge conventional wisdom.

¹¹¹ Robert Coram, *Boyd: The Fighter Pilot Who Changed the Art of War* (New York: Back Bay Books, Little, Brown, 2002), 395; and Gray October interview.

¹¹² William S. Lind, "Defining Maneuver Warfare for the Marine Corps," *Marine Corps Gazette* 64, no. 3 (March 1980): 55–58.

¹¹³ Lind, "Defining Maneuver Warfare for the Marine Corps," 55–58; and Laidig, *Al Gray, Marine*.

¹¹⁴ Terriff, "Fields of Fire," 26.

¹¹⁵ Historian Grant T. Hammond and journalist Robert Coram both argue that it was Boyd's constant briefings and popularization of the maneuver warfare concept that brought the U.S. military in line with this style of warfare, see Grant T. Hammond, *The Mind of War: John Boyd and American Security* (Washington, DC: Smithsonian Books, 2012); and Coram, *Boyd*.

¹¹⁶ Robert Coram admits that so entangled were many of Boyd and Wyly's thoughts that "it is difficult on occasion to separate the ideas" of the two. See Coram, *Boyd*, 389. This entanglement extends really into the entire circle of maneuverists and reformers, of which Gray, Lind, and others were a part.

¹¹⁷ Terry Terriff, email with author, 2 August 2017.



On Marine Corps Air Station, Cherry Point, NC, Gen Alfred M. Gray Jr., Commandant of the Marine Corps, speaks to his troops prior to their departure for the Middle East in support of Operation Desert Shield.

Official U.S. Marine Corps photo

As Terry Terriff observes, Boyd's famous "Patterns of Warfare" lecture, a survey of military history designed to explore how maneuver warfare might work in a modern setting, was 5 hours long in the late 1970s while by 1984, after years of communicating with Gray and other maneuver warfare advocates and thinkers, it was a full 14 hours long.¹¹⁸ Grant Hammond, one historian largely in the Boyd camp, nonetheless argues that *Warfighting* was "the essay Boyd should have written instead of only giving briefings" before contending that some of the ideas in the manual are taken directly from Boyd's

presentations.¹¹⁹ Gray, for his part, later recalled benefiting from a "long working relationship" with Boyd, the men developing a close personal relationship over years talking about strategy and future threats to the United States.¹²⁰ However, Gray held that Boyd was not involved in his field development of the maneuver warfare concept.¹²¹ Similar interactions were common between Gray and Lind. When the general first met the maverick staffer in 1976, he was proud to show off how American Marines already knew something about maneuver warfare, even

¹¹⁹ Hammond, *The Mind of War*, 195.

¹²⁰ Gray interview, 25 May 2018, hereafter Gray May interview; Gray October interview; and Coram, *Boyd*, 355.

¹²¹ Gray October interview.

¹¹⁸ Terriff email.

though the Corps had yet to formalize any of this understanding.¹²²

In the full accounting, the association among these men really did matter in advancing a viable alternative to business as usual in the Marine Corps. Getting maneuver warfare to work required different types of talents—intellectual, bureaucratic, operational, and even evangelical—and each of them brought these to varying degrees. Their mutual influence on one another ultimately served as an intellectual proving ground to parallel Gray's field exercises. But it was Gray's combination of thoughtfulness, bureaucratic acumen, and operational focus that overcame many practical and political challenges facing the adoption of maneuver warfare by the U.S. Marine Corps.

Gray fixed himself on developing the concrete aspects of maneuver warfare and Marine special operations throughout his increasingly senior positions from the late 1970s through the 1980s. His time commanding the 4th MAB, a unit upon which he bestowed the name "The Carolina Marine Air-Ground Task Force (MAGTF)" to highlight his special vision for it, and the Landing Forces Training Command offered ready-made opportunities to experiment with these ideas. Indeed, it was this time as commander of the 4th MAB when Gray's ideas crystallized and began taking earnest shape in a series of exercises and training events that earned a reputation across the entire Corps.¹²³ The general later argued that maneuver warfare's development was crucially aided by force-on-force exercises with real post-operations critiques featuring the officers and enlisted men charged with carrying out operations. Experiential learning of this kind converted believers across the ranks and helped

Gray to better understand what was actually necessary to realize maneuver warfare with Marines.¹²⁴ Central to his philosophy of socializing maneuver warfare and special operations capabilities in the Marine Corps were hands-on activities like exercises in which officers would come to appreciate these new approaches themselves rather than having them dictated from above. Gray later recalled hoping to have his vision for the Corps come from the ground up, take on a life of its own separate from him and rooted in junior officers doing the real operational work.¹²⁵

The 4th MAB exercises served other functions as well, especially in identifying the technologies necessary to most effectively carry out maneuver warfare. During this period, Gray began implementing an approach to command and control that supported protracted Marine operations ashore that, combined with increased mechanization, would allow his Marines to attack far from littoral areas for extended periods of time.¹²⁶ Using the amphibious tractors (amtracs) assigned to his brigade as makeshift armored personnel carriers, Gray also improvised the equipment needed to enhance the speed of his Marines in ways far outside the official Marine Corps standard operating procedures.¹²⁷ In 1978, during NATO's Northern Wedding-Bold Guard exercises, he successfully merged technology with his maneuver warfare approach, impressing German allies with his unit's newfound speed and maneuverability.¹²⁸ Marines in amtracs operating ashore succeeded in breaking out of a German encirclement and achieved

¹²² Gray May interview.

¹²³ Terriff, "Fields of Fire," 24.

¹²⁴ Gray October interview.

¹²⁵ Gray May interview.

¹²⁶ Turley, *Journey of a Warrior*, 94.

¹²⁷ Terriff, "Fields of Fire," 24; and Turley, *Journey of a Warrior*, 100–2.

¹²⁸ Turley, *Journey of a Warrior*, 98–119.

their exercise objectives with such rapidity that they nearly ended up in East Germany.¹²⁹ As had been true before and would prove increasingly so, many Marines skeptical about maneuver warfare came to believe after seeing this kind of success in hands-on, realistic, force-on-force exercises.¹³⁰

Gray continued to innovate in similar ways during his time at Marine Corps Development and Education Command (MCDEC). He would eventually come to regard this posting as an especially important period in his intellectual development.¹³¹ Despite especially tight budgets, his time at the command led to some of his most pointed thinking on the strategic issues facing the Marine Corps, including requirements for a fast, armored vehicle to achieve the mobility necessary for maneuver warfare.¹³² This insight eventually led to the development of the light armored vehicle (LAV), but it started as a series of “off-the-shelf” armored vehicles tests, some of which the general participated in personally. Gray’s experience at MCDEC led to an especially well-known aphorism: “It doesn’t cost any money to think.” In his view, years of austerity could also be periods of intense intellectual advancement, setting up especially productive periods once resources became available.¹³³ So it was at MCDEC. When the budgetary spigots were opened once again beginning in the late 1970s, the Marine Corps was well placed to field the LAV by 1983.

Gray’s penchant for realistic, force-on-force exercises extended to his command of the 2d Marine Division, where he aimed to convert



LtGen Alfred M. Gray Jr., commanding general, Fleet Marine Forces, Atlantic, enters the Marine field compound accompanied by unidentified officers during Exercise Cold Winter '87.

Official U.S. Marine Corps photo, courtesy of Cpl J. D. Gonzales, National Archives

the entire division to a maneuver warfare philosophy.¹³⁴ This period offered Gray a series of opportunities to get feedback on how his reforms were actually playing out. For example, he held “professional study groups” in which those who found his brand of reform appealing discussed a range of issues from combined-arms operations to maritime strategy. So-called “Al Gray men” would spread back out across the Corps, sharing a common set of ideas about how Marines might fight in the future.¹³⁵ He also established the [2d Marine Division] Maneuver Warfare Board to “take the lead in collecting, receiving, and disseminating theoretical and practical information regarding maneuver warfare” with the goal of “improv[ing] upon the understanding of maneuver warfare concepts and encourage

¹²⁹ Gray October interview; and Turley, *Journey of a Warrior*, 98–119.

¹³⁰ Thanks to Tom O’Leary for stressing this point to us.

¹³¹ Gray October interview.

¹³² Gray October interview; Terriff, “Fields of Fire,” 25; and Turley, *Journey of a Warrior*, 128–29.

¹³³ Otte, *Grayisms*, 22; and Gray October interview,

¹³⁴ Turley, *Journey of a Warrior*, 143–45.

¹³⁵ Turley, *Journey of a Warrior*, 148–49.



Combat artist Capt Charles G. Grow's LAV "Marietta" shows Sgt Tooke, Company C, 1st Light Armored Infantry Battalion, beside his vehicle from Task Force Shepherd near the heel of northern Saudi Arabia, February 1991. Oil on canvas.

Art Collection, National Museum of the Marine Corps, 301-2-42

their refinement and test in field exercises.”¹³⁶ To bolster this effort, Gray hosted a series of commander's conferences to discuss a wide range of tactical issues relevant to his larger strategic vision, including approaches to amphibious warfare, fire support, and combined-arms coordination, among others, and invited outside speakers such as Boyd to present on his OODA loop, “Patterns of Conflict” brief, and the intellectual underpinnings of maneuver warfare.¹³⁷

The event that perhaps most influenced Gray's thinking on special operations was the

Beirut barracks bombing on 23 October 1983, an attack that occurred while he was in command of the 2d Division.¹³⁸ Following the incident, Gray was more convinced than ever that Special Operations Capable (SOC) training was essential for the Marine Corps; the world was changing, threats were changing, and the Marines needed to change with it.¹³⁹ In this period of shock, the secretary of defense ordered the Services to consider how their special oper-

¹³⁶ “Maneuver Warfare Board at Lejeune,” *Marine Corps Gazette* 65, no. 10 (October 1981): 6.

¹³⁷ Terriff, “Fields of Fire,” 31–32; Turley, *Journey of a Warrior*, 136–37; and “2d MarDiv Maneuver Warfare Study,” *Marine Corps Gazette* 66, no. 3 (March 1982): 8.

¹³⁸ Gray dislikes calling this event the “Beirut barracks bombing” because in fact the building that was attacked was far more than a barracks, it was the hub of all Marine activity at the Beirut International Airport, serving important command, communications, and logistics functions. See Gray May interview. However, because the attack is generally referred to as the Beirut barracks bombing in the available histories, we use that term here.

¹³⁹ Gray May interview.

ations forces might address low intensity conflicts in the future. Then-Commandant P. X. Kelly requested that Fleet Marine Force, Atlantic, produce the Marine Corps report, an effort Gray oversaw as the unit's commander.¹⁴⁰ The resulting study identified the MAGTF as ideally positioned to address a wide range of nonconventional threats thanks to its worldwide presence and ability to quickly deploy forces against a target. Moreover, it stressed that the Marines enjoyed a long history of special operations-type activities, and it would only be natural to enhance their training to better execute these in the future. Gray would take up this cause as his own, aiming to certify some Marine Amphibious Units as SOC forces and advocate for Marine special operations roles throughout his time as Commandant

Finally, a passion for books represented one of the greatest influences on Gray's strategic thinking, one that extended from his childhood into all of his assignments in the Marine Corps. Whereas his experiences playing sports as a boy informed his sense of leadership, his youthful reading opened his eyes to the world.¹⁴¹ For example, young Gray's reading about [Josip Broz] Tito's leadership of Communist partisans against the Nazi occupation of Yugoslavia inspired his early interest in irregular warfare.¹⁴² Once in the Marine Corps, he selected books on the premise that one should "understand what you didn't know;" a philosophy that led him to all kinds of reading in history, political science, economics, and even some physics, math, and chemistry.¹⁴³ As Gray took increasingly senior command posi-

tions, the general became famous for deploying with a footlocker filled with books. "It's important to look at people through their own eyes, not just our eyes," Gray would tell his subordinates, and he sought through his reading to understand what he could about the history, culture, and religion of the places to which he was sent.¹⁴⁴

Later in life, Gray argued that reading history helps inspire strategic and analytical thinking.¹⁴⁵ In this spirit, writers including B. H. Liddell Hart, [British Major General] J. F. C. Fuller, S. L. A. Marshall, Reginald Hargreaves, [Brigadier General] Samuel B. Griffith, Lynn Montrose, and [Colonel] Robert D. Heinl all figured in Gray's approach to strategic thought in one way or another.¹⁴⁶ When asked about his strategic influences, Gray explained that he saw himself as a student of Genghis Khan, Alexander the Great, Hannibal, Julian Corbett, Alfred Thayer Mahan, Isoroku Yamamoto, and especially Sun Tzu, though he admitted thinking through these great strategists took years and was a cumulative process.¹⁴⁷ Interestingly, Gray distanced himself from Carl von Clausewitz, saying he was never a "Clausewitz disciple."¹⁴⁸ While acknowledging this central figure in Western strategy was important to some aspects of his thinking, especially about the nature of war, he contended that Eastern approaches to warfare focused on speed, intelligence, and deception always held greater appeal to him. Gray also pointed to several contemporary thinkers as "strategic figures" in his career, including General Ronald H. Griffith, Senator Sam A. Nunn, and Senator John G. Tower, although he remained disheartened about just how few think strategically—it

¹⁴⁰ Commanding General, Fleet Marine Force, Atlantic, to Commandant of the Marine Corps, December 1984, Box 6, Folder 12, GRC, Archives Branch, History Division.

¹⁴¹ Gray October interview.

¹⁴² Gray October interview.

¹⁴³ Gray October interview.

¹⁴⁴ Otte, *Grayisms*, 23.

¹⁴⁵ Gray October interview.

¹⁴⁶ Turley, *The Journey of a Warrior*, 33.

¹⁴⁷ Gray October interview.

¹⁴⁸ Gray October interview.



In Saudi Arabia, Gen Alfred M. Gray Jr. briefs members of the 1st Battalion, 5th Marines, during Operation Desert Shield.
Official U.S. Marine Corps photo

is easier, after all, to employ a “recipe mentality,” fitting the case at hand to some preconceived conception of the world and what ought to be done to affect it.¹⁴⁹ Strategic wisdom—in theory and practice—is more elusive than not.

VIEWS ON THE THEORY AND PRACTICE OF STRATEGY— ALFRED GRAY ON STRATEGY

In his own telling, General Gray took the *Ugly American*’s lesson to heart, arguing that a strategist must develop empathy if he is to find success.¹⁵⁰ Thoughtless, ignorant, and ethnocentric views undermine sound defense policy, diplo-

matic efforts, and military strategy; cultivating their antidote, empathy, is thus essential to any person engaged in those efforts. Strategic thinkers are also good listeners, a natural trait of the empath. They take time to gather information from subordinates, intelligence sources, and outside experts before making definitive plans. Finally, sound strategists need to be careful with the assumptions they make about the world and their opponents. They must entertain contingency plans associated with each major assumption should one or many fail to hold up in reality.¹⁵¹ Only in this way might a commander hope to formulate strategies appropriate for the adversary at hand, rooted in facts, and capable of adapting to the ever-changing nature of the battlefield.

Gray views grand strategy as including all elements of national power and influence much the way B. H. Liddell Hart had some half a century before. Strategy at a high level is about “the art of getting things done so that you can keep a peaceful kind of a country” or more broadly to “survive as a nation and perchance thrive,” this second definition coming from a conversation the general once had with Max Lerner. Grand strategy also has long-range purpose: it requires looking over the horizon.¹⁵² It requires long-range planning.¹⁵³ “What do we want it to look like when we are done?” is a famous Grayism that captures this line of thinking.¹⁵⁴ Once an end is clearly established, one can work backward to match it with the most appropriate means. Looking at the grand strategic position of the United States, Gray cultivated a special interest in defending sea lanes, a la classic Mahanian na-

¹⁵¹ Gray October interview.

¹⁵² Gray October interview.

¹⁵³ A. M. Gray Interview Transcript, Box 2, Folder 22, GRC, Archives Branch, History Division.

¹⁵⁴ Gray October interview; and Otte, *Grayisms*, 10.

val strategy; however, he argued that there may well be new domains of particular importance in the twenty-first century. And although the United States would need to maintain its power at sea, the traditional “commons” of the world, new arenas like the cyberspace are likely to face contestation in the future.¹⁵⁵

Gray’s specific views on war, especially maneuver warfare and special operations, spring from a particular grand strategic context. In the late 1980s, Gray began to consider the implications of a post-Cold War world, one where the bipolar order fizzled to a close and new threats came to confront the United States.¹⁵⁶ This world would present a host of new challenges, including asymmetric threats, low-intensity conflicts, terrorism, resurgent nationalism, and resource competition, among others. *Warfighting* captured Gray’s views on the future of warfare in clear terms. “By historical standards, the modern battlefield is particularly disorderly,” the manual argued, and “while past battlefields could be described by linear formations and uninterrupted linear fronts” future wars would feature “unoccupied areas, gaps, and exposed flanks which can and will be exploited, blurring the distinction between front and rear and friendly- and enemy-controlled areas.”¹⁵⁷ Gone were the days of preparing mainly for large-scale conventional war; now, the United States would



During Operation CAX-1-2-82, the commanding officer of the 1st Battalion, 8th Marines, briefs Maj-Gen Alfred M. Gray Jr., commanding general of the 2d Marine Division, on the present situation at Twentynine Palms, CA, 1 November 1981.

Official U.S. Marine Corps photo, National Archives, courtesy of SSgt D. D. Smith

need to think much more about the many ways a weaker adversary might fight. Moving forward into the 1990s, Gray saw long-standing features of American strategy, including forward defense, deterrence, escalation control, and coalition warfare remaining central, though with fewer bases abroad, loss of some overflight rights, and potential conflicts along coastal areas, U.S. strategy would retain essential maritime features.¹⁵⁸ Expeditionary combined-arms forces would be essential for meeting with the contingencies of a

¹⁵⁵ Gray May interview.

¹⁵⁶ Alfred M. Gray, “Change, Uncertainty, and Challenge: The National Security Environment of the 21st Century” (presentation, MacNaughton Symposium, Maxwell School of Syracuse University, NY, 26 September 1989), Box 2, Folder 34, GRC, Archives Branch, History Division; Gen Alfred M. Gray, “Defense Policy for the 1990s,” *Marine Corps Gazette* 74 (May 1990): 18–19; “Statement of General A. M. Gray before the Subcommittee on Projection Forces and Regional Defense, Committee on Armed Services, United States Senate,” 10 March 1989, Box 2, Folder 19, GRC, Archives Branch, History Division, hereafter Gray Senate statement; and Millett, *Semper Fidelis*, 632–33.

¹⁵⁷ *Warfighting*, FMFM-1 (Washington, DC: Headquarters Marine Corps, 1989), 9.

¹⁵⁸ Gray, “Defense Policy for the 1990s,” 20.



Gen Alfred M. Gray Jr., Commandant of the Marine Corps, visits with members of Company G, 2d Battalion, 5th Marines, at their central training area. Gray is on hand to observe a training exercise during his visit to Marine Corps Air Station Futenma, Okinawa.

Official U.S. Marine Corps photo, National Archives, courtesy of Cpl Michael T. Jordan

future featuring progressively varied threats and an increasingly lethal battlefield.¹⁵⁹

To this end, Gray imbued *Warfighting* with a special role for U.S. Marines. “The Marine Corps, as the nation’s force in readiness, must have the versatility and flexibility to deal with military and paramilitary situations across the entire spectrum of conflict,” the manual noted before arguing that “a modern military force capable of waging a war of high intensity may find itself ill-prepared for a ‘small’ war against a poorly equipped guerrilla force.”¹⁶⁰ During his time as Commandant, Gray contended that the

Marine Corps enjoyed a unique opportunity to redesign itself to address future national security challenges from asymmetric threats. He argued that Marine Air-Ground Task Forces (MAGTFs) should form the backbone of an American response to low- and mid-intensity conflict in the foreseeable future. From Gray’s perspective, this was a natural mission for the Corps since it was always forward deployed or could quickly deploy forward in response to a crisis.¹⁶¹ He built a first Marine Corps Campaign Plan (MCCP), a 24- month guide to improving Marine warfight-

¹⁵⁹ Gray, “Defense Policy for the 1990s,” 20–21.

¹⁶⁰ *Warfighting*, 22.

¹⁶¹ U.S. Department of the Navy, “Marine Air-Ground Task Force Master Plan 1990–2000,” Box 14, Folder 27, GRC, Archives Branch, History Division; and *Warfighting*, 42, for the language detailing the Marine relationship with the Fleet to achieve this goal.

ing capabilities, around the notion of strengthening MAGTFs to be an increasingly flexible, expeditionary force capable of projecting itself into a rapidly changing world.¹⁶² However, for MAGTFs, or any Marine unit, to play a role in the future, Gray would need to sell his grand strategic vision to the wider U.S. military and its political leadership.

This was often a challenge throughout the 1980s. In fact, Gray's vision for the Corps and more broadly the future of warfare frequently put him at odds with the other Services, most notably the Navy. Having fought the Cold War with an advanced "blue water" fleet, the Navy saw the future requiring many of the same tools of the past, namely power projection across vast ocean distances thanks to modern naval technology.¹⁶³ Such a vision had little room for maintaining, let alone increasing, Marine transport ships for littoral combat missions, and Gray pushed Congress as early as his first report as Commandant in 1987 to expand amphibious ships in the Fleet.¹⁶⁴ The inter-Service disagreements became so intense that Gray had to write to the secretary of the Navy, Henry L. Garrett III, in November 1989 as debates over the Fleet's future makeup heated up in Washington.¹⁶⁵ In his letter, Gray's strategic vision of the future was clear, and he forcefully advocated not just for Marine transports but also for a broader understanding of littoral combat in the future. Marines would not only fight future battles on beaches, but also deep inside enemy territory, whether as part of a force fighting a conventional enemy, irregular opponent, or terrorist or-

ganization. The Navy would need to accept this future sooner or later.

Gray's broad focus on low-intensity conflict of various sorts also put him at odds with the other branches of the armed forces, all of which were interested in retooling for new types of high-intensity wars.¹⁶⁶ The U.S. Army had little interest in considering another irregular fight after Vietnam, and it had so "heavied up" for conventional combat against the Soviet Union that organizational inertia was against preparation for any alternatives. Meanwhile, increasing the mobility of the Marine Corps, and preparing it to fight inland, encroached on what the Army saw as its traditional mission. Gray was peddling dangerous ideas from the Army's point of view; although Gray, paying careful attention to Army doctrine, was eager to show ways of differentiating the Corps from the U.S. military's other land component.¹⁶⁷ The Air Force, meanwhile, had expensive new weapons systems in mind, including new fighter aircraft, never designed for the types of conflicts Gray envisioned for the future. Thus, from the moment Gray joined the Joint Chiefs of Staff, aiming to expand the ideas he had cultivated in his earlier commands across the entire Marine Corps, he faced skepticism if not outright hostility toward his views.

This did not deter him. From Gray's perspective, low-intensity conflict of all sorts would require two things from Marines: familiarity with maneuver warfare and a special operations capability. Importantly, maneuver warfare was equally applicable to conventional and unconventional warfare. Although its central concepts were initially designed to offer Marines ways of fighting against numerically superior opponents, whether the USSR or some regional

¹⁶² MAGTF Warfighting Center, "Marine Corps Campaign Plan," Box 14, Folder 18, GRC, Archives Branch, History Division.

¹⁶³ Turley, *Journey of a Warrior*, 340–44.

¹⁶⁴ Gen Alfred M. Gray, "Annual Report of the Marine Corps, 1987," Box 2, Folder 8, GRC, Archives Branch, History Division.

¹⁶⁵ Alfred M. Gray to Secretary of the Navy, 15 November 1989, as cited in Turley, *Journey of a Warrior*, 463.

¹⁶⁶ Turley, *Journey of a Warrior*, 340–44.

¹⁶⁷ The authors thank Frank Hoffman for this insight.

power with a hefty local force, the flexible way of thinking about war offered a viable path to success on the many various types of fluid future battlefields. And although the other branches of the U.S. military had developed their own special operations units, Gray saw an important gap in American capabilities that Marines could naturally fill. Because they were constantly at sea and stationed around the world, Marines would be well positioned to help augment special operations units from the other branches and often found themselves in positions requiring their own indigenous special operations capability. If Marines were to be given missions like that in Beirut between 1982 and 1984, they needed their own capability to counter terrorism and associated threats. Through these two vehicles, Gray saw a special place for his Marines in the future defense of the United States.

CONTRIBUTIONS TO THE THEORY AND PRACTICE OF STRATEGY— MAKING THEORY WORK

According to one of his colleagues, Alfred Gray was “singularly responsible for the Marine Corps’ transformation from a conventional warfare mindset to one focused on the emerging threats.”¹⁶⁸ Those describing Gray’s contributions to the theory and practice of strategy often rely on such glowing language. And to be sure, his contributions to maneuver warfare, special operations, professional military education, and the judicious application of new technology made Gray a central figure in American strategic debates at the end of the twentieth century. Like many thoughtful strategists, his efforts in these four areas interlocked, making each stronger thanks to the others. Together, they supported

military power but also undergirded American influence, the often forgotten but, for Gray, essential aspect of grand strategic planning.¹⁶⁹ All four lines of effort remain relevant to contemporary strategic debates in the United States.

Maneuver Warfare

In an interview early in his tenure as Commandant, Gray made clear that one of his highest priorities for the Marine Corps would be to ensure “common operating procedures, common doctrine, and common war-fighting instructions” to ensure “one Marine Corps.”¹⁷⁰ This came in the form of Fleet Marine Forces Manual 1, *Warfighting*.¹⁷¹ “This book describes my philosophy on warfighting,” declared Gray’s introduction to the manual. The new publication was “Marine Corps’ doctrine and, as such, provides the authoritative basis for how we fight and how we prepare to fight.”¹⁷² Years later, Gray regretted muddying the understanding of *Warfighting* by calling it *doctrine*, admitting that it was a mistake to use the term. Once he became Commandant, there was a move to write something down by many who believed in maneuver warfare in the Marine Corps and wanted to differentiate it from similar efforts in the U.S. Army, and so FMFM-1 came about with Gray’s support; however, this decision obfuscated the philosophical features of the thought process, leading some to take it as a

¹⁶⁹ Gray October interview.

¹⁷⁰ Gen Alfred M. Gray, “Much to Be Proud of, Much to Strive For,” *Sea Power* 30 (November 1987): 9. See also Gen A. M. Gray, “29th Commandant Speaks to the Corps,” *Marine Corps Gazette* 71 (September 1987): 18.

¹⁷¹ For one thoughtful treatment on the origins, development, and debate surrounding maneuver warfare in the Marine Corps, see Terry Terriff, “‘Innovate or Die’: Organizational Culture and the Origins of Maneuver Warfare in the United States Marine Corps,” *Journal of Strategic Studies* 29, no. 3 (2006): 475–503, <https://doi.org/10.1080/01402390600765892>.

¹⁷² *Warfighting*, 1.

¹⁶⁸ Turley, *Journey of a Warrior*, 7.

more rigid, doctrinal approach.¹⁷³ The notion of *Warfighting* as a philosophy of war and warfighting, or even more broadly as a philosophy on how to think about war and warfighting, was always much closer to his intent.¹⁷⁴ Gray long argued that the ideas contained in the Marine Corps publication always went beyond policy, instead constituting a thought process appropriate for a wide range of endeavors, from warfighting to business.¹⁷⁵ And although some critics would get bogged down in the notion of *Warfighting* as doctrine, those who read the book carefully often appreciated the nuanced thinking it advocated, pointing to excerpts like this:

Maneuver warfare is a way of thinking in and about war that should shape our every action. It is a state of mind born of a bold will, intellect, initiative, and ruthless opportunism. It is a state of mind bent on shattering the enemy morally and physically by paralyzing and confounding him, by avoiding his strength, by quickly and aggressively exploiting his vulnerabilities, and by striking him in the way that will hurt him most. In short, maneuver warfare is a philosophy for generating the greatest decisive effect against the enemy at the least

*possible cost to ourselves a philosophy for "fighting smart."*¹⁷⁶

Gray later expanded on this central idea, arguing that the maneuver warfare concepts captured in *Warfighting* were all about helping Marines realize their potential. They were rooted in a simple idea that people can do more than they are often allowed, and so they should be empowered to do things rather than be risk adverse.¹⁷⁷ If maneuver warfare was at its heart a way of thinking and "fighting smart" then, from Gray's perspective, it was essential to offer leaders at all levels the opportunity to explore the "state of mind born of bold will, intellect, initiative, and ruthless opportunism." This he did in his various commands.

But what exactly constitutes Gray's philosophy of maneuver warfare? It is ultimately an approach to fighting aimed not at destroying an enemy's armies but rather his will. Gray explained in congressional testimony that the Corps he envisioned would "fight a high tempo, fluid, combined arms, maneuver oriented conflict" with the goal of "collapse our opponent, destroying his ability to fight as a cohesive, organized force" and obtaining "quicker results with fewer casualties."¹⁷⁸ In the words of *Warfighting*, maneuver warfare aims "to shatter the enemy's cohesion through a series of rapid, violent, and unexpected actions which create a turbulent and rapidly deteriorating situation with which he cannot cope."¹⁷⁹ Speed is essential to shattering an enemy's cohesion, allowing one to "seize the initiative, dictate the terms of combat, and keep the enemy off balance" and thus intensify

¹⁷³ Gray May interview; and Terriff, "Innovate or Die," 500. The problems associated with calling *Warfighting* doctrine were recognized by others in the Marine Corps, but from a different angle. Doctrine is often charged with more specific duties, things such as weapons acquisition and force structure, issues poorly covered in *Warfighting*. On this point, see Robert S. Trout, "Dysfunctional Doctrine: The Marine Corps and FMFM 1, *Warfighting*," *Marine Corps Gazette* 77, no. 10 (October 1993): 33–35.

¹⁷⁴ A great deal has been written outlining the theory, history, and application of maneuver warfare. For an especially widely read example, see Richard D. Hooker Jr., ed., *Maneuver Warfare: An Anthology* (Novato, CA: Presidio Press, 1993); Terry Terriff makes the point that *Warfighting* is a "philosophy of war and warfighting" or a "philosophy on how to think about war and warfighting," email with author, 8 April 2018.

¹⁷⁵ Gray October interview.

¹⁷⁶ *Warfighting*, 77.

¹⁷⁷ Gray May interview.

¹⁷⁸ Gray, "Annual Report of the Marine Corps, 1987."

¹⁷⁹ *Warfighting*, 59.

the friction of war that an enemy faces and push the pace of combat beyond a point an enemy can cope.¹⁸⁰ “Chaos and uncertainty create opportunities,” is one of the many aphorisms associated with the former Marine Commandant, and speed helps bring such chaos about.¹⁸¹ Violence remains essential to maneuver warfare, but “not so much as a source of physical attrition but as a source of moral dislocation.”¹⁸² Violent actions do more than kill an enemy, although this surely occurs in maneuver warfare; rather, violence aims to kill an opponent’s psychological capability to resist. Finally, surprise plays an important role. After carefully determining an enemy’s perceptions, a wise commander will employ deception to shape the opponent’s expectations before attacking him at an unforeseen time and place.¹⁸³ Across all these maneuver warfare elements is a commitment to a combined arms doctrine, or “the full integration of arms in such a way that in order to counteract one, the enemy must make himself more vulnerable to another.”¹⁸⁴ In so doing, the enemy faces dilemmas about how to counter its, speedy, violent, and surprising opponent.

Several other broad features underpin maneuver warfare, namely delegation of authority, establishment of commander’s intent, and constant intellectual engagement.¹⁸⁵ To execute maneuver warfare requires a decentralized type of command in which subordinate leaders understand their commander’s intent and act on their own initiative to achieve that intent as the battlefield evolves.¹⁸⁶ *Warfighting* explains

that intent captures the reason for an operation, or the “desired result of the action,” and is the “glue” that holds all actions together at each level of command.¹⁸⁷ A commander’s intent explains why a mission is being carried out rather than just how to conduct it.¹⁸⁸ Gray argued that “intent must be clearly understood two echelons up and two echelons down” within a command structure since it will be those people in the field who will need to respond to changing circumstances, not some distant general; in fact, Gray forcefully held that, without a clear commander’s intent, people would wait for clear orders and that was a foolish thing to do in combat.¹⁸⁹ Instead, a clearly conveyed commander’s intent helps subordinate leaders act on their own when unforeseen opportunities arise. When a commander’s intent is clear down the chain of command, Marines can “fight smart,” think on their feet, and exploit openings to meet the spirit of their mission rather than the letter of some particular order.¹⁹⁰ This type of combat requires constant intellectual engagement at all levels of command, but, the side that better delegates authority and institutionalizes use of intent will ultimately make decisions faster than its opponent. “Whoever can make and implement decisions consistently faster gains a tremendous, often decisive advantage,” reads *Warfighting*.¹⁹¹ This is where John Boyd’s OODA loop and stress on the importance of beating enemies to key decisions supports the broader maneuver warfare philosophy.

Scholars often contrast maneuver warfare with attrition warfare. *Warfighting* makes this

¹⁸⁰ *Warfighting*, 60.

¹⁸¹ Otte, *Grayisms*, 38.

¹⁸² *Warfighting*, 60.

¹⁸³ *Warfighting*, 61.

¹⁸⁴ *Warfighting*, 75.

¹⁸⁵ Gray October interview.

¹⁸⁶ *Warfighting*, 61–62.

¹⁸⁷ *Warfighting*, 69.

¹⁸⁸ Otte, *Grayisms*, 39–40.

¹⁸⁹ Gray May interview.

¹⁹⁰ Turley, *Journey of a Warrior*, 34–35, 114–15.

¹⁹¹ *Warfighting*, 69.

comparison when discussing the two basic forms of combat: fire and movement. Whereas maneuver warfare puts a premium on speedy and surprising movement to bring force against an enemy's weak spots, finding ways to "circumvent a problem and attack it from a position of advantage rather than meet it straight on," attrition warfare attempts to wear down an enemy physically, putting emphasis on larger forces and superior firepower.¹⁹² Maneuver warfare yields the possibility of success "disproportionate to the effort made" because the slog of attritional fighting is avoided but also carries with it greater risk of catastrophe due to the fickle nature of surprise and the increased faith it puts in the military judgment of commanders.¹⁹³ Both styles of warfighting featured in American military history. In the opening pages of *Warfighting*, the author acknowledges that the approach outlined in the book is more akin to that employed by Andrew Jackson, George S. Patton Jr., and Douglas MacArthur rather than the more common American approach to war—attrition—that had only been possible thanks to the mobilization of the American population and technological base.¹⁹⁴ Gray made his views on this debate known in a series of interviews and articles during his time as Commandant. He contended [that] the Marines needed to be "light enough to get there, heavy enough to win" and rely on a combination of fire and maneuver if they were to be successful across a spectrum of conflict, from high to low intensity.¹⁹⁵ Commenting on another occasion, Gray explained that he believed militaries "win by putting together combinations of firepower and maneuver and want

to believe that everybody understands that."¹⁹⁶ Still, as Thomas Ricks writes, Gray "emphatically settled a long-running debate about whether [the Marine Corps] would pursue attrition warfare or maneuver warfare in favor of the latter."¹⁹⁷ Gray saw the purpose for firepower, indeed if one is engaged in a maneuver warfare way of thinking overwhelming firepower may sometimes be the best answer to a tactical or operational issue at hand, but only as subordinate to the broader maneuver warfare philosophy.

The inspirations for maneuver warfare underscore the approach's eclectic features. Eastern strategists clearly inform the style's use of movement, deception, intelligence, and surprise. Gray readily explained that the influence of Sun Tzu and his own time fighting and living in Asia permeate his strategic worldview.¹⁹⁸ But there is plenty of Clausewitzian influence as well. Gray and his philosophy of warfighting place stock in the German's views on the nature of war, most notably the prevalence of friction, the fog of war shrouding battlefield knowledge, and of course the use of force as an extension of politics.¹⁹⁹ Similarly, in what is essentially language lifted from *On War*, the doctrine hails the strength of the defense but the necessity of offense to achieve the aims of war.²⁰⁰ Gray made no mistake that the concept of commander's intent, so important to maneuver warfare, was inspired by Clausewitz's emphasis on the importance of mission-type orders to bend military force in the service of political objectives.²⁰¹ Thus, two classic thinkers of strategic studies, Sun Tzu and

¹⁹² *Warfighting*, 32.

¹⁹³ *Warfighting*, 32.

¹⁹⁴ *Warfighting*, 37.

¹⁹⁵ Gray, "Much to Be Proud of, Much to Strive For," 7; and Gray, "Defense Policy for the 1990s," 21.

¹⁹⁶ Gray, "29th Commandant Speaks to the Corps," 18.

¹⁹⁷ Ricks, *Making the Corps*, 146.

¹⁹⁸ Gray October interview.

¹⁹⁹ *Warfighting*, 15–20.

²⁰⁰ *Warfighting*, 25.

²⁰¹ Gray October interview.



U.S. Marines with 3d Battalion, 4th Marine Regiment, 1st Marine Division, utilize an M1A1 Abrams tank during Exercise Steel Knight 18 at Marine Corps Air Ground Combat Center Twentynine Palms, 10 December 2017. Steel Knight 18 is a division-level exercise designed to enhance the command and control and interoperability with the 1st Marine Division, its adjacent units, and naval support forces.

Official U.S. Marine Corps photo, courtesy of Cpl Joseph Prado

Clausewitz, both find their views embedded in maneuver warfare, albeit in different ways.

Throughout the late 1970s and all the way through the publication of *Warfighting* in 1989, many commentators inside and outside of the Corps thought of maneuver warfare as a kind of update to German World War II doctrine. William Lind and Michael Wyly, each of whom knew a great deal about European military strategies, pushed aspects of this idea at different times. This was a problem for the adoption of maneuver warfare since it led to opposition from Marines, who cited Germany's ultimate loss in 1945. Gray came at spreading the logic of maneuver warfare from another direction since he had come up through the ranks in the Far East

and was much more in tune with the Chinese and Japanese ways of approaching warfare. Gray was always less a disciple of Clausewitz than of Sun Tzu, but *Warfighting* clearly blended these two lines of thinking together.²⁰² Consider the manual's discussion of *surprise*, à la Sun Tzu, and *boldness*, an important feature of Clausewitz's thinking. Surprise involves striking the enemy when he is unaware and depends on "speed, secrecy, and deception," while boldness is a kind of "creative force" and involves taking the calculated initiative.²⁰³ Each relies on the other, as surprise may be achieved through boldness and the spoils of boldness are enriched thanks

²⁰² Gray October interview.

²⁰³ *Warfighting*, 33–34.

to surprise. And so, *Warfighting* can summarize its view on how to fight in terms that both Sun Tzu and Clausewitz would applaud: “Reduced to its simplest terms, we should strike our enemy where and when we can hurt him most.”²⁰⁴

Of course, the intellectual foundation of maneuver warfare extends beyond Clausewitz and Sun Tzu. Historian Frank Hoffman argues that the original father of maneuver warfare was B. H. Liddell Hart. Yes, from Clausewitz came the emphasis on friction, fog, uncertainty, and some aspects of war’s human dimension, and yes, from Sun Tzu came the importance of deception and intelligence; but Liddell Hart, writing between 1916 and 1926 in a time much like Gray’s post-Vietnam period, focused on modern aspects of speed, mobility, and surprise.²⁰⁵ This led to his arguments for an “indirect approach” characterized by mechanized breakthrough operations, identification and exploitation of enemy gaps using multiple lines of attack, and stress not just on physical speed but also speedy command thinking to dislocate the enemy, break his will, and avoid costly attritional fighting.²⁰⁶ Hoffman contends that Gray ultimately took insights from Sun Tzu, Clausewitz, and Liddell Hart, blended them with the work of people like Boyd and Lind, and became “the father of modern maneuver warfare.”²⁰⁷ Thus, when Gray turned his attention to *Warfighting*, the doctrine produced under his watch became a clear example [of] maneuver warfare and the maneuver warfare thought process codified. Terry Terriff agrees, contending that, in the end, *Warfighting* “was all Gray,” though built

on the work of his contemporaries and earlier strategists.²⁰⁸

Although the twenty-first century U.S. Marine Corps ultimately adopted Gray’s thinking, its tenets were the topic of considerable debate during his efforts in the 1980s. In particular, the debate exploded in the pages of the *Marine Corps Gazette*, the intellectual mess hall of the Corps.²⁰⁹ For example, some wondered if a Marine Air-Ground Task Force (MAGTF) was the appropriate vehicle for employing maneuver warfare. One writer argued that MAGTFs lacked the firepower for offensive operations and were too slow to move in the ways maneuver warfare required; instead, it was best structured to fight defensive attritional warfare, especially in the face of a Soviet threat.²¹⁰ Others quickly countered this line of thinking, writing forcefully in the *Gazette* that the Marine Corps was uniquely positioned to employ maneuver warfare in the future thanks to its combined arms training and expeditionary nature.²¹¹

Further discussions focused on just how much was really “new” in *Warfighting*, with some of its readers suggesting it was just a rehash of common earlier ideas. Major John F. Schmitt, the man responsible for putting pen to paper for the manual and capturing Gray’s vision for the Corps, responded to these critics. “In purely conceptual terms, there is nothing new in *Warfighting*,” he wrote in the *Gazette*. “War is one of the oldest of the endeavors of man: I suspect we ran out of truly original ideas on the subject a

²⁰⁴ *Warfighting*, 36.

²⁰⁵ Grant Hammond often makes this point. See Hammond’s presentations to Marine Corps leaders.

²⁰⁶ For Liddell Hart’s thinking on the “indirect approach,” see B. H. Liddell Hart, *Strategy*, 2d rev. ed. (London: Faber & Faber, 1967).

²⁰⁷ Frank Hoffman, correspondence with authors, 28 March 2018.

²⁰⁸ Terry Terriff, email correspondence with authors, 2 August 2017.

²⁰⁹ For an overview of the *Marine Corps Gazette*’s role in cultivating the maneuver warfare concept, see Coram, *Boyd*, 388–89.

²¹⁰ J. D. Burke, “Maneuver Warfare and the MAGTF,” *Marine Corps Gazette* 66, no. 9 (September 1982): 66–71.

²¹¹ Capt G. I. Wilson et al., “The ‘Maneuver Warfare’ Concept,” *Marine Corps Gazette* 65, no. 4 (April 1981): 49–52; and Michael D. Wyly, “Thinking Beyond the Beachhead,” *Marine Corps Gazette* 67, no. 1 (January 1983): 34–38.

long time ago,” he continued before contending that “what is new is that, for perhaps the first time, *Warfighting* manages to weave these various [ancient and modern] ideas into a cohesive doctrine, and, also for the first time, we have made that doctrine official.”²¹² This defense of *Warfighting* highlights the biggest contribution Gray made with the manual’s publication. The small book brought together in an actionable form longstanding notions in strategy, such as surprise and boldness, with new frameworks like the OODA loop to produce a coherent approach to combat suitable for the threats Gray saw facing the United States at the close of the twentieth century. In short, *Warfighting* practically applied maneuver warfare to a changing world.

Asymmetric Warfare and Special Operations

The same lines of thinking driving the production of *Warfighting* were equally apparent in Gray’s contributions to the Marine Corps’ approaches to asymmetric warfare and special operations. By the time he became Commandant, Gray was convinced that the future of warfare would feature more than conventional combat and expand to include a host of nonconventional activities including counterinsurgency, counterterrorism, and a variety of humanitarian missions. This vision of the future spurred his interest in preparing the Marine Corps to operate in these capacities in the future. When Gray subsequently acted on the 1986 call from then Secretary of Defense Caspar W. Weinberger to develop Marine Corps Special Operations Forces (SOF) for small war contingencies, he was implementing long incubating ideas.²¹³

²¹² John F. Schmitt, “The Great FMFM 1 Debate: Is There Anything New Here?,” *Marine Corps Gazette* 73, no. 1 (November 1989): 25–26.

²¹³ Turley, *Journey of a Warrior*, 376–78.

Having served in Vietnam, Gray had long seen terrorism as a timeless tactic requiring special attention to counter.²¹⁴ He brought this view with him into his subsequent commands. While director of Development Command at MCDEC in the late 1970s, Gray worked to prepare Marines for operations against terrorist organizations, and in the process began pursuing a variety of new equipment, including technology for mine clearing and reconnaissance.²¹⁵ His nascent interest in Marine special operations capable (SOC) units was on clear display during these years as Gray hoped to make the Marine Corps relevant into the twenty-first century. Then Commandant P. X. Kelly requested Fleet Marine Forces, Atlantic, to conduct an internal review of SOF capabilities in 1983 following the Beirut Marine Corps bombing and Secretary of Defense Caspar Weinberger’s request for a review of American special operations capabilities, a review in which Gray took part. This effort eventually yielded in 1985 a list of 18 SOF missions that Marines could execute if properly trained and equipped, ultimately leading to the development of a SOC Marine Amphibious Unit (MAU) just a few years later.²¹⁶ Among the 18 special operations missions were hostage rescue, recovery operations, maritime interdiction, as well as gas and oil platform seizure, all of which represented the areas General Gray and his colleagues saw the most potential for Marines to make a special operations contribution.²¹⁷

As commanding general of Fleet Marine Forces, Atlantic, Gray also helped usher the 26th MAU toward SOC status thanks in part to

²¹⁴ Gray May interview.

²¹⁵ Turley, *Journey of a Warrior*, 121–30.

²¹⁶ Catagnus, “The Intellectual Warrior,” 36–41.

²¹⁷ For a thoughtful analysis of these missions, see Maj Lawrence D. Nicholson, “An Analysis of the Twenty-one Missions of the Marine Corps Expeditionary Unit (Special Operations Capable)” (thesis, U.S. Army Command and General Staff College, 1994).



