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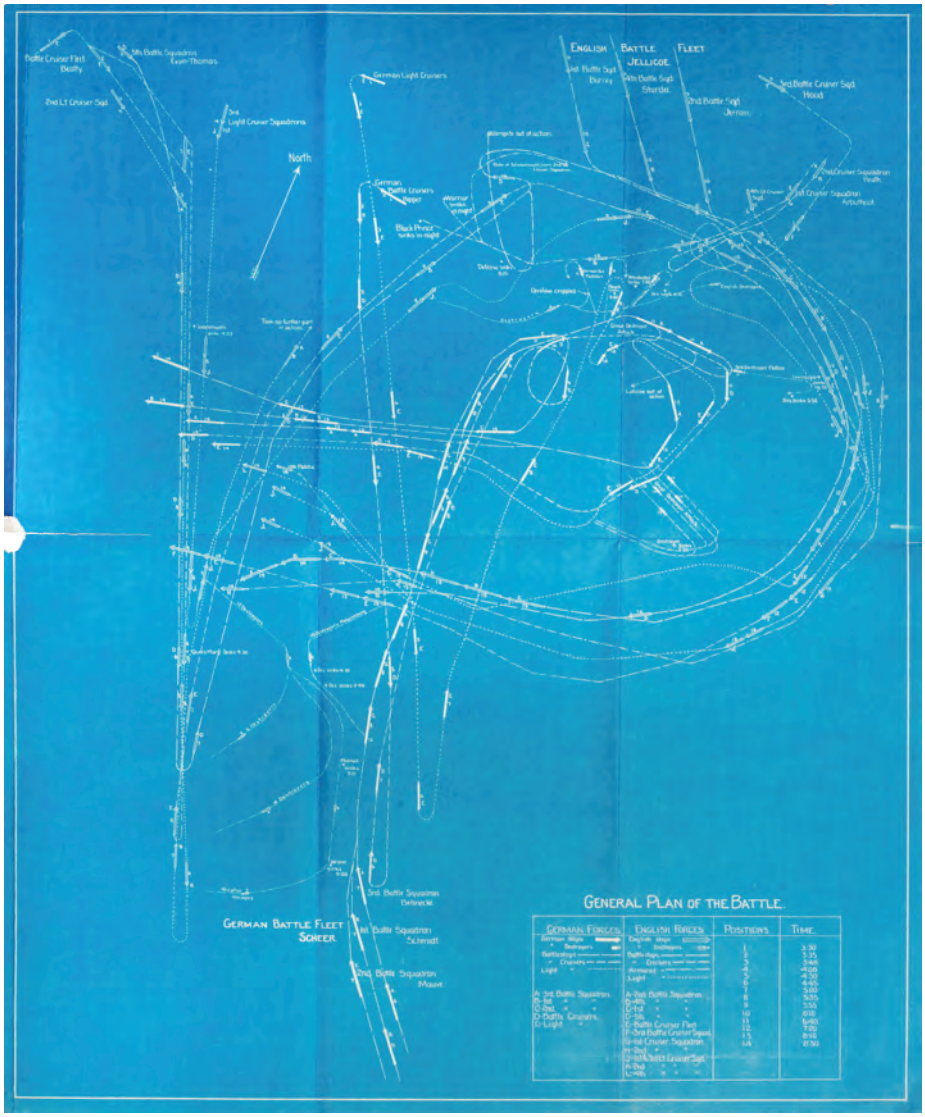

Cover

"General Plan of the Battle," extracted from the original report on the battle of Jutland, as compiled by Lieutenant (junior grade) Holloway Halstead Frost and submitted on 26 November 1916 during World War I. Frost produced his detailed report within six months of the epic battle between the Grand Fleet of the Royal Navy, commanded by Admiral Sir John Jellicoe, and the Imperial German High Seas Fleet. The U.S. Navy, urged on by Rear Admiral William S. Sims, sought to draw strategic perspective on technical innovations and new doctrine and tactics from this and other World War I battles. In this issue's "The U.S. Navy Won the Battle of Jutland," David Kohnen—with contributions from the admirals' grandsons Nicholas Jellicoe and Nathaniel Sims—explains why the battle of Jutland and World War I continue to resonate within contemporary concepts concerning the future of American sea power.