A four-man fireteam of Marines simulates infiltrating a beachhead to gain information about the enemy and its adjacent beaches to help forecast a ship-to-shore landing operation as seen in this 1985 photograph of the 2d Force Reconnaissance Company, II MEF, Marine Corp Base Camp Lejeune, NC. From left to right: team leader LCpl James Schwartz, LCpl Lawrence Gentile, Cpl Michael Norton, and LCpl Samuel Marquet.

Official U.S. Marine Corps photo

his insistence on employing experts from the Federal Bureau of Investigation (FBI) to help his men train in ways appropriate to their new missions.²¹⁸ The FBI trainers brought with them a host of capabilities, most importantly tailored hostage rescue and negotiations techniques. In the years immediately before his time as Commandant, Gray socialized Marine special operations as an accompaniment to the capabilities of other Services; the Corps would not duplicate what other branches of the U.S. military already offered, but would instead have its own competencies expanding the options available to American leaders.²¹⁹ The general did not want the U.S. Marines beholden to other special operations forces, and he sought a complementary,

self-sufficient capability suitable for addressing some aspects of terrorism and low-intensity conflicts.²²⁰ Forward deployed Marines, working in MEU-size MAGTFs and building off of their preexisting roles, would offer “the widest range of single source resources (air and ground), immediately available for use in special operations” should the need arise.²²¹ In the end, historian Allan Millett describes Gray executing the MAU (SOC) program “with messianic conviction” while leading the 2d Division and later Fleet Marine Forces, Atlantic.²²² Frank Hoffman suggests that this messianic conviction was motivated by Gray’s personal sense of obligation fol-

²¹⁸ Turley, *Journey of a Warrior*, 192–98.

²¹⁹ See “Operational Concept for Marine Amphibious Units Being Special Operations Capable,” 2 April 1987, Box 15, Folder 5, GRC, Archives Branch, History Division.

²²⁰ Turley, *Journey of a Warrior*, 177.

²²¹ “Marine Corps Order 3120.XX, Policy for Marine Expeditionary Units (Special Operations Capable)” (unpublished draft, U.S. Marine Corps, Department of the Navy, 1993), 3, as quoted in Nicholson, “An Analysis of the Twenty-one Missions of the Marine Corps Expeditionary Unit,” 3.

²²² Millett, *Semper Fidelis*, 630.

lowing the attack on U.S. Marines in Beirut.²²³

Gray's thinking about special operations in the early 1980s placed him in a position to respond to the 1986 call from the Office of the Secretary of Defense for new special operations capabilities across the U.S. military. That same year, an amendment to the Goldwater-Nichols Act established U.S. Special Operations Command in an effort to integrate the special operations capabilities of the Armed Services. Navy SEALs, Army Green Berets, and Air Force Combat Controllers, would all be a part of this new combatant command, although MAGTFs with special operations mission capabilities would remain with the Corps.²²⁴ This arrangement presented new points of friction as the Services sought to establish clear lanes and mission responsibilities among them. In this context, Gray's particular vision for SOC Marines was especially effective. After all, his Service was not aspiring to replace existing special operations units. His Marines would instead augment the capabilities of the other Services when called on and be prepared to serve as special operations first responders of a sort since they were often the first forces to respond to some contingency across the globe.

It is not surprising that the man so interested in transforming the Marine Corps into a maneuver warfare-oriented force also played an important role in bringing special operations capabilities to the Corps. Special operations seem ready-made for the type of thinking associated with maneuver warfare. Delegation of authority, a focus on speed and surprise, a premium on intelligence, and the aim of defeating an opponent's will rather than its forces, among so

many other concepts, are as readily applied to irregular warfare and special operations as they are conventional fights. Indeed, special operations may disproportionately benefit from many of these approaches to warfare. And so, Gray's efforts to expand the special operations capabilities of the Corps went hand in hand with his efforts to move the force away from attritional warfare and toward maneuver warfare.

Training and Professional Military Education

Another one of Gray's lasting contributions to the theory and practice of strategy is in the classroom. Much like Clausewitz before him, Gray emphasized the importance of a sound military education for leaders at every level of command. This education featured experiences, both lived and vicarious, in the service of developing what the general called a "warrior philosophy." "Every Marine a rifleman" goes the saying, embodying the principle that all Marines, regardless of specialty, are trained to engage in combat. Gray called the men and women serving under him "warriors" to underscore this essential aspect of the Marine Corps.²²⁵ If Marines were to engage in maneuver warfare and special operations as "warriors," however, they would need the training and education necessary to realize their potential. If Marines were to delegate authority and act on their own impetus to exploit battlefield opportunities, they would doubly need new approaches to learning.

Gray eschewed the "zero defect" mentality that he saw associated with the post-Vietnam Marine Corps, fearing that it would crush the calculated risk taking necessary to learn leadership and carry out a commander's intent.²²⁶ Instead, he encouraged training and exercise

²²³ Frank Hoffman, email with authors, 26 March 2018.

²²⁴ This has subsequently changed, with some Marine special operators serving under U.S. Special Operations Command starting in the mid-2000s.

²²⁵ Turley, *Journey of a Warrior*, 13.

²²⁶ Turley, *Journey of a Warrior*, 300.

activities that offered Marines an opportunity to problem solve on their own and in a hands on way.²²⁷ To reinforce his view of Marines as warriors, the general developed Basic Warrior Training (BWT) as Commandant. It featured hand-to-hand combat instruction, introductions to diverse weapons, field activities, and live grenade throwing so that all Marines would have the combat training necessary to engage an enemy. BWT also focuses on the history of the Marine Corps, Gray later explaining that “history relates to the courage of the person who wears the title Marine. . . . History is the glue that holds this together . . . [because] a lot of people have worn the title Marine, and you don’t want to let them down.”²²⁸ The general also directed that all women in the Marine Corps undergo BWT since they too could find themselves in combat.²²⁹ As always, every Marine a rifleman.

Meanwhile, Gray founded the Marine Air-Ground Training and Education Center at Quantico as part of his curricular overhaul and engaged it to supervise training across the entire Corps, standardizing all aspects of Marine training.²³⁰ This training was put to practical use in exercises, realistic maneuvers that from even his earliest years were a trademark of Gray’s commands. He stressed the importance of free play, force-on-force exercises absent scripting and featuring earnest post-exercise “hot wash” evaluations with Marines from all levels of com-

mand, including noncommissioned officers.²³¹ These hot washes reflected Gray’s belief that continuous improvement was possible only through critique of the rationale for actions, not just their outcome; after all, mistakes offered real opportunities to learn and improve, and understanding why they occurred in an exercise was the only way to avoid them on the battlefield.²³² This approach to exercises reflected the general’s belief that experience was the best teacher for would-be warriors.

Training thus took a special place in supporting Gray’s approach to strategy. But there was more to Gray’s educational vision than training on the ranges and proving ground of Twentynine Palms and Camp Lejeune. Gray saw himself as a “teacher or coach” throughout his years in the Corps, one who aimed to persuade instead of distantly barking at those he might mentor.²³³ “If Marines don’t have a lifelong idea of learning, then they will not rise to the top of their profession; nor will they maintain the . . . professional confidence that [they] . . . need,” remarked Gray during his time as Commandant.²³⁴ In this spirit, he encouraged all of those under his command, eventually every Marine in the United States, to engage with productive professional military education. For example, as a colonel in command on Okinawa, he established programs for young Marines to get high school or college credit even while on the faraway island. And so, his longstanding and simple advice stood even at this early point of his career: study

²²⁷ Gray May interview.

²²⁸ Ricks, *Making the Corps*, 66.

²²⁹ Turley, *Journey of a Warrior*, 325–29.

²³⁰ Gray explained the purpose and foundation of the Marine Air-Ground Training and Education Center to members of the U.S. Senate; see Gray Senate statement.

²³¹ Gray October interview. For Gray’s training vision as Commandant, see Gray, “Annual Report of the Marine Corps, 1987.” For his update on initial progress, especially the establishment of the Marine Corps Combat Development Command, see Alfred Gray, “Annual Report of the Marine Corps, 1988,” Box 2, Folder 9, GRC, Archives Branch, History Division.

²³² Otte, *Grayisms*, 46.

²³³ Turley, *Journey of a Warrior*, 41.

²³⁴ Turley, *Journey of a Warrior*, 29.

what you do not know, that is what you need to learn.²³⁵

Fellow Marine Colonel Gerald H. Turley recalls that Gray's "goal all along was to make every possible effort to train and educate the Marine Corps' future leaders. . . . He reminded us that the greater challenge and most lasting reward was to make every possible effort to train and educate the Marine Corps' future leaders."²³⁶ Central to Gray's educational aims and broad conception of strategy was the cultivation of leadership at all levels. Only careful training and education could make broad mission-type orders work, prepare junior officers to take over for their seniors, and cultivate cohesion at all levels of command and unit. This entire notion was rooted in caring for those under one's command and honestly presenting oneself as a leader worth following by taking actions consistent with words.²³⁷ Gray would often say "those who can't teach—can't lead," explicitly linking education with leadership.²³⁸ And so, leaders are also educators, and educators make the kind of fighting man and women necessary to execute something like maneuver warfare.

By the time Gray became Commandant, he was ready to institutionalize many of his views on professional military education (PME) that had been percolating since his time first developing training in the late 1970s. His goal: teaching military judgment in lieu of rote learning.²³⁹ This took several forms. For example, reforms at the Amphibious Warfare School (AWS) that took place while Gray was Commandant began incorporating seminars and staff rides designed for the in-depth study of specific battles

and campaigns; an experience that helped them think about war rather than just think about the nuts and bolts of serving as an office in the Fleet Marine Forces.²⁴⁰ During his time as part of the Joint Chiefs, Gray also revitalized the Marine Corps Base Library at Quantico in the image of the Air Force's facility at Maxwell Air Force Base, taking it from a dusty and underused reading room to the national Marine Corps Research Center, and established the Marine Corps University to guide PME for Marines at all levels.²⁴¹ He led the effort to expand the role of the Marine Corps Development and Education Command (MCDEC), renamed the Marine Corps Combat Development Command (MCCDC), having it work directly with Fleet Marine Forces to identify needs, develop doctrine, make assessments, share operational concepts, and generally improve the training needed to fight. General Gray would rely on the newly constituted MCCDC to help him transform the entire Marine Corps into a maneuver warfare organization.²⁴² In his instructions to its inaugural commander, Gray stressed that his "intent in PME is to teach military judgment rather than knowledge. . . . I want marine NCOs and officers who know how to think about—and *in* war, who know how to conceptualize an engagement, a battle, and a campaign and then execute the concept."²⁴³ Additionally, Gray established the Commandant's Reading List in 1988. In the foreword, he explained to his Marines that "reading is an important way to enhance our understanding of war . . . therefore, my order to you is to

²³⁵ Gray October interview.

²³⁶ Turley, *Journey of a Warrior*, 120.

²³⁷ Otte, *Grayisms*, 24–27.

²³⁸ Otte, *Grayisms*, 32.

²³⁹ Turley, *Journey of a Warrior*, 304.

²⁴⁰ Terry Terriff, email with authors, 8 April 2018.

²⁴¹ Gray October interview; and Turley, *Journey of a Warrior*, 304–7.

²⁴² Turley, *Journey of a Warrior*, 311–12.

²⁴³ Commandant of the Marine Corps to Commanding General, Marine Corps Combat Development Command, 1 July 1989, Box 4, Folder 11, GRC, Archives Branch, History Division.



Through its resident and nonresident programs, Marine Corps University develops the professional competence of its Marines and other Service, international, and civilian students. Graduates are prepared to perform with increased effectiveness in Service, joint, interagency, intergovernmental, and multinational environments at the tactical, operational, and strategic levels of war and across the range of military operations. *Official U.S. Marine Corps photo, Marine Corps University*

read.”²⁴⁴ Reading was not just about becoming better warriors, however, as Gray observed that it “will help keep us anchored in our democratic ideals and up-to-date in this changing world.”²⁴⁵ This list suggested readings for Marines of all ranks, from corporal to general, designed to expand not just their understanding of the Marine Corps, but also its place in the wider world and the ways by which to approach PME. It was the first time enlisted Marines had a reading list of their own.

All of these views on training and education found their way into *Warfighting*. “The Marine Corps’ style of warfare requires intelligent leaders with a penchant for boldness and initiative down to the lowest levels,” reads the book

in a clear manifestation of Gray’s thinking. Unsurprisingly, *Warfighting* warns against a “zero-defect mentality” and lauds taking calculated risks in learning.²⁴⁶ It also stresses the need for realistic exercises to test the products of training, highlighting the importance simulating the uncertainty, stress, and friction of combat while lauding post-exercise critiques designed to cultivate self-analysis for improvement.²⁴⁷ In its clearest explanation for the importance of continuous learning, *Warfighting* argues that “professional military education is designed to develop creative, thinking leaders.”²⁴⁸ And to facilitate the development of these leaders, the very kind of leaders needed for maneuver warfare to be successful, the book puts the responsibility for

²⁴⁴ Professional Reading Statement, Box 4, Folder 11, GRC, Archives Branch, History Division.

²⁴⁵ Professional Reading Statement.

²⁴⁶ *Warfighting*, 45.

²⁴⁷ *Warfighting*, 47–49.

²⁴⁸ *Warfighting*, 49.

professional military education on three entities: the Marine Corps, commanders, and individual Marines.²⁴⁹ The Marine Corps would be an educated organization, to lead to was to teach, to train was to prepare to fight smart, and to be a fighting Marine was to constantly improve oneself. Many of the themes so central to Gray's training and PME reforms found themselves most convincingly drawn in the pages of *Warfighting*. And in the end, the general's goal was to do so much more than make some kind of doctrine, but rather to change the way Marine culture, to change the way Marines thought about fighting.²⁵⁰

Technology

The nature of war is timeless, but the means used to conduct it change. Gray understood this Clausewitzian insight well, and worked hard to consider how modern technologies might be integrated with his vision of maneuver warfare and special operations. *Warfighting* highlights how technology may gain advantage on the battlefield, especially for the side that first integrates new advancements into its way of war, and it was this advantage that Gray often sought with his own technology acquisitions.²⁵¹ Still, technology does little for the force adopting it if it is hard to use or does not fit established doctrine and tactics. For Marines, an amphibious force, technology that enhanced lift at sea or mobility to an enemy, like helicopters and short takeoff aircraft, were of special value to Gray, especially in realizing maneuver warfare; however, equipment that enabled "overcontrol of units

in battle" was not conducive to maneuver warfare and consequently avoided.²⁵² *Warfighting* also warns against an "overreliance on technology" and stresses that "technology cannot and should not attempt to eliminate man from the process of waging war" even as it may offer temporary advantages.²⁵³ War is between men, as Gray well understood, and his major technological pursuits were in the spirit of equipping men not manning equipment.

The risks associated with technological integration into warfare are tempered by their benefits and mitigated by thoughtful adoption. This recognition led Gray to play important roles in the adaption of several military platforms that would help the Marine Corps realize his maneuver warfare vision, especially the light armored vehicle (LAV) and the [Bell Boeing] V-22 Osprey vertical takeoff tiltrotor aircraft, among other technologies. As a brigadier general in 1980, Gray worked hard to bring the LAV into the Corps after experimenting with motorized Marine infantry in NATO exercises. If maneuver warfare depended on speed, light mechanization could help realize this aim, giving the Marine Corps a "quick-strike capability that could both move rapidly across the battlefield."²⁵⁴ Although movement is central to maneuver warfare, and often mechanized forces facilitate rapid movement, not all mechanized warfare is maneuver warfare and surely not all maneuver warfare is mechanized. Gray thus sought to find the right platform for the Marine Corps and worked to explain that the LAV offered movement in support of maneuver warfare; it was not just any new vehicle. In congressional testimony to secure the LAV, Gray argued that the platform

²⁴⁹ *Warfighting*, 50.

²⁵⁰ Terry Terriff, "Warriors and Innovators: Military Change and Organizational Culture in the U.S. Marine Corps," *Defence Studies* 6, no. 2 (June 2006): 215–47, <https://doi.org/10.1080/14702430601056139>.

²⁵¹ *Warfighting*, 14.

²⁵² *Warfighting*, 52.

²⁵³ *Warfighting*, 53.

²⁵⁴ Catagnus, "The Intellectual Warrior," 36–41.



A Bell-Boeing V-22 Osprey of Marine Medium Tiltrotor Squadron 263 (VMM-263) taxis on the flight line at Marine Corps Air Station New River, NC, in this painting by combat artist SSgt Kristopher J. Battles. *Art Collection, National Museum of the Marine Corps*

would offer “a significant new dimension in terms of both firepower and mobility, particularly our ability to conduct maneuver warfare, which we are most interested in improving upon.”²⁵⁵ Here

²⁵⁵ Michael N. Peznola, “Marine Light Armor 1980–1999 Operational Goals, Tactical Results: A Study in the Dynamics of Change” (paper, School of Advanced Warfighting, Marine Corps University, November 1999), 3, as quoted in Catagnus, “The Intellectual Warrior,” 36–41.

was a piece of technology that supported the evolving doctrine of the Marine Corps and Gray’s particular maneuver warfare vision. It was technology with a purpose.

The V-22 [Osprey] also fit neatly into Gray’s vision of a Marine Corps capable of deploying from a ship to a target deep inland in support of maneuver warfare operations against a con-



U.S. Marine light armored vehicles maneuver on W. P. T. Hill Field during the closing ceremony of Exercise Cooperative Osprey '96. Conducted by Fleet Marine Forces, Atlantic, in August 1996 at Camp Lejeune, NC, the U.S. Atlantic Command-sponsored exercise provides interoperability training in peacekeeping and humanitarian operations along NATO/Implementation Force standards, with an emphasis on individual and collective skills.

Official U.S. Army photo, courtesy of Sgt W. L. Davis

ventional adversary or in special operations missions. His role in acquiring and integrating this technology was more political, however, than his experience with the LAV. In the fall of 1987, as Secretary of the Navy Jim Webb debated the future of the V-22 program, Gray worked with his civilian superior to recognize the importance of a “from the sea and over the horizon” capability.²⁵⁶ After a series of conversations culminating in an hours-long meeting with Webb, Gray secured the secretary’s support for the aircraft. Today, the V-22 is a mainstay of Marine Corps operations around the world. It offered a unique capability—vertical takeoff coupled with the range of a fixed wing aircraft—allowing Marines to move in force by the air from a sea-based loca-

tion to a target on land hundreds of miles away. Not only did it help make the Marines a more maneuverable force, it also offered valuable medivac options to American forces in combat zones. Thus, by adopting a new technology Gray helped strengthen not just his maneuver warfare and special operations goals, but he also helped keep troops in harm’s way safer, another long-time goal of his leadership.

The LAV and V-22 were not pet projects of a general devoted to some new technological advancement. Rather, they were deliberate projects designed to enable the Marine Corps to fight as Gray envisioned they should. Gray’s catholic understanding of maneuver warfare, his philosophy of war, never necessarily required new technologies. Clever ruses, dogged intelli-

²⁵⁶ Turley, *Journey of a Warrior*, 321–23.



Ahead of a U.S.-led Joint Task Force Exercise on the eastern seaboard of the United States, HMS *Illustrious* welcomed the very first embarkation of a U.S. Marine Corps Bell-Boeing V-22 Osprey onto a United Kingdom ship.

Official U.S. Navy photo, courtesy of Darby Allen

gence work, careful planning, and high-quality training could all help facilitate the speed and surprise so essential to this more fluid way of war. However, these two projects were ready-made opportunities for modern technological advances to enhance an approach to strategy, to complement it and make it just a bit more effective. Strategists like Gray do not focus on the whizbang features of the latest platforms. Instead, they help envision the types of technology that are congruent with their way of war and then field those tools like any other. Technology is not a substitute for strategic thinking; it often multiplies the positive effects of strategy

when well matched and undercut them when poorly matched. The LAV and V-22 were well matched and consequently became mainstays of the twenty-first century Marine Corps.

CONCLUSION—

THE LEGACY OF ALFRED GRAY

General Alfred Gray is an American strategist who is often overlooked by those outside a close circle of Marines. He was not a strategist in any theoretical sense. Indeed, most of the ideas he espoused were in circulation for many years. What he did was make those ideas work, unifying doctrinal enhancements with improved training and



Col H. Avery Chenoweth's *Kuwait International Secured* captures the intense tank battle between the United States and Iraq's Ba'th Party that occurred on 27 February 1991, during the first Gulf War. Oil on masonite.

Art Collection, National Museum of the Marine Corps, 2012.1005.136

equipment procurement over the course of his career to successfully leave a lasting, and many argue positive, mark on the Marine Corps.²⁵⁷ He overcame the practical, political, and personnel obstacles in the way of the Corps adopting maneuver warfare and special operations capabilities. In the process, he refined the associated ideas, linking them to advancements in training, education, and technology that mutually supported one another. This is an important legacy, one few American strategists hold, and one that practitioners of strategy would benefit from studying.

Gray's contributions appear durable. His time as Commandant came to a close as the Gulf War came to a successful conclusion, a war that featured the American Marines fighting just as he envisioned them—far from the beaches, moving quickly in dispersed units, executing broad mission-type orders, and avoiding cost-

ly attrition warfare. Marine General Walter E. Boomer, the senior Marine commander in the Gulf War, would later recall that many of the technologies Gray had a role in integrating into the Marine Corps, including the LAV, played important roles U.S. Marines overwhelming Saddam Hussein's forces.²⁵⁸ And as America's battlefield moved to Afghanistan and back again to Iraq, Gray's vision remained relevant. Marines found themselves fighting irregular wars using combined arms in units of varying sizes and in so doing employed maneuver warfare and special operations concepts well into the twenty-first century, just as Gray had predicted they would. That seemingly timeless insights into the nature of warfare, some drawing on thinkers as far back as Sun Tzu, remain relevant over this modern period of time might not be surprising, but it is noteworthy.

But relevance and success are not the same. The legacy of Gray's strategic vision remains contested if only because the history surrounding the military endeavors in which his approach was applied is so fresh and open to interpretation. On one hand, the maneuver warfare and special operations concepts Gray advocated are so broad and apparently universal that critiquing them seems a dubious task. Who would argue with the notion of striking the enemy where one can hurt him most? But for all his efforts to build a coherent approach to strategy, one can imagine critiques of Gray's approach and question its implications for the more distant future. For example, one might argue that the ideas Gray promulgated are so open-ended as to be meaningless. What does it mean to strike an enemy where you can most hurt him? Alternatively, one might question whether surprise is regu-

²⁵⁷ The authors appreciate George Flynn stressing the importance of Gray achieving unity across many different lines of effort.

²⁵⁸ Turley, *Journey of a Warrior*, 453–54.



U.S. Marine LCpl Andrew Eisel, a rifleman with Company L, Battalion Landing Team 3/1, 13th Marine Expeditionary Unit, fast ropes out of an MV-22B Osprey from VMM-166 Reinforced, aboard the *Wasp*-class amphibious assault ship USS *Essex* (LHD 2), 20 November 2018.

Official U.S. Marine Corps photo, courtesy of LCpl A. J. Van Fredenberg

larly achievable and thus wonder if a key tenet of maneuver warfare is lame out of the gate. Moreover, one might ask if it is even possible to understand an enemy's worldview well enough to exploit it and achieve deception. Another dilemma comes up when considering Marine special operations. By training for such missions, the Marine Corps was necessarily preparing itself for low intensity conflict, but such a force may well be at a disadvantage in a conventional war having traded firepower and endurance for speed and movement.

These potential criticisms aside, serious strategists ultimately benefit from deeply considering Gray because his approach to warfare is a synthesis of and a response to many of the most important ideas in the field of strategic studies.

His strategic vision reinterprets, builds on, refines, and reinterprets so many foundational approaches to warfare that to discount Gray out of hand is nearsighted. After all, similar criticism might be applied to Sun Tzu and Liddell Hart, and those men receive plenty of attention in classrooms and headquarters around the world. Gray would likely welcome future strategists to engage with, debate, and attempt to improve on his strategic vision, arguing such reflection is essential to crafting sound strategy just as "hot washes" are essential to learning from exercises.

Years after retiring from the Marine Corps, Gray argued that developing "street smarts" about how the world really works is essential to developing sound strategy, and he continued to hold that the precepts of maneuver warfare

were as relevant in a boardroom as they were on a battlefield.²⁵⁹ Gray maintained that good strategy comes from people thinking creatively and historically [those] who aim to understand the reasons for events and recognize that there is no textbook solution to strategic challenges. For all its potential flaws, the philosophy of warfighting, or perhaps even more accurately the philosophy of how to think about warfighting, put forth by Gray encourages critical probing of assumptions about how the world works and welcomes subversion of conventional wisdom, even if that conventional wisdom is maneuver warfare itself. The challenge today for Marines and others attempting to implement Gray's vision for warfare is to avoid looking at his intellectual legacy as one of doctrine, but rather as a flexible, adaptable way of prosecuting not just war, but any competitive endeavor.²⁶⁰ Looking at potential threats to the United States in the near future, cross-domain rivalry in areas spanning cyberspace to outer space are all competitions that Gray holds would benefit from the application of a maneuver warfare mindset, of course in addition to more traditional land, sea, and air domains.²⁶¹

Finally, although this is not a paper about Gray's approach to leading the Marine Corps, his special reputation among Marines warrants mention, if only as an example of the type of leadership he hoped to inculcate in his subordinates. One author has gone so far to say that "no other Commandant before—or since—has garnered as much appreciation from both officers and enlisted Marines."²⁶² Another contends that he employed a "rustic populist" style and featured an "aversion to anything but operations."²⁶³ These reputations likely sprang from his teacher persona, his insistence on looking out for "his Marines," and his willingness to challenge conventional wisdom and succeed in implementing his vision. Author Thomas Ricks contends that Gray and Secretary of the Navy Jim Webb arguably "[made] the Corps what it is today."²⁶⁴ Gray's style of leadership, whatever one may think of his approach to warfare, won him the respect of those serving him and a lasting, positive legacy in the organization he led. Those are special achievements all their own and well worth emulating.

²⁵⁹ Gray and a colleague from higher education actually set out to do just this in a small book project. See Alfred Gray and Paul Otte, *The Conflicted Leader and Vantage Leadership* (Columbus, OH: Franklin University Press, 2006). On "street smarts," see Gray, "Much to Be Proud of, Much to Strive For," 20.

²⁶⁰ Terry Terriff, email with authors, 8 April 2018.

²⁶¹ Gray May interview.

²⁶² Catagnus, "The Intellectual Warrior," 36–41.

²⁶³ Millett, *Semper Fidelis*, 632.

²⁶⁴ Ricks, *Making the Corps*, 133.

WHY CYBERWAR WILL NOT AND SHOULD NOT HAVE ITS GRAND STRATEGIST

by *Martin C. Libicki*

Strategic Studies Quarterly, 2014²⁶⁵

Cyberwar proponents often argue the domain needs its own [Brigadier General William] Mitchell or Giulio Douhet—strategists with great vision who will declare to the world what great power lies therein.²⁶⁶ To

²⁶⁵ The original article came from Martin C. Libicki, “Why Cyber War Will Not and Should Not Have Its Grand Strategist,” *Strategic Studies Quarterly* 8, no. 1 (Spring 2014): 23–39. Minor revisions were made to the text based on current standards for style, grammar, punctuation, and spelling.

²⁶⁶ To those who think the argument in favor of finding a Billy Mitchell for cyberspace is a straw man, note the following requests from Frank J. Cilluffo, former special assistant to the president for homeland security: “We must find the cyber equivalents of Billy Mitchell, George Patton, Curtis LeMay and Bill Donovan—leaders who understand both the tactical and strategic uses of new technologies and weapons,” in Cilluffo and J. Richard Knopf, “Getting Serious about Cyberwarfare,” *Journal of International Security Affairs*, no. 23 (Fall/Winter 2012): 41–47; Stewart A. Baker, former general counsel of the National Security Agency: “As Brig-Gen Billy Mitchell predicted, airpower allowed a devastating and unprecedented strike on our ships in Pearl Harbor. We responded with an outpouring of new technologies, new weapons and new strategies. Today the threat of new cyber weapons is just as real, but we have responded with an outpouring—not of technology or strategy but of law review articles, legal opinions and legal restrictions,” in Baker and Charles J. Dunlap Jr., “What Is the Role of Lawyers in Cyberwarfare?,” *ABA Journal* (May 2012); Robert Cringely, an influential columnist in the IT trade press: “My fear is that when it comes to cyber war-fare there is no Billy Mitchell today in Washington,” in Cringely, “Remember Billy Mitchell,” *I, Cringely . . . on Technology* (blog), 1 June 2009; George J. Stein writing in *Air Power Journal* in 1995: “In some ways, ‘info-warriors’

be sure, cyberwar has no shortage of advocates. But as Colin S. Gray recently observed, “When historians in the future seek to identify a classic book or two on cyber power written in the 1990s and 2000s, they will be hard pressed to locate even the shortest of short-listable items. . . . Certainly they are nowhere near deserving (oxymoronic) instant classic status.”²⁶⁷

But has the failure of cyberwar to generate any such ideal necessarily been a bad thing? There is a case to be made that it is too early to expect such a classic. If the owl of Minerva flies at dusk in cyberspace, the sun is just above the

are like Gen William (‘Billy’) Mitchell and the pioneer league of airmen. They see the potential. Mitchell’s vision of the potential for airpower drove, at great cost to himself but great benefit to the nation, the development of a new form of warfare,” in Stein, “Information Warfare,” *Air Power Journal* (Spring 1995); and Robert M. Lee writing in *Air & Space Power Journal* in 2013: “theorists and military officers, including Gen Giulio Douhet, Marshal of the Royal Air Force Hugh Trenchard, and Brig Gen William ‘Billy’ Mitchell, helped guide the direction of airpower. As cyberspace reaches its full potential as a do-main of warfare equal to the traditional domains, we—like those leaders—must vector it properly,” in Lee, “The Interim Years of Cyberspace,” *Air & Space Power Journal* 24, no. 3 (2012).

²⁶⁷ Colin S. Gray, *Making Strategic Sense of Cyber Power: Why the Sky Is Not Falling* (Carlisle, PA: Strategic Studies Institute, U.S. Army War College, 2013), viii.



After taking fire the night before from a position overlooking their perimeter at Kandahar International Airport, Marines in Afghanistan with the Combined Anti-Armor Team assigned to the 26th Marine Expeditionary Unit set trip flares in the doorway of a suspected Taliban position to warn them should the enemy return. CWO-2 Michael D. Fay, *Setting Trip Flares, Kandahar*.

Art Collection, National Museum of the Marine Corps

yardarm; the information revolution is hardly a done deal. But such a case is too easy. What if the fundamental features of cyberwar were to remain essentially as they are into the indefinite future? Although highly unlikely, this is not so absurd a proposition. The late Roger C. Molander of Rand would frequently remind me that the questions we wrestled with in the mid-1990s are no less relevant and no better understood today than they were then.

Even assuming that the cyber domain has

yet to stop evolving, it is not clear that a classic strategic treatment of cyberwar is possible, or, even if it were, it would be particularly beneficial. In explaining why, this article makes three points. First, the salutary effects of such classics are limited. Second, the basic facts of cyberspace, and hence cyberwar, do not suggest that it would be nearly as revolutionary as airpower has been, or anything close. Third, more speculatively, if there were a classic on cyberwar, it would likely be pernicious.

THE LIMITED USEFULNESS OF CLASSICS

Clausewitz's *On War* was, is, and will continue to be perhaps *the* classic book on warfare, but it would be an exaggeration to argue that it was an "instant classic." It was published posthumously. Its influence spread slowly—within a generation in Germany and not until after 1945 in the United States. Furthermore, it really is not a book that gained its reputation by talking about land warfare as such. True, all of its chapters between the introduction and conclusion are about land warfare. But what made it a classic was its treatment of war itself—that is, the role and purpose of military force within the relations among states and the relationship between the goals of war and its reality in battle (fog and friction).

In the naval domain, the name Mahan is clearly front and center. Mahan lauded naval power as essential to the maintenance of a seafaring state, especially one that wanted to maintain a global empire—not an irrelevant consideration circa 1890 when he published *The Influence of Sea Power upon History, 1660–1783* (such historic dates suggest he was not overly impressed by technology fads). His book argued strenuously for large battle fleets, which by their very presence and concentration (fleet in being)

could dissuade other states from trying to assert sea control on their own behalf. He eschewed the *Jeune École* preference for commerce raiding.²⁶⁸

Mahan's work was enormously influential inside the United States (an inspiration for Theodore Roosevelt's Great White Fleet), and perhaps even more outside it. Kaiser Wilhelm was particularly enchanted by it, as were, to only a slightly lesser extent, [Admiral John A.] Jackie Fisher and the British Royal Navy. Although the expensive Anglo-German naval rivalry cannot be entirely laid at Mahan's doorstep, his influence was not trivial, and the rivalry over battleship building hardly played a calming role in that bilateral relationship.

As for naval strategy, Mahan's work was not particularly helpful for those who believed in his doctrine. The Kaiser's love for his fleet kept it in port for the two and a half years after the Battle of Jutland, even though Germany might have had a chance—admittedly, with a substantial amount of luck—to break the blockade on it and the Austro-Hungarian Empire. This blockade ultimately accelerated the Central Powers breaking under the stress of war before the Allies did. Meanwhile, the naval action that nearly broke the war the other way was the success of German U-boat attacks on Britain's supply lines to North America. In retrospect, the more decisive use for naval power in World War I was closer—albeit with submarines, not surface ships—to the commerce raiding that Mahan disdained 25 years earlier in favor of grand fleet actions. He had argued these fleet actions were the *sine qua non* of naval power.

²⁶⁸ The term *Jeune École* refers to a naval strategy adopted by France that changed the focus from a battleship-centric fleet to smaller ships armed with torpedoes intended to overwhelm larger warships.

All this suggests that the global enthusiasm over Mahan's writing—which *was* an instant classic—was good neither for world peace nor a productive naval strategy. Perhaps these are tough tests for any analyst to pass, but if we are to laud the writing of great strategic formulations these are not unfair evaluations.

Consider now airpower. Three individuals stand out in the development of post-World War I strategic thought: the writer Giulio Douhet and generals Billy Mitchell and [Marshal of the Royal Air Force] Hugh Trenchard. All three argued that air forces would become an increasingly important component of modern militaries and that military strategy should, correspondingly, reflect that fact. In that insight, they were correct.

Douhet went further to emphasize the role of strategic bombardment in not only winning future wars, but also shortening them; in that respect—if World War II was any indication—he was not correct. There is an important distinction to be made between the tactical or operational use of airpower to aid ground and naval forces and its strategic use: to break the enemy's will to resist and destroy its ability to arm itself. In theory, air forces can do both operational and strategic missions; in practice, their resources are limited, and funds used for strategic purposes compete for resources used operationally.

This leads to the question: Was World War II's emphasis on the strategic campaign such a good idea? In the first major war in which this proposition could be truly tested, only three countries were capable of mounting a serious strategic bombing campaign—first Germany, then the United Kingdom [UK], and the United States. Germany's efforts did not seem to have accomplished much; it did not force the



A Lattice Modular Heli-Drone is displayed during a test run of the Lattice Platform Security System at the Red Beach training area, Marine Corps Base Camp Pendleton, CA, 8 November 2018. The Lattice Modular Heli-Drone was being tested to demonstrate its capabilities and potential for increasing security.

Official U.S. Marine Corps photo, courtesy of Cpl Dylan Chagnon

UK out of the war nor make much of a dent in its war production. The United States and UK bombing campaigns certainly had effects, but these effects were purchased at great cost—the 8th Air Force alone suffered more than 50,000 deaths (by comparison, the entire U.S. Pacific campaign cost twice as many lives). The succeeding decades saw considerable controversy over whether such bombing campaigns were worthwhile, with detractors saying they *increased* Germany's will to resist and, only toward the very end, impaired its ability to produce war materiel. A recent prominent defense of strategic bombing by Richard J. Overy maintains they were worthwhile, not for what harm they did

to the Germans, but for how much Germany spent (mostly wasted) to counter them.²⁶⁹ Even if true, that is a far cry from Douhet's rationale: "air power will demoralize foes" to "air power will cause foes to overreact in self-defense." Admittedly, a [Boeing] B-29 [Superfortress] loaded with nuclear weapons can have a considerably greater effect than a B-29 loaded with conventional weapons—a victory for airpower, but only for 15 years until missiles were invented to do the job more efficiently and reliably. Furthermore, it took until NATO's campaign in Kosovo before there was a first, albeit even then arguable, validation of Douhet's thesis.

If the strategic implications of airpower were poorly understood by virtue of their being exaggerated, the operational implications of airpower à la Billy Mitchell (and many others at the time, if not so dramatically) were on point. Airpower *would* rise in importance relative to land and sea weapons. At sea, by 1942, the carrier was universally recognized as the replacement for the battleship, although the carrier was under firm naval control. Only a half-century after World War I, success in gaining air control—the 1967 Six-Day War and Operations Desert Storm and Iraqi Freedom—predisposed and foretold success in ground combat at least over uncluttered terrain.

The basis for Billy Mitchell's optimism was, in retrospect, clear. Every year, aircraft became faster; flew higher, farther, and longer; and could carry more weight (weapons but also cargo). Anti-aircraft weapons were improving but not so quickly, [where] targeting radar and analog computing helped but only somewhat.

²⁶⁹ Richard Overy, *Why the Allies Won* (New York: W. W. Norton, 1997). Incidentally, his most recent book, *The Bombing War: Europe, 1939–1945* (New York: Penguin, 2013), is far more critical of the entire air campaign.



A Marine with Task Force Southwest catches the InstantEye small unmanned aerial system (UAS) following a flight at Marine Corps Base Camp Lejeune, NC, 8 February 2017. The drone allows operators to record surveillance and execute reconnaissance in small, confined areas that are otherwise inoperable with larger aircraft. Approximately 300 Marines are assigned to Task Force Southwest, whose mission is to train, advise, and assist the Afghan National Army 215th Corps and 505th Zone National Police.

Official U.S. Marine Corps photo, courtesy of Sgt Lucas Hopkins

Nor were ground or sea-based weaponry getting more impervious to bomb damage all that quickly. Technology was inexorably shifting the dominance of battle to the skies. That being so, every other decision about the conduct of battle would have to factor the shift-in-power relationships from ground and surface to air accordingly.

As noted, nothing boosted airpower as much as the development of atomic weapons, which seemed to have validated Douhet's thesis, at least ex post facto. The U.S. Air Force came to absorb almost half of the nation's defense budget in the [Dwight D.] Eisenhower administration. Clearly, a single weapon capable of knocking out cities was going to have a strategic effect on both war and warfare. So, were there any classics in

this new *atomic* field, and what good did they do?

The first place to look was a set of essays by Bernard Brodie for the book, *The Absolute Weapon: Atomic Power and World Order*, wherein can be found his famous quote: "Thus far the chief purpose of our military establishment has been to win wars. From now on its chief purpose must be to avert them. It can have almost no other useful purpose."²⁷⁰ His essays do mention deterrence, but the thrust of his writing was not about how to use atomic forces but to drive home the point that a country under serious atomic attack (i.e., thousands of atomic bombs) would be effectively destroyed regardless of how well defended it was. Indeed, his essay spends more time on how

²⁷⁰ Bernard Brodie, ed., *The Absolute Weapon: Atomic Power and World Order* (New York: Harcourt, Brace, 1946).

to lay out cities to maximize their survivability in an atomic war than it does contemplating what a strategy of deterrence might mean for the construction and the use of forces. So, instant classic quote but no instant classic work.

More works followed in the 1950s by Albert Wohlstetter on the importance of a second-strike capability, Tom Schelling on strategies that “left something to chance,” and Herman Kahn on the need for escalation dominance.²⁷¹ It was undoubtedly brilliant stuff, but was it necessarily a wise way to fight—or, better yet, avoid—a nuclear war? The classic model of a nuclear confrontation featured ultra-cool decision makers rationally facing the prospect of mega deaths and maneuvering deftly to avoid that and worse. The actual conduct of a nuclear crisis (e.g., Cuba, 1962) suggested something a little different: world leaders, having stared at the abyss, realized they had come far too close to a nuclear holocaust and never ever wanted to get that close again. Reactions to that near catastrophe included the hotline and the 1963 test ban treaty. Rather than each side making noises as if it would throw the steering wheel out the window (as Schelling’s strategy suggested), each instituted measures to ensure and assure others that it had a much better grip. Similarly, strategic thinking, deprived of direct evidence of Soviet thought, tended to assume that the Soviet Union would approach a confrontation much as Americans would—that is, by carefully delineating, if not necessarily observing, a firebreak between conventional and nuclear operations. The opening of the Soviet archives in 1989 indicated that such delineations were not particularly import-

ant to them. Fortunately, no one ever had to go to war based on these strategic theories.

Incidentally, none of this infers that such thinkers did not educate the mind by raising key questions. Even when wrong, one cannot help but profit by working through arguments and, in some cases, asking whether their logic applies to cyberspace. Unfortunately, when such thinkers are cited as authorities—which they inevitably are—their arguments are converted into answers, at least in the minds of their adherents. The next two domains of conflict—space and spectrum—have no comparably memorable strategic doctrines or assessments associated with them at all. This, alone, should raise the question of why cyberspace should. Once touted as the really high ground, outer space turns out to be merely a nifty place to stick information collection/processing devices—surveillance satellites, communications relays, and timing/navigation systems (e.g., GPS)—and it is not clear that space will always remain competitive vis-à-vis networked unmanned air-breathing systems for the first two roles. Space is not a particularly good place from which to fight wars. It costs a great deal to get something into orbit, and the price per pound has not appreciably fallen since the 1970s. Space-based weapons are not only expensive but, in their current incarnation, take longer to reach their targets than do simple missiles—deorbiting something actually takes some time.²⁷² Space systems are also quite fragile in the sense that they can be destroyed by a very small object hitting head-on at a relative speed of 36,000 miles an hour, assuming they are both in low Earth orbit. In a contest between a ground-based missile and a satellite, the odds these days are on the missile. So, much

²⁷¹ Albert Wohlstetter, “The Delicate Balance of Terror,” *Foreign Affairs* 37, no. 2 (January 1959): 211–34; Thomas C. Schelling, *The Strategy of Conflict* (Cambridge, MA: Harvard University Press, 1960); and Herman Kahn, *On Escalation: Metaphors and Scenarios* (New York: Praeger, 1965).

²⁷² For a good general treatment, see Robert Preston et al., *Space Weapons, Earth Wars* (Santa Monica, CA: Rand, 2002).

to the anguish of the space community, here is a domain without a strategic concept and, at this point, not inappropriately. It is easy, incidentally, to get lost in arcane debates over which orbit in space is truly the high ground that dominates all the other orbits in space; true aficionados wax rhapsodic about controlling the L1 point, which is roughly four times as far from the earth as the moon and sits directly between the sun and the Earth.²⁷³

Finally, a word is needed in defense of the radio-frequency (RF) spectrum as a domain of warfare, mostly because this domain not only lacks a strategic theory but lacks a strong proponent for theory building. Yet, it is a *physical* domain in which dominance, in the sense that those who can get their signal through and keep others from getting their signal through, thereby gives its possessor a signal advantage in warfare. No serious military power ignores electronic warfare, largely because radio communications allow militaries to coordinate their operations and radar allows detection and tracking of all manner of enemy assets. But the wizards in the business know the purpose of manipulating the use of a spectrum is to enable physical warfare; by itself, electronic warfare is next to worthless. Similarly, no one seriously thinks that one country can wreak persuasive or dissuasive damage on another by unleashing its electronic warriors on it, although the latter may be the source of some interesting forms of annoyance, particularly if they can interfere with all GPS applications and mobile devices.

²⁷³ Named for Joseph-Louis Lagrange, an eighteenth-century mathematician, a Lagrange point is a location in space where the combined gravitational forces of two large bodies equal the centrifugal force felt by a much smaller third body. The interaction of the forces creates a point of equilibrium where a spacecraft may be “parked” to make observations.

THE SIGNIFICANCE OF WARFARE IN CYBERSPACE

It should be fairly clear by now that this article will not close with a ringing call for a strategic cyberspace doctrine. As oft noted, such doctrines—even, or especially, if they meet with universal approbation—are as likely to be wrong as they are right.

To start with, cyberwarfare and cyberwar need to be distinguished from one another. Cyberwarfare, like warfare itself, is about the conduct of war, carried out inevitably to further the performance of combat in the physical domain; it can also be considered operational or instrumental cyberwar. Cyberwar is undertaken to affect the will of the adversary directly; it can also be considered tantamount to strategic cyberwar. A similar distinction can be made between electronic warfare and electronic war—the difference being that no one talks about electronic war as something interesting.

First, we can ask whether cyberwarfare can so alter warfare that warfare—how it is conducted and what one can do with it—needs to be seriously rethought. Although the ultimate answer to that question is empirical and yet to be determined, it is easy to establish that such a question cannot be answered without an important intermediate step. Cyberwarfare attacks systems and digital networks. Prior to the 1960s, militaries had no digital networks to attack. A cyberattack carried out against a military today can, at worst, return it to its prenetworked condition (as long as it *has* something to revert to). To argue that cyberwarfare can have a revolutionary effect on the battlefield requires establishing that digital networking is itself revolutionary. This is a step many proponents of cyberwarfare neglect to take.

So, how much *does* digital networking im-



LCpl Travis DeShazo, a rifleman assigned to Company E, 2d Battalion, 4th Marine Regiment, 1st Marine Division, prepares a computer to control a Raven UAS to establish the location of notional enemy units aboard Twentynine Palms, CA, 10 December 2015. The Marines employed the Raven UAS as part of Exercise Steel Knight 18 to gain a better understanding of it and to develop a higher proficiency operating as an effective ground combat element of the I MEF.

Official U.S. Marine Corps photo, courtesy of Cpl William Perkins

prove the workings of a military? First, one does not need digital communications to have RF communications; the latter can be carried out with analog equipment as it was prior to the 1970s and, to some extent, still is. Second, as helpful as network-centric warfare may have been for the United States, every other military in the world is less digitized and therefore less susceptible to cyberwar than the U.S. military—notwithstanding the possibility that the digital equipment they have is more vulnerable than the equivalent in the hands of U.S. forces.

Thus, the revolutionary impact of cyberwarfare can be no greater than the revolutionary impact of digital networking, which is not, itself, a fully tested proposition. The question of how much less entails asking how

effective cyber warfare can be at nullifying the advantages of digital networking. The most it can be is 100 percent, but there are many simple measures militaries can take to reduce it well below 100 percent. One is electronic isolation. If a network is disconnected from the rest of the world, it is very difficult for outsiders to penetrate it. In practice, as [Operation] Buckshot Yankee and Stuxnet [virus] proved, it is not enough that a network lacks an internet address or a phone number. There also has to be no way for errant bytes to get into these machines via RF links that depend on the strength of the attacker's transmitter. These are challenging problems but hardly insurmountable. For the most part, systems can be immunized against much of cyberwarfare if their instructions are difficult

to alter without hands-on contact. This could be because the logic is hardwired into the unit, or because the logic can only be replaced by new hardware modules, or the update has to be digitally signed by a known trustworthy source, using reliable cryptographic protocols implemented correctly. This prevents malware or malicious software with rogue instructions from being placed on the machines, which then limits a machine's actions to those prespecified in its programming. Stuxnet, and its relatives such as Flame, as well as much of cybercrime and the advanced persistent threat all depend on the possibility of malware (arbitrarily altered instruction sets) to work.²⁷⁴ All this suggests that the effect of cyberwarfare, if properly recognized, will be far less revolutionary than the putatively revolutionary effect of digitized networking.

In fairness, consider two objections to this argument. One is that militaries cannot revert to their predigitized network state. This may be empirically true, but if true, it says either that (1) such militaries have abjured that option because they *correctly* recognize that the impact of cyberwarfare is something they can manage, or (2) the revolutionary impact of cyberwarfare is *incorrectly* underappreciated by militaries who consequently digitize without giving sufficient thought to what would happen if cyberwarfare *were* revolutionary. If the former is true, the issue is settled. If the latter is true, then the only way cyberwarfare could be revolutionary is if those victimized by it fail to see it was going to be revolutionary. This is the sort of error that is unlikely to be made more than once, if it is even made at all. Consider, by way of example, Stux-

²⁷⁴ This does not eliminate all sources of cyberwarfare. A class of attacks known as SQL (structured query language) injection does not require malware to work, but it only works against systems that accept structured queries, which very few weapons systems do.



The Marine Corps Tactical Service-Oriented Architecture (TSOA) will allow users to request and share mission-critical information on-demand. TSOA is a software platform that will be installed in combat operation centers, allowing for the sharing of data between combat operation centers across the Corps. This removes the need to depend on multiple independent tactical data systems, which are not always compatible.

Official U.S. Marine Corps photo, courtesy of LCpl David Staten

net. If Iranians had understood what Stuxnet *could* have done to them, they would have likely taken pains to ensure that no USB device was accessible. Because it came as a surprise, Stuxnet worked. But can one assign revolutionary strategic impact to a form of warfare that requires it be systematically underestimated before it can work?

The second objection is that, while cyberwarfare is not much to look at now, it is only to get more important as militaries continue to digitize. This line echoes the argument that aircraft were going to get better every year; thus, what was false today may be true tomorrow. Can the same be said about cyberwarfare?

At this point in the article, one distinction between cyberwarfare and warfare in all other media must be made: cyberwarfare (as well as cyberwar) requires that the targets have made mistakes in their implementation and use of digital equipment. In theory, digital machines should only obey their given instructions in service of their owners/operators. In practice, there are variations between what a system actually does and what it is supposed to do that permits cyberwarfare to work. But neither the form nor even the existence of these variations is inevitable. They are artifacts of systems programming. Such artifacts can be reduced, perhaps even effectively eradicated. As noted above, even if systems still have errors, users—especially military users—have a great number of steps they can take to reduce vulnerability to cyberwarfare. Indeed, many such steps are being taken—and, doubtlessly, more would be taken if the threat from cyberattacks and the like were greater (or at least perceived to be greater) than is currently the case. This is no proof that there will be a declining threat from cyberwarfare to advanced militaries—militaries that have failed to advance have little or nothing to attack in cyberspace—it may well grow. The fact that the threat from cyberwarfare has to be enabled by the target's decisions weighs against the proposition that cyber warfare can be revolutionary.

Indeed, there is every indication that electronic warfare will continue to generate more consequential effects on the battlefield than cyberwarfare because electronic warfare is not an artifact of the other side's poor decisions. It is an unavoidable aspect of long-distance RF communications. And, as noted, there is no classic strategic treatment of electronic warfare; nor is there indication that such effort is missed.

That leaves the question of whether strategic cyberwar can be significant enough to merit some twenty-first-century version of the Douhet proposition: a form of war that can induce countries to stop fighting (or better, avoid starting fights) without having been defeated or threatened on an actual battlefield. Arguments similar to those above can be generated to suggest that such a thesis is not terribly convincing today. Most cyberattacks, once discovered, are resolved and the effects (apart from leaked information) reversed within a period ranging from hours to days. In the long run, even in the highly unlikely event that hackers will always be able to control the systems they attack, the worst that can happen would be to convince people to abandon networking and thus set economies back to where they were in 1995, when the internet started to spread beyond universities and defense-related sites.²⁷⁵ For advanced countries, 1995 is not that much further behind than they are in 2013. Thus, an economy subject to continuous, vicious, and expectedly successful attacks would not retrogress as much as a society subject to World War II-level bombing. And cyberattacks have yet to kill anyone. Granted, if societies have evolved in ways that are difficult to reverse, the effects of cyberwar on such societies may be worse than if they had never adopted digitized networks in the first place. But such effects, almost by definition, can be used only once—and only if a society's leadership systematically underestimates its vulnerability to cyberwar. Of course, if cy-

²⁷⁵ In the short run, it is possible that an errant set of codes can break equipment, as happened to Iran's nuclear centrifuges following Stuxnet. There is considerable disagreement about whether Stuxnet can be replicated. Its revelation, incidentally, by illustrating what is theoretically possible may have made a repeat performance practically much more difficult because systems managers came to understand they expose their sensitive production and control equipment to the outside at their peril.



Theresa Rouse, training officer (left), and Ens Stephanie Wexler, combat information center officer, review and discuss contacts at the anti-air warfare coordinator watch station in the combat information center aboard the *Ticonderoga*-class guided-missile cruiser USS *Shiloh* (CG 67). *Shiloh* is assigned to the commander of Task Force 70, and is forward deployed to Yokosuka, Japan, to support security and stability of the Indo-Pacific Asia region.

Official U.S. Navy photo, courtesy of MCI N. Ross Taylor

berwar turns out to be weak, then perhaps they have not underestimated it at all.

Over time, the distance between 1995 and the then-current year will increase, which will, in theory, lend cyberwar more leverage than it has today. Perhaps then, it will be possible to write how cyberwar has changed everything we know about warfare. Or maybe not. True, just as aircraft grew monotonically more capable from their invention forward, so societies are growing increasingly digitized, with little prospect that they will move backward unless, cyberattacks prove to be far more powerful and unavoidable than they are today. But the correlation ends there. Aircraft improvement was a

contest against a fixed target (the laws of aerodynamics, physics, and chemistry); cyberwar is a contest against a moving target wherein offense contends with defense. It is not obvious that offense will get continually better, particularly when defense—in the form of the target's system and software—defines what the offense can do. Granted, hackers are getting better, thanks in part to markets and market-like mechanisms for sharing information about software vulnerabilities. Furthermore, new uses for digitization (e.g., networked cars) are constantly creating new vulnerabilities or new ways for vulnerabilities to do serious damage. But defense is not catatonic. If the problem with cyberattacks gets

bad enough, there are more radical steps that can be taken. One example is Apple's iOS operating system, which has successfully resisted malware because it is a fairly closed system, although some countries have been rumored to have prepared and stashed away attacks on it. Another is the consensus reached by security professionals that Java software should be disabled on all browsers because it is becoming very difficult for its developer to stay ahead of all the vulnerabilities hackers keep discovering in it. On purely technical grounds, every successive version of Microsoft's products is more malware resistant than its prior versions. These days operating systems are subverted by insecure applications rather than being attacked directly. So, the technology dynamic that Billy Mitchell employed—even if aircraft cannot do it today, tomorrow's eventually will—does not necessarily translate into cyberspace, even if cyber security may get worse before it gets better.

Then there is the possibility that the strategic effects of cyberwar may arise from the interaction of state actors that systematically overestimate its effects, as quasiapocalyptic statements from both U.S. and Chinese military officials suggest is quite possible. This could lead to unfortunate dynamics, but in the longer run, the problem with such analyses is similar to those analyses that posit leaders to *underestimate* the effects of cyberwar and are therefore unprepared in ways that make it more dangerous. Either way, this is an attitude capable of being corrected by events, and, by its very nature, of temporary import; unless one can successfully argue that the *perception* of what cyberattacks *have done* is systematically in error, but that is a hard case to make.

Cyberspace, as it turns out, is ill-suited for grand strategic theories for other reasons. As

mentioned earlier, cyberspace *is* changing very quickly in many important respects. Circa 1999, for instance, U.S. cyberwar capability, such as it was, housed itself within the U.S. Space Command (disestablished in 2002). In an era in which mischief in cyberspace was most likely perpetrated by individual hackers who were adroit at getting into systems, maneuvering deftly while discovering how they worked, doing their job, and leaving quietly, its working ethos would have made it a natural fit for something like the U.S. Special Operations Command. Fortunately, that never happened, because within a dozen years, it was clear that hacking was less about individual rough-and-ready hackers and more like a team-based enterprise building malware tools that took commands from afar and otherwise went about their business based on their programmed-in wits. Today, the original fit between cyberwar and the space business looks better—although the fit between U.S. Cyber Command and the National Security Agency is quite good itself.

Another difficulty in proposing a grand theory of cyberwarfare is that deception lies at the essence of cyberwar. Systems, although meant to be under the control of their owners/operators, are tricked into obeying the commands of others. Once the precise nature of the trick is realized, it is relatively straightforward to figure out how to foil that particular attack, requiring hackers to come up with new tricks, which they often but cannot always do. Deception, by nature, introduces its own self-defeating dynamic, because its existence depends on two sides having different notions of what something can do. Success, in certain key respects, is often inherently unpredictable. Those who wrote strategic theory for, say, airpower had the advantage of understanding the interaction between the



Marines from II MEF fill up the expeditionary combat operations center during the field exercise aboard Marine Corps Base Camp Lejeune, 31 March 2010. During the exercise, II MEF Headquarters Group demonstrated their ability to set up and maintain an expeditionary headquarters in the field.

Official U.S. Marine Corps photo, courtesy of Cpl Meg Murray

machine and its aeronautical environment and between weapons and their targets. They could use that solid base to speculate on the relationship between the effects caused by aircraft and the goals for which countries went to war. Those who would write strategic theory for cyberspace have no such foundation. Everything appears contingent, in large part, because it is.

THE POSSIBLY PERNICIOUS EFFECTS OF WRITING A CYBERWAR CLASSIC

To be fair, it is not easy to counter what some yet-to-be-written cyberwar classic would say. Setting forth here the brilliant insights of such a classic would create the tome this article says cannot exist. Yet, if cyberwar's forthcoming

classic looks like classics in past domains, they are likely to say (1) cyberwar is totally important, (2) those who wield its power should fight to win wars on their own rather than helping warriors in other domains, and (3) warfighters in those other domains should take their strategic cues from what takes place in cyberspace.

To say that war in the virtual world can match the horrors of war undergone or contemplated might seem a stretch, but anyone who ventured such an opinion would not stand alone. Joining them would be the U.S. Defense Science Board, which imagined a cyberattack so severe as to merit a nuclear response, some Chinese generals (one of whom casually opined that a cyberattack could be as damaging as a nuclear attack), and even Russian president Vlad-



To counter the growing strength of the Soviet Union's Navy in the face of fleet reductions at home, Adm Thomas H. Moorer wanted U.S. Navy ships equipped with the most advanced technology of utmost importance. This included nuclear propelled ships, improved aircraft, upgraded missile systems, and modern tracking systems. John Charles Roach, *Watching the Sound*, 1985. Oil on board.

Art Collection, Naval History and Heritage Command, 88-163-CZ

imir Putin, who said that a cyberwar could be worse than conventional warfare—this from the head of a country that lost 25 million [people] in World War II.²⁷⁶ There is nothing quite like a good nuclear analogy to rally those in favor of an independent cyberwar force. Yet, the mere argument that cyberwar is going to be very im-

²⁷⁶ "The cyber threat is serious, with potential consequences similar in some ways to the nuclear threat of the Cold War." in *Resilient Military Systems and the Advanced Cyber Threat* (Washington, DC: Defense Science Board, 2013), ES-1; "The United States and China held their highest-level military talks in nearly two years on Monday, with a senior Chinese general pledging to work with the United States on cybersecurity because the consequences of a major cyberattack 'may be as serious as a nuclear bomb.' " in Jane Perlez, "U.S. and China Put Focus on Cybersecurity," *New York Times*, 23 April 2013; and "[Putin] warned that damage from cyberattacks could be higher than that of conventional weapons." in "Putin Urges Readiness against Cyber and Outer Space Attacks," *RIA Novosti*, 5 July 2013.

portant hardly says what to do with cyberwar capabilities, apart from keeping them well fed.

Emphasizing the strategic aspects of cyberwar over its tactical (alternatively, operational or instrumental) aspects is not necessarily wrong. Because the operational uses of cyberwar are neither ethically nor particularly strategically problematic—in that it only substitutes nonlethal for lethal means—there is little reason *not* to use it against military targets.²⁷⁷ But military targets are generally harder targets than civilian ones. What may produce limited gains on the battlefield may produce huge payoffs off the bat-

²⁷⁷ "Particularly" inserted to the extent there are not fully explored stability impacts of using cyberwar as the opening shot of a kinetic engagement or using any form of warfare where attribution is less than obvious.

tlefield, thereby tempting the elevation of the strategic over the operational.²⁷⁸ But such elevation has consequences. It affects the allocation of resources and manpower. If talented cyberwarriors convince themselves that strategic warfare offers a better shot at top command slots, they will migrate accordingly. Perhaps if cyberwar *is* that important, there will be enough resources and manpower to go around—although the current difficulties in finding enough cyber security professionals suggest that their supply is not infinite and only time will tell how elastic. However, there are certain resources where serious choices must be made: that is knowledge of vulnerabilities in software that allows cyberwarriors into many of their targets. To the extent military and civilian systems rely on the same software and hardware—as they increasingly do, although there are still major differences—then a vulnerability exploited for disruptive/destructive purposes (rather than espionage) is likely to be a vulnerability that can be used only during a small time window. Its availability for strategic purposes limits its availability for military purposes. Hence, choices, notably between operational and strategic cyberwar, must be made. Because systems have to be penetrated well before they are attacked, such choices may have to be made well before the character of the upcoming conflict is clear.²⁷⁹

²⁷⁸ In March 2013, “The chief of the military’s newly created Cyber Command told Congress . . . that he is establishing 13 teams of programmers and computer experts who could carry out offensive cyberattacks on foreign nations if the United States were hit with a major attack on its own networks.” Mark Mazzetti and David E. Sanger, “Security Leader Says U.S. Would Retaliate against Cyberattacks,” *New York Times*, 12 March 2013. It would seem, from such comments, that these offensive teams would be oriented toward strategic rather than tactical missions.

²⁷⁹ That NATO actions against Moammar Gadhafi were unforeseen months before they took place was a key reason that cyberattacks were not used to take out Libyan air defenses. See Ellen Nakashima, “U.S. Cyberweapons Had Been Considered to Disrupt Gaddafi’s Air Defenses,” *Washington Post*, 17 October 2011.

Consider, too, that both forms of cyberwar—the strategic and the operational—compete with cyber espionage when it comes to allocating vulnerabilities to exploit.²⁸⁰ Those who want to reserve the exploit for cyber espionage can make two strong points. First, since penetration, in and of itself, tends to be deliberately stealthy, the vulnerability can remain hidden longer than it can once a disruptive/destructive attack takes place.²⁸¹ Second, the yield from cyber espionage can be immediate, while the yield from getting into a system that might be taken down is contingent on a war starting.

Strategic cyberwar is far more problematic than its operational cousin. It raises laws-of-armed-conflict issues that operational cyberwarfare does not. Similarly, it is more likely to result in escalation and in ways that make conflict resolution more difficult. By contrast, operational cyberwarfare ends when kinetic warfare ends, because there is no longer any advantage in making targets more susceptible to kinetic attack when kinetic attack terminates.

If the galvanizing theory emphasizes doctrines such as preemption, further difficulties await. Although exactly how to preempt a cyberattack remains a mystery, there is very little that can be destroyed, and only a narrow class of attacks can be disrupted by actions taken outside one’s network. If the doctrine is attractive enough, people will think they have found a way

²⁸⁰ Not every exploit, however, requires a software vulnerability. Some can be penetrated and exploited by poor systems administration, notably but not exclusively, poor password management.

²⁸¹ A year is roughly the time that a typical (discovered) advanced persistent threat attack lasts prior to its discovery. Dan McWhorter, “Mandiant Exposes APT 1—One of China’s Cyber Espionage Units and Releases 3,000 Indicators,” *FireEye* (blog) 19 February 2013. A year is also roughly the time that a discovered vulnerability sold on the vulnerability market remains undiscovered by anyone else. Nicole Perlroth and David E. Sanger, “Nations Buying as Hackers Sell Flaws in Computer Code,” *New York Times*, 13 July 2013.



CWO-2 Michael D. Fay, *Practicing with the MARBOT*. Watercolor on paper.
Art Collection, National Museum of the Marine Corps, 335-1-112

to do so. Unfortunately, the many ambiguities of who is doing what to whom in cyberspace suggest that understanding who is preparing to do what to whom is even harder to discern. Grave mistakes are possible—particularly if the decision to preempt attacks is delegated from the president, as many have suggested it might be.²⁸²

Finally, what might be those cues that warriors in today's domains should take from cyberspace according to some yet-to-be-written doctrine? Cyberwar is sneaky stuff. It relies on deceiving computers, which, in turn, requires deceiving humans who manage these computers. It usually works a great deal better when it comes without warning. Insofar as its success depends on the discovery of impermanent elements in the target system, laid-in attacks have to be used quickly if they are to be used at all. Furthermore, because many of its effects are temporary, they must be exploited in a very short time (as quickly as within hours and days). In that sense, powerful cyberattacks can pull follow-up strategic or operational actions behind them, whether or not the latter are, respectively, appropriate or ready. Cyberwar is also an elite activity in which numbers of hackers count for little but the skills of the best of the best count for a great deal.

Cyber operations are covered in heavy layers of secrecy. In some ways, secrecy is deserved: vulnerabilities described quickly become vulnerabilities eradicated. But in other cases, it is questionable: no country admitted to

having cyberwar forces until 2012. And in other ways, particularly when disclosing information about vulnerabilities that the other side found in the systems of commercial organizations, it can get in the way. All this makes it difficult to have a serious public debate about the role of cyberwar in national security. To be fair, the common difficulty of understanding cyberspace also interferes with useful public debate. Hence the question: Would it be beneficial for the mores of physical war fighting to reflect the inherent mores of war fighting in cyberspace? Perhaps not.

CONCLUSIONS

So, rather than bemoan the fact that there are no instant strategic classics on cyberwar, or even well-percolated ones, perhaps we should count ourselves lucky. Many of the strategic classics from earlier domains seem to have been misleading, even harmful. Warfighters that deal with the more recent media, such as outer space or the radio-frequency spectrum, seem to be doing just fine without them. And cyberwar appears to have even less basis for a strategic treatment than space warfare or electronic warfare. Its efficacy—much less significance—has been postulated well before it has been proven. By its very nature, cyberwar has to continually morph to retain its relevance. Furthermore, there are good reasons to believe that its contribution to warfare, while real, is likely to be modest, while its contribution to strategic war is a great deal easier to imagine than to substantiate.

²⁸² David E. Sanger and Thom Shanker, "Broad Powers Seen for Obama in Cyberstrikes," *New York Times*, 3 February 2013.

ON HYPERWAR

by General John Allen and Amir Husain

U.S. Naval Institute *Proceedings*, 2017²⁸³

2 JANUARY 2018

The battle damage was devastating and constituted the leading edge of what the United States soon would discover was a widespread, strategic attack. The guided-missile destroyer had not “seen” the incoming swarm because it had not recognized that its systems were under cyber attack before things turned kinetic. The undetected cyber activity not only compromised the destroyer’s sensors, but also “locked-out” its defensive systems, leaving the ship almost helpless. The kinetic strikes came in waves as a complex swarm. The attack appeared to be conducted by a cloud of autonomous systems that seemed to move to-

gether with a purpose, reacting to each other and to the ship.

The speed of the attack quickly overwhelmed nearly all the ship’s combat systems, and while the information technology specialists were able to release some defensive systems from the clutches of the cyber intrusion, the sailors in the combat information center (CIC) simply were unable to generate the speed to react. Decision-action times were in seconds or less. Indeed, it appeared from the now very limited situational awareness in the CIC that some of the enemy autonomous weapons were providing support to other systems to set up attacks of other systems. The entire event was over in minutes.

The captain had survived, courageously remaining on the bridge, but he was badly wounded, as were many crew members. Fires were burning out of control, and the ship was listing badly from flooding. Because of the damage, the captain was unable to communicate to the damage control assistant

²⁸³ The original article came from Gen John Allen, USMC (Ret), and Amir Husain, “On Hyperwar,” U.S. Naval Institute *Proceedings* 143, no. 7 (July 2017): 23–39. Minor revisions were made to the text based on current standards for style, grammar, punctuation, and spelling. As we build the conversation for hyperwar, we intend to recognize fellow travelers in this journey. To that end, we would like acknowledge the work of Peter W. Singer and August Cole in their excellent book, *Ghost Fleet: A Novel of the Next World War* (Boston and New York: Eamon Dolan Book, Houghton Mifflin Harcourt, 2015) an important fictional treatment of future war.



An artist rendering of the *Zumwalt*-class destroyer USS *Zumwalt* (DDG 1000), a new class of multimission U.S. Navy surface combatant ship designed to operate as part of a joint maritime fleet, assisting Marine strike forces ashore as well as performing littoral, air, and subsurface warfare.

Official U.S. Navy illustration

(DCA), who was, herself, badly wounded but valiantly seeking to control the fires and flooding. Damage control central had been hit. Evidently some of the autonomous platforms knew exactly where to strike the ship to both maximize damage and reduce the chances of survivability. With his capacity to command the ship now badly compromised and the flooding out of control, the captain did what no U.S. skipper had done for generations—he issued the order to abandon ship.

On only a few occasions has history witnessed fundamentally transformative changes in

the way war is waged. The employment of cavalry, the advent of the rifled musket, and the combination of fast armor with air support and instantaneous radio communications in the execution of the blitzkrieg strategy are a few examples. Technological developments—sometimes originating in a variety of different fields—come together to enable these seismic shifts. Another such shift is coming soon to the field of battle. Those who are not prepared for it will fare no better than the Iraqi Army did when confronted with the “second offset” technologies of smart, precision-guided weapons, stealth, and electronic warfare.

Broad contours of how this new shift in

the way war will be waged already are becoming clear. Technologies such as computer vision aided by machine-learning algorithms, artificial intelligence (AI)-powered autonomous decision making, advanced sensors, miniaturized high-powered computing capacity deployed at the “edge,” high-speed networks, offensive and defensive cyber capabilities, and a host of AI-enabled techniques, such as autonomous swarming and cognitive analysis of sensor data, will be at the heart of this revolution. The major effect/result of all these capabilities coming together will be an innovation warfare has never seen before: the minimization of human decision making in the vast majority of processes traditionally required to wage war. This minimization likely will alter where the human will be located in the decision-action loop and the human’s specific involvement in decision making itself. In this coming age of hyperwar, we will see humans providing broad, high-level inputs while machines do the planning, executing, and adapting to the reality of the mission and take on the burden of thousands of individual decisions with no additional input.

EXPLAINING HYPERWAR

First, why refer to AI-fueled, machine-waged conflict as *hyperwar*? This is not a new term. In World War II, its use implied the global nature and many concurrent theaters of war. In today’s context, however, hyperwar may very well be applied globally, but the element of “pan-war” is not its singular defining characteristic. Instead, what makes this new form of warfare unique is the unparalleled speed enabled by automating decision making and the concurrency of action that will become possible by leveraging artificial intelligence and machine cognition.

In describing the wars of the future, *hy-*

per is used in the original Greek sense of the word—over or above. This new type of combat will be beyond what has been seen before in important ways. In military terms, hyperwar may be redefined as a type of conflict where human decision making is almost entirely absent from the observe-orient-decide-act (OODA) loop. As a consequence, the time associated with an OODA cycle will be reduced to near-instantaneous responses. The implications of these developments are many and game changing.

Infinite, Distributed Command and Control Capacity: until the present time, a decision to act depended on human cognition. With autonomous decision making, this will not be the case. While human decision making is potent, it also has limitations in terms of speed, attention, and diligence. For example, there is a limit to how quickly humans can arrive at a decision, and there is no avoiding the “cognitive burden” of making each decision. There is a limit to how fast and how many decisions can be made before a human requires rest and replenishment to restore higher cognitive faculties.

This phenomenon has been studied in detail by psychologist Daniel Kahneman, who showed that a simple factor such as the lack of glucose could cause judges—expert decision makers—to incorrectly adjudicate appeals. Tired brains cannot carefully deliberate; instead, they revert to instinctive “fast thinking,” creating the potential for error. Machines do not suffer from these limitations. And to the extent that machine intelligence is embodied as easily replicated software, often running on inexpensive hardware, it can be deployed at scales sufficient to essentially enable an infinite supply of tactical, operational, and strategic decision making.

Concurrency of Action/Perfect Coordination: “overpowering the enemy” is a

phrase used often in the literature of war. In military terms, this refers to the concentration of force in a finite space, during a finite period of time, such that the application of this force against the opposing elements able to respond delivers a numeric or firepower advantage impossible for the opposition to counter or resist. This may not necessarily be because the attacking force is larger or more powerful than the entire defending force, only that it is more powerful when and where it matters. This is an important distinction. If a smaller force can be quickly “perfectly coordinated” and applied to a precise point where the enemy is unable to reinforce during the period of hostility, then the smaller force usually will prevail. If such action can be replicated repeatedly, then much larger opposing forces can be effectively neutralized economically and often will be dislocated psychologically.

The two key variables of concern are time and space. The time is what it takes to form and execute kinetic action, and the space is where such action is to be executed. These variables are computed as a result of significant strategic, operational, and tactical decision making. Identifying a candidate space for the application of force is the first ingredient. When done properly, it involves computing a large set of contingencies, called branches and sequels in planning parlance, regarding the enemy’s capacity to replenish, resupply, and reinforce. The tactical matters of identifying targets, maneuvering to achieve advantage or to avoid counter fire, and directing one’s own fire add to this list of decisions and to the cognitive complexity. With machine-based decision making, a large group of sensors and shooters can be coordinated instantaneously, enabling the rapid forming or massing of forces and the execution of kinetic

action and subsequent dispersal. The degree to which concurrency of action can be achieved with machine-based decision making fuels hyperwar and will far outpace what can be done under human control and direction.

Logistical Simplification: the old adage that, “amateurs talk tactics, and professionals discuss logistics” is good guidance. Since time immemorial, waging war has required the movement of human armies that must be fed, clothed, and protected. When the level of intelligence required to fulfill a specific mission can be created in synthetic form, however, machines can become soldiers. The needs and logistics demands of robotic soldiers will neither be as varied as those of a human soldier, nor will these machines be as indispensable as a human soldier. The loss of these assets no longer will trigger the expensive and dangerous standard operating procedures involving infiltration of a medical team, extraction, and transportation to a field facility.

Today’s drones or unmanned combat aerial vehicles (UCAVs) mostly are remotely piloted systems that simply separate the human pilot from the craft, placing human decision making at a distance. This is a useful configuration, but it has many downsides. First, the latencies involved mean that only certain types of missions can be fulfilled by today’s drones. High-speed air-to-air combat would be difficult, for example. Second, the system remains susceptible to jamming and loss of communications. Third, the human pilot succumbs to many of the pressures and stresses of real war. This drone pilot post-traumatic stress disorder phenomenon has been well documented and sheds light on the limitations of the current model.

Truly autonomous UCAVs of a variety of types and sizes with on-board synthetic intelligence



Marines with I MEF and sailors with Cyber Protection Team 553 (CPT 553) monitor network activity during I MEF's Large Scale Exercise 2016 at Marine Corps Air Station Miramar, CA, 22 August 2016. The overall purpose of the exercise was to practice the deployment of a fighting force of more than 50,000 military personnel to a partner nation and incorporate both live-fire and simulated combat scenarios against a near-peer enemy force. CPT 553 is a team of cyber defense specialists with Fleet Cyber Command. The team advised I MEF while setting up the command element's networks.

Official U.S. Marine Corps photo, courtesy of Cpl Garrett White

will be the foot soldiers in a future hyperwar. Models the size of commercial quadcopters capable of weaving through forests and racing across open fields will assemble, act, and dissipate in no time. They will be armed with sophisticated sensors that feed vision and decision-making algorithms both on board, in the swarm, and when accessible, in centralized locations. In addition, they will come equipped with a variety of cyber and kinetic payloads. A large number of these systems can be coordinated by means of swarm algorithms, enabling "a collective" to ensure the fulfillment of a mission and individual drones to support and to adapt to the loss of another.

Despite their flexibility, these systems principally will require only two resources: energy

and ammunition. In the future, energy may be converted to ammunition, such as with directed-energy weapons. Still, it will be some time before the requisite miniaturization can be achieved to deliver this capability. These assets will remain "resource neutral" until they are actively being employed, reducing the overall energy required to sustain them in a theater over time. With all these changes, the logistical effort will be simplified immensely, and as a result, the "teeth to tail" ratios for autonomous forces will be higher than for any manned force.

Instant Mission Adaptations: German World War II General Erwin Rommel once said, "The best form of welfare for the troops is first-rate training." Without training, there is no chance of success, and advanced forms of mili-

tary training help create specializations for roles that are essential in the conduct of war. In the face of artificially intelligent technologies and the hyperwar they will enable, there will be two groundbreaking changes in training.

First, AI technologies such as natural language-based dialog systems that can ingest hundreds of thousands of pages of manuals, guides, studies, and more will augment human operators in noncombat situations, such as with maintenance and remediation of equipment. Eventually these capabilities will be enriched with augmented reality information-delivery technologies in combat scenarios.

Second, when employed in an entirely autonomous fashion, the tactics and strategies of an AI system—its entire set of behaviors and corpus of acquired knowledge—can be copied easily from one system to another. This is the equivalent of having the most qualified veteran instantly transfer his or her experience and expertise to troops who have never been in battle. Further, an AI system's skills and specializations can be swapped in and out immediately. The same autonomous aerial platform can be an expert "pilot" for a suppression of enemy air defenses mission and, with a quick swapping of the neural network controller, become the world's deadliest air superiority specialist. In addition, if one such "expert" AI pilot needs to be sacrificed to achieve mission objectives, so be it. Other than the hardware, nothing is lost. The "brains" of the pilot simply can be replicated on a different piece of hardware.

Training for AI-based systems can happen in the real world, or in simulators. An approach known as "reinforcement learning" has made great strides in defeating human players at traditionally unconquerable games, such as the ancient game of Go. The same technology is being

employed to build better autonomous cars. Each autonomous car does not have to go through the learning curve that every human driver must navigate. Instead, the car—or simulated car—that evolves the best performing neural network can communicate that experience and learning instantly to all other vehicles. This instant "transfer learning" will be another unparalleled reality in future hyperwar, fueled by the employment of artificial intelligence.

28 MAY 2027

AN AUTONOMOUS DEFENSE RISES

The artificially intelligent cyber defense system in the guided-missile destroyer's CIC was the first to detect what appeared to be an attempt at a major cyber intrusion, perhaps an attack. The intrusion was pervasive, seeking to lock-out the ship's sensors and many of its defensive systems, and seemingly concentrating on the ship's antiswarm batteries (ASBs) and supporting systems. The initial cyberattack and the successful defense occurred within microseconds. The defensive system had functioned exactly as it had been designed. As a result, the ship was able to "sense," then detect, a massive incoming complex swarm attack—the kinetic follow-up to the invisible opening strike. In fact, the system had gone further, instantly forwarding threat information to the rest of the fleet, enabling other units to prepare for an impending attack.

The captain moved quickly from the bridge into the CIC and, along with the others in the center, donned the augmented reality headgear and attendant gauntlets to assimilate and react to the totality and complexity of the battle he was about

to lead. His first thought was the status of his weapons. He had only seconds as some elements of the swarm were supersonic, maybe hypersonic. Because of the elevated threat level, the captain had been given a high level of authority and autonomy to engage any potential attackers. He quickly cycled to the “weapons status” views in his headset, and all were green, being continuously fed targeting information from the ship’s fire-control complex now locked onto and tracking and analyzing the incoming attacking swarm. He had to act and shifted to the “ASB status view.” With a sweep of his hand in virtual reality, he initiated the ASB.

In that instant, naval warfare changed forever. Now, “cleared hot,” the various components of the ASB sprinted skyward outside the skin of the ship, and the airspace was filled with several types of now-completely autonomous aerial vehicles. Some moved off at high speed on the azimuth of the incoming attack to engage the enemy swarm at long range; others dwelt in the vicinity of the ship, ready to engage as a last-ditch defense. No one on the ship, indeed no one in the U.S. Navy, had experienced the ASB going into action at full capacity. The ship shuddered as systems leapt into the air with a cacophony of noise.

Back in the CIC, the captain shifted to “target view” in his headset to see what was coming. He had been slightly skeptical this would all come together, beyond his simulator training, but now he was seeing the reality of something nearly beyond belief: completely autonomous aerial systems locked in mortal combat. Blue tracks representing ASB systems and red tracks identifying enemy threats filled the screens.

Likely electronic countermeasures (ECM) decoys were highlighted in orange and automatically deprioritized by the ASB. As the battle unfolded—measured in seconds—one after another red and blue systems winked out as they crashed into each other or detonated in close proximity. That battle was moving toward his ship at a high speed. Having donned his own headset, the weapons officer quickly unleashed the full might of the various close-in weapon systems, including the autonomous systems from the ASB, which continued to engage the closing enemy swarm.

The first impact was deafening. Some elements of the enemy’s swarm had detonated above the ship, taking out some of the ship’s antennas. They evidently were searching for certain antennas to reduce the ship’s connectivity. The second strike carried away a 20mm Phalanx Gatling gun, a principal means to defend the ship. The third blast struck the ship at the waterline, killing and wounding a number of crew members and starting fires and flooding. While outside the ship a maelstrom was unfolding as kinetic systems autonomously coordinated fires with the near continuous launching of the ASB, inside the ship, damage-control and medical recovery measures were under way.

The captain quickly switched to “damage control view” and was able to see the AI-enabled dashboard view of the damage and the damage-control measures the ship’s DCA was using to fight fires and control flooding. Because of the sophistication of the AI system, he could instantly “see” which of the ship’s systems were offline, which were being rebooted to recover, and which were being instantly cross-connected to restore



Navy PO3 Bryanna Artellano stands watch in the combat information center on the dock landing ship USS *Harpers Ferry* (LSD 49) in the South China Sea, 4 August 2016. The ship, with embarked 13th MEU, operates in the U.S. 7th Fleet area of operation to support security in the Indo-Pacific Asia region. Official U.S. Navy photo, courtesy of PO3 Zachary Eshleman

capacity and capability. The AI-powered damage-control system was quickly and autonomously shifting power loads and bringing emergency systems on line. Decisions for damage control were being made in seconds where before long minutes were needed.

The captain then shifted to the view he dreaded: “crew status.” Because every member of the ship’s company wore a “health status harness,” which measured body temperature, heart rate, blood pressure, and breathing, he instantly could see the overall status of his crew and each individual sailor’s status dashboard. Sobered and saddened by the number of casualties as he cycled through

subviews in this domain, he saw who had been killed and who was wounded. He knew which of his leaders were down and began to consider how he would reconstitute the chain of command.

Hours later, with his wounded cared for, the fires out, and the flooding under control, the captain reflected on the engagement. He was shaken but not frightened by the reality. The attack had come seemingly from nowhere. The cyber defense system had detected the initial cyber intrusion, and not only had it protected the ship, but it also had reasoned the attack was a precursor to something larger and alerted the CIC of

what might be coming. This hypothesis had been formed, researched, and validated in less than a second. Within 10 seconds, the ship initiated general quarters on its own and the captain had donned his augmented-reality ensemble. From that moment until the final fires were put out, using the automatic fire suppression system coordinated around crew status readings, the entire battle had unfolded and was over in minutes.

The autonomous nature of the ASB assets, coordinated with the CIC, and the ship's defensive systems had foiled a coordinated, complex cyber and autonomous swarm attack. The captain was struck by the realization that at nearly every point where human actions and decisions were required they nearly risked the ship. Though he was a master of the combat systems of the USS Infinity (DDG 500), he had just experienced the near mind-numbing speeds of AI and deep-learning-driven warfare. He had become the first U.S. commander to fight in the environment of hyperwar.

IS THIS A REVOLUTION IN MILITARY AFFAIRS?

The scenarios here and the intervening discussion provide a window into only a few of the ways in which synthetic intelligence will fuel the next great shift in how warfare is conducted. The fusion of distributed machine intelligence with highly mobile platforms brings a speed and scale of concurrency never seen before. The hyperwar these technologies will enable is a new paradigm for which we need to plan. The rise of these capabilities has sparked a revolution. But it is more than a revolution in military affairs, it is a revolution in human affairs with major implications for the security and defense arenas.

Advances in AI have the capability to fundamentally change the human condition, and with it, a profoundly human undertaking, war.

Near-peer opponents already are investing heavily in these technologies and have some operational AI-powered weapon systems, such as cruise missiles. The ability for autonomous algorithms to transform moderately dangerous weapon systems into significant threats means we must watch for and guard against synthetic intelligence being added to existing arsenals.

The speed of battle at the tactical end of the warfare spectrum will accelerate enormously, collapsing the decision-action cycle to fractions of a second, giving the decisive edge to the side with the more autonomous decision-action concurrency. At the operational level, commanders will be able to “sense,” “see,” and engage enemy formations far more quickly by applying machine-learning algorithms to collection and analysis of huge quantities of information and directing swarms of complex, autonomous systems to simultaneously attack the enemy throughout his operational depth.

At the strategic level, the commander supported by this capacity sees the strategic environment through sensors operating across the entire theater. The strategic commander's capacity to ingest petabytes of information and conduct near-instantaneous analysis of information ranging from national technical means to tactical systems provides a qualitatively unsurpassed level of situational awareness and understanding heretofore unavailable to strategic commander.

AI-powered assistive technologies—such as intelligent assistants, advanced interactive visualizations, virtual reality technologies, and real-time displays projecting rapidly updated maps—will come together to enable this situational awareness. This level of strategic un-

derstanding generates the capacity for a speed in command and control and concurrent and subsequent actions that will consistently dominate—at a time and place of our choosing—because our superior concurrency will consistently overmatch the enemy’s capacity to respond.

All of this reawakens the perennial conversation about the nature and the character of war. If, indeed, we are poised at the edge of hyperwar, we must explore the changes necessary to adapt to this new conflict environment. It will

require understanding the moral dimensions of these advances, educating a new generation of leaders, and developing the AI-powered analytical systems and autonomous weapons platforms. The mental, moral, and physical challenges of hyperwar demand analysis and a searching conversation. Our adversaries and our enemies are moving forward aggressively in this area. The United States must make the strategic investments both to be ready to wage hyperwar and to prevent us from being surprised by it.

KEEPING OUR AMPHIBIOUS EDGE

by Admiral John C. Harvey and Colonel P. J. Ridderhof
U.S. Naval Institute *Proceedings*, 2012²⁸⁴

WHO IS RESPONSIBLE FOR MAINTAINING THE CRITICAL SEA-TO-SHORE-AND-BACK CAPABILITY?

THE U.S. NAVY AND MARINE CORPS, THAT IS WHO

In March, U.S. Fleet Forces Command and U.S. Marine Corps Forces Command completed their Exercise Bold Alligator 2012 (BA12), the largest amphibious exercise in the past decade. A mix of live and simulated forces, the exercise followed Bold Alligator 2011, executed in December 2010, which was conducted wholly with simulated forces. The commands' staffs are now crafting an extended campaign plan to incorporate Bold Alligator exercises into annual operations and training of East Coast naval forces. So why are these exercises important, and what challenges lie ahead?

THE REQUIREMENT

Amphibious capability has become associated primarily with assaulting defended beaches and seizing lodgments for land campaigns. However, such forces provide much broader capability to the nation than that narrow mission profile. Stripped to its essence, an amphibious capability places an intact, ready-to-operate landing force ashore and supports it from the sea to accomplish the mission.

A simple assessment of U.S. global interests and geographic position, set against a backdrop of continuing instability in the world, clearly points to the need for a U.S. amphibious capability so described. We have been fortunate to have ready access to friendly ports for our major operations over the past decades. This will not necessarily, nor even likely, be the case in the future. We may be denied these ports not only based on overt hostile action, but also by political decision, natural disaster, or lack of infrastructure. Amphibious capability brings a greater guarantee of access to a foreign shore at the time and place of our choosing.

²⁸⁴ The original article came from Adm John C. Harvey, USN, and Col P. J. Ridderhof, USMC, "Keeping Our Amphibious Edge," U.S. Naval Institute *Proceedings* 138, no. 7 (July 2012): 36–40. Minor revisions were made to the text based on current standards for style, grammar, punctuation, and spelling.



U.S. Marines from 1st Combat Engineer Battalion, 1st Marine Division, prepare to load an assault breacher vehicle (ABV) onto a landing craft utility (LCU) at Camp Pendleton, CA, in February 2018. All vehicles were loaded onto LCUs then transported to the USS *Rushmore* (LSD 47) to conduct the first amphibious landing in an ABV with a modified full-width mine plow prototype. Marine Corps Systems Command tested the prototype, which will make it easier to transport the ABV from ship to shore.

Official U.S. Marine Corps photo

An amphibious operation becomes a forcible-entry capability when the environment is either hostile or potentially hostile. Since the end of the Cold War, the threat was ashore. However, today's and tomorrow's adversaries have capabilities that extend the threat out to sea. Whether it is against conventional or irregular forces, or a combination of both—what many describe as a hybrid threat—an amphibious forcible-entry capability must be able to succeed in a hostile air-land-sea environment.

Amphibious capability is not a one-way operation from sea to shore. Amphibious forces can adjust from sea to shore and back again, depending on logistical or political factors. They can also rapidly withdraw the landing force from one point and make use of the inherent mobility afforded naval forces to move and strike else-

where. An amphibious attack is not only an axis of attack inland, but it can operate and dominate laterally along an extended littoral area.

This has been a key characteristic of U.S. military power, from its initial ad hoc forms in the Barbary Wars, the Civil War, and the Spanish-American War; through being the primary U.S. operational capability of World War II, all the way to the multitude of crisis response actions of today. The nation will continue to need amphibious capability in the future, and it is the U.S. Navy and Marine Corps' responsibility to provide it.

THE CHALLENGE: BEYOND THE ARG-MEU

Belying recent chatter that the Marines and Navy are returning to their amphibious roots after a

decade of war on land, we have never stopped preparing and deploying amphibious forces during the past 10 years. There is always an Amphibious Ready Group, Marine Expeditionary Unit (ARG-MEU), trained and ready, afloat somewhere on the oceans. The ARG-MEU has proved its worth in countless crises. The naval Services have nurtured this amphibious cutlass to a sharp and lethal edge. It has served us well in the past and will do so in the future.

However, the continued excellence of the ARG-MEU program does not by itself mean that the United States has an effective amphibious capability for the full range of operations. The ARG-MEU excels at forward presence, theater security cooperation, and crisis response, but it is not sufficient for all missions, or for taking on a competent adversary of significant size and strength. The Navy and Marine Corps must provide combatant commanders with workable doctrine and trained forces to execute amphibious operations, including forcible-entry operations, larger than the ARG-MEU.

To develop this effective amphibious capability, the naval Services must think and train beyond the ARG-MEU. As we have found in both 2011 and 2012, executing a large amphibious operation is not only quantitatively bigger, it is qualitatively different from an ARG-MEU operation. Lessons learned from the latter may not be relevant; some may actually be counterproductive. We must address a number of challenges in order to achieve expanded amphibious capability.

HOW TO EXPAND AMPHIBIOUS CAPABILITY

We must tactically integrate amphibious, sea-control, and strike capabilities. A common belief is that the air and sea superiority battle

must be completely fought and won before ever contemplating an amphibious assault. However, that has not been the historical pattern. While the amphibious attacker has usually set the local conditions for an assault, the defender has normally not made his strongest challenge to air and sea superiority until after the actual initiation of the operation. Think of the great air and sea battles—around Guadalcanal in 1942–43, the Philippine Sea in June 1944, Leyte Gulf in October 1944, the kamikaze assaults off Okinawa in April–May 1945, and the Battle of San Carlos Sound in the 1982 Falklands campaign. In each case, the great battle for air-sea superiority around the beaches did not begin until after the amphibious force was committed to the landing area.

Before the amphibious operation commences, the attacking naval force has the natural advantage of mobility and concealment afforded by open sea. Knowing this, the defender has little incentive to uncover his weapons and sensors to risk them in a long-range strike duel. Once the assault begins, however, the amphibious task force and supporting fleet elements are constrained to a relatively defined littoral area to support the landing force. This gives the defender a much easier detection problem to solve and a host of lucrative targets in the form of the amphibious ships.

The intertwined dynamic of the air/sea superiority fight and the amphibious assault makes it critical that these operations are tactically integrated. Operating ARG-MEUs and Carrier Strike Groups (CSGs) in the same vicinity has not provided us the experience or insight on how to closely align amphibious, sea-control, and strike operations. In fact, we have developed doctrines and operating practices that do not mesh with one another. If *Bold Alligator 2012* is

any indicator, we have work to do to ensure that a CSG, Expeditionary Strike Group (ESG), and Marine Expeditionary Brigade (MEB) can effectively integrate their operations in a maritime environment.

SHIP-TO-SHORE

We must know how to embark and employ a larger Marine Air-Ground Task Force (MAGTF) across more ships. While there are variations in each deployment, ARG-MEUs all go out with a standardized embarkation of the Marine elements. More amphibious ships and a larger MAGTF mean more capability and more options, but these advantages will only be realized if we rediscover the art of combat embarkation and amphibious ship-to-shore tactical employment. This includes all elements of the MAGTF, from aviation coordinating across multiple decks to an infantry battalion launching from multiple well-decks to land in a single wave on a single beach. Parts of the MAGTF, especially aviation, may be based ashore within range of the amphibious operation, further enhancing capability, but complicating the situation. We must break out of the ARG-MEU mold to explore the possibilities and fully take advantage of the flexibility and combat power of a larger MAGTF.

We must be able to command and control a large Amphibious Task Force (ATF). A large ATF is not simply a collection of three-ship ARGs. There is no single template for how an ESG commander employs his subordinate ships, Amphibious Squadron Command elements, and other Navy assets. Amphibious doctrine calls for very centralized control under the commander ATF in the form of a primary control officer for surface movement and a tactical air officer for all air operations. We have very little recent practi-

cal experience in knowing whether or how this doctrine will work in large task forces in light of new capabilities as well as the pervasive influence of composite warfare doctrine in the force.

We must be able to embark and employ larger command elements. A large amphibious force requires more command elements. From where do they embark and operate? Do they all need to embark? The requirements levied by these command-and-control nodes can come at a cost to combat capability of the force, as well as stressing already limited bandwidth available at sea.

We must be able to simultaneously deploy aggregate, and operate the force. A large amphibious force will not be embarked and sail from a single port, or even a single coast. Deployed ARG-MEUs and CSGs will be the first naval forces on-scene and will be task-organized to begin operating immediately. Coordinating embarkation and deployment of Continental U.S.-based forces with aggregation and initial shaping operations in-theater will be a daunting challenge for fleets and tactical amphibious command elements. Our approach to large-scale amphibious operations must account for how our amphibious forces will realistically concentrate from a dispersed strategic posture.

ROLE OF THE MILITARY SEALIFT COMMAND

We must leverage Military Sealift Command (MSC) capabilities. Current practice divides the landing force into an assault echelon on amphibious shipping and an assault follow-on echelon on MSC and other craft. We need to consider whether these categories and their impact on our thinking still make sense. BAI 2 featured MSC ships closing rapidly to provide support and additional MAGTF elements, even



Marines descend ladders to storm ashore during the landing at Inchon, Korea, on 15 September 1950.
Official U.S. Marine Corps photo, Photograph Collection, Archives Branch, History Division

while the assault echelon was still operating from the amphibious ships. MSC ships are by no means amphibious vessels, but further integrating MSC shipping into the amphibious operation, with proper shaping and risk assessment, may provide a more powerful assault-echelon punch than can be mustered by amphibious ships alone.

We must integrate Navy expeditionary capabilities. The classic rationale for an amphibious operation is to secure a port and/or airfield complex for the introduction of follow-on forces. Another look at the historical record indicates that physically securing a port has not been as much an issue as have the challenges in getting that port operating. We only need to think of Naples in 1943, Cherbourg in 1944, and Port-au-

Prince in 2010 to see the significant impact of damaged ports to sustaining operations ashore. The capabilities to execute port opening, operations, and security, or logistics over the shore may need to be prioritized for embarkation and offloading—even to the degree of having these capabilities as part of the assault echelon.

We must be able to understand and tie the amphibious operation into the broader joint campaign. On the far end of the amphibious operation, the landing always serves a further purpose. When that purpose is a lodgment ashore to allow the introduction of a larger joint force, then the plans and requirements of that joint force will drive the amphibious operation. Left to our own devices, the naval Services will tend toward courses of action that maxi-



Two Marine Corps McDonnell Douglas AV-8 Harrier "jump jets" return after a training flight to the USS Nassau (LHA 4) in the Gulf of Oman. The planes provided close air support to the many Marines loaded aboard this amphibious ship. John Charles Roach, *USS Nassau (LHA-4) in the Gulf of Oman*. Oil on canvas board. Art Collection, Naval History and Heritage Command, 92-007-BJ

mize the strengths and mitigate the weaknesses of the amphibious force. However, the needs of the campaign, and possibly the planned concept of operations for a land component, may drive the naval force to “suboptimize” the conditions for its amphibious phase to better support the overall campaign. The Inchon landing during the Korean War is the best example: General Douglas MacArthur’s need for the assault to occur in close proximity to Seoul overrode Navy and Marine Corps objections concerning the suitability of the area for amphibious operations.

We must be able to integrate Special Operations Forces. Amphibious operations rely heavily on good intelligence and shaping of the operating environment. Many of the required capabilities to accomplish these tasks now reside in U.S. Special Operations Command forces.

THE ANSWER: SINGLE NAVAL BATTLE AND AGGRESSIVE ACTION

As the list here demonstrates, large amphibious operations are not the domain of just the “Gator Navy” and the Marines. We will need to apply CSGs, submarines, patrol aircraft, mine warfare, Navy expeditionary forces, as well as the amphibious ships, landing craft, beachmasters, and the entire inventory of MAGTF capabilities to address land-air-sea threats and accomplish the amphibious mission. In order to integrate these units into coherent operating forces, we need a common approach across the naval Services. *Single naval battle* is a term that has recently emerged from the deliberations of the Marine Corps’ Amphibious Capabilities Working Group. Single naval battle is not an operating concept or a separate doctrine. It is a framework, or lens, for thinking, planning, and executing naval operations: everything that occurs in the maritime

battlespace affects everything else in that battlespace, so every aspect of Navy and Marine Corps doctrine and operations must take into account the impact across the whole naval force. This framework will facilitate developing our ideas and capabilities with integration foremost in mind. However critical single naval battle is to bringing naval thinking into coherency, it is only a first step. To address the challenges itemized in this article requires active experimentation and training. U.S. Fleet Forces and Marine Forces Command are taking action to this end by crafting a multiyear campaign to develop and train to our capability of executing large-scale amphibious operations. This campaign will get after the “how” of large amphibious operations, and in the process ensure our forces are trained and ready.

The Combined [Force]/Joint [Force] Maritime Component Command with the Maritime Operations Center provides an actual naval command-and-control tool with which to apply single naval battle approaches in wargaming and exercises. In BA12, U.S. Fleet Forces and Marine Forces Command employed an inherently naval Combined Force Maritime Component Command (CFMCC), with equal Navy and Marine Corps staff representation, to pursue the single naval battle at the tactical and operational level of war. The CFMCC will be a centerpiece of the campaign plan.

PREMIER ANNUAL EVENT

The Bold Alligator exercise will be the premier annual event of this campaign. However, the campaign will not solely be an exercise series. It will feature experiments, professional military education, leadership seminars, and other events to truly develop and sustain this capability. This effort on the East Coast is part of a larger

Navy and Marine Corps effort to revitalize the full range of our naval capabilities.

The naval Services have a great deal of work to do to deliver the amphibious capability that our nation expects of us. There will always be capacity and resource limitations, and in an era of declining budgets, the naval Services will not be able to field and maintain all the forces

we desire. However, the challenges laid out are primarily those of doctrine, training, and education. If we fail to understand how we should execute these operations, and fail to build a generation of sailors and Marines who have been trained to do so, we will also fail in execution, regardless of whether we have more resources or not.

BETWEEN PEACE AND THE AIR-SEA BATTLE

A War at Sea Strategy

by Captain Jeffrey E. Kline and Captain Wayne P. Hughes

Naval War College Review, 2012²⁸⁵

“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. . . . Command of the sea is a preeminent form of power that determines the outcome of land-sea conflicts.

~ John Arquilla²⁸⁶

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.²⁸⁷ 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.

²⁸⁵ The original article came from Jeffrey E. Kline and Wayne P. Hughes Jr., “Between Peace and the Air-Sea Battle: A War at Sea Strategy,” *Naval War College Review* 65, no. 4 (Autumn 2012): 35–40. Minor revisions were made to the text based on current standards for style, grammar, punctuation, and spelling.

²⁸⁶ *Dubious Battles: Aggression, Defeat, and the International System* (Washington, DC: Crane Russak, Taylor & Francis, 1992).

²⁸⁷ Adm Norton A. Schwartz, USN, and Gen Jonathan W. Greenert, USAF, “Air-Sea Battle,” *American Interest*, 20 February 2012.

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.²⁸⁸ The *means* are a force structure with a better combination of conventional air forces, battle-group ships, and submarines, and a forward-deployed flotilla of U.S. and allied small combatants.

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

The war-at-sea strategy is also, however, a catalyst for peacetime engagement. It implies an adaptable force structure, a deployment plan, logistics capability, and allied collaboration. Accordingly, a critical peacetime component includes engaging Singapore, Malaysia, Indonesia, Brunei, Philippines, South Korea, and Japan. While engagement may take many forms, increased maritime security operations, especially

with the flotilla, can aid these nations' maritime governance operations to counter terrorism, piracy, smuggling, and illegal, unregulated, and underreported fishing. These vessels would also prevent seabed exploration contrary to international law, while at the same time providing valuable tactical experience for the crews.

MORE OPTIONS FOR DETERRENCE

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

A tenet of the maritime strategy is that no U.S. Navy actions will be initiated except in response to claims by China contrary to international law. Our emphasis on influence and peacekeeping embraces the notion that we stand

²⁸⁸ 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 Corbett, *Some Principles of Maritime Strategy*, 121–23.



USS *Nathanael Greene* (SSBN 636) was one of the “41 for Freedom,” nuclear-powered submarines designed to carry ballistic missiles. They served in the forefront of the Cold War, keeping the nation’s nuclear arsenal mobile and therefore able to respond to a surprise attack. Edward Terhune Wilbur, *Nathanael Greene (SSBN-636) Underway, March 29, 1965, for 21st Polaris Shot, 1969*. Watercolor on illustration board.
Art Collection, Naval History and Heritage Command, 88-185-K

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; and
- 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; and
- 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 600 tons carrying six or eight surface-to-surface missiles and depending on soft kill and point defense for survival, aided by offboard manned or unmanned aerial vehicles for surveillance and tactical scouting.²⁸⁹ 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.²⁹⁰

²⁸⁹ For comparison, a PHM (or patrol combatant hydrofoil, 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 300 or 400 tons; and the coastal minesweepers (MSCs) once stationed in Sasebo, on Kyushu, in Japan, displaced 450 tons.

²⁹⁰ For example, supposing a unit cost of \$80 in series production and assuming a mere 10-year service life, a force of 64 vessels would cost about \$500 million per year to sustain, or a bit more than 4 percent of the probably diminished Ship Construction (Navy), or SCN, budget.



Patrol combatant missile hydrofoils USS *Taurus* (PHM 3) in the foreground, and USS *Hercules* (PHM 2) cruise alongside one another during a patrol on 1 November 1989.

Official U.S. Navy photo, National Archives, courtesy of PH2 Mark Kettenhofen

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

example, off the coast of Burma—aerial surveillance from littoral combat ships, land bases, or both seems desirable.

Holding the South China Sea Islands at Risk. The presence of Marine expeditionary forces and their amphibious ships station forward in the western Pacific provides a unique capability to keep Chinese-held South China Sea islands, particularly those in dispute, at risk. During peacetime, their presence, by balancing force in the region and signaling American commitment, may motivate peaceful resolutions to disputes over exclusive economic zones; increase engagement opportunities exercises with the Philippines, Malaysia, Vietnam, and Singapore; and provide an asymmetric threat in response to a Taiwan invasion. In the event of war,

these expeditionary forces would deny use of South China Sea islands and exploration of the seabed through quick-reaction raids, land-to-sea missile attacks from concealed sites, ground and air surveillance, and other collaborative island employment with allies.

Less Reliance on Communications.

Our undersea forces will be less vulnerable to cyber and electromagnetic attack by operating in ways that exploit the “silent service’s” long-standing advantages. Flotilla ships would operate in stealthy, semisilent fashion as MGBs, MTBs, and PT boats have done in the past. Tactically offensive, yet operationally defensive, the war-at-sea strategy leverages the stronger form of warfare at sea, the offense, and allows for less concern on command-and-control interruption as it promotes individual and independent tactical actions for cumulative effect. Conventional air and sea forces that must employ active modes of search and communication will at first be assigned to support the distant blockade, thereby keeping them outside Chinese antiaccess and area denial targeting. If Chinese land attacks on U.S. or allied forces ashore require the United States to reply with the air-sea battle’s deep strike capabilities, then our ships and aircraft would move into position to execute their missions with well-rehearsed methods of deception and networking.

WISHING DOES NOT MAKE A STRATEGY

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

1. Can the United States effectively deny China’s use of the South and East China Seas in the event of all-out war at sea

without attacks on land-based forces by either side?

2. Before the war-at-sea strategy is adopted for the indefinite future, the United States must confirm the affordability of the Navy forces that would create a maritime no-man’s-land within the first island chain. What do the time-phased, programmatic details look like?
3. Attacks on bases would be an expansion of the war to the land, so the more secure the bases the less temptation to attack them. Where are the best locations at which to base submarines and support flotilla operations?
4. Can China counter this war strategy by threatening attacks off U.S. West Coast ports and in the Pacific trade routes, essentially implementing a war-at-sea strategy of its own?
5. For what other combat and noncombat operations might the flotilla be more cost effective than traditional battle-group combatants? Patrolling and fighting in coastal waters will continue to be the most frequent tasks for the twenty-first-century U.S. Navy. Until we can carry part of the burden with our own flotilla, we must rely on our partners around the world or employ more expensive, multipurpose, blue-water combatants for maritime security operations.
6. Will a war-at-sea strategy have a better chance to deter, delay, or constrain conflict with China than land-attack strategies?
7. Last, how do we disseminate the change of structure of our strategy in a way that maintains influence in the western

Pacific? We suggest, for unity of effort among the U.S. armed forces and our partners in Asia, that the strategy be openly published. China will not like it, but it is a peacekeeping strategy, not at all a manifest for aggression.

CONSUMMATION

We have cited Professor John Arquilla on the significance of seapower, as Arquilla's analysis looks at land-sea wars after 1815. He gives the classic nineteenth-century maritime strategists' advocacy of seapower 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.

GENERAL PAUL X. KELLEY

BIOGRAPHY

Life is full of lousy options, the question is which of the lousy options is the best.

~ General Paul X. Kelley²⁹¹

General Paul X. Kelley was born on 11 November 1928 in Boston, Massachusetts. He was commissioned a second lieutenant in the Marine Corps in 1950 through the Naval Reserve Officers Training Corps program at Villanova University. An infantry officer, Kelley served in several billets in his first 15 years in the Corps, attended jump school, and the U.S. Army's Pathfinder course. He later commanded the 2d Force Reconnaissance Company. He then served as an exchange officer with the Royal Marine Commandos, where he earned the Royal Marine's beret. After earning the beret, he commanded C Troop, 42 Commando, in the Far East in 1960–61.

In 1966, Kelly deployed to Vietnam as the commanding officer of 2d Battalion, 4th Marines; he was awarded the Silver Star for leading his battalion in combat. He returned to Vietnam in 1970–71, commanding the 1st Marines, the last Marine regiment in Vietnam.

Following the Vietnam War, he served in a variety of joint staff billets, including chief, Southeast Asia Branch, Plans and Policy Directorate, and served as a liaison officer for the Joint Chiefs of Staff to the Paris Peace Accords. He was promoted to brigadier general in 1974 and commanded the 4th Marine Division and held several developmental and education commands. He served as the director of both the Development Center and the Education Center in turn at Marine Corps Development and Education Command. He then became deputy chief of staff for Requirements and Programs.

In 1979, he was appointed to lead the development of the Rapid Deployment Joint Task Force, he was then its first commander. He later described its value:

As I envision the [Joint Rapid Deployment Task Force], we will present the National Command Authority with a full range of options for any given crisis. Rather than going through the last-minute agony of what forces are available and who will command them, we will have done all the proper plan-

²⁹¹ Attributed to Gen Paul X. Kelley in Richard C. Gross, "Marine Guards Scandal Could Hurt Soviets, Says Kelley," UPI, 25 June 1987.



Gen Paul X. Kelley served as the 28th Commandant of the U.S. Marine Corps from 1 July 1983 to 30 June 1987. Here, he is seen during an official visit to Okinawa in October 1984.

Official U.S. Marine Corps photo, Paul X. Kelley Collection, Archives Branch, History Division

ning and force sizing beforehand. The National Command Authority can then rapidly deploy the correct force package before the crisis gets out of hand.

General Kelley was appointed Commandant of the Marine Corps on 1 July 1983. During his tenure as Commandant, he led the Corps through the 1983 Beirut bombing, the invasion of Grenada (1983), and the Iran-Iraq Tanker War (1984–88). He oversaw the most extensive modernization of the Corps since the early 1940s. Light armored vehicles were introduced and M249 squad automatic weapons were assigned to each fireteam, dramatically increasing

the firepower of Marine infantry, while logistics were improved by the Logistics Vehicle System, or “Dragon Wagon.” In aviation, Kelley oversaw the introduction of the McDonnell Douglas AV-8B Harrier II and McDonnell Douglas F/A-18 Hornet to operational status. When he recommended the Joint Rapid Deployment Task force he created be transformed into U.S. Central Command, he advocated strongly for General George B. Crist as its second commander, the Corps’ first joint combatant commander.

General Kelley retired from the Corps in 1987, after a 37-year career in which he prepared the Corps for the challenges it would face in the Middle East as the twentieth century closed and the twenty-first century began.

ADMIRAL ELMO R. ZUMWALT

BIOGRAPHY

After all, the best warships in the world are of no avail without the crews to sail and fight them.

~ Admiral Elmo R. Zumwalt²⁹³

Admiral Elmo R. Zumwalt was born on 29 November 1920 in San Francisco, California. He entered the United States Naval Academy in 1939 and was commissioned an ensign in June 1942. He served initially in destroyers, and was awarded a Bronze Star with V for his actions in the Combat Information Center aboard the USS *Robinson* (DD 562) during the Battle of Leyte Gulf. He later commanded a captured Japanese vessel, the river gunboat *Ataka*, which helped restore order in Shanghai, China, after the war.

Zumwalt continued to serve on destroyers until he took command of USS *Tills* (DE 748) in 1950 and then was assigned as navigator aboard the USS *Wisconsin* (BB 64) during the Korean War in 1951. He was later the first commander of the original purpose-built guided-missile destroyer in the Navy, the USS *Dewey* (DDG-45), built in 1957.

Following several desk assignments, he

took command of Cruiser-Destroyer Flotilla Seven in 1965 upon promotion to rear admiral. In 1968, the same year he was promoted vice admiral, he became commander of Naval Forces Vietnam and chief of the Naval Advisory Group, United States Military Assistance Command, Vietnam.

In 1970, he was promoted to admiral and appointed as the Chief of Naval Operations (CNO). During his tenure as CNO, he set about reforming the Navy's culture and personnel policies, particularly targeting racism and sexism, but also removing regulations that were demeaning or abrasive to professional sailors. His preferred methods for communicating this goal to the fleet were Z-grams, Navy-wide communications that presented orders and explained his intent on broad Navy policies. Addressing the Navy's need to replace aging World War II ships, he championed the *Pegasus*-class missile patrol boats and the *Oliver Hazard Perry*-class guided missile frigates.

Admiral Zumwalt retired in 1974 from the Navy and passed away in 2000. At his funeral,

²⁹² Adm Elmo Zumwalt's Z-gram, quoted in John Dessel, "An Iconic Figure to Remember, Admiral Elmo Zumwalt Jr.," *Sextant*, 6 October 2016.

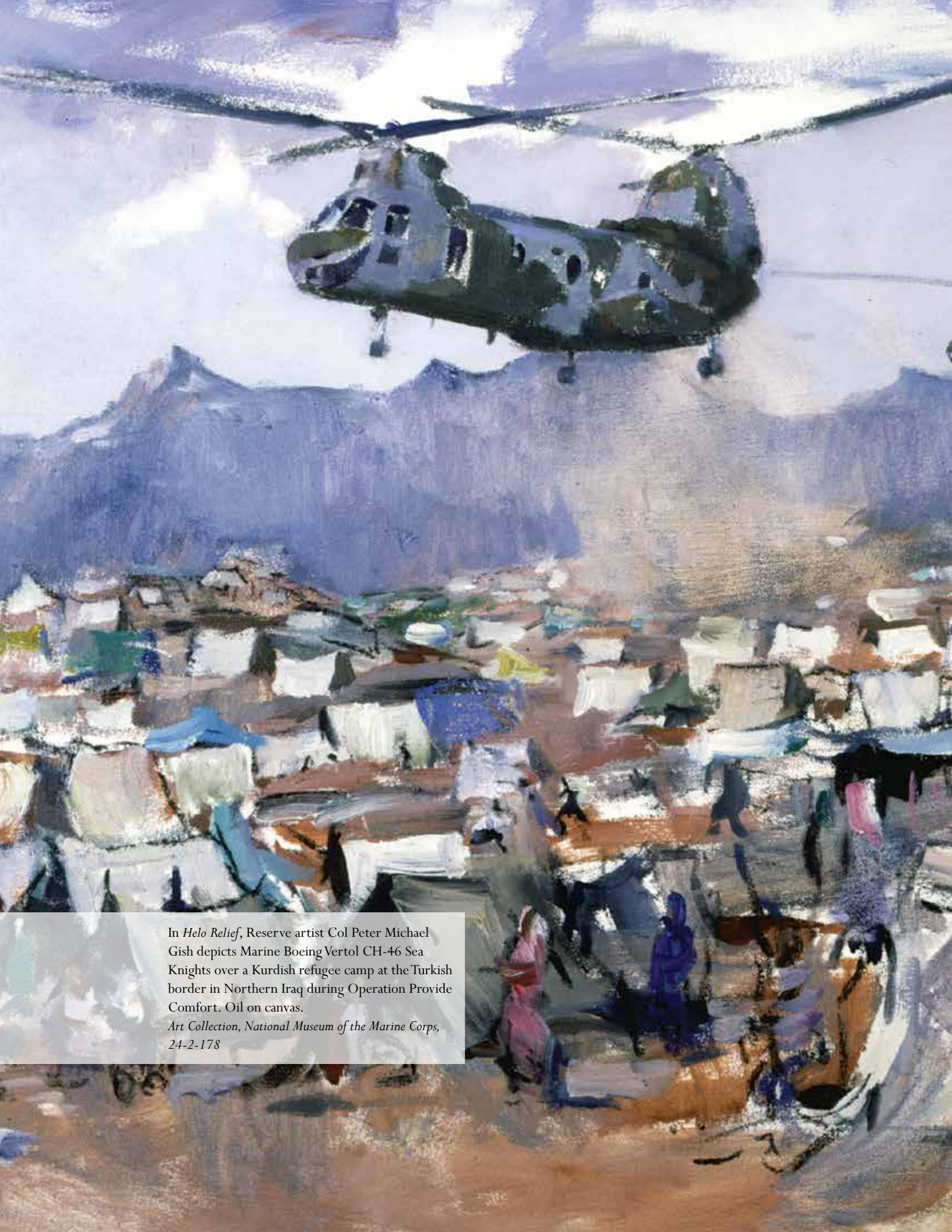


Adm Elmo R. Zumwalt Jr. sat for this portrait photograph in August 1970, shortly after receiving his fourth star and assuming the post of Chief of Naval Operations. He was the youngest officer to hold that position. *Official U.S. Navy photo, courtesy of PHC W. Mason, Naval History and Heritage Command, NH 97202-KN*

President William J. "Bill" Clinton said, "When our historians look back on the century we have just left, they may well record that Arleigh Burke was the spirit of the United States Navy;

they will certainly recall that Bud Zumwalt was its conscience."²⁹³

²⁹³ William J. Clinton, "Remarks at Funeral Services for Elmo R. Zumwalt Jr.," American Presidency Project, 10 January 2000.



In *Helo Relief*, Reserve artist Col Peter Michael Gish depicts Marine Boeing Vertol CH-46 Sea Knights over a Kurdish refugee camp at the Turkish border in Northern Iraq during Operation Provide Comfort. Oil on canvas.

Art Collection, National Museum of the Marine Corps, 24-2-178



CHAPTER FOUR

The Future of Maritime Power

by Paul Westermeyer

Studying the lessons of World War II, Allan R. Millett and Williamson Murray noted that, “No amount of operational virtuosity . . . redeemed fundamental flaws in political judgment. Whether policy shaped strategy or strategic imperatives drove policy was irrelevant. Miscalculations in both led to defeat, and any combination of politico-strategic error had disastrous results. . . . This is because it is more important to make correct decisions at the political and strategic level than it is at the operational and tactical level. Mistakes in operations and tactics can be corrected, but political and strategic mistakes live forever.” Maritime conditions may change, but the imperative to make sound strategic decisions remains, and requires careful consideration of future maritime threats.¹

Evaluating those threats requires that we follow Mahan’s dictum that “the study of history lies at the foundation of all sound military conclusions and practice.”² The first step in

¹ Quoted in Murray and Grimsley, “Introduction: On Strategy,” 3.

² Capt A. T. Mahan, *Armaments and Arbitration, or The Place of Force in the International Relations of States* (New York & London: Harper & Brothers, 1912), 206.

considering the United States' future maritime strategy is considering what historical examples best fit current conditions, and then studying them closely, while keeping in mind that history can never truly repeat itself.³ In other words, maritime strategists must study a wide variety of maritime conflicts looking for insights beyond the grand Mahanian struggles of the Pacific in World War II to ensure the future of American naval power.

The maritime challenges facing the United States today are varied, ranging from asymmetrical piracy and terrorism through humanitarian disasters, unconventional responses to naval power from near-peer states, and traditional naval threats. The beginning of the twenty-first century resembles that of the beginning of the twentieth century. Naval technologies such as cyberwarfare and hypersonic antishipping missiles are at the height of development, altering naval time-distance factors. As with the big-gunned, steam-driven, armor-plated dreadnoughts of a century earlier, these elements carry immense potential to change the ways that naval battles will be fought; however, they have yet to be tested in major conflicts with enemies of comparable technological advancement to adequately measure their impact.

The United States Navy remains the most powerful navy on the planet, dominating global maritime affairs as it has since the end of World War II; yet, it faces the threat of a submarine *guerre de course* from near-peer competitors in Russia and China possibly similar to the U-boat campaign of World War II. Similarly, hoping to control local sea spaces and choke points, a wide variety of aggressor forces may pose a threat

similar to the hybrid littoral conflict of the Tanker War of the 1980s. In both scenarios, maritime technological change may require different strategic responses than those employed in the past.

Along with traditional naval operations, the maritime Services must deal with law enforcement and border control issues, such as cross-sea migration, drug smuggling, and illegal fishing, challenges reminiscent of the Barbary pirates or the struggle against the slave trade prior to the Civil War. The modern era of operations includes bringing relief to civilian populations after natural or man-made disasters, which is of increasing political importance; historically, naval forces are very adept at such operations.

All three of the naval Services of the United States—the Navy, Marine Corps, and Coast Guard—must work together to face these threats. To meet this new requirement, military strategists have been working to conceive of a new collaborative, inter-Service model of naval power in the future. In 2015, the Chief of Naval Operations, the Commandant of the Marine Corps, and the Commandant of the Coast Guard released *A Cooperative Strategy for 21st Century Seapower*, addressing these threats. It has since been updated and additional strategic proposals published, most notably *Littoral Operations in a Contested Environment* (2017) and *A Design for Maintaining Maritime Superiority, Version 2.0* (2018).⁴

All of these strategic proposals attempt to balance the danger of the continually evolving threats posed by peer competitors with the need to stay abreast of the latest technological

³ All human events are a unique combination of time, place, and participants; no event can ever completely mirror another in all of these respects.

⁴ *A Cooperative Strategy for 21st Century Seapower: Forward, Engaged, Ready* (Washington, DC: Coast Guard, Headquarters Marine Corps, Department of the Navy, 2015); *Littoral Operations in a Contested Environment* (Washington, DC: Headquarters Marine Corps, Department of the Navy, 2017); and *A Design for Maintaining Maritime Superiority, Version 2.0* (Washington, DC: Chief of Naval Operations, Department of the Navy, 2018).

developments, while remaining mindful of the economic and political constraints common to democratic states limited by budgetary realities. Thus, the future challenges that maritime strategists will face require not only a solid grounding in the history of naval strategy but also a keen understanding of the technological realm as well as political realities. Failure to do so may result in unpleasant strategic surprises that can only be overcome through great sacrifice. By studying the following essays, students of naval strategic thought should come away with new perspec-

tives that will guide them through the various and difficult challenges that the future holds in store.

The first three chapters of this anthology focused on the legacy of American naval power, examining how the nation's maritime strategies have evolved since the start of the twentieth century. The subtitle for this anthology, however, is "Reinvigorating Maritime Strategic Thought" and, as such, this final chapter is forward-looking, focusing on "The Future of Maritime Power."

THE MARINE CORPS OF TOMORROW

by Major Kenneth F. McKenzie Jr.
U.S. Naval Institute *Proceedings*, 1993⁵

The periods after wars always have been difficult for the Marine Corps. Defense spending declines, the president and Congress grapple to shape the role of the United States in a new world order, and the Marine Corps' struggles to avoid marginalization or absorption by hungry sister Services. To survive the recent victory of the grand strategy of containment, the Marine Corps must again revalidate its usefulness and, where necessary, reinvent itself. There is ample precedent for this. The amphibious mission evolved after the end of World War I. The idea of an expeditionary force-in-readiness followed World War II demobilization, and a general top-to-bottom revitalization and refocus was undertaken after the Vietnam War and the provocative Brookings Institution paper, "Where Does the Marine Corps Go From Here?"

These are clear examples of the Marine

Corps' ability to redefine itself with respect to the demands of the age, and all of them share a common thread: they required the enlightened preparation of doctrine and forces in the present to meet an uncertain future. The challenge is no less today.

Successful anticipation of future requirements is key to maintaining a potent Marine Corps that will survive this interregnum and live into the next century. Wise choices must be made in today's fiscally constrained environment to create, sustain, and refine doctrine and force structure poised against *tomorrow's* potential foes. Anticipation of who tomorrow's Marines will fight and what they will be required to do demands discriminating vision and the moral courage to change—or not to change, if more appropriate.

These choices will be expressed in the ways the Marine Corps fulfills its service responsibilities of equipping, training, organizing, and supporting forces for the warfighting commanders in chief. In the post-Goldwater-Nichols world, the warfighters enjoy enormous power. It is

⁵ The original article came from Maj Kenneth F. McKenzie Jr., "The Marine Corps of Tomorrow," U.S. Naval Institute *Proceedings* 119, no. 11 (November 1993): 28–31. Minor revisions were made to the text based on current standards for style, grammar, punctuation, and spelling.



Marines assigned to the 31st MEU board a Bell Boeing MV-22 Osprey assigned to VMM-265 (Reinforced), on the flight deck of the forward-deployed amphibious assault ship USS *Bonhomme Richard* (LHD 6), 24 September 2013.

Official U.S. Navy photo, courtesy of MC3 Adam D. Wainwright

these commanders, through their integrated priority lists, congressional testimony, and their access to the chairman of the Joint Chiefs of Staff, who can control the missions of service components in their fiefdoms.

In balancing the commanders-in-chief's requirements and internal imperatives, the Marine Corps operates within a triangular framework. Its three sides are doctrine, force structure, and training. Sound decision making is based on understanding and controlling the dynamic, causal relationship between current and future doctrine and force structure. Forces built and trained without workable, coherent doctrine are doomed to failure. Doctrine written without reference to the future is equally worthless.

DOCTRINE:

NOW AND IN THE FUTURE

The 1992 Navy-Marine Corps white paper, “. . . From the Sea,” describes a changed role for naval forces in the national military strategy. Shifting from open-ocean, global war to a regional, green-water outlook, the white paper emphasized the effects of joint operations *from* rather than *on* the sea. Conceptually, this littoral focus granted the Marine Corps a central role in naval operations. Unfortunately, the fresh concepts of the white paper did not penetrate the collective thinking of defense planners.⁶

⁶ Col Mackubin T. Owens Jr., USMCR, “The U.S. Marine Corps in Review,” U.S. Naval Institute *Proceedings* 119, no. 5 (May 1993): 131.

The emphasis on jointness struck many as “operational correctness,” a craven attempt to slice a larger share of an ever-decreasing budgetary pie, like the Air Force’s hurried attempt to field and (most importantly) advertise their new composite 366th [Fighter] Wing as a global power-projection force.⁷ Critics quickly labeled “. . . From the Sea” a political document, designed against an internal Department of Defense foe, that “deflected” rather than confronted the future.⁸ Ironically, Marine doctrine has not been materially changed by “. . . From the Sea.” With this white paper, it is the Navy that has moved closer to a warfighting strategy that showcases the unique capabilities of the Corps, capabilities that have been available for more than 40 years, but that were overlooked by the Cold War planners of the Navy as they focused on the Soviets and a possible nuclear Midway.

Operational Maneuver from the Sea and the Air-Ground Task Force: the enduring style of the modern Marine Corps is defined by two concepts:

First, the Marine Corps is an expeditionary force with a naval character maneuvering from the sea to operate on the land.

Second, Marine operations are conducted within the framework of an integrated air-ground team.

Operational maneuver from the sea is the soul of the Marine Corps. It is the Marine expression of the white paper’s broader naval focus, with sea basing its fundamental tenet. It provides for the rapid deployment and subsequent employment of naval expeditionary forces

with all the advantages—both tactical and strategic—granted by control of the seas. This doctrine recognizes the relative unlikelihood of a traditional amphibious assault, and much attention is devoted to the myriad of other activities that can be conducted in littoral areas, including war and circumstances short of war. Humanitarian operations, such as those in Somalia and Bangladesh, represent the low end of this continuum, while [Operation] Desert Storm and Korean contingencies stand at the high end.

Both amphibious and sustained operations ashore are united by the Marine Corps’ air-ground team. This doctrine calls for the synchronized application of aviation and ground combat power, which gives the Marine Air-Ground Task Force (MAGTF) commander the flexibility to strike both deep and close areas with a powerful aviation component. The aviation combat element as a coequal component of the MAGTF is critical, because the ground combat element is traditionally lighter, hence “poorer” in towed and self-propelled artillery than comparable army formations.

Institutionally, the Marine Corps is recovering from a decades-long doctrinal trough in which it reduced its combined-arms doctrine, born in Korea, from potent elegance to empty dogma. While chanting the air-ground team mantra, Marine leaders let the ground combat element of the MAGTF assume primacy in planning, while the other two elements (the air combat element and the combat service support element) supported the ground concept of operations. This planning syllogism now has changed as part of the maneuver warfare revolution of the 1980s. A painful renaissance of the MAGTF command element is virtually complete. The swiftness and virtuosity of the MAGTF, com-

⁷ Julie Bird, “Anytime, Anywhere,” *Air Force Times*, 29 March 1993, 12–17.

⁸ Michael Vlahos, “. . . From the Sea and the Politics of Change,” U.S. Naval Institute *Proceedings* 119, no. 2 (February 1993): 47.



EN2 David Watson (front) assigned to USS *Freedom* (LCS 1), shows Marines from the USS *Blue Ridge* (LCC 19) Fleet Antiterrorism Security Team, Pacific, how to secure a Jacob's ladder and pelican hook during a joint visit, board, search, and seizure exercise. *Freedom* is in Singapore on an overseas deployment. Fast, agile, and mission-focused, littoral combat ships are designed to operate in near-shore environments and employ modular mission packages that can be configured for surface warfare, mine countermeasures, or antisubmarine warfare.

Official U.S. Navy photo, courtesy of MC Cassandra Thompson

posed of equal air, ground, and service support elements, is the glue of Marine Corps doctrine. It permeates every aspect of Marine Corps tactical thinking.

FORCE STRUCTURE

Doctrine drives force structure. Since Korea, this has produced three functionally different types of MAGTFs: amphibious forces, prepositioned forces, and special purpose forces.⁹ In

⁹ As opposed to the traditional MAGTFs: MEF, MEB, MEU. They, of course, are all functionally similar, hence the differentiation.

looking at the future, it seems likely that variations of these three models will remain the basis for the Marine Corps' forward-deployed structure.

Amphibious Forces: the Marine Expeditionary Force (MEF) is the largest amphibious force, and would be employed only in a major regional contingency.¹⁰ Other forces that might be deployed include amphibious ready forces and airlift alert forces. All of these forces are

¹⁰ Under new Marine Corps doctrine, MEFs are defined by their command element rather than by assigned forces.

constrained by time. They either are not immediately available, or they are employable rapidly only outside a traditional MAGTF task organization. Until the recent rise of the Special Purpose MAGTF (SPMAGTF), the only force that has been readily available is the Marine Expeditionary Unit (MEU). The MEU—composed of an infantry battalion, a helicopter squadron, logistics support, and a command element—epitomizes Marine Corps amphibious forces. MEUs in some form have been employed for more than 30 years in forward-presence missions. Based on board three to five amphibious platforms, a MEU is task organized with the amphibious squadron with which it has trained. Together, they form a Marine Amphibious Ready Group. This force possesses great operational depth and flexibility, manifested principally in its ability to conduct operations simultaneously and on extremely short notice. In response to the commanders-in-chief requirements, the Marine Corps maintains a MEU in the Mediterranean, the Pacific, and in the Persian Gulf.

MEUs operate in the realm of deterrence, diplomatic resolve, and missions short of sustained combat. The MEU is diplomatically “cheap.” It requires no basing rights or overflight agreements. It can be postured rapidly and with veiled intent. These forward-presence forces can enter forcefully, alone or in concert with airborne or other joint elements. Once through the front door, they enable either heavier combat or humanitarian assistance forces to follow rapidly. Innate flexibility, joint interoperability, rapid response, and the escalation control unique to sea-based organizations are the hallmarks of Marine forward deployed forces.

Today and tomorrow, the greatest threat to forward presence lies in well-meaning attempts to retain capabilities while reducing the strain on

ships, personnel, and equipment. The U.S. Central Command’s deployment of a scaled-down MEU in 1992–93 as an amphibious task unit is a classic example. The 15th MEU was not whole; it did not possess all of its equipment or personnel on board its amphibious ships. Instead, in a curious Rube Goldberg artifice, a single prepositioned ship was tagged to join up with the MEU, meeting a fly-in-echelon of troops from the United States.¹¹ While saving personnel tempo days, this scheme gutted the MEU of all its traditional advantages, significantly reducing its flexibility and combat power.

Maritime Prepositioning Forces (MPFs):

MPFs were born in the mid-1980s, when the Marine Corps played in global war scenarios against the Soviet Union. Three squadrons of ships, each preloaded with combat equipment and sustainment for a Marine Expeditionary Brigade, were positioned in selected forward ports. The plan was to marry up this equipment with Marines flown in to an adjacent airfield.

In the 1980s, there were powerful advantages to such a scheme. It provided a fairly rapid buildup of combat power in excess of a comparable light Army division of the same period, and it reduced the commitment of strategic lift at the start of a general war.

The prepositioning decision looks even better now than it did at conception. In a global war against the Soviets, the slow-steaming maritime prepositioning squadrons would have had little chance of survival against the Soviet gauntlet of submarines and long-range naval aviation. Today, with the steady weakening of the sea-denial threat, these squadrons can reach almost

¹¹ Reuben Garrett Lucius Goldberg, a.k.a. Rube Goldberg, was an American cartoonist, sculptor, author, engineer, and inventor best known for his cartoons depicting complicated gadgets performing simple tasks in indirect, convoluted ways.



Marines of the 24th MEU file out on the flight deck of USS *Bataan* (LHD 5) to await their aircraft the MV-22 Ospreys, during a training evolution in preparation for their upcoming deployment. SSgt Kristopher J. Battles, *Shuffling Out to the Birds*, 2017. Acrylic on canvas board.

Art Collection, Naval History and Heritage Command, 2017-004-05

any region without fear of strategic interdiction. The successful employment of maritime prepositioning ships in [Operations] Desert Shield and Desert Storm stands as a strong lesson in the powerful utility of these ships.

Maritime prepositioning forces are the critical link between tripwire and sustained conflict. But unlike amphibious forces, they have significant political limitations. They are not diplomatically “free,” because they require a host nation that will allow the entry of the squadron and the arrival of the flown-in Marines. The introduction of additional combat forces into an area of potential conflict can be escalatory. The prepositioning forces thus become a strong sig-

nal of resolve on both our part and, ineluctably, on the part of the host nation. Many nations will shrink from such a stand.

Maritime prepositioning forces and amphibious forces are fundamentally different and irreconcilable, unless they are employed in accordance with their capabilities. Amphibious forces enter and secure, forcibly or otherwise. Prepositioning forces add combat power, depth, and sustainment, but in sequence, not simultaneously.

Special Purpose Marine Air-Ground Task Forces: as part of the search for ways to create forward-deployed forces “on the cheap,” in 1992, the U.S. Atlantic Command proposed

the establishment of a company-size Marine force on board a carrier. Austere aviation and combat service support elements were colocated with the company, along with a small command element.

The carrier-based SPMAGTF, the current adaptive joint force paradigm, possesses none of the operational depth of a MEU. Once ashore, the company has no mobility, little firepower, and only the carrier aircraft wing for support. It can be inserted only by helicopter, which requires the carrier battle group to move dangerously close to a potentially hostile shore. This mismatch of operating envelopes either forces the carrier battle group to operate outside its element, or, most likely, forces the SPMAGTF to conduct operations at extreme helicopter range, with no backup. Every operation thus has the potential for disaster that attends extremely long-range helicopter operations. Additionally, the carrier's antiair capability is weakened by making room for the Marine helicopters.

There are advantages to adaptive force packaging, and there is certainly a role for its current naval manifestation, the SPMAGTF. The advantages are in the fiscal and personnel arenas, however, not in operational capabilities. To survive, the SPMAGTF must be linked directly to precise circumstances, circumscribed in time and space, carefully calibrated to the nuances and specifics of a particular situation. To attempt to employ these forces as MEU surrogates—as general purpose forces—in a fixed deployment routine invites disaster.

CONCLUSIONS AND RECOMMENDATIONS

Crafting doctrine and force structure requires foresight, to balance conflicting visions of the fu-

ture. It requires courage, to defend the product of foresight. Finally, it requires persistence and integrity, to articulate and hold to a vision over the long run. This means rejecting the lure of short-term compromises that promise transient advantages but deviate from the basic values of the institution. War is waged most effectively from first principles, and the first principle of the Marine Corps is the continued organization and training of expeditionary amphibious forces, deployed intact and employed in depth as integrated air-ground task forces. These forces, using our doctrine, possess the flexibility, combat power, and simultaneity that will be critical in future regional wars, across the spectrum from low to mid to high intensity. They must remain whole, self-contained, and capable of action without escalatory reinforcement, yet capable of joint interoperability.

Both the Central Command and the Atlantic Command have sponsored initiatives that may alter fundamentally the organization and doctrine of forward deployed MAGTFs. These ideas are just the bow wave driven by many others, all of which will seek to impose regional, fiscal, or other constraints on Marine Corps general-purpose forces. The Marine Corps must not stand by idly while these changes are implemented. We must be full partners in the dialogue. Where the changes are good, we should support them. Where they clash with our first principle, they must be opposed.

The Marine Corps must retain its singular vision of how to fight; once abrogated, it can never be recovered. The Marine Corps brings unique and compelling options to a commander's strategic menu. There is no need to rush to change, to modify, or to recast an organization because of operational fads. As General Vande-

grift said in his May 1946 testimony before Congress, “the bended knee is not a tradition of our Corps.”¹² If we must pass from the stage, let it be because *our capabilities* are judged no longer

needed after hard-headed analysis, not because we changed sound practices capriciously and ill-advisedly in pursuit of the chimera of “operational correctness.”

¹² Gordon W. Keiser, *The U.S. Marine Corps and Defense Unification 1944–47: The Politics of Survival* (Fort McNair, Washington, DC: NDU Press, 1982), 56.

FACING WESTWARD TO THE FUTURE

by General Charles C. Krulak
U.S. Naval Institute *Proceedings*, 1997¹³

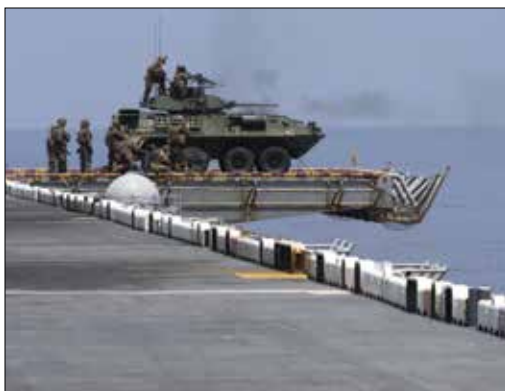
For two centuries, our nation maintained foreign-policy focus on the European continent. There were several reasons for this: the majority of the first settlers came from Europe; threats from that area posed the first challenges to our national security; and we fought two world wars primarily against European powers. But in many ways, our nation has found the key to the future not by looking east, but by looking west.

The people of the United States traditionally have looked to the West for growth and opportunity. Thomas Jefferson's quest for a nation that stretched from the Atlantic to the Pacific Ocean was shared by many, because the West meant opportunity. Jefferson's efforts opened the vast North American interior for development, turning the continent's potential wealth into economic growth, and accelerated the flow of immigration to the West Coast. Once settled

there, Americans began to look farther west, across the Pacific Ocean, to find economic opportunity. This westward focus enabled the United States to become a world power by the close of the nineteenth century, largely because of burgeoning maritime trade with countries that rim the Pacific. During the twentieth century, we as a Pacific power were destined to fight three wars in the Asia Pacific-Indian Ocean region, at a cost of more than 200,000 American lives.

Poised at the threshold of the twenty-first century, we still look westward for future economic growth. The key to our national security lies in the Asia Pacific-Indian Ocean region, whose markets are essential to the continued health of our economy. Access to and free trade within these markets can be possible only in a regional environment of political, economic, and military stability; such tranquility, however, is far from a natural state of affairs. Many have hoped for a period of global stability after the demise of the Soviet Union, but it has not materialized. Many challenges are surfacing to threat-

¹³The original article came from Gen Charles C. Krulak, "Facing Westward to the Future," U.S. Naval Institute *Proceedings* 123, no. 3 (March 1997): 12–18. Minor revisions were made to the text based on current standards for style, grammar, punctuation, and spelling.



Marines with Weapons Company, Battalion Landing Team, 2d Battalion, 5th Marines (BLT 2/5), sit on a LAV atop the flight deck aboard the amphibious assault ship USS *Wasp* (LHD 1) during a defense of the amphibious task force drill underway in the South China Sea, 27 September 2018. During the training, Marines with BLT 2/5 and crewmen with the *Wasp* rehearsed ship security using a variety of mounted and dismounted small arms and heavy weapons.

Official U.S. Marine Corps photo, courtesy of GSgt E. V. Hagedwood

en the security of the United States and its allies in the twenty-first century:

Rapid advances in science and technology are bringing vastly increased lethality to conventional weapons, and are making weapons of mass destruction more available.

The post-Cold War diffusion of power and resultant political fragmentation are creating power vacuums from which spring new conflicts fueled by ancient ethnic, religious, and cultural animosities. These conflicts are aggravated by explosive population growth, regional food shortages, and mass migrations, which bring a new dynamic to local conflicts and increasingly threaten to escalate into large-scale regional conflict.

The world is becoming more economically interdependent.

The global economic center of gravity is shifting westward toward the Asia Pacific-Indian Ocean littoral.

The Asia Pacific-Indian Ocean littoral is as diverse as it is wealthy. It is home to one of the planet's most influential economies (Japan), the last significant Communist state (China), the two most populous nations (China and India), and the most populous Islamic nation (Indonesia). Six of the world's great religions (Christianity, Buddhism, Confucianism, Hinduism, Islam, and Taoism) intersect there. In addition, this region creates more than 33 percent of the world's wealth, contains 41 percent of the world's bank reserves, and consumes 28 percent of the oil. It is responsible for one out of every six jobs in the United States. In terms of geography, resources, and economic and industrial capacity, the nations that comprise this region have all the tools and the momentum to become the world's economic heartland. Unfortunately, these elements of strength also provide tinder for conflict, and regional tensions could in time become the seeds of global instability.

Geography: the Asia Pacific-Indian Ocean littoral features great land masses, peninsulas, islands, straits, rain forests, mountains, and river basins—all separated by water. This diverse and fragmented geography has nurtured civilizations that in the course of many centuries have learned to excel at, and depend upon, sea-based trade. As a result, the region's economies have become extremely interdependent with one nation's success fueling expansion for its neighbors. This focus on trade and regional interdependence has enabled the Asia Pacific-Indian Ocean nations to bring the productivity of their national infrastructures to unprecedented levels during the final decade of the twentieth century.

ry with incredible economic growth continuing through the foreseeable future.

This fragmented geography is a source of strength, but it also is a potential weakness. The nations in the Asia Pacific-Indian Ocean littoral rely on a steady flow of strategic raw materials and resources, such as oil, to fuel their burgeoning economies. These resources must move along the sea lines of communication, through the straits, and near the islands and peninsulas of their economic, cultural, and military competitors. If these resources become scarce, or the demand for them cannot be met, these geographic features can become choke points, taking on new strategic significance. The region's unique geography can help a desperate or aggressor nation interdict, divert, or deny the flow of resources to its competitors. Considering oil, for example: More than 80 percent of Japan's oil imports must transit not only through the Strait of Hormuz but also past Pakistan, India, Myanmar, through the Strait of Malacca, and past Vietnam, the Spratly Islands, the Paracel Islands, China, and Taiwan. With regional demand for oil projected to outstrip supply early in the twenty-first century, the potential for regional tension is likely to rise.

Economic Growth: by the year 2020, the global economy's center of gravity will have shifted from North America to Asia, with 80 percent of the world's largest economies located along the Pacific and Indian Ocean Rim. Today, in China and India, we are watching the emergence of two economic superpowers that together will have a major impact on the global economy. Both have burgeoning high-tech industries, an expanding middle class, and a limitless pool of inexpensive labor that will compete strongly with other manufacturing and service-based economies in the world. Current pro-

jections show that China's economy will be 40 percent larger than that of the United States by the year 2020.

At present, Japan has the region's strongest economy, with a growth rate of more than 4 percent per year. But Japan's economic pre-eminence is being challenged by such other economic and industrial powers as China, India, South Korea, Taiwan, Singapore, Hong Kong, Thailand, Malaysia, and Indonesia, which have annual rates of growth of more than 6 percent. These competitors are beginning to erode the Japanese market share of high-technology exports.

The wealthier states in the Asia Pacific-Indian Ocean littoral are generating economic growth throughout the rest of the region by underwriting industrial initiatives in less wealthy nations and by improving the regional transportation infrastructure (e.g., the new superhighway in between China and Hong Kong). The effects of these initiatives are most noticeable in China's Guangdong and Fujian provinces, where cross-border investment from Hong Kong has generated economic growth rates exceeding 15 percent per year. This spreading development will continue to gain strength, owing largely to the region's economic interdependence, which is growing at more than 2.8 percent per year.

Energy Requirements: fueling this economic growth is oil, and the demand for it, by the region's existing economic powers and the newly industrialized economies, is increasing rapidly. At present, the Asia Pacific-Indian Ocean nations use 23 percent of the world's energy, up from 18 percent 10 years ago. Moreover, the region's rate of oil consumption is forecast to continue growing at 4 percent per year. One of the by-products of the region's economic growth is the creation of a middle class, which now has

Table 1. Asia-Pacific oil import dependence

	1993	2000	2010
Oil demand (million barrels/day)	14.9	19.8	26.6
Oil supply (million barrels/day)	6.9	6.9	6.7
Imports	8.0	12.9	19.9
Share imports from Middle East	70 percent	87 percent	95 percent
Volume imports from Middle East (Million barrels/day)	5.6	11.2	18.0

Table 2. Changing global defense budgets

	1990	1991	1992	1993	1994	1995	% change 1990–95
United States	291.4	300.0	270.9	259.9	251.4	252.6	-13.3
USSR	116.7	--	--	--	--	--	--
Russia	--	--	85.9	75.1	78.5	62.8	-26.9
Japan	28.7	32.7	35.9	39.7	42.1	53.8	+87.5
People's Republic of China	6.1	6.1	6.7	7.3	6.7	7.5	+23.0
Taiwan	8.7	9.3	10.3	10.5	11.3	NA	+29.9
South Korea	10.6	10.8	11.2	12.1	14.0	14.4	+35.8
Indonesia	1.5	1.6	1.8	2.0	2.3	2.6	+73.3
Australia	7.0	7.1	7.0	7.0	6.9	7.4	+5.7

Note: Figures stated in billions of dollars. Data do not reflect exchange rate fluctuations.

the means and the desire to purchase consumer goods.

This year, Chinese workers will buy 300,000 new automobiles; that number will increase to 3,000,000 by the year 2000. In order to fuel these vehicles and support its growing industrial sector in the next century, China must increase its regional oil imports from 10.9 percent to 19.4 percent. With a finite supply of oil, an increase of this magnitude could provide the tinder for a flare up of regional instability.

Most of these regional powers lack adequate oil reserves, and even today's oil producers, such as Indonesia, will be net importers by the year 2000. Today's relative peace in this region could be shattered by any constriction in the supply of oil in the near term. Over the

long term, there will not be enough oil to meet the region's demand unless alternative energy sources are developed. This future shortfall is cause for concern, because it could lead to a regional arms race. The national security of these nations hinges upon the health of their respective economies, and their economies have a voracious and growing demand for oil.

Security: the current security environment in the Asia Pacific-Indian Ocean littoral is laced with contradictions. On one hand, the region seems to be fairly stable, bolstered by surging economies, and unprecedented multi-lateral political cooperation. But on the other hand, long standing political, economic, military, and cultural disagreements are fomenting uncertainty and anxiety in the region. India and

Pakistan have gone to war several times in the past half-century, and still are fighting, albeit on a limited scale, on the Siachen Glacier. China, which already possesses the world's largest standing army, is increasing the size and quality of its forces, and has made threatening overtures in the past year toward Taiwan. North Korea's military forces still pose a threat to Asian stability, and its precarious economic and agricultural situation could generate massive migrations toward South Korea and China. North Korea's military posturing is a source of anxiety today, but many in the region also are concerned about the future military potential of a reunified Korea. The region is wracked with such territorial disputes as those over the Indian Kashmir and the Spratly Islands. In addition, overlapping maritime claims in the East China Sea, the South China Sea, the Sea of Japan, and the Gulf of Thailand all contribute to a heightened level of anxiety and sow the seeds of distrust and conflict. These insecurities and anxieties have caused many of the regional powers to upgrade their military arsenals.

Trends in Regional Military Procurement: the end of the Cold War and the demise of the Soviet Union have not led to a reduction in military spending in this region. In fact, the nations of the Asia Pacific-Indian Ocean littoral are increasing the size and capabilities of their military arsenals. It is clear that the traditional Cold War powers have reduced their defense spending drastically, while the Asia Pacific-Indian Ocean regional powers are increasing theirs at a rapid rate.

One current trend in these weapon procurement programs is the change from arsenals designed primarily to combat insurgents to ones focused on guaranteeing national sovereignty, backing territorial claims, and protecting sea

lines of communication. India, already a regional naval power, is improving the capabilities of its fleet. Japan, the nation with the biggest oil appetite in the region, already has a strong navy, and is in the process of building an even stronger one. China is developing amphibious power projection forces, has fortified the Spratly Islands, and has built forward air bases on Woody Island in the Paracels, allowing its [Sukhoi] Su-27s to cover these islands with fighter aircraft support. Most telling though, are the newly industrialized economies' weapon-procurement programs. Such countries as Hong Kong, South Korea, Taiwan, Singapore, Indonesia, and Malaysia are investing heavily in naval assets. Amphibious shipping, attack submarines, mine-countermeasures ships, ski-jump equipped small-deck aircraft carriers, and aircraft armed with antiship missiles are flowing into the region's expanding arsenals. In addition, these countries can afford top-of-the-line equipment in large numbers, because of excess capacities of their economies. Although these weapon-procurement programs are designed to protect national sovereignty and livelihood, they also could lead to a regional arms race, which would be destabilizing.

The nations in this region have a valid requirement to protect their sea lines of communication from interdiction. But they must be aware of additional threats that lurk in the Asia Pacific-Indian Ocean littoral. These are internal threats, which reside within the growing economies, feeding the flames of domestic and regional chaos: cultural, ethnic, and religious conflict; environmental pollution; rapidly increasing urbanization; drug cartels and organized crime; food and clean water shortages; population explosions; and large-scale unemployment for unskilled labor are creating friction and chal-

enges that can undermine regional stability. The geography of the region lends itself to ethnic and religious splintering, similar to what we have seen in the former Yugoslavia. Armed with high-technology weapons, including weapons of mass destruction, these ethnic enclaves, positioned along the world's busiest sea-lanes, could not only interdict their ethnic or religious opponent's flow of trade, but in the process they also could interdict the trade of the entire region. Small-scale ethnic battles over resources could trigger larger regional conflagrations, much more devastating than any scenario envisioned for the Balkans. Chaos in these littorals would affect much more than just the Asia Pacific-Indian Ocean region. The effect would be global.

IMPORTANCE OF REGIONAL STABILITY

Leaving aside the possibility that a twenty-first-century regional conflict could escalate into a large-scale conventional or even a nuclear confrontation, we still should recognize that both the stability and security of the Asia Pacific-Indian Ocean littoral are of great importance to the national security interests of the United States. Our *National Security Strategy* defines our most basic vital interests as the defense of our territory and citizens, our allies, and our economic well-being, which in turn is tied inextricably to the economies of the Asia Pacific-Indian Ocean region.¹⁴ Today, 40 percent of U.S. overseas trade is with Asia, and U.S.-Pacific trade outstrips U.S.-European trade. By the year 2000, our Asian trade will double our European trade. Instability in the Asia Pacific-Indian Ocean littoral, whether fed by resource shortages, territorial or cultural disputes, or chaos, will affect our

economy, our citizens, and our national interests. We also should remember that the nations in this region include some of our best and most respected allies, and it is vital to our national interest that we work together with our allies to maintain regional security and stability.

The Center for Strategic and International Studies has identified four vital national interests in this region. We must:

Ensure that a regional hegemon does not emerge and upset the balance of power.

Ensure the security of the Korean Peninsula.

Ensure commercial, political, and military access throughout the region.

Contain the growth and proliferation of nuclear, chemical, and biological weapons throughout the region.

The best way for the United States to protect these vital interests in the Asia Pacific-Indian Ocean littoral is by remaining politically, economically, and militarily engaged in the region. The key to this engagement is presence.

PRESENCE

The United States is, and will continue to be, the critical guarantor of regional political stability. At the same time, we cannot assume that we can continue to conduct business as we have in the past. The Asia Pacific-Indian Ocean nations have matured both politically and economically during the past 50 years. The methods and strategies through which we established presence earlier in this century may no longer work in this region. The political leaders of our regional allies still rely on the United States to provide military forces to maintain stability and security, but they are coming under increasing pressure to reduce the numbers of U.S. land-

¹⁴ *National Security Strategy of the United States, December 2017* (Washington, DC: White House, 2017).

based personnel and their support infrastructure. Whether this is a short-term phenomenon or a long-term trend remains to be seen, but in the past 10 years we have lost our bases in the Philippines, and we recently have consolidated certain U.S. bases on the island of Okinawa—a result of local pressures, among other things.

The region's security and stability require that the United States maintain a credible military presence, but regional political dynamics may deny us access to or the use of the traditional land bases and facilities we have used for years. Nonetheless, we still must ensure that we have the flexibility and the means to project decisive military force, appropriate for use across the full range of conflict, and a force whose basing posture is acceptable to our allies. Without question, the forces best suited to provide this flexibility and acceptability are provided by the Navy and Marine Corps.

WHY THE NAVAL SERVICES?

In large measure, the cultures associated with the Asia Pacific-Indian Ocean region look to the sea for their livelihood, their defense, and their international relations. The sea provides the common ground for the military interaction vital to regional collective security. This factors very heavily in what the regional powers find acceptable in terms of U.S. military presence. Traditionally, naval forces have been looked on as politically and culturally acceptable because they are viewed as transitory. At the same time, it is the presence of the U. S. Navy and Marine Corps in this region that provides our allies with a tangible symbol of both our commitment and capability to remain engaged for the long term in the Asia Pacific-Indian Ocean littoral.

Naval forces are unique in the range of options they provide for the National Command

Authorities (NCA) to respond to national security challenges. In many ways, these air, land, and sea forces can be used as a rheostat for the NCA, providing an on-scene combined-arms team with a wide range of force application capabilities, which can be tailored to meet any contingency. Whether that means simply deterring a threat to stability by maintaining presence, ensuring the integrity of sea lines of communication, conducting humanitarian assistance operations or participating in a major regional contingency, naval forces allow the NCA to operate across the full range of conflict. Forward deployed, on-the-scene Navy and Marine Corps forces offer the NCA the ability to respond quickly and decisively respond to a conflict in its incipient phase. The wide range of force application capabilities resident in these naval forces allows the NCA to employ precisely the right amount of power required to deter an aggressor, resolve the conflict, or secure access for follow-on forces. Because these naval forces can respond so expeditiously, operate freely from land or sea bases, and employ such a diverse set of tools, they allow the NCA the luxury of choosing from a wide range of options, turning up or down the power setting as needed to achieve their objectives. If the NCA were forced to wait for the deployment of U.S.-based combat forces, their range of options could be diminished greatly.

Forward-deployed naval forces are expeditionary by design. They are organized specifically for forward deployment as a part of their normal mission, and as a result there is little or no additional cost associated with their commitment to a contingency. As a crisis unfolds, these naval forces can reposition, to be immediately responsive to the orders of the NCA. Since their forward deployment already has been funded,



The aircraft carrier *Liaoning* takes part in a military drill of the Chinese People's Liberation Army (PLA) Navy in the western Pacific Ocean, 18 April 2018.

Official PLA photo

the Department of Defense will not have to ask for heavy supplemental funding to cover the costs associated with pop-up contingencies. With the defense budget already pared to the minimum, we cannot afford to ignore the economies resident in naval expeditionary forces.

IMPLICATIONS FOR THE NAVAL SERVICES

Look at a map of the region. What are the potential challenges? Where are the choke points? Look closely at the distances involved in projecting military power to the region. What bases might we be able to use today? Will they still be available into the twenty-first century? Geography will not change the tyranny of distance in Asia will remain a factor. Distance equates to time; time equates to political leverage.

We know that the future political landscape

of this region will be quite different from today's. Maintaining presence there will require agile, competent, and capable naval power projection forces, able to conduct operations ranging from submarine warfare and mine-clearing operations to high-intensity land and air combat, simultaneously with humanitarian operations. In addition, these naval forces must be able to operate in surroundings that range from open seas to urban slums. Most important, they must be able to accomplish their missions from their secure sea bases.

We cannot avoid the geostrategic reality of the Asia Pacific-Indian Ocean region, whose geography places a premium on naval presence, access, and flexibility. Since presence in this littoral is best provided by forward-deployed, on-scene, Navy and Marine Corps forces, this translates to an increased emphasis on naval

amphibious shipping, maritime prepositioned forces, and land and air combat systems that can operate from austere land bases and naval platforms. Contingencies in this region could range from small-scale humanitarian operations to large-scale conflict; but irrespective of the scope of the conflict, our ability to respond will depend directly upon our access to the region's port and air facilities. Forward-deployed naval forces will be responsible for guaranteeing such access, enabling the introduction of conventional follow-on forces, humanitarian organizations, and additional logistics support. Naval forces offer a flexible operating posture that is uniquely suited to the region's geography, political, and social dynamics. This becomes increasingly important in situations where a host nation decides that it will not (or for political reasons cannot) allow U.S. forces to operate within its borders or airspace. In such cases, the land and aviation forces that were operating ashore simply redeploy back to their sea bases and continue operations.

We must ensure that our naval expeditionary forces are properly organized and equipped to provide the National Command Authorities with a relevant force application rheostat. To maintain security in this region in the twenty-first century, naval power-projection forces must be visible and on the scene, working together with our allies, providing presence, deterring potential aggressors, dampening the forces of chaos, and promoting stability and peace.

As the Asia Pacific-Indian Ocean littoral economies grow and become more interdependent, instability anywhere becomes less and less tolerable. This is why a continued credible forward presence is so vital. By underwriting stability, by providing the security foundation upon



Laurel Stern Boeck, *Gen Charles C. Krulak, 31st Commandant of the Marine Corps (1995–99)*.
Art Collection, National Museum of the Marine Corps

which economies can grow, free from pressures to invest in massive military establishments, we help reduce the potential for conflict by reducing the need for states to arm against one another. This is not just their gain; it is ours as well. We ultimately profit economically while enhancing regional security. Markets replace threats, and trading partners replace former enemies.

Since regional stability is so critical to our economic health and national security it is imperative that we invest adequately in our presence providers—the naval Services. In the words of then-National Security Advisor W. Anthony Lake: “We must be a Pacific power, or no power at all.”

To be a Pacific power, we must be a naval power.

A NEW TWIST TO AN AGE-OLD NAVAL TRADITION

by *Commander David B. Waidelich*

Command and Staff College, Marine Corps University, 2009¹⁵

INTRODUCTION

In October 2007, the U.S. Navy released its new *Maritime Strategy, The Cooperative Strategy for the 21st Century Seapower*. When the strategy was released, the United States faced complex and challenging situations around the globe. There was no longer a definitive enemy, such as the Soviet Union, but rather unconventional warfare against nonstate actors. The Navy, drawing on the shift in the *U.S. National Security Strategy, 2006*, drafted a document that called for it to develop six core competencies. The first four were enduring capabilities: forward presence, deterrence, sea control, and power projection; and [they] focused on the traditional, *hard power* aspects of the Navy. In an effort to enhance international cooperation and demonstrate America's goodwill, the Navy introduced

two new expanded capabilities: maritime security, as well as proactive humanitarian assistance and disaster relief. The strategy's ability to balance the enduring hard power capabilities with a new emphasis on the expanded soft power made it a unique document.

While the Army and Marine Corps find themselves stretched fighting two ground wars in two theaters, the Navy's reduced role in these conflicts has afforded them the opportunity to deploy units focused on building partnerships and administering aid. The Navy has begun executing this new strategy and its subsequent expanded capabilities as a number of ships are underway as part of the Global Maritime Partnership initiatives and proactive humanitarian deployments. The *Maritime Strategy* stated, "preventing wars is as important as winning wars" and by executing these two new aspects of the strategy, the U.S. Navy has met the complex and irregular challenges that face the maritime environment of today.¹⁶

¹⁵ The original work came from Cdr David B. Waidelich, USN, "A New Twist to an Age-Old Naval Tradition: The Maritime Strategy and Its Impact on Humanitarian Assistance and Maritime Security Operations" (master's thesis, Command and Staff College, Marine Corps University, 2009). Minor revisions were made to the text based on current standards for style, grammar, punctuation, and spelling.

¹⁶ *A Cooperative Strategy for 21st Century Seapower*, 2.

HUMANITARIAN ASSISTANCE / DISASTER RELIEF AND THE UNITED STATES NAVY: A HISTORY

*It was . . . an act by our sailors not of combat
but of charity and compassion, a model for
many such efforts by the United States to
come.*

~ Honorable Richard Greco Jr.
Assistant Secretary of the Navy¹⁷

On 28 December 1908, at 0520 in the morning, a massive earthquake struck the straits of Sicily. The carnage and devastation from the earthquake and subsequent tsunami that followed was catastrophic. Almost 80,000 lives were lost, 90 percent of the buildings were destroyed, and three cities lay in ruin. The Italian people and its government needed help in recovering from the worst natural disaster they had experienced in recent memory. The aid and assistance they would receive came from Italy's conventional allies around the world. The most significant foreign contributor in this immense relief effort that would help Italy rebuild and recover would be from a most unlikely entity—the United States Navy.¹⁸

In 1907, in an effort to increase America's influence around the world, President Theodore Roosevelt, sent 16 battleships on a mission to circumnavigate the world. His Great White Fleet was sent as a demonstration of America's military strength and was extremely successful in this endeavor. The devastation that took place in Italy in December 1908 gave the United

States an opportunity to show the world a more diplomatic and compassionate side of the Navy.¹⁹

When the Messina earthquake hit Sicily, a squadron of four battleships was exiting the Suez Canal. As news of the disaster reached the squadron, it diverted to the coast of Italy to offer assistance and supplies. In the effort that followed, the Navy delivered much needed food, medical relief, and supplies, as sailors were used on shore to extract bodies and rebuild homes, shelters, and hospitals. The overall effort lasted a few months and is considered one of America's greatest humanitarian achievements.²⁰

The unexpected response of the Great White Fleet to the Messina tragedy marked the genesis of a long tradition of response to natural disasters in the form of humanitarian assistance for the United States Navy. Since its inception, the Navy had offered aid while on the high seas. Rescues at sea, aiding vessels in distress, and transport of supplies had been a tenet of naval operations since the days of John Paul Jones. However, the response in Messina marked the first time the Navy had been used on foreign soil in such a role.²¹

During the next century, as the Navy grew into a preeminent world naval force, it continued to respond in varying degrees to natural disasters around the world. Yet, almost a century after this first humanitarian endeavor, a similar catastrophic event took place that would mark the beginning of another new chapter in the Navy's role in humanitarian assistance—the Indonesian tsunami of 2004.

¹⁷ Salvatore J. LaGumina, *The Great Earthquake: America Comes to Messina's Rescue* (Youngstown, NY: Teneo Press, 2008), xviii.

¹⁸ "America's Greatest Humanitarian Deed: Responding to the Messina Earthquake of 1908," New York Council for Humanities, accessed 5 January 2009.

¹⁹ Donald C. Winter, "100th Anniversary of the Great White Fleet Sailing" (keynote address, USS *Theodore Roosevelt* [CVN 71], Norfolk, VA, 15 December 2007).

²⁰ LaGumina, *The Great Earthquake*, 140–64.

²¹ James Hoeft and Jennifer Craig, "[USS] *Kearsarge* Upholds Vision of Great White Fleet," Navy.mil, 1 November 2008.



In *Wheat Unloaded Kismayu, Somalia*, Col Peter Michael Gish depicts the Norwegian ship *Slevik* unloading a precious cargo of grain to relieve starving Somalian refugees in the port of Kismayo. Watercolor on paper. Art Collection, National Museum of the Marine Corps, 24-1-168

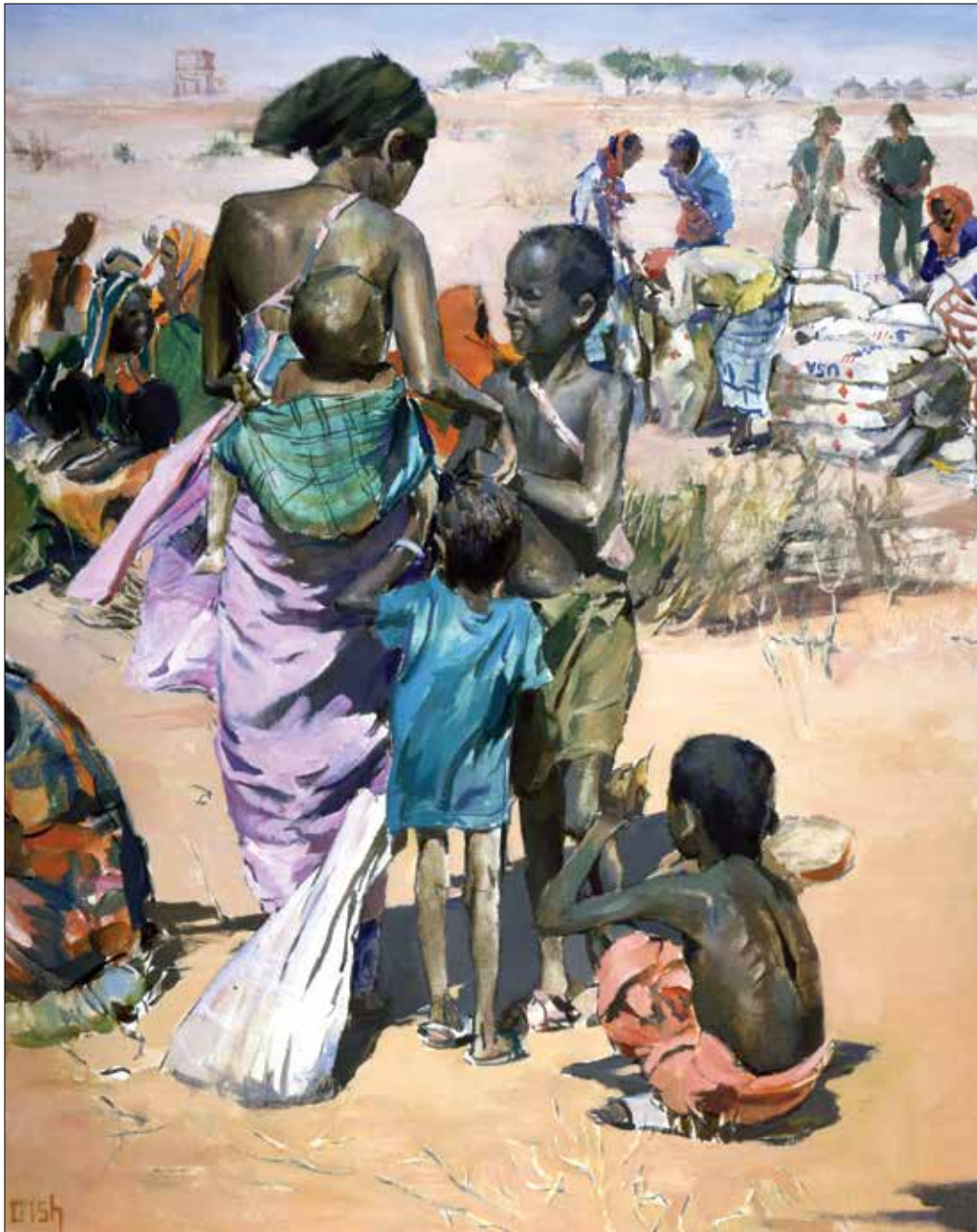
The Indonesian Tsunami of 2004

On 26 December 2004, a massive earthquake and subsequent tsunami struck the Pacific in the region of Southeast Asia. The earthquake's magnitude measured 9.0, one of the 10 greatest earthquakes ever recorded. More than 150,000 people were dead, 1 million displaced, and more than 26,000 missing. In terms of human suffering, it was the most destructive tsunami in history.²² The impact of its destruction reached countries from Thailand to India to Somalia; the

greatest suffering took place in Indonesia. The devastation and suffering there was unimaginable as more than 100,000 people perished in the country alone. In addition to the human toll, the tsunami caused inconceivable damage to the infrastructure and the environment. Much of the coast of Indonesia lay in ruins and the fear of disease and epidemic necessitated an immediate and drastic response. The response came in a relief effort that would become one of the most challenging ever faced.

The relief effort, Operation Unified Assistance, was a multinational, inter-Service, inter-agency venture led by U.S. Pacific Command

²² Bruce A. Elleman, *Waves of Hope: The U.S. Navy's Response to the Tsunami in Northern Indonesia*, Newport Paper no. 28 (Newport, RI: Naval War College Press, 2007), vii.



Col Peter Michael Gish, *Grain Queue, Somalia*. Oil on canvas.
Art Collection, National Museum of the Marine Corps, 24-2-189

(USPACOM) whose mission was to “prevent further loss of life and human suffering by expeditiously applying resources to the overall relief effort.”²³ The task force created for the mission included the countries of Australia, Japan, Russia, Singapore, France, and Malaysia; the interagency and nongovernmental organizations (NGOs) included United States Agency for International Development (USAID), Save the Children, and Red Cross and Red Crescent Societies.²⁴ Yet, when the initial stages of the relief effort began, there was a unique challenge. More than 110 miles of coastal infrastructure were destroyed, creating an inability for aid to be transported to the disaster area via roads. With the dearth of access by land, the Navy became a key contributor as they were able to leverage their capabilities and resources from the sea.²⁵

When the Indonesian tsunami occurred, the U.S. Navy had forces in East Asia but did not have ally ships in the immediate area. Within 10 days, there were 25 Navy ships and approximately 13,500 military personnel off the coast.²⁶ Operating from a “sea base,” the Navy became a key player in organizing and executing the relief effort. Through coordination with the government and military of Indonesia, the U.S. Navy and its partners were able to deliver much needed materials, food, water, and medical treatment to the ravaged coastal population. Unified Assistance lasted almost two months and, by the end of the operation, the Navy had delivered 10 million pounds of food and 400,000 gallons of water. Thousands of patients were treated on the

hospital ship, USNS *Mercy* [T-AH 19].²⁷ In the end, the Navy’s goodwill had helped transform Indonesia’s attitude toward America.²⁸

The success of Unified Assistance not only had profound effects on the people of Indonesia, but also was a stimulant for a new way of thinking about how to deploy naval assets throughout the world. Navy leadership began to realize that the lessons learned from Unified Assistance would help shape thinking and strategy for the twenty-first century.²⁹ A first area of focus dealt with the cooperative aspect of the operation. In January 2006, the Chief of Naval Operations, Admiral Michael G. Mullen, published an article in which he discussed the concept of “The 1,000 Ship Navy.”³⁰ *The 1,000 Ship Navy* is defined as “a global maritime partnership that unites maritime forces, port operators, commercial shippers, and international, governmental and nongovernmental agencies to address mutual concerns.” It does not purport 1,000 ships at sea, but rather promotes global capabilities and partnerships.³¹

A second transformative aspect of the tsunami relief effort was the overwhelming impact that the humanitarian effort had on the hearts and minds of those affected. Admiral Gary Roughead, U.S. Pacific Fleet commander during the operation, realized the effect his forces had

²³ Elleman, *Waves of Hope*, vii.

²⁴ Elleman, *Waves of Hope*, 8, 29.

²⁵ Elleman, *Waves of Hope*, vii.

²⁶ Elleman, *Waves of Hope*, 10.

²⁷ Samantha L. Quigley, “Wolfowitz: U.S. Should Safeguard Tsunami Relief Successes,” *DefenseLink News*, 10 February 2005; and Elleman, *Waves of Hope*, 31.

²⁸ Elleman, *Waves of Hope*, 101.

²⁹ John G. Morgan Jr. and Charles W. Martoglio, “The 1,000-Ship Navy: Global Maritime Network,” U.S. Naval Institute *Proceedings* 132, no. 11 (November 2005): 14–17.

³⁰ Adm Mike Mullen, “What I Believe: Eight Tenets that Guide My Vision for the 21st Century Navy,” U.S. Naval Institute *Proceedings* 132, no. 1 (January 2006).

³¹ Christopher P. Cavas, “The Thousand-Ship Navy,” *Armed Forces Journal*, December 2006.



Col Peter Michael Gish, *15th MEU Marine in Mogadishu, Somalia*. Watercolor on paper.
Art Collection, National Museum of the Marine Corps, 24-1-193

on the region.³² The supplies and medical aid they provided were tangible actions that directly influenced the opinions of the population. Following the tsunami, favorable opinions of the United States increased from 15 percent to 34

percent.³³ Realizing the significance of this information along with positive feedback from leaders in the area, Navy leadership began to think that instead of reacting to such disasters, what if the Navy proactively deployed ships whose primary mission was goodwill and humanitarian aid? How much good could be done and what

³² Adm Gary Roughead, "Remarks as Delivered: Assumption of Office" (speech, Washington Navy Yard, Washington, DC, 11 October 2007).

³³ "2006 Poll: Humanitarian Relief Sustains Change in Muslim Public Opinion," *Terror Free Tomorrow*, accessed 14 January 2009.



Newly arrived to the Persian Gulf for Operation Desert Shield/Storm, hospital ship USS *Comfort* provides complete medical services for combat casualties. The morale boost the ship represents is inestimable. John Charles Roach, *Hospital Ship USNS Comfort at Sitrah*, 1991. Watercolor on paper.

Art Collection, Naval History and Heritage Command, 91-049-T

impact would this have on the attitudes of the people who came in contact with these goodwill ambassadors from the United States Navy?³⁴ With these two visions in mind, the origins of the new *Maritime Strategy* had begun.

THE MARITIME STRATEGY

This strategy builds upon changes that have already been underway for some time, and formally endorses operations that we are already carrying out.

~ Honorable Donald C. Winter
Secretary of the Navy³⁵

Through much of its history, the United States has been a maritime nation and the Navy has played a prominent role in making it the preeminent world power it is today. Despite the focus on the ground conflicts being fought in Iraq and

Afghanistan, the security of the maritime environment remains vital to global prosperity. The Earth is approximately 70 percent water. Eighty percent of its population lives near a coast, and upward of 90 percent of global commerce is transported via the sea. Due to the globalization of world economies, any disturbances in this flow of goods could have significant ramifications to a number of countries including the United States.³⁶ It is evident that in order to serve its national interests, the United States must maintain a strong maritime presence throughout the world. Thus, the three maritime Services—the Navy, Coast Guard, and Marine Corps—developed a strategy designed to enhance their ability to protect the nation's vital interests.

There was not a relevant maritime strategy in place when the development of the current maritime strategy began in early 2005. The last maritime strategy was released in 1986 and was a Cold-War centric strategy designed to defeat the Soviet Union. While effective at the time, it provided no guidance for the complexities and multidimensional challenges of operating in today's maritime environment.³⁷ In October 2005, naval leaders from around the world met in Newport, Rhode Island, at the International Seapower Symposium. It was at this conference that the discussions took place that led to the beginnings of the strategy.³⁸ Many of the leaders at the conference had been the ones directly involved and impacted by the tsunami relief effort. The discussions they had demonstrated an increased international interest in the maritime environment and a call for cooperative efforts from international forces. From these talks,

³⁶ A *Cooperative Strategy for 21st Century Seapower*, 2–5.

³⁷ Su Hao, "The U.S. Maritime Strategy's New Thinking Reviewing the *Cooperative Strategy for 21st Century Seapower*," *Naval War College Review* 61, no. 4 (Autumn 2008): 68–72.

³⁸ Roughead, "Remarks as Delivered."

Navy leadership pressed forward with hopes to codify a strategy that would shape future operations. In addition to the input from the global community, the Navy realized the importance of collaborating with the mainstream leaders of America. Through a series of “Conversations with the Country,” they met with business, academic, and civic leaders and the shared ideas were instrumental in the strategy. From these conversations, it was apparent that the “American people [desired] their maritime services to remain strong, to defend the homeland, and to protect American citizens” as well as to cooperate internationally to secure national interests abroad.³⁹ With these ideas in mind, the next two years were spent debating and discussing the strategy. Finally, at the 2007 International Seapower Symposium, before a record attendance of 98 nations, including 94 chiefs of navy and coast guards, *The Cooperative Strategy for the 21st Century Seapower* was released.⁴⁰

The strategy marks the first time in history, that the three U.S. maritime forces—the Navy, Marine Corps, and Coast Guard—collaborated on the formulation and implementation of a maritime strategy. This collaboration served as an assurance that an integrated approach would be taken to protecting the nation’s vital interests. It builds on the core capabilities that have been a recent part of the Service’s maritime approach to operations. Forward presence, deterrence, sea control, and power projection were tenets of the maritime Services outlined in numerous strategic whitepapers to include “. . . From the Sea” (1992), “Forward . . . From



This makeshift sign was created by USNS *Comfort* mariners to direct patients to the ship for medical care while the ship was docked in Pascagoula, MS, during the relief operations for hurricanes Katrina and Rita in 2005. The storms devastated the Gulf Coast region, bringing mass flooding and damaging winds. Nearly 1,500 people received medical care from the ship.

Headquarters Artifact Collection, Naval History and Heritage Command, 2012-57-1

the Sea” (1994), and “Sea Power 21” (2001).⁴¹ The strategy confirms that the Navy will be forward deployed and will act as a deterrent force capable of controlling the seas. Further, it mandates that when access is denied or mission dictates, they are able project power both on the seas and on the shores. These warfare roles have been customarily accepted as what is traditionally expected from the Navy and have been “enduring capabilities . . . for centuries.”⁴² While the explicit delineation of these core capabili-

³⁹ House Armed Services Committee on *The Cooperative Strategy for 21st Century Seapower* (statement of Adm Gary Roughead, 13 December 2007), hereafter Roughead House Armed Services Committee statement.

⁴⁰ Adm Gary Roughead, “Maritime Strategy Testimony” (remarks, Washington, DC, 13 December 2007).

⁴¹ Roughead House Armed Services Committee statement.

⁴² Roughead, “Remarks as Delivered.”



A port beam view of the hospital ship USNS *Mercy* (T-AH 19) at anchor at a harbor in the Philippine Islands, May 1987. The ship visited various ports in the Philippines during the first phase of its five-month humanitarian medical service and training mission.

Official U.S. Navy photo, National Archives, courtesy of PHC Chet King

ties is an essential part of the strategy, it is not what makes this strategy a unique and distinctive document. Rather, it is the strategy's ability to balance these core hard power capabilities with a new emphasis on cooperative soft power that makes it so innovative.

In addition to these enduring capabilities addressed, the strategy calls for the expanded capabilities of proactive maritime security as well as proactive humanitarian assistance and disaster relief. These expanded capabilities support a key precept of the strategy that "preventing wars is as important as winning wars."⁴³ Maritime security addresses the global economic systems dependence on the sea and the free

flow of goods on and above the oceans. Without the freedom of shipping, whether from piracy, smuggling, terrorism, or other illicit activities, the global system is disrupted.⁴⁴ The strategy clearly stresses the importance of "[joining] navies and coast guards around the world to police the global commons and suppress common threats."⁴⁵ Through this cooperation and collaboration, a maritime awareness can be developed and programs and initiatives can be developed to protect and preserve both national and international interests abroad.⁴⁶

In his testimony before Congress on the *Maritime Strategy*, current Chief of Naval Op-

⁴³ *A Cooperative Strategy for 21st Century Seapower*, 1.

⁴⁴ Roughead, "Remarks as Delivered."

⁴⁵ *A Cooperative Strategy for 21st Century Seapower*, 12.

⁴⁶ Roughead, "Remarks as Delivered."

erations, Admiral Gary Roughead stated [that] “we also intend to pursue proactive humanitarian assistance and disaster relief.”⁴⁷ This second expanded capability, proactive humanitarian assistance/disaster relief (HA/DR), is perhaps the most distinctive and innovative concept within the strategy. As stated, the maritime Services have traditionally responded to international crises and disasters, however, deploying ships with the sole mission of rendering goodwill and aid had never been done. In delineating this as a core capability, the strategy states “we will continue to mitigate human suffering as the vanguard of interagency and multinational efforts, both in a deliberate, proactive fashion and in response to crises.”⁴⁸ The expeditionary nature of all three maritime Services allows them to render assistance and aid in such a quick and unique manner in response to crises. In making this a proactive endeavor, the Services will not only bring direct support and care to the international community, but perhaps more importantly, the global maritime Services will develop relationships, procedures, and methods that will benefit future response operations.⁴⁹ As the strategy states, “trust and cooperation cannot be surged,” and through these expanded capabilities, the maritime Services are building relationships so that “strategic interests of the participants are continuously considered while mutual understanding and respect are promoted.”⁵⁰

These capabilities offer a new approach consistent with the *National Security Strategy of the United States of America*, March 2006 and *National Defense Strategy*, June 2008. These strategies clearly call on the military to use diplomacy and soft power in coordination with traditional hard



A sailor with refugee and child during Operation Passage to Freedom in 1966. American officials and sailors helped refugees as they were moved from North Vietnam to South Vietnam.

Naval History and Heritage Command, UA 478.06

power capabilities in order to help shape the behavior and actions of the global community.⁵¹ They are also in accord with the new presidential administration’s focus on diplomacy and multilateralism. The top leaders of President [Barack H.] Obama’s national security team—Secretary of Defense Robert Gates and Secretary of State Hillary Clinton—share the same vision of how America will ensure peace both here and abroad. According to Secretary Clinton, “we know our security, our values and our interests cannot be protected and advanced by force alone nor indeed by Americans [alone].”⁵² Secretary Gates, in a November 2007 speech, argued for more funding for the State Department and U.S. Agency for International Development (USAID) in an effort to “strengthen our

⁴⁷ Roughead, “Maritime Strategy Testimony.”

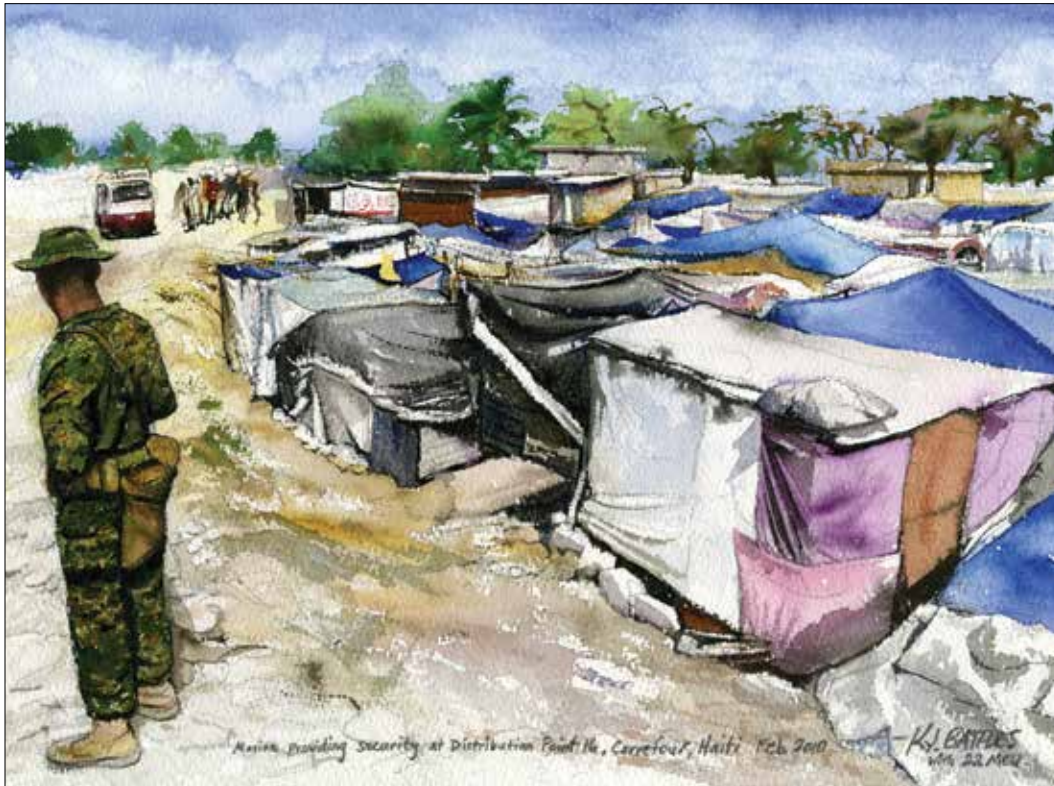
⁴⁸ *A Cooperative Strategy for 21st Century Seapower*, 12.

⁴⁹ Roughead, “Remarks as Delivered.”

⁵⁰ *A Cooperative Strategy for 21st Century Seapower*, 9.

⁵¹ *National Security Strategy of the United States of America*, March 2006 (Washington, DC: White House, 2006); and *National Defense Strategy*, June 2008 (Washington, DC: Department of Defense, 2008), 6.

⁵² Jim Lobe, “Obama’s Team Stresses Diplomacy, Multilateralism,” *Global Information Network*, 2 December 2008.



SSgt Kristopher J. Battles, *Marine Providing Security at Distribution Point 16 Carrefour, Haiti*. Watercolor on paper.

Art Collection, National Museum of the Marine Corps, 2016-80-2

capacity to use soft power and for better integrating it with hard power.”⁵³ Perhaps most telling are the words of President Barack Obama when he said, “In order to [assure prosperity] we have to combine military power with strengthened diplomacy and we have to build and force stronger alliances around the world so that we’re not carrying the burdens and these challenges by ourselves.”⁵⁴ It is apparent that a renewed focus on balanced, multilateral approaches will be a prevailing part of the new administration’s ap-

proach to global affairs. With the *Maritime Strategy*’s focus on cooperative security and proactive HA/DR, the Navy is poised to contribute to the overall *National Security Strategy* for the coming years.

STRATEGY IMPLEMENTATION

My guidance to the fleet is to execute our strategy.

~ Admiral Gary Roughead⁵⁵

A strategy is of no use unless it is put into action

⁵³ Secretary of Defense Robert Gates, “Landon Lecture” (speech, Landon Lecture Series on Public Issues, Kansas State University, Manhattan, KS, 26 November 2007).

⁵⁴ Lobe, “Obama’s Team Stresses Diplomacy, Multilateralism.”

⁵⁵ Roughead, “Maritime Strategy Testimony.”

and thus the ability of the naval Service to implement the *Maritime Strategy* is the unique challenge faced by each Service. When the Navy is deployed, it is implementing the strategy. Today's fleet, whether combating piracy off the coast of Africa, flying combat missions over Afghanistan, or patrolling the ocean floors, is consistently engaged in the traditional core capabilities. Yet, during the past several years, deploying assets in support of the expanded capabilities of maritime security and HA/DR have been much more prevalent. It comes as no surprise that the Navy has been able to focus on this aspect of the strategy. While the Army and Marine Corps find themselves stretched fighting two ground wars in two theaters, the Navy's reduced role in these conflicts has afforded them the opportunity to deploy units focused on building partnerships and administering aid.

While the Navy has been able to focus on the soft power missions, they have also elected to deploy to regions whose conditions allow for such missions to take place. Since proactive HA/DR deployments began in 2006, the Navy has deployed ships to three primary areas of operations: South America, the west coast of Africa, and the Pacific.⁵⁶ Because these regions are absent of intense combat operations, the combatant commanders have been able to focus on these type missions to improve social conditions and cooperative engagements.

In both U.S. Africa Command (USAFRICOM) and U.S. Southern Command (USSOUTHCOM), the value the interagency plays in their missions have garnered so much attention that their commands now incorporate representatives from various interagency and NGOs. In fact, both commands have placed a senior State Depart-

ment official to act as the deputy to the commander.⁵⁷ With this type of thinking and focus from the combatant commands, the Navy has received significant support in execution of its *Maritime Strategy*.

Though the *Maritime Strategy* was released in 2007, the Navy did not wait for its release to start implementing the expanded core capabilities. As noted, the genesis of the ideas surrounding cooperative engagement and proactive HA/DR, took place soon after the Indonesian tsunami of 2004–5 (table 1). As early as 2006, the Navy deployed one of its two hospital ships, USNS *Mercy*, on a proactive HA/DR mission as part of Pacific Partnership 2006. On its five month deployment, it revisited Indonesia, where it had deployed in response to the Tsunami in a continuing effort to “restore hope and spread goodwill to the region.”⁵⁸ In spring of 2007, just prior to the release of the strategy, the catamaran HSV-2 *Swift* deployed to the Caribbean and South American in the first deployment in support of cooperative engagement.⁵⁹ These two deployments marked the beginning of the efforts of the Navy to execute the two soft aspects of the *Maritime Strategy*: HA/DR and maritime security operations.

Humanitarian Assistance/Disaster Relief

The U.S. Navy's unique capability in rendering HA/DR is made possible by its two dedicated hospital ships—USNS *Comfort* [T-AH 20] and USNS *Mercy*—as well as its fleet of large deck amphibious ships. The hospital ship has been an intermittent part of the Navy's inventory since

⁵⁷ LtCdr Pat Paterson, USN, “SOUTHCOM Turns to Soft Power,” U.S. Naval Institute *Proceedings* 134, no. 7 (July 2008): 56–61.

⁵⁸ Donald Smith, “Hospital Ship *Mercy* Deployed on Humanitarian Mission,” *DefenseLink News*, 11 May 2006.

⁵⁹ Commander Task Group 40.9, “Global Fleet Station HSV-2 SWIFT” (brief, Chief of Naval Operations International Engagement Branch [OPNAV N52], 2007).

⁵⁶ Cdr Rob Bennett, Global Maritime Partnership lead, OPNAV N52, discussion with author, 12 January 2009.

Table 1. HA/DR and theater security cooperation missions since 2004

Operation	Type assistance
Unified Assistance 2004–5	Tsunami relief
Pacific Partnership 2006	USNS <i>Mercy</i> (T-AH 19)
Partnership of America 2006	USS <i>George Washington</i> (CVN 73)
Pacific Partnership 2007	USS <i>Peleliu</i> (LHA 5)
Continuing Promise 2007	USNS <i>Comfort</i> (T-AH 20)
Southern Partnership Station 2007	HSV-2 <i>Swift</i>
Partnership of America 2007	USS <i>Pearl Harbor</i> (LSD 52)
Bangladesh Engagement Opportunity 2007	USS <i>Kearsarge</i> (LHD 3)
Africa Partnership Station 2007–8	HSV-2 <i>Swift</i> /USS <i>Fort McHenry</i> (LSD 43)
Continuing Promise 2008	USS <i>Kearsarge</i> / <i>Boxer</i> (LHD 4)
Pacific Partnership 2008	USNS <i>Mercy</i>
Black Sea Partnership Cruise 2008	USS <i>Mount Whitney</i> (LCC 20)
Africa Partnership Station 2008	USS <i>Elrod</i> (FFG 55)
Partnership of America 2008	USS <i>George Washington</i> / <i>Farragut</i> (DDG 99)/ <i>Kaufman</i> (FFG 59)/ <i>Sherman</i> (DDG 98)
Southern Partnership Station 2008–9	HSV-2 <i>Swift</i>
Africa Partnership Station 2008–9	USS <i>Leyte Gulf</i> (CG 55)/ <i>Robert G. Bradley</i> (FFG 49)
Continuing Promise 2009	USNS <i>Comfort</i>
Africa Partnership 2009	USS <i>Nashville</i> (LPD 13)
Pacific Partnership 2009	USS <i>Dubuque</i> (LPD 8)

1918 and has predominantly been activated during times of war. The current ships, *Comfort* and *Mercy*, were commissioned in 1986 and 1987, respectively. The ships are equipped with operating rooms, intensive care units, dental services, optometry, and laboratory facilities. Through 2004, their deployments mainly consisted of supporting military operations, and disaster and refugee relief.⁶⁰

While the hospital ships are designed for HA/DR-type missions, the Navy has begun to use their large deck amphibious ships in diverse ways to support its overall strategy. Large deck amphibious ships, typically used to carry elements of a Marine Expeditionary Brigade (MEB) in preparation for combat operations, have

played an integral part in executing the *Maritime Strategy*. As Marine units have been deployed to Iraq and Afghanistan, the frequency of their deployments aboard naval vessels has diminished. With the reduced deployment on board amphibious ships, the Navy has elected to deploy the ships without the Marines and their usual complement of weapons and equipment and instead have deployed with medical equipment, construction vehicles, and medicine. Instead of Marines, the ships are deploying with doctors, nurses, and a “medical assault force.” While it is undetermined if these types of deployments will be part of the long-term future of naval HA/DR missions aboard amphibious ships, they currently are filling the role quite effectively.⁶¹

⁶⁰ “Comfort Deployments,” *ComfortNavy.mil*; and “Mercy History,” *MercyNavy.mil*.

⁶¹ David Axe, “Medical Diplomats,” *Sea Power* 51, no. 10 (October 2008): 52–53.

Since the first deployment of *Mercy* in 2006 and the release of the *Maritime Strategy* in 2007, the Navy has significantly increased the frequency of proactive HA/DR deployments (see table 1). In 2007 and 2008, there were a total of four deployments conducted to South America and the Pacific, and the Navy has committed to annual deployments to each region. Under the initiative Continuing Promise 2007, the *Comfort* deployed to South America while Continuing Promise 2008 saw USS *Kearsage* [LHD 3] and USS *Boxer* [LHD 4] continue the mission. Currently, *Comfort* is scheduled to redeploy to the region in 2009. The Pacific Partnership initiative has seen two *Mercy* deployments and one deployment by USS *Peleliu* [LHA 5]. In 2009, the USS *Dubuque* [LDP 8] is scheduled to deploy to the region.⁶²

While the deployments have become a part of the naval rotation, it is important to understand exactly what these missions accomplish. The Continuing Promise 2008 mission is to “conduct civil-military operations including humanitarian and civic assistance as well as veterinary, medical, dental and civil engineering support to six partner nations and to send a strong message of U.S. compassion, support and commitment to Central and South America and the Caribbean.”⁶³ In its five-month deployment, *Keasarge* conducted missions in five nations: Nicaragua, Colombia, Dominican Republic, Trinidad and Tobago, and Guyana. The crew included 150 military and Public Health Service medical professionals as well as host nation medical teams and NGOs. Overall, the team treated 47,000 patients; conducted 221 surgeries; treated 5,600 animals with veterinary care; dispensed 81,300



Beachmasters assist U.S. sailors and Marines embarked aboard the multipurpose amphibious assault ship USS *Iwo Jima* (LHD 7) on 25 July 2010 after they performed humanitarian assistance in Port-de-Paix, Haiti.

Official U.S. Marine Corps photo, courtesy of PO1 Christopher B. Stolz

prescriptions; and conducted 198,600 medical, dental, and optometric services. In addition to these services, a team of military engineers built three schools and conducted 25 renovation and infrastructure projects.⁶⁴ These numbers were just a continuation of the goodwill *Comfort* delivered in summer of 2007, where 400,000 patients were treated and more than 1,100 surgeries were performed.⁶⁵ It is evident that the operations were particularly successful in helping to improve impoverished countries where leadership is often hesitant and distrustful of American intervention.⁶⁶

Maritime Security: Theater Security Cooperation and Global Maritime Partnerships

When Admiral Mullen called on an increase in

⁶² “Global Maritime Partnerships: Table of Contents” (unpublished report, OPNAV N52, 2008).

⁶³ MC1Amy Kirk, “Continuing Promise 2008 Mission Complete; *Kearsarge* Heads Home,” Navy.mil, 28 November 2008.

⁶⁴ “Continuing Promise May–Dec 2008,” SOUTHCOM.mil, accessed 3 January 2009.

⁶⁵ Axe, “Medical Diplomats,” 52–53.

⁶⁶ Paterson, “SOUTHCOM Turns to Soft Power,” 56–61.

existing alliances and cooperative engagements with his 1,000 Ship Navy concept, it marked a renewed emphasis on collaborative maritime partnerships.⁶⁷ This concept was soon codified in the *Maritime Strategy*. Later referred to as Theater Security Cooperation (TSC), it called for an increased emphasis in maritime security and was the impetus behind the major initiative that became known as the Global Maritime Partnership (GMP) concept.

In February 2008, the Navy released a GMP concept paper. This paper not only defined the concept, but also defined why it is needed and helped identify how the concepts would be conducted. Its definition is as follows:

*Global Maritime Partnerships is new approach to cooperation among maritime nations with a shared stake in international commerce, safety, security, and freedom of the seas. GMP serves as a basis for building a global consensus on policy principles and for undertaking common activities to address maritime challenges by improving collective capabilities. Global Maritime Partners will seek opportunities to assist one another in using the sea for lawful purposes and legitimate commerce, while limiting use by those who threaten national, regional, or global security.*⁶⁸

The GMP is not an official organization led by any particular country but rather a voluntary organization amongst nations committed to supporting maritime security. In essence, it is an informal partnership focused on collaboration and exchanging best practices to foster maritime security.⁶⁹ The Navy began to “operationalize” the

concept when it began deploying units as part of Global Fleet Stations (GFS).

GFS came about in the Navy’s effort to support the GMP concept. A GFS is a small, adaptive force package that is deployed to facilitate partnerships in a region. Its size can range from one ship to a small flotilla consisting of four to five ships primarily focusing on shaping operations. By using the Navy’s sea-basing capability, a GFS deploys to specific regions for an extended period of time and works to meet the needs of partner nations. Through training and working with these partners, the GFS aims to bolster the effectiveness of maritime operations through the exchange of ideas and skills. However, perhaps the greatest benefit of the GFS is that it is able to do all of this while imposing a negligible presence ashore.⁷⁰

The GFS is still in its infancy stages. There was one GFS deployment to the west coast of Africa in 2008, while another one is slated for early 2009 (see table 1). In South America, there have been a total of four deployments since 2007.⁷¹ With the newness of such deployments, the Navy is still developing procedures on how to execute such missions. However, thus far, there has been very positive feedback in the effectiveness of these deployments.

SOUTHCOM has two initiatives which support the GFS concept, Partnership of Americas (POA) and Southern Partnership Stations (SPS). An annual operation, there have been three POA deployments since its initial deployment in 2006. These deployments focus on exercises and other training evolutions in an effort to improve coordination and interoperability amongst participating countries. The exercises, which focus

⁶⁷ Mullen, “What I Believe.”

⁶⁸ “Global Maritime Partnership Concept Paper” (draft report, OPNAV N52, 2008).

⁶⁹ “Global Maritime Partnership Concept Paper.”

⁷⁰ “Global Fleet Stations: Supporting Global Maritime Partnerships” (draft report, OPNAV N52, 2008).

⁷¹ “Global Maritime Partnerships Concept Paper.”



Marines with Marine Medium Tiltrotor Squadron 265 (Reinforced), 31st MEU, assists the government of Japan in supporting those affected by recent earthquakes in Kumamoto on 18 April 2016. VMM-265 picked up supplies from Japan Ground Self-Defense Force Camp Takayubaru and delivered them to Hakusui Sports Park in the Kumamoto Prefecture. The long-standing relationship between Japan and the United States allows U.S. military forces in Japan to provide rapid, integrated support to the Japan Self-Defense Forces and civil relief efforts.

Official U.S. Marine Corps photo, courtesy of Cpl Nathan Wicks

on combating unconventional threats such as narco-terrorism and illicit trafficking, are carried out by traditional combatant ships to include destroyers and aircraft carriers.⁷²

Where POA has emphasized exercises and other at sea events to work and train with other navies, SPS has taken a slightly different approach. SPS is a much smaller scaled operation whose primary mission is information sharing. It has used the HSV *Swift* (high speed vessel), a 300 foot, wave-penetrating catamaran as its prima-

ry vessel. A leased vessel with a crew of 45, the *Swift* deploys with embarked engagement teams from the Navy, Marine Corps, and Coast Guard as well as Naval Criminal Investigative Service and Information System technicians. Focusing on classroom training and hands-on instructions, these teams train and mentor partner nation's defense forces, police departments and Coast Guards. Engagement teams instruct on a wide spectrum of topics including small boat operations, boarding techniques, search and rescue, marksmanship, martial arts, and port security. HSV *Swift* is currently conducting its

⁷² "Southern Partnership Station," SOUTHCOM.mil, accessed 3 January 2009.

second SPS mission as it is in the midst of a five-month, seven-country deployment throughout the Caribbean and Central and South America.⁷³

Perhaps more significant and potentially under more scrutiny, is the Africa Partnership Station (APS) conducted off the west coast of Africa. APS is the Navy's GFS initiative that, according to its mission statement, is designed to "build maritime safety and security capabilities in the Gulf of Guinea with partner nations using an at-sea training platform that provides persistent regional presence with a minimal footprint."⁷⁴ Similar to its counterpart initiatives in South America, the Navy is using a combination of large deck amphibious ships, destroyers, submarines, and HSV *Swift* to accomplish its mission.⁷⁵

The first APS deployment took place in November 2007 through April 2008 where the goals, objectives, and outcomes were the similar to SPS and POA. The African maritime environment is extremely unstable. One-quarter of the cocaine sold in Europe goes through West Africa and approximately 60 percent of the world's human trafficking takes place in sub-Saharan Africa. The maritime capabilities of West African nations are extremely limited, making it very difficult for local navies to combat the illicit activities that take place on their waters.⁷⁶

Africa's dangerous waters and insufficient protection provide a model environment for the Navy to make a difference with APS and, by Navy standards, the most recent deployment was extremely successful. Seven countries were

visited and 1,770 courses were given to more than 1,500 students from 15 nations ranging from small boat operations to port security to maritime law. Eleven nations were represented on the APS staff to include six European and five African nations. Training took place aboard ships as well as host nation facilities. Finally, NGOs, including USAID, Project HOPE, and the Wildlife Conservation Society assisted in community outreach programs delivering aid, training, and hospital equipment.⁷⁷ On an operational level, APS was able to improve maritime security and promote goodwill while establishing partnerships in an unstable region of the world.

However, there are still some reservations about a growing military presence in Africa. Currently, African governments are apprehensive about the establishment of AFRICOM. There is a fear of an increased U.S. military presence, particularly land forces, on the continent. Likewise, most of the littoral African nations are years away from developing a credible and competent naval force. Some may think this would discourage future APS endeavors. However, the Navy's unique characteristics make it an ideal platform for the region. Due to its small footprint, APS is able to work with host countries without burdening them with a sizable ground force. It also is able to assuage concerns of AFRICOM's presence with the assistance and training it is offering.⁷⁸ Finally, while many countries may be decades off from developing strong maritime forces, the APS costs are low and as long as the Navy is committed to this concept, in the long run it should prove to be an effective investment.⁷⁹

⁷³ "Continuing Promise May-Dec 2008"; and Commander Task Group 40.9, "Global Fleet Station HSV-2 *Swift*."

⁷⁴ "Africa Partnership Station WOT-FED Forum APS Current Status Brief 15 May 2008" (brief, OPNAV N52, 2008), hereafter Africa Partnership brief.

⁷⁵ Africa Partnership brief.

⁷⁶ "Navy Aims to Curb Wariness towards AFRICOM," Oxford Analytica, August 2008, 1.

⁷⁷ Africa Partnership brief.

⁷⁸ "Navy Aims to Curb Wariness towards AFRICOM."

⁷⁹ Africa Partnership brief.



Indonesians rush to a U.S. Navy Sikorsky HH-60H Seahawk helicopter assigned to the Golden Falcons of Helicopter Anti-Submarine Squadron 2 to receive food and water, as the helicopter lands in Jalan, Sumatra, Indonesia, in support of Operation Unified Assistance, 8 January 2005.

Official U.S. Navy photo, National Archives, courtesy of PH2 Philip A. McDaniel

THE WAY AHEAD

For far too long and in far too many ways, it has been about big-ship battles and high-tech weapons. Life is just not that simple anymore.

~ Admiral Michael Mullen⁸⁰

The *Maritime Strategy* has laid the foundation of how the Navy will operate in the coming years. As seen, the Navy has and will continue to maintain a balanced approach between the hard power it is customarily known for and the soft power that is called for and required in today's irreg-

ular and complex global environment. As this new strategy is implemented, it is important to evaluate its effectiveness. It is important not only to evaluate the strategy from a strategic and operational level, but it is equally as important to assess if HA/DR and TSC are effective means of reaching the nation's objectives.

Strategic Analysis

Much of the press and discussion surrounding the *Maritime Strategy* has tended to focus on the expanded core capabilities of HA/DR and maritime security. The new focus on these capabilities, in conjunction with the aforementioned proactive deployments, is an innovative and new

⁸⁰ Mullen, "What I Believe."

undertaking for the Navy. Highlighting these missions is an important development as they will be more essential over the coming years while the United States continues to battle terrorism, instability on the high seas, and political volatility. From a strategic perspective, it is important to realize the necessity to balance the soft power with hard power. With this strategy, the Navy has done so.⁸¹

It is essential the Navy not reduce the hard power capabilities that are so clearly outlined in the strategy. These capabilities are the backbone of the U.S. Navy and the emphasis on soft power elements does not preclude the necessity for hard power.⁸² As secretary of the Navy, the Honorable Donald C. Winter, stated at the release of the *Maritime Strategy*, "Let there be no mistake: we are not walking away from, diminishing, or retreating in any way from those elements of hard power that win wars. . . . Our increased emphasis on maritime partnerships and the '1000 ship Navy concept' is not a repudiation of the Mahanian insistence on U.S. Navy maritime dominance."⁸³ The balance of these capabilities have ensured the Navy is postured to prevent, as well as combat conflicts it may face in the future.

The Navy must also determine if its HA/DR and TSC deployments are focused in the appropriate regions. Annual deployments are already taking place in South America, West Africa, and the Pacific. The *Maritime Strategy* has stated that its areas of focus will be the Arabian Gulf, Indian Ocean, and the Western Pacific. However, it also recognizes the importance of increased peacetime operations in Africa and the

Western Hemisphere.⁸⁴ This can be interpreted to mean that the hard power focus will remain in the Middle East and Pacific in response to threats, such as Iran and China, where soft power concentration will remain the more unstable areas where deployments are currently underway. While this current force distribution makes sense, the Navy must assess if there are other regions, such as East Africa and the Arabian Gulf, where proactive HA/DR and TSC could be effective.

Finally, it is important to address the strategic shortfalls that are inherent in the implementation of any new plan. Initial responses to the GFS and HA/DR deployments have for the most part been extremely positive yet there have still been some negative, unintended consequences. In some cases, the good works done by Navy and NGOs have revealed the incompetency of the host government or military.⁸⁵ It is imperative that the Navy continue to work in conjunction with host nations in order to build confidence in the governments and militaries. In doing so, they must remain sensitive to the perceptions, both good and bad, that may come about from their works.

Next, the Navy must be mindful that their stops in each country are only temporary. They cannot train every sailor, treat every village, or build enough schools to immediately change many of the conditions that inflict these nations. Therefore, it is essential to develop a comprehensive and logical deployment plan that best meets the strategic objectives for each region. Is it better to revisit a select group of countries or villages at the cost of working with other nations? While consistent revisits are the core of creating partnerships, is there a benefit to

⁸¹ William Housey and James Stark, "Crisis of Confidence," U.S. Naval Institute *Proceedings* 135 (January 2009): 26–30.

⁸² J. Michael McGrath, "Wielding 'Soft Power'," *Sea Power* 51, no. 10 (October 2008): 3.

⁸³ Winter, "Remarks."

⁸⁴ *A Cooperative Strategy for 21st Century Seapower*, 7.

⁸⁵ Bennett discussion.



Displaced residents from Super Typhoon Haiyan/Yolanda prepare for takeoff inside a Boeing C-17 Globemaster III from Tacloban Airport to Manila, 15 November 2013. The supply drop-off and personnel loading was the first use of the C-17 during Operation Damayan, which is able to carry significantly more supplies and displaced persons than the Lockheed C-130 Hercules aircraft currently being utilized.

Official U.S. Marine Corps photo, courtesy of Sgt Jonathan Wright

“spreading the wealth” and deploying to more countries at a less frequent interval?

These questions are so challenging because currently there are no means of evaluating the measures of effectiveness of these deployments. It could be years if not decades before one knows if the overall strategic objective has been achieved. According to a November 2008 study on HA/DR missions conducted by the Center for Naval Analysis, “accepted measures of effectiveness have not been established but are being developed along with operational doctrine. In particular, there is not yet any framework that relates the achievement of operational objectives to the achievement of strategic objectives.”⁸⁶ The

⁸⁶ Alison Lawlor et al., *Navy-NGO Coordination for Health-Related HCA Missions: A Suggested Planning Framework* (Alexandria, VA: CNA, 2008).

Navy must develop a framework quickly because until hard numbers can be evaluated, it will be difficult to determine the strategic effectiveness of such missions.

Operational Analysis

The biggest operational challenge for the Navy concerns resources and force structure. First, the Navy does not have the resources or capacity to execute the strategy. Second, it is still debating future structure of the force in determining if it should be built for small-scale and maritime security operations or large-scale, conventional war.⁸⁷

The Navy currently has 280 ships in its inventory, which is too small of a number to exe-

⁸⁷ Houley and Stark, “Crisis of Confidence,” 26–30.

cute the strategy. It has a goal of building the size of the fleet to 313 ships; yet, this number, according to Admiral Roughead, is the minimum number of ships that is acceptable to execute the strategy.⁸⁸ Given the current financial crisis the country finds itself in, along with the necessity to fund the Army and Marine Corps, the pressure on DOD budgets will likely lead to a loss of Navy budget supplementations.⁸⁹ With this reality, the Navy must find a creative way to attain necessary funding or must figure out a creative way to purchase the number of ships it needs for the strategy. The latter option is more likely and will require the Navy to sacrifice some technologies and capability in order to attain capacity.

When evaluating the decision of what type of force to build, the Navy will have to make the difficult decision of either building a force to combat an unconventional or conventional opponent. The fiscal realities of today will make it difficult to achieve the ideal, a well-balanced force able to combat both high- and low-end opponents. The Navy has already cut the DDG-1000 program designed for high-end warfare and likewise has halted the littoral combat ship production designed for low-end warfare. If a high-end force designed for conventional war-

fare is desired, there will likely not be the numbers to support the *Maritime Strategy*.⁹⁰ Likewise, if a low-end force focused on unconventional and TSC operations is built, the capability will likely be absent to meet the strategy's demands in the conventional realm. The Navy is at a cross-road. It must make difficult decisions in sacrificing its ideal force if the future fleet is going to be capable of executing all aspects of the strategy.

CONCLUSION

The *Maritime Strategy* has set a course for the Navy in the twenty-first century. While challenges and uncertainty still exist in some of the specifics of its implementation, the men and women of the Navy have deployed and conducted all facets of the strategy. In doing so, they have laid the foundation for future deployments and execution. The world is more complex and more dynamic than ever. By maintaining a focus on the core capabilities that have been tenets of naval strategy for years, while codifying the new areas of proactive HA/DR and TSC, the strategy has not only found itself relevant for the coming years, but as the world has shifted to a more cooperative environment, the Navy has positioned itself to lead and influence future world affairs.

⁸⁸ "Senate Armed Service Committee Oral Statement" (statement, Adm Gary Roughead, 28 February 2008).

⁸⁹ Houley and Stark, "Crisis of Confidence," 26–30.

⁹⁰ Houley and Stark, "Crisis of Confidence."

A DESIGN FOR MAINTAINING MARITIME SUPERIORITY

by Admiral John M. Richardson, Chief of Naval Operations
Version 2.0, 2018⁹¹

MISSION

The United States Navy will be ready to conduct prompt and sustained combat incident to operations at sea. Our Navy will protect America from attack, promote American prosperity, and preserve America's strategic influence. U.S. naval operations—from the seafloor to space, from the blue water to the littorals, and in the information domain—will deter aggression and enable resolution of crises on terms acceptable to the United States and our allies and partners. If deterrence fails, the Navy will conduct decisive combat operations to defeat any enemy.

WHY DESIGN 2.0?

WHAT HAS CHANGED?

A Design for Maintaining Maritime Superiority, Version 1.0, released in January 2016 (Design 1.0), was explicitly intended to be assessed and, if

necessary, revised to stay relevant. This update reflects the first reevaluation. There were three reasons we undertook this assessment.

The first reason was to ensure our plans were aligned with updated strategic guidance. President [Donald J.] Trump issued a new *National Security Strategy* (NSS) in December 2017, and Secretary of Defense [James N.] Mattis issued a supporting *National Defense Strategy* (NDS) in January 2018. A new *National Military Strategy* (NMS) will follow. These documents orient national security objectives more firmly toward great power competition. While Design 1.0 highlighted that competition, these new strategies demand that we reevaluate our current heading to ensure it maximizes the Navy's contribution to the objectives they set forth.

The second factor driving our assessment was to account for progress that has been made since Design 1.0 was issued. We have accomplished many of the tasks it articulated, and have advanced many more—it is now time to define what comes next. The third motivation was to validate Design 1.0's characterization of the

⁹¹The original work came from Adm John M. Richardson, *A Design for Maintaining Maritime Superiority, Version 2.0* (Washington, DC: Chief of Naval Operations, Department of the Navy, 2018). Minor revisions were made to the text based on current standards for style, grammar, punctuation, and spelling.



A Grumman F-14 Tomcat, preceded by two Grumman A-6 Intruders, launch from USS *Ranger* (CV 4) as part of the opening strikes against Iraqi targets in Kuwait and Iraq as Operation Desert Storm, the liberation of Kuwait, is ordered by President G. W. Bush at 0200 hours on 17 January 1991. Chip Beck, *Commencing Hostilities*, 1991. Watercolor on paper.

Art Collection, Naval History and Heritage Command, 91-159-H

strategic environment, to check our assumptions.

Design 2.0 reflects the results of this assessment. Overall, the structure of Design 1.0 proved sound: the characterization of the security environment, the core attributes, and the lines of effort (LOEs) remain valid and relevant. Readers should recognize the new version as a continuation of Design 1.0; a major course change was not required.

There are, however, some adjustments. Design 2.0 provides updated operational guidance to link strategy with execution. The “Achieve

High Velocity Learning” Green LOE has been tightened, focusing on outcomes rather than processes. The tasks supporting all of the LOEs have been updated to establish new and ambitious goals that will spur us to accelerate our progress. This is an all-hands effort.

Like Design 1.0, Design 2.0 establishes the framework to guide our behaviors and investments this year and in the years to come. More specific details about programs and funding adjustments will be reflected in our annual budget documents.

SECURITY ENVIRONMENT

The United States Navy will aggressively compete, harnessing three forces that continue to shape our modern security environment:

The increasing use of the maritime domain—the oceans, seas, waterways, and seafloor.

The rise of global information systems, especially the role of data in decision making.

The increasing rate of technological creation and adoption.

It has been decades since we last competed for sea control, sea lines of communication, access to world markets, and diplomatic partnerships. Much has changed since we last competed.

We will adapt to this reality and respond with urgency. The future of the United States depends on the Navy's ability to rise to this challenge. As discussed in the 2018 NDS, China and Russia are deploying all elements of their national power to achieve their global ambitions. In addition, our competitors have been studying our methods during the past 20 years. In many cases, they are gaining a competitive advantage and exploiting our vulnerabilities. Their activity suggests that Eurasia could once again be dominated by rivals of the United States, our allies, and partners. China and Russia seek to accumulate power at America's expense and may imperil the diplomatic, economic, and military bonds that link the United States to its allies and partners. While rarely rising to the level of conflict, Chinese and Russian actions are frequently confrontational. And these actions are not only directed at the United States: China and Russia seek to redefine the norms of the entire international system on terms more favorable to themselves.

This global competition extends to the

maritime domain, including the seabed, and importantly, to newer domains: space and cyber. The new security environment is shaped by the following facts:

Our competitive advantage has shrunk and, in some areas, is gone altogether. We do not have the margins we once enjoyed.

Twenty-first century competition takes place over a wide range of conceptual approaches—from peaceful competition to violent conflict. This competition involves all elements of national power.

The competitive space has expanded to new domains, fueled by technological advances as well as the amount and availability of information.

The pace of competition has accelerated in many areas, achieving exponential and disruptive rates of change. As this pace drives yet more unpredictability, the future is becoming increasingly uncertain. Identifying mid- and near-term outcomes will become more challenging.

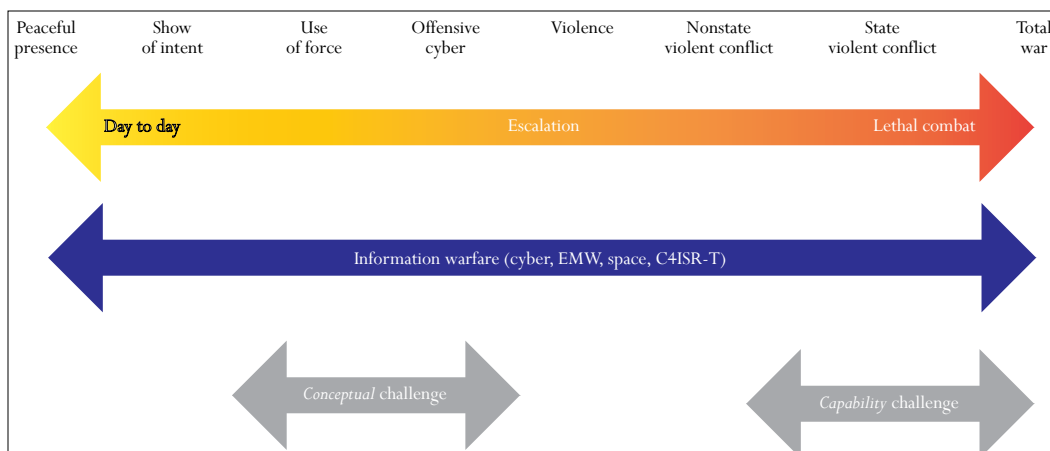
We cannot become overwhelmed by the blistering pace. This is a long-term ion. We must think in terms of infinite, instead of finite, time frames. Only sustainable approaches will prevail.

OUR RESPONSE

To recapture strategic momentum and grow our advantages in the maritime domain, the U.S. Navy will act with a sense of urgency and creativity. Three central themes will guide our response:

1. The Navy will become more agile.

The Navy will develop concepts and technology to “expand the competitive space” as the 2018 NDS directs. With the Joint Force, we will restore agility—conceptual, geographic, and



The competition-conflict spectrum for the military dimension of power. Navy concepts and capabilities should improve our ability to day-to-day operations, to escalation, to lethal combat.

Adapted by History Division

technological—to impose cost on our adversaries across the competition-conflict spectrum. Our efforts will be prioritized to exploit our strengths against our competitors’ weaknesses.

We will leverage the creativity and expertise of the Fleet. It is essential to develop options for the full spectrum of competition. Naval concepts and capability development will appreciate that this spectrum is fluid from peaceful presence to total war. Our competitors see the landscape as continuous; we will do so as well. Restoring agility means realizing that operating in the spectrum can be non-linear and simultaneous—our adversaries can operate at different levels of intensity in different domains at the same time. We will not let rigid thinking or self-imposed structures prevent us from operating in creative ways.

2. The Navy will compete in ways that are sustainable. Overextension in the short- and long-term—the pursuit of ends that are beyond the ways and means of the force—is self-defeat-

ing. Over the long timelines that characterize the current competition, the Navy will be ready to fire effectively first, but also be able to defend and return fire. We will aim to act as early as possible to deescalate any crisis on our terms and be ready for the next move. This will require that we sustain the fight with the logistics capabilities needed to refuel, rearm, resupply, and repair our operational forces.

3. The Navy, fighting with the Joint Force and with our allies and partners, will control the high end of maritime conflict. The Navy is a key enabler of the Joint Force’s ability to prevent China and Russia from controlling the Eurasian rimland and its adjacent seas. We will protect the sea lines of communication between the United States and its allies and partners.

FOUR CORE ATTRIBUTES

The current security environment demands that the Navy be prepared at all levels for decen-

tralized operations, guided by commander's intent. This operating style is reliant on clear understanding up, down, and across the chain of command. It is also underpinned by trust and confidence created by demonstrating character and competence. Our actions must always reflect our core values of honor, courage, and commitment. Four core attributes define our professional identity and serve as guiding criteria for our decisions and actions. Leaders at all levels must continue to educate and focus our sailors through example, education, and dialogue.

Integrity: our conduct must always be upright and honorable. Our behaviors as individuals, as teams, and as an organization must align with our values as a profession. We will actively strengthen our resolve to act consistently with our values.

Accountability: we are a mission-focused force. We achieve and maintain high standards. Our actions support our strategy. We clearly define the problem we are trying to solve and the outcomes to which we will hold ourselves accountable. In execution, we honestly assess our progress and adjust as required. We are our own toughest critic. Our leaders in command recognize the unique trust and confidence placed in them to operate independently. This is a profound responsibility.

Initiative: we strive to accomplish what needs to be done, even in the absence of direct orders. Leaders at all levels take ownership and act to the limit of their authorities. We foster a questioning attitude, and we encourage everyone to look at new ideas with an open mind. Our most junior teammate may have the best idea; we must be open to capturing and implementing that idea.

Toughness: we can take a hit and keep

going, tapping all sources of strength and resilience. Through rigorous training for operations and combat, the fighting spirit of our people, and the steadfast support of our families, we maintain a culture of warfighting excellence and hone our warfighting ethos. We do not give up the ship, we never give up on we never give up on ourselves. We are never out of the fight.

FOUR LINES OF EFFORT

As in Design 1.0, Design 2.0 is structured along four LOEs that are interrelated and mutually supporting. Together, the LOEs and their supporting tasks define our priority efforts.

LOE Blue: Strengthen Naval Power at and from the Sea

1. Strengthen the undersea leg of our nation's strategic deterrent. Be ready to deploy USS *Columbia* (SSBN 826) as quickly as possible—beating the current schedule—in order to preserve our ability to defeat the threat. Refresh and fortify the nuclear command and control system. Develop the nuclear capabilities directed in the *Nuclear Posture Review*.⁹²
2. Build 2d Fleet to full operational capability by 2019. Commander, 2d Fleet (C2F) and Commander, 3d Fleet (C3F) will be expeditionary: they will have the capability to command and control their forces while deployed forward. In order to retain the capability for force generation while C2F and/or C3F are deployed, Carrier Strike Group (CSG)-4 and CSG-15 will develop the capability and capacity to

⁹² *Nuclear Posture Review, 2018* (Washington, DC: Department of Defense, 2018).



Official Navy artist DM2 Robert Adam Malin's *Dawn* shows flight deck preparations on board USS *Carl Vinson* (CV 70) during RIMPAC '98, a biannual fleet exercise in the Pacific Ocean with the goal of enhancing the tactical capabilities of participating units in major aspects of maritime operations at sea. Acrylic on illustration board.

Art Collection, Naval History and Heritage Command, 98-110-C

generate forces, reporting directly to Commander, Fleet Forces Command (CFFC) and Commander, Pacific Fleet (CPF), respectively.

3. Continue to reinvigorate and strengthen the warfighting culture of the Navy through execution of the comprehensive review and strategic readiness review programs. In support of this, make any necessary adjustments to the command and control structure for the talent and capacity resident in the Afloat Training Groups. Aim to assign the capacity for training and certification to the accountable commander.
4. Establish data-driven decisions as a foundation for achieving readiness in our warfighting enterprises. Lead Type Commands (TYCOMs), supported by Systems Commands (SYSCOMs),

Budget Submitting Offices, and higher echelons will develop and maintain authoritative and accessible data for decision-quality information. We will strive to reduce cycle time in all aspects of the organization.

5. Refine, through execution and iteration, and in concert with the Joint Force, the dynamic force employment (DFE) concept. Use DFE creatively to impose costs on competitors and make our Navy stronger, more ready, and sustainable. Ensure Navy's development of DFE concepts is aligned with the Joint Force to achieve maximum effects.
6. Continue to mature the distributed maritime operations (DMO) concept and key supporting concepts. Design the Large Scale Exercise (LSE) 2020 to test the effectiveness of DMO. LSE 2020 must include a plan to incorporate feedback and advance concepts in follow-on wargames, experiments, and exercises, and demonstrate significant advances in subsequent LSE events.
7. Posture logistics capability ashore and at sea in ways that allow the fleet to operate globally, at a pace that can be sustained over time. Assess and develop options for improved ability and resilience to refuel, rearm, resupply, and repair.
8. Invigorate and continually reinforce our culture of mission command, which is an enduring advantage against any adversary. As stated in the charge of command, the ability of commanding officers to execute commander's in-

tent, using their initiative and creativity to fight, will enable victory.

9. As stated in “One Navy Team,” we will leverage inclusion and diversity within our teams to make better decisions. This will make us more creative, more competitive, and more operationally effective.

LOE Green: Achieve High Velocity Outcomes

1. Rapidly acquire key platforms and payloads:
 - Award the future frigate contract in 2020 to deliver as soon as possible (ASAP).
 - Award the large surface combatant contract in 2023 to deliver ASAP.
 - Award the large unmanned surface vehicle contract in 2023 to deliver ASAP.
 - Award the future small auxiliary contract in 2023 to deliver ASAP.
 - Award the future large auxiliary (CHAMP) contract in 2023 to deliver ASAP.
 - Contract for and field the family of underwater unmanned vehicles ([Lockheed Martin] Orca, Snakehead, Razorback, [General Dynamics] Knifefish) ASAP, and no later than (NLT) 2025.
 - Unmanned aerial vehicles:
 - Reach [Boeing] MQ-25 [Stingray] first flight in 2021 and initial operating capability ASAP.
 - Reach [Northrup Grumman] MQ-4C Triton initial operating capability in 2021.

- By the end of 2019, identify requirements across the family of systems to replace the [Boeing] F/A-18E/F [Super Hornet] and EA-18G [Growler] by 2030.

- Develop and field an offensive hypersonic weapon by 2025.
- Develop and field the family of laser weapons (low power lasers, high power lasers, surface Navy laser weapons system) beginning in 2019 and NLT 2025.

- ^a Improve the performance of our current enterprise networks in 2019. Modernize these networks under the [Next Generation Enterprise Networks Recompete NGEN-R contract.

2. Strengthen the synergy between development and dissemination of naval doctrine and naval capability:

- Establish a concept development hub (DEVGRUEAST) at C2F. Principally supported by the Naval War College (NWC), the Naval Warfare Development Command (NWDC), and the TYCOM Warfare Development Commands, it will form the Navy’s Center of Excellence for concept development.
- Establish a capability development hub (DEVGRUWEST) at C3F. Principally supported by Space and Naval Warfare Systems Command (SPAWAR), the Naval Postgraduate School (NPS), the

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- NWDC, and the TYCOM Warfare Development Commands, it will form the Navy's Center of Excellence for capability development.
- DEVGRUEAST and DEVGRUWEST will collaborate to exploit the constructive, iterative dynamic between capability and concept development.
3. Design and implement a comprehensive operational architecture to support DMO. This architecture will provide accurate, timely, and analyzed information to units, warfighting groups, and fleets. The architecture will include:
 - A tactical grid to connect distributed nodes.
 - Data storage, processing power, and technology stacks at the nodes.
 - An overarching data strategy.
 - Analytic tools such as artificial intelligence/machine learning (AI/ML), and services that support fast, sound decisions.
- The operational architecture will be designed to be extensible to Joint and coalition forces. It will include a development environment to rapidly generate enhancements and support its continued evolution.
4. Upgrade the plan-brief-execute-debrief (PBED) cycle to a plan-practice-perform-progress-promulgate (P5) cycle:
 - Red team the **plan** early to expose weaknesses and vulnerabilities as soon as possible.
 - **Practice** the plan under expected and casualty conditions.
 - **Perform** the event according to the plan, recording information for further analysis. Depart from the plan during execution if required, but do so deliberately, with an understanding of what assumptions have been abandoned.
 - **Progress** to a higher level of performance by analyzing planned outcomes versus actual performance. Review the original plan, practice, and performance data. Make adjustments to improve performance the next time.
 - **Promulgate** what has been learned.
 5. Focus Navy efforts for fielding AI/ML algorithms on areas that most enhance warfighting, training, and corporate decisions. By the end of 2018:
 - CFFC and CPF identify five priority warfighting problems for AI/ML to address.
 - Chief of Naval Personnel (CNP) and N7 identify five priority training problems.
 - VCNO identify five priority corporate problems.
 - ^a Demonstrate initial capability for each AI/ML application by the end of 2019.
 6. Maximize use of additive manufacturing (AM) to fabricate hard to source or obsolete parts, reduce cost, field more effective systems, and reduce reliance on vulnerable supply chains, through production at the point of need.
 - OPNAV N4, with the SYSCOMs in support, develop and issue means to certify each stage of the



Ronald Wong, *Operation Iraqi Freedom, Black Stallion 41 (MH-53E)*. Oil on canvas.
 Art Collection, Naval History and Heritage Command, 2007-095-01

- process, to include design, data transmission, printing, article test, and installation.
 - Field AM-produced metal parts in at least five current programs by the end of 2019.
 - If relief from current policies is required, recommend adjustments to better align policy with future technological trends.
7. Expand the use of live, virtual, and constructive (LVC) training to support the growing demands of the scale, complexity, and security of training and operations. LVC training capabilities must provide a realistic, accurate experience in a secure environment at all levels of classification.
- TYCOMs ensure unit-level training fully leverages LVC tools and systems.
 - Deliver an initial cross-domain solution by LSE 2020.

*LOE Gold: Strengthen Our Navy Team
 for the Future*

1. Continue to improve and modernize military personnel management and training systems through the Sailor 2025 program. Deliver mobile access, increased career choice and flexibility, easier movement back and forth between active and reserve components, expanded family support, and tailored learning.
- Provide commanding officers with

-
- a dashboard for talent management and risk monitoring by the end of 2020.
- Build a one-stop detailing marketplace for reenlistment and billet negotiation by the end of 2019. Implement rating modernization so sailors can explore opportunities and understand the training required to take a job in a different rate. Enable every sailor to negotiate for more than one tour to include opportunities like geographic stability, education, colocation with spouses, advancements for hard-to-fill locations, and special pays.
 - Deliver a new performance evaluation system by the end of 2021 that emphasizes meaningful, frequent, and timely feedback. Use a standards-based assessment that evaluates character and that values merit over tenure. Focus on enhancing coaching and individual development.
 - Modernize and integrate the personnel and pay systems to provide accurate auditable pay to all active and reserve personnel by the end of 2021. Create a single authoritative data environment for Navy personnel systems to permit the use of cutting-edge machine learning and data analytics by the end of 2024. Use commercial off-the-shelf, cloud-hosted modern technology.
 - Complete the transition to block learning and choose the training technology portfolio to deliver ready, relevant learning.
2. Stand up a three-star director for Warfighting Development on the OPNAV staff (OPNAV N7). This office will be responsible for coordinating and aligning the Navy's education, experimentation, exercise, and analytic efforts. It will align leader development across accession sources. Synergy between how we fight and how we learn will accelerate our combat effectiveness.
 3. Release a mobile version of MyNavy Portal that can be accessed without a common access card and allows leave submission and record access from a smartphone by the end of FY2020.
 4. Shift from multiple Personnel Support Detachments to two MyNavy Career Centers with 24 hours/7 days a week sailor and family customer service support by the end of 2019.
 5. Better align our Navy Reserves to fleet and warfighting, instead of administrative, roles.
 6. Establish the goals in "Laying the Keel" to advance leadership development for our enlisted force by the end of 2020. Create courses that focus on character, ethics, leadership, and decision making, and are facilitated by certified senior enlisted leaders. Continue to evolve chief petty officer (CPO) initiation to build senior line leaders with expertise and innovative thinking—consistent with the CPO creed.
 7. Use quantitative techniques, data-driven analysis, and other research to catalyze Navy leadership development by the end of 2020. Use science-based

-
- practices and training to support leader development and better decision making.
8. Continue the work started with the Navy Civilian Workforce Framework.
 - Develop Navy-wide guidance for Navy civilian acculturation that provides a consistent approach to acclimating civilians to our Navy mission and culture.
 - Create a structure for effectively developing civilian leaders through experience, education, training, and personal development.
 - Educate uniformed military members and civilians on effective personnel management.
 9. As outlined in the Navy Family Framework:
 - Provide for authoritative Navy information online.
 - Provide for spouse and family training and education to strengthen a sense of mission in families.
 - ^a Evaluate the effectiveness of support provided to families.
 - ^a Include assessment of command family support in our command inspections.
- Deepen naval integration with other services to realize the NDS and the NMS in multidomain, distributed operations. Integration with our natural partner, the U.S. Marine Corps, will continue to get top priority.
 - Work with the COCOMs and Joint Staff to support the development of joint operational concepts.
2. Maintain close alignment across the U.S. government.
 - Strengthen our relationships with other Executive Branch agencies and the Congress. Work to achieve a relationship of transparency in order to build mutual understanding and trust. Develop a cohesive approach to building and supporting a balanced and ready Navy.
 3. Strengthen the Navy's unique role in diplomacy. Our nation's history is replete with examples where the Navy has advanced the diplomatic element of national power.
 - Increase Navy International Programs Office contributions to strategic U.S. relationships.
 - Strengthen support for the North Atlantic Treaty Organization (NATO), especially for high-end operations at sea.
 - Mature Joint Forces Command-Norfolk as the NATO headquarters for high-end naval operations and warfare in the Atlantic theater.
 - Execute the work plans as set out in our maritime trilateral agreements between:

*LOE Purple: Expand and Strengthen
Our Network of Partners*

1. Further strengthen Navy and naval integration into the Joint Force.
 - Ensure the development of the naval operational architecture, to include the naval tactical grid, progresses in alignment with and in support of the development and fielding of the Joint tactical grid.



AW1 Kelly R. Evinger, Helicopter Anti-Submarine Squadron 8, kneels in the doorway of his SH-60F Seahawk, a turbine powered Navy helicopter. Evinger is an air crewman who operates the aircraft sensors and fires weapons as needed. AWs also may act as rescue swimmers. This perspective shows him flying astern of the aircraft carrier while engaged in combat operations as part of Operation Enduring Freedom. Morgan Ian Wilbur, *Crossing the Wake*, 2002. Oil on canvas.

Art Collection, Naval History and Heritage Command, 2002-093-01

- The United States, United Kingdom, and France.
- The United States, United Kingdom, and Japan.
- Continue to progress agreements and technology for information and intelligence sharing.
- Build on existing maritime intelligence and logistics partnerships with allied nations, and expand

relationships with partner nations to broaden and strengthen global maritime awareness and access.

4. Advance the Navy's partnership with industry.
 - Encourage collaboration between industry and the new requirements officer community. Continue to refine and optimize requirements, informed by the availability of mature technology.
 - Move the acquisition process to progress via faster, more frequent iterative steps for acquisition and capability development.
 - Expand dialogue at all levels with industry partners to increase shared understanding and reduce obstacles to more effective and efficient ways of doing business.
5. Enhance cooperation with academic and research institutions.
 - Securely connect Navy labs in the cloud.
 - Create a commercial cloud environment to accelerate collaboration with academia.
 - Use this environment to allow our workforce to be more agile and innovative, as we reimagine traditional workflows to maximize efficiency.
 - Leverage NPS to facilitate deeper exchanges between technology developers and warfighters, to inform rapid capability and concepts development.
 - Expand cooperation with academia beyond technical matters, to include social and decision sci-

ence to improve decision making in the Navy.

6. Reinforce relations with our neighbors.

Forge closer relationships between our Navy installations and host communities, both within the United States and abroad. Create new access opportunities, promote mutual security through drills and exercises, and build pride in and loyalty with the communities we serve.

END STATE

A dominant naval force that produces outstanding leaders and teams, armed with the best equipment, that learn and adapt faster than our rivals. Every person and every unit in the Navy

will maximize their potential and be ready for decisive combat operations.

CONCLUSION

The margins of victory are razor thin but decisive. We will remain the world's finest Navy by fighting each and every minute to achieve excellence in everything we do. Our rivals are intent on taking the lead from us—we must pick up the pace and deny them. We cannot be satisfied with achieving minimum standards—we are a Navy focused on being the best we can be, every day. I am counting on you. I am honored and proud to lead the Navy team.

~ John M. Richardson
Admiral, U.S. Navy
Chief of Naval Operations

THE NAVY AND NATION NEED A MARITIME STRATEGY

by Paul S. Giarra

U.S. Naval Institute *Proceedings*, 2017⁹³

Since the closing of the American frontier, U.S. Navy strategy has been both instrument and guide for U.S. national power, international engagement, opposition to hegemony and totalitarian regimes, and the global assertion of U.S. interests and values. When presidents have recognized the strategic salience of the Navy and lent their authority to maritime strategies, the Navy's strategy has become the national strategy. The combination of presidential backing and Navy strategic planning has produced maritime strategies of outsized geostrategic influence, with historic consequences. Today presents one of those junctures when the Navy should step up again to lead the thinking, strategies, plans, and capability development necessary in a challenging and competitive world. But first, there must be a viable Navy narrative.

Maritime strategies are contextual, reflect-

ing contemporary perceptions of threat and opportunity in an iterative value proposition that is essential to maintaining an effective Navy. As strategic circumstances have changed, the strategies they have shaped and in which they are reflected have changed in general syncopation. This has ensured that the Navy's strategic rationale for what a navy is for has been aligned with what it has to do, and that it has been expressed in a logical and broadly understandable way. This is the essence of the Navy narrative.

The Navy's strategy enterprise has been fundamental to operations and tactics as well as to the guiding vision that expresses what a U.S. Navy is for. It has depended on the Navy's intellectual bent, tempered by a seaman's experience and practicality. As an expression of commander's intent, previous maritime strategies have reflected central guidance that at the same time distributed authority. Not everyone can be a strategist, but when the strategic mechanism is working—when the strategy is well articulated, widely circulated, and popularly debated—all in the sea Services are able to understand and

⁹³ The original article came from Paul S. Giarra, "The Navy and Nation Need a Maritime Strategy," U.S. Naval Institute *Proceedings* 143, no. 12 (December 2017). Minor revisions were made to the text based on current standards for style, grammar, punctuation, and spelling.



American artist John Singer Sargent painted Theodore Roosevelt's official presidential portrait in February 1903. Standing with his arm akimbo, the 26th president of the United States exudes physical vitality and confidence. Oil on canvas.

White House Collection/White House Historical Association, 1903.1328.1

internalize strategy. This necessary popular relationship between the fleet and the strategic enterprise and the maritime strategy extends to landsmen as well, for maintaining a navy depends on the tangible and intangible appreciation and support of others.

THE LONG CYCLE

Navy strategic leadership has waxed and waned in three long cycles since the Civil War. The first cycle of Navy strategic leadership began with Alfred Thayer Mahan. It is no coincidence that he began to write at the same time the U.S. Naval Institute was founded. Each was a representation of the same compelling naval strategic impulse. At a time of dramatic international competition and shifting balances of power, Mahan's representation of the influence of sea power on history had precisely that effect of historical influence. He was seconded by the likes of Stephen B. Luce and William S. Sims, who drove the Navy to think about itself not just as a gunnery platform or engineering problem, but as a shaping force that affected its circumstances as well as reflected them.

President Theodore Roosevelt embraced Mahan's concept of naval-based national greatness as a strategic rationale and point in fact. His leadership in an ambitious national competition culminated in the Great White Fleet's "grand pageant of American sea power." He combined a great naval buildup with the hefty sinews of the United States' economy, industry, natural resources, and abundant and ambitious populace. In doing so, Roosevelt demonstrated how sea-power could shape, drive, and affect those other elements in a persuasive calculus of national power.

This was a symmetric maritime strategy. The measure of effectiveness at the time was

battleships in direct competition with other fleets. But the new U.S. fleet represented more than the industrial capacity necessary to build and maintain it. The Great White Fleet was an expression of the American desire to compete on a geostrategic basis with the other powers of the time and a symbol of the United States' emergence as a great power in its own right. This was a new direction for U.S. grand strategy, and the Navy was both the symbol and the means of the strategy.

The second cycle of Navy strategic leadership began in the interwar years. By the 1920s, war and depression had intervened. The surge of World War I naval building peaked in 1920, with 243 surface warships, before plummeting to 102 surface warships in 1921.⁹⁴ A post-war, isolationist United States was in no mood to underwrite naval power and endorsed naval disarmament. At the outset of the second cycle, the Navy was left to itself to quietly consider the long-brewing threat from Japan and how to defend the colonial Philippines. Nevertheless, this was a period of great clear-mindedness for the Navy, which set about the most difficult of tasks: talking itself out of deeply held doctrinal preferences for a Trafalgar-like, definitive Mahanian victory over the Imperial Japanese Navy in a short, sharp campaign.

Likewise inspired by Mahan, and encouraged by their own great naval victories over China and Russia around the turn of the century, Japan's admirals planned for the same battle, albeit without modernizing their approach. The difference was that the U.S. Navy was able to work through the exercise of changing its mind at the strategic and doctrinal level, and Japan never managed to divest itself of its pre-

⁹⁴ See "U.S. Ship Force Levels, 1886–present," Naval History and Heritage Command, 17 November 2017.

vailing strategic concept of a great fleet engagement.

The Navy received a great deal of political support in the interwar period, *sotto voce*, from President Franklin Roosevelt, who was not entirely constrained by the prevailing national isolationism, and more explicitly from Congressman Carl Vinson, who became the political father of the “Two-Ocean Navy.”⁹⁵ It is an indication of how far the Navy and he had to go that Vinson began laying the ground for the naval buildup to come by having to argue in the mid-1930s that the first task was to build to interwar treaty limits with modern ships.

In the meantime, the Navy was challenging every strategic, operational, and tactical preconception on the books, investing in enough transformative capabilities that it would be ready when the time came not just for expansion, but also for revolutionary technical and operational change. This brewing intellectual and strategic transformation preceded both political and budget authority. The Navy did not wait to be told to get ready, and not just because thinking did not cost much. Although isolation was the national policy, naval aviators could design aircraft carriers based on airplanes that did not exist, which in turn had to wait for engines to be designed that were powerful enough to lift a useful bomb load. And thinking was not against the law either. In the run-up to Pearl Harbor, submariners could consider the efficacy of unrestricted submarine warfare against Japan even while its conduct was literally illegal.

This was difficult and consuming work, and essentially the entire Navy was involved. Two decades of fleet problems, hundreds of war



Douglas Mitchie, *USS Olympia (C-6) in Hong Kong, 22 February 1898*. Oil on canvas.

Art Collection, Naval History and Heritage Command, 2013-002-001

games at the Naval War College, defining tactical innovation emerging from the Fleet, and thinking forward ensured that the Navy was ready with a fleet design when Carl Vinson passed his landmark Two-Ocean Navy Act in the summer of 1940. The interwar process of transformation was not perfect, and it was not complete by the time of the attack on Pearl Harbor, but virtually every World War II flag officer had attended the Naval War College before the war started. Interwar thinking and planning, when the Navy had time but no money, succeeded in articulating the need for and requirements of a great maritime strategy that would exemplify the nation’s naval ambitions and drive the rest of the national strategy through World War II. This institutional effort set up the cascade of naval building and authorizing legislation that was to follow, when the Navy had money but no time.

At its most fundamental, the interwar Navy was able to conceptualize and articulate its strategic purpose and goals to itself, the Congress, the president, and the American people. Unlike its turn-of-the-century antecedent, it was an

⁹⁵ The Two-Ocean Navy Act (a.k.a. the 1940 Vinson-Walsh Act) increased the size of the U.S. Navy by 70 percent—1.325 million tons—for combat tonnage at a cost of \$4 billion.

asymmetric maritime strategy of power, sustainment, and sea control that disadvantaged competing concepts of short wars and internal lines, with its denouement the decisive use of naval power against the shore. Numbers, materiel, logistics, jointness, and maneuver all played prominent roles. Time was a critical factor; this would not be a short war, and sustainment would be a key consideration. Destroying Japan's national economy and ability to wage war was a key strategic objective for the Navy. Like its strategic antecedent at the turn of the century, it was persuasive and broadly accepted. Its direct result was a U.S. Navy unprecedented in size and power, enabled by institutional clarity of vision and purpose. Even more so than its antecedents, this second-cycle maritime strategy informed a national strategy of external lines, forward deployment, sea-lane defense, and sea control that essentially pertained for the next 50 years.

Postwar reduction repeated several times during the Cold War. By the outbreak of the Korean War, the World War II[-era] U.S. Navy had shrunk from 833 surface warships and 28 fleet carriers to 161 surface warships and 11 fleet carriers. Despite the dramatic buildup of the Soviet Navy after the Cuban missile crisis, the post-Vietnam War low came in 1977: 182 surface warships and 13 fleet carriers.⁹⁶ The Navy was following, not leading.

The third cycle of Navy strategic leadership commenced in the aftermath of the war in Vietnam. As commander of the Pacific Fleet from 1976 to 1978, Admiral Thomas B. Hayward defied conventional wisdom. The strategic transformation he led began in his own thinking, as he read the war plans as 7th Fleet commander. War with the Soviet Union was going to escalate

rapidly to a nuclear exchange. There was to be little use, and no place, for the U.S. Navy.

Hayward recognized that the strategy of the time, which would send all the Pacific Fleet to the Atlantic to support a European war with the Soviet Union, was not only insufficient but also counterproductive. He saw that this reflexive shift was poor use of his fleet and also of the Navy; swinging the Pacific Fleet would not pressure the Soviets in a general war. The Trans-Siberian Railroad had been modernized and expanded, was handling 100 trains a day in peacetime, and could transport scores of Soviet divisions to the western fronts long before any transatlantic reinforcement could make a difference. Holding these divisions in the Soviet Far East would be essential to any war in Europe. Furthermore, Hayward concluded that the Navy was not taking advantage of its inherent mobility, flexibility, conventional striking power, and survivability. Doing so would require expanding fleet operational plans globally, escalating horizontally, and fighting in the Pacific as well as in the Atlantic.

Perhaps most important, his plan was developed as an alternative to an early and automatic resort to nuclear warfare. This was the deterrent irony at the core of the strategy: plan to fight to win to avoid having to fight. What began as the Pacific Fleet "Sea Strike" plan had obvious force structure and posture implications for all the Services. More important, it was a *maritime* strategy that was both practical and expansive. It leveraged the combat power and strategic influence of maritime forces in a national realignment of military posture that was able to address the nuclear conundrum of the Cold War on conventional warfighting terms.

Like Mahan and then the interwar naval leadership, Hayward had not waited to be asked.

⁹⁶ "U.S. Ship Force Levels, 1886–present."

The complex strategic formulation on which he had embarked as commander of the Pacific Fleet was not in his remit. Nevertheless, when Senator Sam Nunn stopped by Makalapa on his way through Hawaii on a fact-finding tour of U.S. defenses in the Pacific, Hayward was ready with his strategic conclusions and prescriptions. Nunn was the first of many to recognize the deceptively simple audacity of what became the maritime strategy of President Ronald W. Reagan's defense buildup in which Navy Secretary John F. Lehman Jr. played a pivotal role. As it had for Mahan and the pre-World War II Navy, this presidential imprimatur made all the difference in elevating Navy strategic thinking to national prominence and geostrategic effect.

THE CONTEXT OF MARITIME STRATEGIES

What, then, is the strategic context for the fourth cycle of Navy strategic leadership, a Navy narrative to garner that essential presidential imprimatur?

The Fleet and its platforms will continue to change, with new warfighting technologies emerging more rapidly than ever. Budgets are a perennial challenge, as is the ebb and flow of presidential and popular political support. Obviously, the United States is not now an emerging power rationalizing its naval power in Mahanian terms. The U.S. Navy is not trying to fight its way to the top; rather, it is striving to stay on top.

The context of the Navy, however, has not changed nearly as much. Addressing the British Parliament just before the outbreak of World War I on the largest estimates for British naval expense ever presented, Winston Churchill described what could be our own conjunction of naval and national strategies:

Two things have to be considered—first,

*that our diplomacy depends in great part for its effectiveness upon our naval position, and that our naval strength is the one great balancing force which we can contribute to our safety and to the peace of the world; secondly, we are not a young people with a blank record and a scanty inheritance.*⁹⁷

In his remarks, Churchill was addressing constant purpose, not transitory method. In fact, in the same address, he highlighted the transformative effects of oil and submarines on naval warfare and alluded to the eventual obsolescence of battleships: “two eggshells striking each other with hammers.”⁹⁸

Just as for Great Britain then, the effectiveness of the U.S. naval position, its great balancing force, its essential contribution to the nation's safety and to the wider security of the world, and the great U.S. naval heritage remain constants in the equation of naval strategy.

Nevertheless, there are four holdbacks to working through the U.S. Navy's narrative:

The first is the irony of success. The Cold War ended in such a way that the Navy walked away from the successes of Reagan, Lehman, and Hayward. This was to be the end of history, which some took literally, forecasting that the Navy would face no competition going forward.

Second, without ostensible competition, it was decreed the Navy would not need a strategy. In his June 1990 confirmation hearings, when asked what he thought of the Maritime Strategy, Chief of Naval Operations (CNO) Admiral Frank B. Kelso II responded, “We don't need one.” Soon

⁹⁷ Quoted in “Battleships, Submarines, and Oil,” *Army and Navy Register* 55, no. 1761 (18 April 1914): 486.

⁹⁸ “Battleships, Submarines, and Oil.”



On 27 March 1934, President Franklin D. Roosevelt signed the Vinson-Trammell Act to increase the Navy's treaty limits. Also present at the White House signing were Representative Carl Vinson, Assistant Secretary of the Navy Henry L. Roosevelt, and Representative Fred Britton.

Naval History and Heritage Command, NH 973

thereafter, the Navy strategic planning subspecialty was disestablished, the small community of Navy strategists was left to fend for itself, and the bones of the strategic planning enterprise were fought over by OpNav's [Office of the Chief of Naval Operations] three-stars.

Third, Goldwater-Nichols disestablished the CNO's responsibility as the Navy's strategic planner and distributed strategic planning authority in small portions without critical mass to the Office of the Sec-

retary of Defense, the Joint Staff, and the theater commanders.

Fourth, OpNav strategic planning influence passed to budget programmers, and platform preference as a strategy was not compelling. This has had a pernicious effect on Navy strategic leadership. The figurative result was that no one spoke for the Navy strategy, let alone for the Navy as a shaper of national strategy.

Still, there is room for optimism. The



DM2 Robert Adam Malin's painting, *Defenders of Freedom, Past and Present*, captures the moment when USS *Kitty Hawk* (CVA 63) pulls in to relieve USS *Independence* (CVA 62) in Pearl Harbor, where the World War II-era battleship USS *Missouri* (BB 63) is anchored in the background. Acrylic on illustration board.
Art Collection, Naval History and Heritage Command, 98-110-A

bones of Navy geostrategy are still solid.⁹⁹ Like Churchill's Royal Navy, "we are not a young people with a blank record and a scanty inheritance."¹⁰⁰ In fact, we have a lot to remember, to our credit and our benefit. Thinking through the maritime strategy is *terra oblii* (forgotten territory), not *terra incognita* (unknown or unexplored territory).

In a fourth cycle of Navy strategic leadership, two ingredients are indispensable. The first is strategic leadership in the person of the CNO, who can speak both to the Navy and for the Navy. The CNO must express what a navy

is for and thereby shape both the maritime and national strategies and the fleet operations that flow from that guidance. The CNO must express this Navy narrative without waiting to be asked, remit or no remit. This requires making the fundamental case that the strategy is the independent variable—not the budget, not particular ships or capabilities, and certainly not proposals for withdrawal and reduction.¹⁰¹

Second, as a forcing function, the fleet is going to have to train, equip, and operate on the world ocean like a great navy of great inheritance. As in each of the first three cycles, the fourth-cycle Navy will have to be a fighting navy, with all the at-sea and shore-based sustainability and industrial base necessary to support it.

The justification for a muscular deterrent

⁹⁹ The Navy has many resources to call on: numerous self-selected Navy strategists, the Naval War College strategy curriculum, and Center for Naval Analysis [CNA]; the Naval Postgraduate School strategic planning curriculum and many other civilian academic resources; [federally funded research and development centers] FFRDCs like CNA; the national laboratories; and university affiliated research centers all are traditionally invaluable resources.

¹⁰⁰ Randolph S. Churchill, *Winston S. Churchill: Young Statesman, 1901–1914* (Hillsdale, MI: Hillsdale College Press, 2007).

¹⁰¹ See Sam LaGrone, "Randy Forbes to CNO Greenert: 'The Navy Desperately Needs a Strategy'," USNI News, 1 October 2014.



A Tomahawk cruise missile is launched from the battleship USS *Missouri* against Iraqi targets as Operation Desert Storm commences. More than 100 such cruise missiles were fired in the opening hours of the war. Chip Beck, *Cruisin' for a Bruisin'*, 1991. Watercolor on paper.
Art Collection, Naval History and Heritage Command, 91-159-0

rests in the enduring Cold War insights of Admiral Hayward: war has become too terrible to lose and too terrible to fight. Neither doing nothing nor not doing enough are options. Remembering Churchill's description of "eggshells and hammers," and the temptation of preemption, we must ensure that our competitors are never tempted to move beyond phase zero.¹⁰²

This requires taking competitor navies into account, as did Mahan and Theodore Roosevelt,

¹⁰² Lt C. C. Gill, USN, "Professional Notes," U.S. Naval Institute *Proceedings* 40, no. 4 (July–August 1914): 1811.

but also accounting for the Navy's influence against the shore, as did Franklin Roosevelt and Hayward. This requires an iterative emphasis on the fleet's sustainment and transformation. This will be no short deterrent campaign, and any failure would not bring a short war. Furthermore, advanced technology will be important but not necessarily determinative.

Great naval strength will require fleet expansion in parallel with transformation and worldwide deployments. Numbers of ships and squadrons count; although there is much more

to a strategy than numbers, and it is fallacious to make those numbers the bottom line of any strategic argument. That said, it would be good to remember that the surge of the Navy into the Pacific in 1943 and 1944, in what amounted to a strategy of power, “changed everything” for our commanders and our strategy:

At the operational level, nothing prepared the Navy to employ the explosion of naval production that took place in 1943 and 1944. Fifteen fast aircraft carriers were put into commission in 1943. Thus was born the idea of a single carrier task force composed of three- and four-carrier task groups. The ability to concentrate or disperse gave [Admiral Raymond A.] Spruance and his carrier boss, [Admiral] Marc A. Mitscher, tremendous flexibility.

*They realized during the February 1944 strike on Truk Atoll that it was no longer necessary to hit and run. There had been no precedent for this. Instead of hitting and running, relying on mobility and surprise, they could hit and stay, relying on sheer combat power, both offensive and defensive. That changed everything.*¹⁰³

¹⁰³ See Christopher Nelson, “‘The Fleet at Flood Tide’: A Conversation with Author James D. Hornfischer,” Center for International Maritime Security, 7 December 2016; and James D. Hornfischer, *The Fleet at Flood Tide: America at Total War in the Pacific, 1944–1945* (New York: Bantam Books, 2016).

This means the Navy has to both guide and reflect the national impulses for power, the good offices of international engagement, insistent opposition to hegemony and totalitarian regimes, and the global assertion of U.S. interests and values.

CONCLUSION

Maritime geography has not changed, nor have the basics of maritime strategy. Yale Professor Nicholas J. Spykman’s prescient observations in 1942 and 1944 regarding the postwar United States’ power position apply directly to today’s world: “Who controls the rimland, rules Eurasia; who rules Eurasia controls the destinies of the world.”¹⁰⁴ He foresaw a postwar alliance with Japan to control China: “a threat not only to Japan, but also to the position of the Western Powers in the Asiatic Mediterranean.”¹⁰⁵

Perhaps most tellingly, he saw this Asiatic Mediterranean in the marginal seas of the western Pacific as controlling China’s access to the Pacific Ocean and the sea lanes of communication connecting the Indian and Pacific oceans. For the Navy’s strategic planning enterprise, that observation is a good point of departure.

¹⁰⁴ Nicholas J. Spykman, *America’s Strategy in World Politics: The United States and the Balance of Power* (Piscataway, NJ: Transaction Publishers, 2007); and Nicholas John Spykman, *The Geography of the Peace*, ed. Helen R. Nicholl (New York: Harcourt, Brace, 1944). See the discussion by Francis P. Sempa, “Nicholas Spykman and the Struggle for the Asiatic Mediterranean,” *Diplomat*, 9 January 2015.

¹⁰⁵ Sempa, “Nicholas Spykman and the Struggle for the Asiatic Mediterranean.”

SEAPOWER IN SUPPORT OF NATIONAL SECURITY

*by General Joseph Dunford Jr., Admiral Jonathan W. Greenert,
and Admiral Paul F. Zukunft*

A Cooperative Strategy for 21st Century Seapower, 2015¹⁰⁶

The sea Services operate in the world's oceans to protect the homeland, build security globally, project power, and win decisively. This ability to maneuver globally on the seas and to prevent others from using the sea against our interests constitutes a strategic advantage for the United States. Carrier strike groups with embarked airwings, as the naval forces' preeminent strike capability, and amphibious task forces with embarked Marines, along with surface combatants, submarines, and Coast Guard cutters, provide flexible and sustainable options from the sea to the littoral in support of the following naval missions: defend the homeland, deter conflict, respond to crises, defeat aggression, protect the maritime commons, strengthen partnerships, and provide humanitarian assistance and disaster response.

We organize, train, and equip naval forces to accomplish these missions through the five

essential functions: all domain access, deterrence, sea control, power projection, and maritime security. We employ these functions in a combined-arms approach as the summation of U.S. seapower, providing a unique comparative advantage for the Joint Force and the nation.

ALL DOMAIN ACCESS

All domain access is the ability to project military force in contested areas with sufficient freedom of action to operate effectively. In today's security environment, that access is increasingly contested by state and nonstate actors that can hold even our most advanced forces and weapons systems at risk with their own sophisticated antiaccess/area denial strategies.

We must be able to achieve access in any domain. That means altering how we plan and coordinate actions in the air, sea, land, space, and cyberspace domains, identifying and leveraging the right capability mix to assure access and freedom of action.

~ Admiral Jonathan W. Greenert

¹⁰⁶The original work came from *A Cooperative Strategy for 21st Century Seapower* (Washington, DC: Department of the Navy, Headquarters Marine Corps, Coast Guard, 2015). Minor revisions were made to the text based on current standards for style, grammar, punctuation, and spelling.



While providing gunfire support to harass the Iraqi troops in Kuwait in preparation for a possible amphibious landing, USS *Missouri* (BB 63) was fired upon by an Iraqi silkworm antiship missile. By the use of infrared flares and chaff, the missile's guidance was confused. It crossed close astern of the *Missouri* and was engaged and shot down by HMS *Gloucester* (D 96). John Charles Roach, *USS Missouri under Attack by Iraqi Silkworm*, 1991. Oil on canvas board.

Art Collection, Naval History and Heritage Command, 92-007-U

Employed in coordination with the Navy–Marine Corps team's sea control and power projection capabilities, all domain access allows Joint Force maritime component commanders to provide cross-domain capability to the Joint Force through the following elements:

- Battlespace awareness, which provides: persistent surveillance of the maritime domain, including the landward portion of the littoral, and the information environment; penetrating knowledge
- of the capabilities and intent of our adversaries; an understanding of when, where, and how our adversaries operate; and a comprehensive grasp of the environment in which our forces will operate.
- Assured command and control, which provides commanders the ability to maintain robust, resilient, and agile networks for the command and control of forces in contested environments.

-
- Cyberspace operations, including both defensive and offensive measures, which preserve the ability to utilize friendly cyberspace capabilities; protect data, networks, net-centric capabilities, and other designated systems; and project power by the application of force in or through cyberspace.
 - Electromagnetic maneuver warfare (EMW), a relatively new concept, which blends fleet operations in space, cyberspace, and the electromagnetic spectrum with advanced nonkinetic capabilities to create warfighting advantages.
 - Integrated fires, which provide an expanded range of kinetic and nonkinetic options for the commander to fully exploit and, when necessary, attack adversary capabilities and vulnerabilities.

Cross-domain synergy is achieved when these elements are synchronized, providing Joint Force commanders a range of options in all domains to defeat antiaccess/area denial strategies. These options include greater emphasis on force-wide, coordinated nonkinetic capability and countertargeting techniques as opposed to engaging each threat with increasingly expensive kinetic weapons. In short, we must become more comprehensive in our offensive capability to defeat the system rather than countering individual weapons. As an example, we may more effectively defeat antiship ballistic and cruise missile threats by making use of superior battlespace awareness to employ cyber and EMW capabilities in an integrated fires approach that defeats the threat before it has even been launched.

Assuring access in all domains begins in

peacetime through routine regional operations with the naval and maritime forces of our allies and partners. These efforts enhance relationships, build capability and capacity, and lead to access in the maritime environment. When naval forces set the conditions for access in peacetime, we enhance our interoperability with allies and partners to more readily achieve all domain access during conflict.

Naval forces achieve all domain access as part of joint operations, improving relationships and deterrence in peacetime and enabling success against our enemies in wartime. This function supports all naval missions.

DETERRENCE

We achieve deterrence by convincing potential enemies that they cannot win or that the cost of aggression would be unacceptable.

Strategic nuclear deterrence is guaranteed by Navy ballistic missile submarines (SSBN) that provide the United States with an assured, precise, nuclear second-strike capability. Always at sea, SSBNs patrol undetected, remaining in continuous communication and capable of immediate response. As the most secure and survivable element of our nation's nuclear triad, it is imperative that our sea-based nuclear forces be maintained at peak readiness and fully resourced.

Conventional deterrence is provided by naval forces through the overwhelming combat power of our carrier strike groups with embarked airwings; surface and subsurface combatants with precision attack weapons; and the scalable, deployable, expeditionary combat power of Marine Expeditionary Forces (MEF), Marine Expeditionary Brigades [MEB], and Marine Expeditionary Units [MEU] employed from various combinations of amphibious ships, mar-



Promoting global security through international cooperation, Adm Michael G. Mullen supported the “1,000 Ship Navy,” which would be a “free-form, self-organizing coalition of partners.” More than a number, the effort would make effective use of the best resources of Coalition members in the places they were needed. In this image, USS *John C. Stennis* (CVN 74) provides air support to Coalition partners in Afghanistan. Morgan Ian Wilbur, *Naval Nocturne, USS John C. Stennis*, 2009. Oil on canvas.

Art Collection, Naval History and Heritage Command, 2009-020-05

itime prepositioning, and forward bases. The Coast Guard maintains a continuous presence in our ports, internal waterways, along our coasts, and offshore, providing an additional layer of defense against maritime threats. Together with multimission ballistic missile defense-capable ships, these naval forces offer a wide range of credible deterrent options that are agile, flexible, and scalable. They are also positioned to rapidly respond to defend the homeland and our allies should deterrence fail.

This function supports the naval missions of

defending the homeland, deterring conflict, and strengthening partnerships.

SEA CONTROL

Sea control allows naval forces to establish local maritime superiority while denying an adversary that same ability. Forward naval forces employ a full spectrum of layered capabilities for the destruction of enemy naval forces, suppression of enemy sea commerce, and protection of vital sea-lanes, including ports of embarkation and debarkation, which enables strategic sealift



Years of supplying resources to the global war on terrorism resulted in the reduction of the Navy's presence in the Pacific Ocean. Adm Jonathan Greenert sought to "rebalance" the Navy's assets by increasing its presence and replacing or renovating older ships. Here, USS *George Washington* (CVN 73) departs Yokosuka, Japan, returning to the United States for a period of refueling and complex overhaul, as seen from the deck of USS *Blue Ridge* (LCC 19). Morgan Ian Wilbur, *USS George Washington Departs Yokosuka, Japan*, 2015. Oil on canvas. Art Collection, Naval History and Heritage Command, 2015-012-08

and facilitates the arrival of follow-on forces. The essential elements of sea control are surface warfare, undersea warfare, strike warfare, mine warfare, air and missile defense, maritime domain awareness, and intelligence, surveillance and reconnaissance.

The centerpieces of naval capability remain the Carrier Strike Group and Amphibious Ready Group. . . . These ships, aircraft, Sailors, and Marines have deterred and defeated aggression since World War II and will continue to do so well into the future.

~ Admiral Jonathan W. Greenert

Establishing sea control may require projecting power ashore to neutralize threats or control terrain in the landward portion of the littorals. Similarly, projecting and sustaining power ashore requires establishing sea control in the adjoining seas and airspace. Because of this, sea control and power projection are mutually reinforcing. This function supports the naval missions of defending the homeland, defeating aggression, and strengthening partnerships.

POWER PROJECTION

In a broad sense, power projection is the ability of a nation to apply all or some of its elements of national power—diplomatic, informational, military, or economic—to respond to crises, contribute to deterrence, and enhance regional stability.

Naval power projection includes conventional strikes against targets ashore, integrated kinetic strikes and nonkinetic fires against enemy forces, advance force operations, raids, and all forms of amphibious operations, from ship-to-objective maneuver and sea-based fire support to forces ashore to missions conducted by Naval Special Warfare and Special Operations Forces. Navy strike forces led by aircraft carriers, surface combatants, and other ships, as well as submarines provide long-range, sea-based strike capabilities. Naval expeditionary forces can project power deep inland to disrupt the enemy, destroy enemy forces, and seize terrain in support of a joint campaign.

Power projection also depends upon our ability to sea-base capabilities and leverage Military Sealift Command's strategic sealift and logistics support, as well as Joint Force aerial refueling, and the global strategic laydown of our bases and facilities that safeguard, deliver, and sustain our forces. Naval logistics integration is

a key enabler of our ability to sustain forces operating from the sea. Historically, the capability to sustain distant operations has served as a cornerstone of naval power projection.

Naval power projection capabilities also facilitate other elements of "smart power" missions in the form of humanitarian assistance and disaster response, as demonstrated in the 2010 earthquake in Haiti, the 2011 tsunami in Japan, and the 2013 typhoon in the Philippines. Positioned to respond rapidly to disasters in key regions, forward naval forces working with allies and partners are ready to save lives, provide immediate relief, and set the conditions for effective civilian response without relying on damaged or inaccessible ports or airfields ashore. This function supports the naval missions of defending the homeland, responding to crises, deterring conflict, defeating aggression, and providing humanitarian assistance and disaster response.

The Coast Guard's vast array of authorities is unique—we are a regulatory agency, a federal law enforcement organization, and one of the Nation's five armed services. We sustain mission excellence by combining our authorities and competencies with the significant capacity of our sister services.

~ Admiral Paul F. Zukunft

MARITIME SECURITY

Maritime security protects U.S. sovereignty and maritime resources, supports free and open seaborne commerce, and counters weapons proliferation, terrorism, transnational crime, piracy, illegal exploitation of the maritime environment, and unlawful seaborne immigration.

Naval forces provide maritime security in the maritime commons and the seaborne ap-



The guided-missile cruiser USS *Antietam* (CG 54) pulls alongside the Navy's forward-deployed aircraft carrier USS *Ronald Reagan* (CVN 76) during a refueling in the Philippine Sea, 21 June 2018. The *Ronald Reagan*, flagship of Carrier Strike Group 5, provides a combat-ready force that protects and defends the collective maritime interests of its allies and partners in the Indo-Pacific region.

Official U.S. Navy photo, courtesy of PO2 Kaila Peters

proaches to our nation. The United States manages critical mineral and marine resources in our 4.5 million square mile exclusive economic zone (EEZ) and maintains internationally recognized search and rescue responsibility in the larger Western Hemisphere transit zone. Operating in and beyond our EEZ, Coast Guard and Navy ships and aircraft are the forward edge of the nation's layered defense, developing maritime domain awareness, establishing effective maritime governance, and protecting the homeland.

Maritime security supports U.S. efforts to

uphold the laws, rules, and norms that govern standards of behavior in the maritime commons for transit, trade, and the pursuit of natural resources. Particularly important is cooperation with other coast guards to address both military and nonmilitary state-sponsored challenges to sovereign rights.

We conduct maritime security operations by locating and monitoring vessels suspected of carrying illicit cargo or persons. If required, we intercept and board these vessels in support of U.S. law or international sanctions. Operating with the Coast Guard's unique legal authorities, naval forces combat the illegal drug trade, human trafficking, and the unlawful exploitation of natural resources, particularly in the Western Hemisphere. Maritime security operations further support the broad maritime governance activities of the United States. These include assuring access to ice-covered and ice-obstructed waters in the Arctic and Antarctic.

Because all nations share in the collective benefits of maritime security, it is a promising area for expanded cooperation with our allies and partners. Through multinational exercises and training, we will conduct maritime security force assistance to combat transnational organized crime and protect fisheries and maritime commerce. This function supports the naval missions of defending the homeland, protecting maritime commons, and strengthening partnerships.

LITTORAL OPERATIONS IN A CONTESTED ENVIRONMENT

by General Robert B. Neller and Admiral John M. Richardson
2017¹⁰⁷

1. Purpose

- a. The purpose of this concept is to describe “naval operations in the littoral environment in light of emerging threats” in order to provide a unified framework for Navy-Marine Corps innovation. It places a renewed emphasis on fighting for and gaining sea control, to include employing sea-based and land-based Marine Corps capabilities to support the sea control fight.
- b. This concept introduces ideas on how naval forces could be organized, trained and equipped to enhance their ability to operate in

contested littoral environments.¹⁰⁸

Included among those ideas are: additional, versatile force options; a wider application of existing doctrine; and the more flexible employment of current, emerging, and some potential capabilities. To confirm their integral merit, the ideas put forth in this concept require further testing and refinement through detailed wargaming, experimentation, and exercises. It is expected that these activities will invigorate and advance naval operational art and stimulate creativity on how to exploit the inherent synergy of integrated Navy and Marine Corps

¹⁰⁷ The original work came from *Littoral Operations in a Contested Environment, 2017* (Washington, DC: Headquarters Marine Corps, Department of the Navy, 2017). Minor revisions were made to the text based on current standards for style, grammar, punctuation, and spelling.

¹⁰⁸ The term *contested* is used to encompass both the uncertain and hostile environments as defined in joint doctrine. An uncertain environment is one in which host government forces, whether opposed to or receptive to operations that a unit intends to conduct, do not have totally effective control of the territory and population in the intended operational area. A *hostile* environment is one in which hostile forces have control, intent, and capacity to effectively oppose or react to the operations a unit intends to conduct.



A landing craft utility (LCU) attached to Naval Beach Unit 7 prepares to depart the well deck of forward-deployed amphibious assault ship USS *Bonhomme Richard* (LHD 6) to retrieve Marines after completing a simulated amphibious assault in support of exercise Talisman Saber 2013. Talisman Saber is a biennial exercise that enhances multilateral collaboration between U.S. and Australian forces for future combined operations, humanitarian assistance, and natural disaster response.

Official U.S. Navy photo, courtesy of MC SA Edward Gutierrez III

- capabilities. Of particular importance, practical application of the concept during live exercises will allow naval forces to identify the inevitable seams and capability limitations that must be resolved.
- c. Following this rigorous testing and refinement process, the ideas determined to have merit will generate changes to doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy (DOTMLPF-P) and influence operational planning and

execution of integrated Navy and Marine Corps operations on and from the sea.

2. Scope

- a. As described in *A Cooperative Strategy for 21st Century Seapower* and the *Marine Corps Operating Concept*, all domain access is the ability to project military force in contested areas with sufficient freedom of action to operate effectively.¹⁰⁹ This concept addresses the littoral

¹⁰⁹ *A Cooperative Strategy for 21st Century Seapower*, 19.

component of all domain access by examining options for integrated Navy-Marine Corps operations to overcome sea denial forces in contested littoral environments.

- b. This concept is derived from an assessment and comparison of friendly and adversary capabilities in the near future. It spans a range of naval operations that extends from forward postured formations conducting crisis response in uncertain environments on one end to larger formations established to conduct significant contingencies in openly hostile environments on the other.

- i. **Crisis Response Operations in Uncertain Environments.**

As recent history has ward-postured naval forces frequently conduct noncombatant evacuations, embassy reinforcements, humanitarian assistance/disaster response, and other crisis response operations in situations where state or nonstate actors possess some measure of sea denial capabilities. Because friendly naval forces are often responding to crises for humanitarian purposes, they normally operate under rules of engagement that restrict preemptive offensive action to eliminate potential threats.

- ii. **Contingency Operations in Hostile Environments.**

A number of state actors

possess significant sea denial capabilities and capacities. Some nations are demonstrating an increasing pattern of aggressiveness by employing proxy forces against their regional neighbors as a means of asserting control over disputed geography. As a result, the potential for confrontation has been growing, particularly in the Western Pacific, the Baltics, and the Eastern Mediterranean. In such cases, friendly naval forces that are forward-postured, or surged from other regions, may be called upon to conduct contingency operations in support of allies and partners. In such contingencies, friendly naval forces play a critical role in deterring escalation by demonstrating that they represent credible force. This concept espouses ideas that may be useful both in deterring and winning such conflicts; however, major combat operations (MCO) and campaigns versus peer competitors are beyond the scope of this concept.

- c. While naval forces normally operate under a Joint Force commander (JFC) and often utilize enablers provided by other members of the joint team, this concept is focused on the Navy-Marine Corps forces assigned to a fleet commander or

a Joint Force maritime component commander (JFMCC). It therefore does not address joint integration beyond the fleet/JFMCC context. This concept is, however, consistent with and fully supportive of the emerging family of joint concepts.

3. Background

a. **The Littoral Battlespace.** Joint doctrine defines the *maritime domain* as consisting of the “oceans, seas, bays, estuaries, islands, coastal areas, and the airspace above these, including the littorals.” Joint doctrine also says the *littoral* is comprised of two segments. The *seaward* portion is that area from the open ocean to the shore that must be controlled to support operations ashore.¹¹⁰ The *landward* portion is the area inland from the shore that can be supported and defended directly from the sea. Today, the range of modern sensors and weapons extends hundreds of miles both seaward and landward, blurring the distinction between operations at sea and on land and necessitating an operational approach that treats the littorals as a singular, integrated battlespace. Depending on a given situation, the cognizant naval commander’s assigned operating area should include a sufficient portion of the landward battlespace to enable rapid engagement of threats therein.

b. **The Need for a Paradigm Shift.** During the immediate post-Cold War era, the maritime environment was largely uncontested. As a result, the Navy and Marine Corps were able to focus on the capabilities that support maritime power projection unfettered by a corresponding need to fully invest in those capabilities required to establish sea control. The luxury of this presumptive maritime superiority meant that the capabilities, tactics, techniques, and procedures (TTP) associated with fighting at sea, along with the idea that maritime power projection might need to be conducted in support of sea control, were allowed to wane. In fact, the increasingly contested operating environment marks a return to the historic norm, with the added challenge posed by twenty-first century sensors and weapons. Friendly naval forces now routinely face land-based and sea-based threats employed by state and nonstate actors who are implementing sea denial strategies.¹¹¹ Armed with increasingly formidable sea denial capabilities, fu-

¹¹⁰ *Joint Intelligence Preparation of the Operational Environment*, JP 2-01.3 (Washington, DC: Department of Defense, 2009).

¹¹¹ While the defense community has adopted the term *antiaccess/area denial* (A2/AD) as shorthand to describe this situation, that term is highly problematic in two fundamental ways. The first is that it has created the impression outside the naval Service that we face an impenetrable “wall at sea” that cannot be overcome. The second is the misperception that this is a new problem when, in fact, such strategies have been employed since at least the fifth century BC, when the Greeks employed what is more properly called a *sea denial* strategy against the Persians. See Sam J. Tangredi, *Anti-Access Warfare: Countering A2/AD Strategies* (Annapolis: Naval Institute Press, 2013).

ture adversaries may be capable of controlling choke points, holding key maritime terrain, or denying freedom of action and maneuver within the littorals by imposing unacceptable risk to forces at ever increasing ranges. Additionally, some potential adversaries are attempting to expand their sea denial capabilities into the ability to achieve sea control. These conditions call for a paradigm shift and the reinvigoration of a unified naval approach that effectively integrates sea control and maritime power projection capabilities. To do that effectively, it is important to recognize the major factors that impact naval operations:

- i. We face potential adversaries that operate from a position of relative advantage in close proximity to their territory and basing networks, while we operate globally, in remote locations, with extended lines of communication. Some adversaries have significant capacity advantages, especially in precision weapons, shore-based sensors, and air and surface platforms within the region, which can negate our capability advantages.
- ii. The new long range, precision missile era has added a landward dimension to naval combat, even for missions where the primary focus is at sea.
- iii. Some adversaries have field-

ed advanced undersea capabilities that may challenge friendly naval operations.

- iv. Even in peacetime, state and nonstate actors employ space, cyberspace, and electromagnetic spectrum (EMS) capabilities, as well as information operations, against friendly naval forces. Adversaries may use these capabilities in attempts to deny, degrade, and exploit our use of our historic command, control, communications, computer, intelligence, surveillance, and reconnaissance (C4ISR) strengths.
 - v. Crisis response operations may be conducted with constrained rules of engagement to mitigate escalation, thereby limiting opportunities to shape the battlespace.
 - vi. Large overseas bases offer economy of scale but are also vulnerable.
 - vii. Large ships offer superior endurance and flexibility for forward presence but are lucrative targets.
 - viii. Geography matters—especially key maritime terrain and hydrography.
- c. **Naval Integration.** Recognizing the growing threat, beginning in 2006 successive Chiefs of Naval Operations (CNO) and Commandants of the Marine Corps (CMC) published a series of strategy, concept, and guidance documents, as



A humvee launches from an LCU assigned to amphibious dock landing ship USS *Whidbey Island* (LSD 41). *Whidbey Island* is deployed as part of the Bataan Amphibious Ready Group, supporting maritime security operations and theater security cooperation efforts in the U.S. 5th Fleet area of responsibility.

Photo courtesy of MC3 James Turner

well as professional journal articles, which increasingly called for more flexibility in task organizing and employing Navy and Marine Corps forces and capabilities.¹¹² Two of the Service chiefs summarized the issue succinctly in a professional journal by stating that the Navy and Marine Corps cannot “confront events in the littorals as carefully segregated specialists” because the “changing set of challenges in the emerging

security environment requires a naval team that is smoothly integrated and easily adaptable to new situations.”¹¹³ *A Cooperative Strategy for 21st Century Seapower* outlines the need for the naval Service to develop new warfighting concepts which identify the capabilities and solutions required to gain and maintain access and freedom of action in the global commons.

- d. **Concept Development Guidance.** Given the foregoing, at the Navy-Marine Corps Warfighter Talks conducted on 10 June 2015, senior U.S. naval leadership, using a framework spanning crisis response in uncertain environments and contingencies in hostile environments, issued guidance to develop the *Littoral Operations in*

¹¹² Most prominent among them are the 2007 and 2015 versions of the maritime strategy, the 2006 and 2010 editions of the *Naval Operations Concept: Implementing the Maritime Strategy* (Washington, DC: Department of the Navy, Headquarters Marine Corps, Coast Guard, 2010); the *Marine Corps Operating Concept: How an Expeditionary Force Operates in the 21st Century* (Washington, DC: Headquarters Marine Corps, 2017); the *36th Commandant's Planning Guidance, 2015: Innovate, Adapt, Win* (Washington, DC: Headquarters Marine Corps, 2015); the *37th Commandant's FRAGO 01/2016: Advance to Contact* (Washington, DC: Headquarters Marine Corps, 19 January 2016); and the CNO's *A Design for Maintaining Maritime Superiority*.

¹¹³ Amos and Greenert, “A New Naval Era.”

a *Contested Environment* concept. The word *littoral* was specifically chosen to frame the content in a manner that is much broader than just amphibious operations. The CNO and CMC endorsed the consensus position to explore a more integrated application of Navy and Marine Corps capabilities in operations on and from the sea. This included considering new, scalable models of command and control unconstrained by current force constructs and terminology.

e. **Concept Development Events.**

In August 2015, the deputy chief of Naval Operations for Operations, Plans and Strategy, and the deputy commandant for Combat Development and Integration issued a planning order that formalized the tasks and guidance to the concept development team. Accordingly, in September 2015, the writing team presented a plan of actions and milestones to the Naval Board, which had oversight authority for the project. The concept development plan, conducted as a collaborative effort between the Navy and Marine Corps, included a series of workshops, a “capabilities” game run by the Center for Naval Analyses (CNA) in December 2015, and the annual Naval Service Game in February 2016. The two wargames provided critical venues wherein sailors and Marines from the operating forces were able to examine key ideas and provide insights

to the concept development team.

f. **Literature Review.** In addition to the prescribed activities and events, the concept development team conducted an extensive literature review. This included research on littoral operations in general as well as specific related topics. These topics included adversary sea denial/sea control strategies, sensor and weapon capabilities, naval command and control, and naval operational art. These writings allowed the team to leverage the insights of historians, naval theorists, allies, intelligence analysts, and experienced naval leaders over time in order to identify the considerations and enduring truths that informed the concept. Naval personnel who will be engaged in testing and refining this concept would be well served by leveraging the bibliography provided in appendix C. At a minimum, for a thorough understanding of the nature and theory of littoral operations, they should start with *Fleet Tactics and Coastal Combat* by retired U.S. Navy Captain Wayne P. Hughes Jr., professor emeritus of the Naval Postgraduate School, and “On Littoral Warfare” by Milan Vego, professor of Joint military operations at the Naval War College.¹¹⁴

¹¹⁴ Hughes, *Fleet Tactics and Coastal Combat*; and Milan Vego, “On Littoral Warfare,” *Naval War College Review* 68, no. 2 (2015). Dr. Vego’s article offers a number of thought-provoking force structure recommendations that helped inform, but are not mirrored in, this concept.



A Lockheed Martin F-35B Lightning II short takeoff/vertical landing aircraft conducts test operations on the flight deck of amphibious assault ship USS *America* (LHA 6), 8 November 2016.
Official U.S. Marine Corps photo, courtesy of Darin Russell

4. Military Problem

Certain aspects of naval operational art have not been adequately developed for twenty-first century warfare. The Navy and Marine Corps already possess some very effective capabilities.

However, adversaries demonstrate the ability to rapidly adapt and implement sophisticated counters to U.S. capabilities. The Navy and Marine Corps need to renew integrated naval approaches for applying those capabilities, adapt them to meet emerging challenges, and identify capability gaps that must be overcome. At a time when adversary capabilities have extended the seaward reach of land-based weapons, thereby blurring the dividing line between land and sea, Navy and Ma-

rine Corps forces are often employed as separate entities in an artificially divided maritime battlespace. These practices inhibit the effective application of our complementary capabilities. Friendly naval forces lack recent experience employing unified and integrated task forces able to conduct operations in a contested littoral against advanced threats. Task-organized naval forces must be able to flexibly apply the capabilities resident in each Service both at sea and ashore. However, given advances in adversary sensor and weapon capability and capacity, as well as geographic considerations and global commitments, fleet commanders/JFMCC may be challenged to assemble the required capabilities, capacities,

span of control, or optimal formations to effectively respond to crises, address larger contingencies, and deter aggression in contested littorals. Subordinate elements of the problem include:

- a. **Dissimilar Command and Control Constructs.** Naval forces require a common tactical command and control doctrine for integrated Navy and Marine Corps operations in a unified maritime battlespace.
- b. **Insufficient Marine Corps Representation within the Fleet/JFMCC Staffs.** The strategic environment and Service chief guidance call for the more integrated application of Navy and Marine Corps capabilities, but there is insufficient Marine representation within the fleet/JFMCC staffs to do this effectively. While the maritime operations centers (MOC) within each fleet provide the venue for operational level planning and execution, the existing fleet/JFMCC staffs that man those facilities require resident expertise regarding landward operations in general and Marine Corps capabilities, limitations, and support requirements in particular.
- c. **Augmentation of Amphibious Ready Groups/Marine Expeditionary Units (ARG/MEUs).** The ARG/MEUs are optimized for forward-postured crisis response and may require augmentation to operate in some environments,

depending on the nature of the threat.

- d. **Capacity Challenges.** Navy and Marine Corps forces may be at a capacity disadvantage within key regions. In some instances, naval formations may need to composite additional assets to provide sufficient organic air and missile defense capacity or capability to conduct operations in the face of land-based precision weapons. Capacity challenges, and how they might be mitigated, can be viewed through three lenses:

- i. *MAGTF Capabilities Not Fully Leveraged.* Marine air-ground task forces (MAGTFs) are designed for seaborne power projection in which their primary mission lies ashore. These include forward-postured MEUs that routinely conduct sea-based engagement and crisis response, as well as the episodic projection of Marine Expeditionary Brigades (MEB) as part of an amphibious or maritime preposition force operation. When required, these MEBs can be expanded into a full Marine Expeditionary Force (MEF) capable of conducting sustained operations ashore. In addition to these existing roles, MAGTFs have the as yet untapped potential to make significant

contributions—from either a sea-based or land-based posture—to the sea control fight.

- ii. *Composition of the Surface Force.* Following the Cold War, some surface force capabilities and capacities for sea control were deemphasized, and select foundational warfare skills eroded over time. The emergence of sophisticated sea denial strategies has driven a need to shift to an offensive imperative to control the seas. The surface warfare community has identified the need to counter rapidly evolving missile, air, submarine, and surface threats. This includes the need to develop missiles that represent a significant improvement in capability and to employ them more broadly across the force. The surface warfare community has also called for a more fully integrated Marine Corps surface force combat team to provide persistent presence that can influence and control events at sea and in the littorals.¹¹⁵
- iii. *Risk to High Value Units.* Each ship within the current carrier strike groups (CSGs) and ARG/MEUs provides capa-

bilities critical to the force as a whole, meaning that the loss of a single ship would degrade the force's ability to accomplish the mission. It is therefore imprudent to task those ships with inshore operations in complex archipelagoes or confined and shallow waters, where geography and battlespace geometry allow an adversary to concentrate diverse weapons systems to maximum advantage. "The coastal defender's wide range of options and his freedom to initiate a strike practically any time he chooses to do so create a threat that is both continuous and immediate."¹¹⁶ In the face of this unremitting threat, a surface platform's self-defense systems—along with its crew's vigilance and the captain's decision making—must perform flawlessly 100 percent of the time. As stated by one of the participants in the Naval Services Game, "A fleet commander needs some chess pieces he can wager without risking the whole game." Lacking such assets, commanders can be expected—rightly—to approach littoral operations with a tactically defensive

¹¹⁵ VAdm Thomas Rowden et al., "Distributed Lethality," U.S. Naval Institute *Proceedings* 141, no. 1 (January 2015).

¹¹⁶ RAdm Yedidia Ya'ari, Israel Navy, "The Littoral Arena: A Word of Caution," *Naval War College Review* 48, no. 2 (Spring 1995): 8.



The commanding officer of Marine Fighter Attack Squadron 122 (VMFA-122), LtCol John P. Price, enters his aircraft in preparation for VMFA-122's first flight operations in an F-25B Lightning II on Marine Corps Air Station Yuma, AZ, 20 March 2018.

Official U.S. Marine Corps photo, courtesy of Sgt Allison Lotz

orientation. To promote a more offensive orientation, fleet commanders/JFMCC must have strong screening and scouting capabilities to develop and maintain a tactical picture. By complementing current capabilities with a sufficient number of lower-end units, commanders will have more options available to accept calculated risk in confined and shallow waters.

5. **Desired End State**

Naval forces capable of operating in contested littorals with sufficient freedom

of action to accomplish likely objectives.

Broadly stated, these objectives are:

- a. Gain and maintain battlespace awareness.
- b. Establish persistent sea denial capabilities forward to deter aggression in the littorals.
- c. In a hostile environment, establish sea control.
- d. In an uncertain environment, employ sufficient defensive and nonlethal capabilities to conduct operations in the face of sea denial threats.
- e. Conduct maritime power projection operations.

The main prerequisites for success in littoral warfare are suitable and diverse platforms, weapons, and sensors; robust command organization; close cooperation among friendly forces; air superiority; well-developed theory; and sound doctrine.

~ Dr. Milan Vego¹¹⁷

6. Central Idea

The Navy and Marine Corps will refine how we organize, train, and equip forces in order to provide the fleet commanders/JFMCC the ability to operate in all five dimensions of the littorals for the duration required. These five dimensions include: (1) seaward (both surface and subsurface); (2) landward (both surface and subterranean); (3) the airspace above; (4) cyberspace; and (5) the electromagnetic spectrum.¹¹⁸ These refinements will give the fleet commanders/JFMCC a wider range of integrated, Navy-Marine Corps force options and additional sensor and weapons capacity. These task organizations will fight with unity of command, employing networked, sea-based and land-based capabilities as well as common doctrine and operating principles, to counter adversary sea denial forces, disrupt their C4ISR-strike complex, and overcome disadvantages in capacity and/or weapons range. In sum, the goal is to create a modular, scalable,

and integrated naval network of sea-based and land-based sensors, shooters, and sustainers that provides the capabilities, capacities, and persistent yet mobile forward presence necessary to effectively respond to crises, address larger contingencies, and deter aggression in contested littorals.

7. Supporting Ideas

- a. **Composite Warfare Commander (CWC).** The Navy and Marine Corps will conduct wargaming, experimentation, and exercises to determine the most effective way to integrate Marine Corps capabilities into the CWC construct for operations on the sea and from the sea, and from the land to the sea. Near-term wargames will be used to develop predoctrinal solutions that will be tested and refined in subsequent games, experiments and exercises. Marine participation in CWC has been debated for many years. Consensus feedback provided by participants during recent wargames and exercises has recommended that the Navy and Marine Corps explore CWC as a common command and control construct. The composite warfare organization facilitates simultaneous, integrated offensive and defensive combat operations against multiple targets and threats. Flexibility of implementation, reinforced by clear guidance to subordinates, and use of command by negation are keys to decentralized control

¹¹⁷ Vego, "On Littoral Warfare."

¹¹⁸ As we refine force organization, training, and equipment for operations in all dimensions of the littorals, there is a temporal aspect to force employment that must be considered. How long it takes to conduct key tasks, how long we can maintain certain conditions, as well as the anticipated duration of a given operation, are important factors.

of the tactical force. The officer in tactical command (OTC) may implement a composite warfare organization whenever and to whatever extent required, depending upon the composition and mission of the force and the capabilities of the adversary. The composite warfare construct allows the OTC to assign some or all of the command functions associated with mission areas to warfare commanders, functional group commanders, and coordinators, thus supporting decentralized execution.¹¹⁹ The philosophy of decentralized execution that is inherent in CWC is entirely consistent with “mission tactics” as espoused in the Marine Corps’ maneuver warfare doctrine. Potential revisions to [Navy Warfare Publication] NWP 3-56, *Composite Warfare: Maritime Operations at the Tactical Level of War*, include options for employing MAGTF commanders as a warfare commander. For example, landing force operations, maritime prepositioning offload operations, and expeditionary advanced base operations (EABO) (described in paragraph 7.d. [1] below) are not currently included under any of the warfare commander options within CWC. These missions could be conducted by a MAGTF commander designated as an expeditionary warfare commander (EXWC). The po-

tential solution may also include, depending on the formations involved, the option of employing the MAGTF commander as a strike warfare commander (STWC), given the capabilities of Marine aviation and ground-based fires. Each warfare commander, whether a Navy officer or Marine officer, will support or receive support from the other warfare commanders as the tactical situation demands and CWC directs. For example, current, emerging and envisioned Marine Corps capabilities (e.g., ISR [intelligence, surveillance, reconnaissance] assets, air defense batteries, [Lockheed Martin] F-35B/C [Lightning II], the High Mobility Artillery Rocket System [HIMARS], coastal defense cruise missiles [CDCM], etc.) can be integrated into the CWC construct as additional sensor and firing nodes for the various warfare commanders, including the STWC, surface warfare commander (SUWC), and air and missile defense commander (AMDC). For those cases in which expeditionary operations primarily encompass forces from Navy expeditionary forces (NEF), a Navy officer from these forces may be designated the EXWC. Alternate command and control options for Navy mine warfare capabilities should also be considered during follow-on wargaming and experimentation.

b. Integrated Fleet/JFMCC Staff.

¹¹⁹ See *Composite Warfare: Maritime Operations at the Tactical Level of War*, NWP 3-56, for additional details.

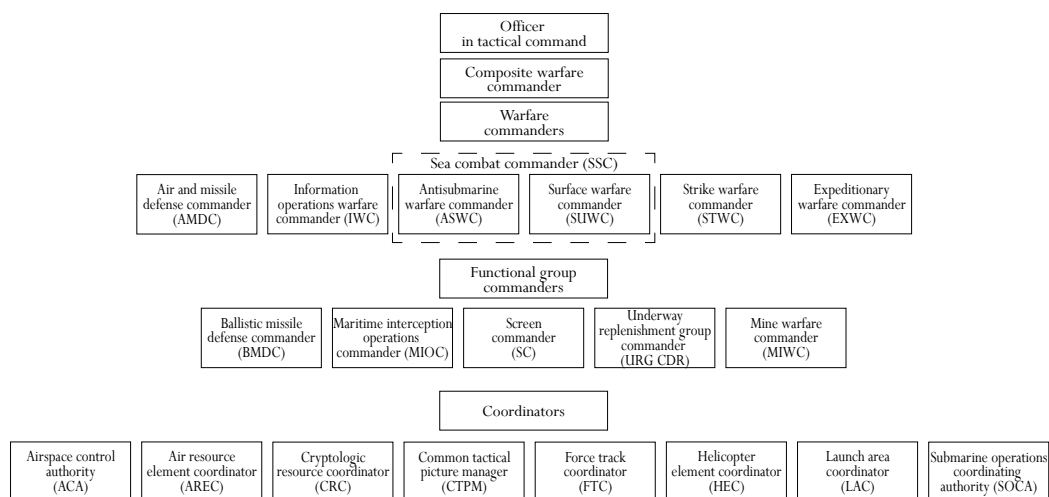
The Navy and Marine Corps will explore assigning Marine subject matter experts (SMEs) to fleet/JFMCC staffs to provide the requisite expertise regarding Marine Corps capabilities, limitations, and support requirements. These Marine assignments should be to actual billets within each staff, rather than liaison positions, to create an integrated “blue/green” staff. Such a staff will support the commander’s ability to plan and execute operations involving the gamut of Navy and Marine Corps capabilities. Additionally, future crises and contingencies could benefit from deliberately planned force options that give the fleet commander/JFMCC flexibility. For example, while CSGs are the principle formations that fleet/JFMCC commanders employ to establish sea control, a blue/green staff can advise the commander regarding the complementary application of Marine Corps capabilities within the CWC construct to support the sea control fight.

c. **Littoral Combat Groups (LCG).**

The Navy and Marine Corps will explore the viability of a force package designed to establish sea control in order to conduct crisis response in an uncertain environment. Due to the focus on sea control, the LCG would be Navy flag led as an integrated naval task group that includes an ARG, a MEU, one or more a surface

combatants, and select capabilities from the NEF. In the event of an expanding crisis or larger contingency, when more combat power is required to gain sea control, the fleet/JFMCC commander may elect to reinforce the LCG with additional capabilities or combine the LCG with other formations such as a CSG, an afloat MEB, or a special purpose MAGTF. Major areas for innovation include:

- i. *Command Element.* Commanded by a Navy flag officer who is supported by an integrated Navy-Marine staff, the LCG command element is envisioned as a means of providing continuity of command in the event that crisis response operations expand into larger contingencies. It also provides the seniority, expertise, and unity of command necessary to conduct integrated operations by a larger formation in the seaward and landward portion of the contested littoral. While in an earlier era both Navy admirals and Marine generals were eligible to command the original incarnation of the expeditionary strike groups (ESG), that construct was feasible only because U.S. naval forces enjoyed presumptive maritime superiority. The nature of the threats across the domain into and within the seaward por-



Notional options within a revised composite warfare construct.
Adapted by History Division

tion of the littoral is such that an LCG is appropriately commanded by a Navy flag officer. Determining the composition and location afloat of the LCG command element, along with the command structures of the subordinate ARG, MEU, surface combatants, and NEF detachments, will rely on a detailed functional analysis conducted with due consideration for embarkation, allocation of spaces, C4ISR requirements, and be informed by rigorous live experimentation. This functional analysis should consider how the emerging family of expeditionary ships might be added to the LCG as a means of redistributing embarked

assets in order to accommodate a flag command element and NEF detachments, as well as to expand distributed maneuver options.¹²⁰

- ii. *Littoral Sea Combat.* Assign or attach SUW, ASW, and expeditionary MCM capabilities to the LCG, as required to gain sea control in the littorals. The fleet commander/JFMCC determines the capabilities and capacities required to counter the threats an LCG will likely encounter within the region, and assigns or attaches forces accordingly.
- iii. *Air and Missile Defense.* Ensure

¹²⁰ The family of expeditionary ships includes the following types: expeditionary fast transport (EPF) (formally called the joint high-speed vessel or JHSV); expeditionary transfer dock (ESD) (formerly called the mobile landing platform [MLP]); and the expeditionary base, mobile (ESB).

the defensive capabilities of the LCG are sufficient to operate in the contested littorals without unacceptable risk.

- iv. *Littoral Raid Forces*. Provide the LCG a high-speed, long-range, low-signature combatant craft capable of projecting and recovering Marines for a variety of missions. As an interim measure/proof of concept, Mk VI patrol boats or riverine command boats from the NEF Coastal Riverine Force (CRF) may be useful surrogates for experimentation that informs development of some future craft specifically designed for this purpose.

d. **Increasing Capacity.** Recognizing that capability and capacity will always be subject to resource constraints, the Navy and Marine Corps team needs to examine ways to leverage existing capabilities while also seeking relatively low-cost means to further negate adversary capacity. Major areas for innovation include:

- i. *Expeditionary Advanced Bases*. Further mitigate the adversary's sensor and shooter capacity advantages by implementing the Expeditionary Advanced Base Operations (EABO) concept being developed by the Marine Corps. While EABO was initiated separately from the Navy's distributed lethality [DL] ef-

fort (described below), the two concepts are complementary and there has been beneficial interaction among the two development teams. The EABO concept further distributes lethality by providing land-based options for increasing the number of sensors and shooters beyond the upper limit imposed by the quantity of seagoing platforms available. The EABO concept espouses employing mobile, relatively low-cost capabilities in austere, temporary locations forward as integral elements of fleet/JFMCC operations. As such, these land-based capabilities would be employed by the EXWC within the CWC construct in support of the other warfare commanders. Expeditionary advanced bases may be used to position naval ISR assets, future CDCMs, anti-air missiles (to counter cruise and ballistic missiles as well as aircraft), and forward arming and refueling points (FARPs) and other expedient expeditionary operating sites for aircraft, critical munitions reloading teams for ships and submarines, or to provide expeditionary basing for surface screening/scouting platforms, all of which serve to increase friendly sensor and

shooter capacity while complicating adversary targeting. They may also control, or at least outpost, key maritime terrain to improve the security of sea lines of communications (SLOCs) and choke points or deny their use to the enemy, and exploit and enhance the natural barriers formed by island chains. The EABO concept provides the opportunity to “turn the sea denial table” on potential adversaries and deter fait accompli actions. This can be done in a pre-crisis manner through security cooperation activities with our partners and allies. This could include prestaging equipment and supplies in key regions, conducting EABO exercises, and perhaps even creating more persistently forward postured—but continuously mobile—forces task organized for EABO. This would give the fleet commander/JFMCC sea denial assets persistently postured in potentially disputed areas in order to deter aggression. In the event of crises, EABO can be employed in support of task forces maneuvering into the area to seize the initiative. To fully leverage the DL and EABO initiatives, the Navy and Marine Corps must pursue

the ability to network sea-based and land-based sensors and shooters. Additionally, the Navy should determine what current or planned sensors and weapons can be fielded in an expeditionary variant while the Marine Corps should determine what changes to existing Marine systems can enhance their utility in a sea denial or sea control fight. Furthermore, new initiatives, such as fielding a common antiship missile that can be launched from existing surface combatants, submarines, manned (and perhaps unmanned) aircraft, and mobile ground launchers, should be explored.

- ii. *Distributed Lethality.* Mitigate the adversary’s sensor and missile capacity advantages by leveraging the ideas presented in the “Distributed Lethality” (DL) white paper. The DL white paper is a surface force initiative in which the offensive capacity of the entire surface fleet would be increased and the surface force would be employed in “dispersed” offensive formations known as “hunter-killer” surface action groups (SAGs). Both of the DL and EABO concepts seek to impose increased battlespace complexity on the adversary and confound his

decision calculus by forcing him to allocate sensors and shooters against a wider—and more dispersed—set of threats. The forward posturing of sensors and weapons, such as the Ground/Air Task Oriented Radar (G/ATOR), Navy tactical and electronic warfare collection capabilities, and repurposed HIMARS, integrated into fleet operations via CWC, would further complement the DL initiatives designed to expand sea control capability and capacity.

- iii. *Screening/Scouting Surface Forces.* Explore complementing current fleet composition, incorporating the ideas of DL, and reducing the risk of in-shore operations in complex archipelagoes or confined and shallow waters through the establishment of screening/scouting surface forces in proximity to key operating areas. The idea of fielding screening/scouting surface forces, employed in conjunction with manned and unmanned aircraft, supports the ideas within the DL and EABO concepts, as “hard to find, hard to hit” platforms, operating from mobile expeditionary locations or an afloat forward staging base would further complicate adversary targeting and help

provide friendly forces a favorable missile ratio.

- e. **Force on Force Littoral Exercises.** Our current certification exercises serve valid and useful purposes. However, they need to be complemented by realistic and stressful littoral exercises that challenge leaders’ cognitive skills and accelerate learning. Revitalizing littoral operational art requires a realistic and challenging training environment that places humans and machines in conditions as close to actual combat as possible. The most effective way of achieving this is by conducting realistic, evaluated force-on-force exercises—using a combination of physical and virtual means—that produce winners and losers. To enable this approach, friendly forces must be pitted against a red team that replicates the capabilities and tactics likely to be employed by adversaries in the littorals. By putting our concepts, doctrine, organizations, tactics, and capabilities to the test under stressful conditions, we will learn what works and what does not. We will determine how to integrate new technology and how to coordinate actions in all dimensions and warfare specialties. Most importantly, leaders will be forced to make time-sensitive decisions in the face of uncertainty and then—in a rigorous post exercise critique—explain their actions to

their seniors, peers, and subordinates. This is not a novel idea; it is the method used by the fleet and fleet Marine force commanders during the interwar period that generated victory in World War II. Leaders need to prepare themselves for these demanding events through unrelenting professional study, conducting rigorous analysis of friendly and enemy capabilities, developing an aggressive spirit tempered by realism, and fostering the ability to think like the enemy.¹²¹

8. Command and Control for a Continuum of Operations

The ability to conduct a continuum of operations is predicated on the idea that the fleet commanders/JFMCC can adjust command arrangements—to include task organization, subordinate unit command relationships, and the assignment of battlespace—as needed to meet changing circumstances. This flexibility can be understood by considering the evolution from initial deployment and steady-state activities to crisis response to larger contingencies.

- a. Currently, ARG/MEU assets are often employed over wide areas within a region or tasked to conduct distributed operations across regional boundaries. Similarly, it is anticipated that LCG assets will normally be distributed within or across regions to conduct a wide

array of missions, with maritime security operations and security cooperation activities being the most common. When episodic crises occur, the fleet commander/JFMCC may task organize available naval forces and assign them to an LCG commander. The most likely missions will be non-combatant evacuation, embassy reinforcement, foreign humanitarian assistance, and strikes or raids against violent extremist organizations.

- b. In the event of larger contingencies, in which a significantly more capable force is required to deter or contain conflict, the fleet commander/JFMCC will review and prioritize requirements and aggregate additional Navy and Marine Corps forces as needed.
- c. A key aspect of effective force aggregation is the need to develop common tactics, techniques, and procedures that promote effective integration of all fleet and select fleet Marine force units. An historical example of the benefit of a fleet-wide SOP can be found in *Current Tactical Orders and Doctrine, U.S. Pacific Fleet*, more commonly known as “PAC 10,” of 1943.¹²² This manual made it “possible for forces composed of diverse types, and indoctrinated under different task force commanders, to join at

¹²¹ Edward S. Miller, *War Plan Orange: The U.S. Strategy to Defeat Japan, 1897–1945* (Annapolis: Naval Institute Press, 1991), 17.

¹²² *Current Tactical Orders and Doctrine, U.S. Pacific Fleet* (Washington, DC: Commander in Chief, U.S. Pacific Fleet, 1943).

sea on short notice for concerted action against the enemy without interchanging a mass of special instructions.”¹²³ As noted in the manual’s introduction. “The ultimate aim is to obtain essential uniformity without unacceptable sacrifice of flexibility.”¹²⁴

9. Proposed Capabilities

The following is a list of notable capabilities required to implement this concept. This list should not be considered exhaustive. Additional capabilities will likely be identified through wargaming, experimentation, and exercises.

a. Command and Control

- i. Ability to form and command and control scalable, integrated Navy and Marine Corps task organizations (i.e., task force, task group, task unit) from globally distributed forces based on mission requirements.
- ii. Ability to command and control naval task organizations in denied, degraded, and exploited environments (D2E2).
- iii. Ability to employ a combination of integrated and interoperable Navy and Marine Corps C4ISR systems and networks to enable operations in all dimensions of the littoral battlespace.

- iv. Ability to conduct expeditionary airborne early warning in support of littoral operations.
- v. Ability to integrate sea-based and land-based Marine Corps capabilities into the Navy’s CWC construct.
- vi. Ability to employ common, collaborative, and adaptable Navy-Marine Corps processes to support rapid planning and execution.

b. Intelligence

- i. Ability to rapidly develop battlespace awareness in uncertain environments, particularly with regards to threat antiship missiles, naval mines, air defenses, improvised explosive devices (IED), cyberspace capabilities, and unmanned systems.
- ii. Ability to perform rapid and accurate mission assessment of fires.
- iii. Ability to understand the entire littoral operating environment. This includes not only military features, but also natural and man-made terrain, hydrography, the “human terrain” in the area (e.g., culture, society, economy, technology, and population concentration/dispersion), civilian traffic (e.g., air, sea, and land), the climate, and regional weather patterns.

¹²³ As quoted in Thomas C. Hone, “Replacing Battleships with Aircraft Carriers in the Pacific in World War II,” *Naval War College Review* 66, no. 1 (Winter 2013): 63.

¹²⁴ Trent Hone, “U.S. Navy Surface Battle Doctrine and Victory in the Pacific,” *Naval War College Review* 62, no. 1 (Winter 2009): 75.

c. Fires

- i. Ability to integrate Navy and Marine Corps lethal and non-lethal effects from afloat and ashore (e.g., EAB) for sea control and power projection.
- ii. Ability to disrupt adversary command and control, movement, and maneuver, and intelligence capabilities and to protect our own, by employing synchronized Navy and Marine Corps lethal and nonlethal effects.
- iii. Ability to strike adversary naval forces at longer ranges using ground, surface, subsurface, or aviation platforms. This includes development of long range SUW missiles.
- iv. Ability to provide land-based support to sea denial and sea control operations (e.g., coastal defense cruise missiles, rockets, artillery). This includes developing Marine Corps shore based antiship capabilities that can be integrated with Navy surface combatant sensors and weapons systems. This may be accomplished by modifying the munitions for existing systems, such as the HIMARS, or by modifying off-the-shelf CDCMs to meet our needs. Ideally, to simplify systems integration and logistics support, the Navy and Marine Corps will field a common

missile or family of missiles that can be launched from air, surface, subsurface, or land-based means.

- v. Ability to support over-the-horizon amphibious raids and assaults.
- vi. Ability to conduct over-the-horizon fire support for amphibious operations.
- vii. Ability to rapidly employ and closely integrate SOF in support of naval objectives.

d. Movement and Maneuver

- i. Ability to establish expeditionary advanced bases to support sea denial, sea control, power projection, and sustainment operations in contested environments.
- ii. Ability to maneuver in cyberspace and the electromagnetic spectrum to assure command and control and ISR and deny the same to the adversary.
- iii. Ability to employ scalable landing forces using a variety of platforms, including amphibious ships, as well as alternative capabilities, including expeditionary fast transport (EPF) (a.k.a. JHSV), expeditionary transfer dock (ESD) (a.k.a. MLP), expeditionary base mobile (ESB) (a.k.a. AFSB), dry cargo ammunition ships (T-AKE), and littoral combat ship (LCS). The use of alternate platforms in contested environments will



Marines and sailors of the 26th MEU step off a landing craft utility vehicle onto the shore of Breezy Point, a small coastal community in New York City, 9 November 2012. The Marines and sailors of the 26th MEU are partnering with the 8th Engineer Support Battalion, 2d Marine Logistics Group, II MEF, as well as the Federal Emergency Management Agency, the U.S. Army Corps of Engineers, and the National Guard to clear debris from walkways and public spaces to help the residents of New York City return to normalcy as soon as possible after Hurricane Sandy.

Official U.S. Marine Corps photo, courtesy of Cpl Bryan Nygaard

have to be weighed carefully, balancing the additional lift capacity and flexibility against force protection requirements and the legal status of merchant mariners. Depending on the assigned tasks, under international law, platforms designations may need to be changed from “USNS” to “USS” and have Navy personnel assigned.

iv. Ability to conduct sea-based

inshore maritime raids and amphibious advanced force operations.

e. Protection

- i. Ability to defend expeditionary advanced bases through active and passive means (the latter including the use of low-signature, mobile assets).
- ii. Ability to defend forward logistics capabilities afloat and ashore.
- iii. Ability to conduct littoral

mine detection, avoidance, and clearance.

f. Sustainment

- i. Ability to protect logistics capabilities, and provide selective redundancy for critical requirements.
- ii. Ability to sustain distributed naval forces with precision munitions and sufficient fuel in high-intensity combat.
- iii. Ability to rapidly establish mobile, clandestine expeditionary logistics bases to provide sustainment to afloat and expeditionary operating forces.
- iv. Ability to provide logistics forces the mobility, protection, and agility to support widely dispersed forces with diverse support requirements.
- v. Ability for logistics at-sea forces to sustain forces in the contested littorals.
- vi. Ability to utilize auxiliary platforms to augment logistics sustainment capacity, spread sustainment risk, and enhance operational tempo.
- vii. Ability to fully integrate naval force logistics staffs to realize efficiencies and maintain operational tempo throughout the naval campaign.
- viii. Ability to operate in a communications contested/degraded environment.
- ix. Ability to synchronize distributed logistics forces.
- x. Ability to achieve battlespace awareness, manage signal control, and conduct dynamic maneuvering.
- xi. Ability to safeguard and improve the integrity of logistics data.
- xii. Ability to conduct expeditionary maintenance and battle damage repair.
- xiii. Ability to conduct casualty and medical treatment and evacuation.

GENERAL PETER PACE

BIOGRAPHY

Today's tactical victory does not guarantee tomorrow's strategic success.

~ General Peter Pace¹²⁵

General Peter Pace was born on 5 November 1945 in New York. He attended the U.S. Naval Academy and was commissioned in the Marine Corps in June 1967. The following year, he was assigned to 2d Battalion, 5th Marines, as a platoon commander in Vietnam. After his tour, he was attached to the Marine Barracks at 8th & I in Washington, DC, where he served as a ceremonial platoon commander and White House social aide, among other duties. He held several command and staff billets, served on recruiting duty, and attended Command and Staff College during the next decade.

In 1985, he led the 2d Battalion, 1st Marines, before advancing to service on the combined/joint staff in Korea. He returned to the Marine Barracks at 8th & I as the commanding officer in 1988. He went on to hold high positions including the chief of staff for the 2d Marine Division, president of Marine Corps University, and commanding general of Marine

Corps Combat Development Command. Pace also served in Somalia as deputy commander, Marine Forces, and deputy commander Joint Task Force-Somalia from 1992 to 1994.

In 2000, Pace was promoted to general and took command of U.S. Southern Command before serving as vice chairman of the Joint Chiefs of Staff. In 2005, President George W. Bush appointed Pace chairman of the Joint Chiefs of Staff, making him the first Marine to hold that position. He retired from the Service in October 2007.

General Pace's career represents the final acceptance of the Marine Corps as an equal Service with the Army, Navy, and Air Force at the highest levels, as he held multiple joint commands, including a combatant command, and served as chairman of the Joint Chiefs of Staff, helping to formulate the nation's strategies and acting as the senior most U.S. military officer and principal military advisor to the president.

¹²⁵ Gen Peter Pace, "Pace Says War on Terror Will Last Years," Associated Press, 24 March 2006



The official portrait of Gen Peter Pace, 16th chairman of the Joint Chiefs of Staff, was unveiled in the Pentagon auditorium on 16 January 2009. Pace retired from the Marine Corps on 1 October 2007, after more than 40 years of service. Photo of original oil painting by Peter Egeli.

Official U.S. Marine Corps photo, courtesy of LCpl Jacquelyn M. White

ADMIRAL JAMES G. STAVRIDIS

BIOGRAPHY

Whenever a new international crisis faced the nation, the president then in office would continue to ask, “Where are the carriers? Where are the Marines?” Why? Because they form the ready strike forces that are sustainable from the sea.

~ Admiral James G. Stavridis¹²⁶

Admiral James G. Stavridis was born on 15 February 1955 in West Palm Beach, Florida.¹²⁶ He graduated from the U.S. Naval Academy in 1976 and was commissioned as a surface warfare officer. He served in a variety of surface warfare billets on cruisers and destroyers before attaining a master’s in law and diplomacy, and a doctorate in international affairs from Tufts University in 1983 and 1984, respectively. He commanded the USS *Barry* (DDG 52) from 1993 to 1995, and Destroyer Squadron 21, then deployed to the Persian Gulf in 1998.

He held a variety of staff billets for the Chief of Naval Operations and the chairman of the Joint Chiefs of Staff as a strategic planner and senior military assistant to the secretary of the Navy and the secretary of defense. Following the 9/11 attacks, Stavridis was the first commander of the U.S. Navy’s “Deep Blue” strategic think

tank, which was formed in the Pentagon to provide the Chief of Naval Operations with ideas for fighting the War on Terror at the strategic level. From 2002 to 2004, he commanded the *Enterprise* Carrier Strike Group in the Indian Ocean and Persian Gulf region in support of operations in Iraq and Afghanistan. In 2006, he took command of U.S. Southern Command, and in 2009, he became Supreme Allied Commander Europe. He retired from that position in 2013.

In addition to his naval and joint commands, Admiral Stavridis has been a prolific author, publishing both division and watch officer guides through Naval Institute Press, as well as several books on command and maritime strategy. Throughout his career, Stavridis has helped to shape the Navy’s modern approach to maritime strategy and its commitment to a joint approach to maritime and naval affairs.

¹²⁶ Adm James Stavridis, USN (Ret), *Sea Power: The History and Geopolitics of the World’s Oceans* (New York: Penguin Press, 2017), 327.



From 2009 to 2013, Adm James G. Stavridis served as combatant commander of the U.S. European Command and NATO Supreme Allied Commander Europe. He was the first Navy officer to hold these positions.
Official Department of Defense photo

CHRONOLOGY

Selected Significant Moments in the History of Maritime Strategic Thought

1210 BCE	In the first dateable sea battle, the Hittites, under Suppiluliuma II, defeat a Cypriot fleet.	1588	Ottoman Turks at the Battle of Lepanto.
ca. 500–430 BCE	Sun Tzu's <i>The Art of War</i> is completed.	1805	The British defeat the Spanish Armada.
483 BCE	Themistocles convinces the Athenians to use the unexpected wealth from silver mines to build a fleet of 200 triremes.	1832	British VAdm Horatio Nelson defeats the French in the Trafalgar campaign.
480 BCE	Employing the first overtly maritime strategic plan, the Greeks defeat the Persians in a naval campaign that includes the battles of Artemisium and Salamis.	1838	Carl von Clausewitz's wife publishes <i>Vom Kriege</i> (On War) posthumously, Clausewitz's classic work on strategic thought.
ca. 410 BCE	Thucydides produces his <i>History of the Peloponnesian War</i> , a classic of both history and strategic thought.	1890	Antoine-Henri, baron de Jomini, publishes <i>Précis de l'Art de la Guerre, ou Nouveau tableau analytique des Principales Combinaisons de la Stratégie, de la Grande Tactique et de la Politique Militaire</i> .
ca. 383–450	Flavius Vegetius Renatus writes the <i>Epitoma Rei Militaris</i> .		Alfred Thayer Mahan publishes his seminal work on history and maritime strategic thought, <i>The Influence of Sea Power upon History, 1660–1783</i> .
ca. 575	Maurice's <i>Strategikon</i> is written.		
ca. 1050	The "Seven Military Classics" of China are compiled.	1907–9	The U.S. Navy, at the orders of President Theodore Roosevelt, sends the Great White Fleet on
1571	Spain and Venice lead an alliance of Christian states and defeat the		

	an around-the-world cruise, demonstrating the global reach of American naval power.	1984	world's first nuclear powered aircraft carrier.
1911	Julian S. Corbett publishes <i>Some Principles of Maritime Strategy</i> .		Chief of Naval Operations Adm James D. Watkins issues the <i>Maritime Strategy</i> .
1916	The British Home Fleet and the German High Seas Fleet clash in the Battle of Jutland.	1985	The Commandant of the Marine Corps, Gen Paul X. Kelley, and the Chief of Naval Operations, Adm James D. Watkins, issue <i>The Amphibious Warfare Strategy</i> .
1919	War Plan Orange is produced by the U.S. Navy and the U.S. Army, planning for war with Japan.	1989	The Commandant of the Marine Corps, Gen Alfred M. Gray Jr. issues <i>Warfighting</i> , FMFM-1.
1920	LtCol Earl H. Ellis produces <i>Advanced Base Operations in Micronesia</i> , Operation Plan 712.	1992	The U.S. Navy publishes “. . . From the Sea.”
1921	Italian Gen Giulio Douhet publishes <i>Il dominio dell'aria</i> (The Command of the Air).	2015	Commandant of the Marine Corps Gen Joseph F. Dunford Jr., Chief of Naval Operations Adm Jonathan W. Greenert, and Commandant of the Coast Guard Adm Paul F. Zukunft issue <i>A Cooperative Strategy for 21st Century Seapower</i> .
May 1942	The Imperial Japanese Navy and the U.S. Navy clash in the Battle of the Coral Sea, the first naval battle fought by carriers on both sides.		Chief of Naval Operations Adm John M. Richardson issues <i>A Design for Maintaining Maritime Superiority, Version 1.0</i> .
June 1942	The U.S. Navy fleet defeats the Imperial Japanese Navy in the Battle of Midway.	January 2016	Commandant of the Marine Corps Gen Robert B. Neller and Chief of Naval Operations Adm John M. Richardson issue <i>Littoral Operations in a Contested Environment</i> .
August 1945	The United States drops atomic bombs on the Japanese cities of Hiroshima and Nagasaki.	February 2017	Chief of Naval Operations Adm John M. Richardson issues <i>A Design for Maintaining Maritime Superiority, Version 2.0</i> .
1954	The U.S. Navy launches the USS <i>Nautilus</i> (SSN 571), the world's first nuclear powered submarine.		
1959	The U.S. Navy launches the USS <i>George Washington</i> (SSBN 598), the first ballistic missile submarine.	December 2018	
1961	The U.S. Navy launches the USS <i>Enterprise</i> (CVA[N] 65), the		

AN INTRODUCTORY BIBLIOGRAPHY OF MARITIME STRATEGIC THOUGHT

The following bibliography provides an introductory list of relevant works on strategic theory, broadly, and maritime strategic thought, specifically. There is an emphasis on foundational works and those relating more directly to the current U.S. strategic challenges. This list is a starting point, reading works beyond it is required for a thorough understanding of these subjects. Entries in bold appear within this anthology.

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This volume, *The Legacy of American Naval Power: Reinvigorating Maritime Strategic Thought*, is the second in a series edited by Paul Westermeyer and Dr. Breanne Robertson. The first anthology in the series was *The Legacy of Belleau Wood: 100 Years of Making Marines and Winning Battles*, published in 2018.

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