Courtesy of the Naval Historical Collection, Naval War College, Newport, Rhode Island, and the Naval War College Visual Communications Department.

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FROM THE EDITORS

The reemergence in recent years of high-end naval competitors has raised some difficult questions for the U.S. Navy in assessing priorities in fleet design. In "Posture versus Presence: The Relationship between Global Naval Engagement and Naval War-Fighting Posture," Robert C. Rubel makes the case that the too-common assumption that "war fighting" should enjoy absolute priority over the requirements of peacetime global presence or engagement fails to appreciate the important contribution the presence mission actually makes to the fleet's war-fighting effectiveness. He argues in particular that the latest iteration of the Navy's maritime strategy overcorrects for the emphasis on cooperative naval engagement in the original 2007 strategy document, and that the Navy needs to take steps to reaffirm its commitment to that collaborative vision. Robert C. "Barney" Rubel is the former dean of the Center for Naval Warfare Studies at the Naval War College.

At the forefront of the concerns of our sea services today is the challenge of confronting and defeating increasingly effective antiaccess/area-denial capabilities in various parts of the world. Robert C. Owen, in "Distributed STOVL Operations and Air-Mobility Support: Addressing the Mismatch between Requirements and Capabilities," explores options for improving logistic support for Marine Corps F-35B strike fighters in such an environment through the creative employment of air-mobility assets of the U.S. Air Force. Robert C. Owen, a retired USAF colonel, is a professor at Embry-Riddle Aeronautical University.

In "When Robots Rule the Waves?," Robert Sparrow and George Lucas tackle a topic of great current interest from the unusual perspective of military ethics. After presenting an overview of unmanned and autonomous surface and undersea vehicles currently in the inventory or under development in the U.S. Navy, they identify and discuss a range of questions that the employment of these vehicles might raise within the framework of traditional just war theory. While acknowledging that many issues remain to be investigated and resolved regarding the legal and ethical ramifications of unmanned naval systems, they argue that it is time to begin to incorporate ethical considerations into the operational concepts and even the design of such systems. George Lucas is currently a visiting fellow at the Naval War College; Robert Sparrow is a professor at Monash University in Australia and a co-chair of the IEEE Technical Committee on Robot Ethics.

Another area of intense current interest for the U.S. Navy is the potential challenge that Chinese antiship cruise missiles pose to the Navy in the western Pacific. In "A Thousand Splendid Guns: Chinese ASCMs in Competitive Control," Lieutenant Alan Cummings, USN, lays out the nature of this challenge and discusses the developing American response, now commonly described by the label "distributed lethality." He particularly emphasizes the need to develop new offensive antiship capabilities in close collaboration with our regional allies. Lieutenant Cummings is currently a staff officer at U.S. Southern Command.

The U.S. Navy is in the process of reevaluating at a fundamental level how it develops its leaders. It seems to be widely agreed that the Navy has paid insufficient attention in the past to the ethical or character component of leadership and that ways need to be found to foster this component throughout the fleet—other than merely promulgating bumper-sticker terms and punishing deviations from legalistically formulated regulations. In "Cultivating Sailor Ethical Fitness," Commander Michael Hallett, USNR, echoes this view and suggests a way to think about what might be done. He argues that the phrase "ethical fitness" captures the essence of an approach based on the unique demands of the military environment—especially in crisis and combat situations—as well as the need to embed such a training regime in everyday practice. Commander Hallett is currently a staff officer in the U.S. Pacific Fleet's Maritime Operations Center.

In the spirit of a historian's "what if?" exercise, Stephen Turnbull, in "Wars and Rumours of War: Japanese Plans to Invade the Philippines, 1593–1637," describes a virtually forgotten moment in early modern Asian history, but one with potentially large ramifications for Japan's relationship with Asia and indeed the West. Stephen Turnbull is professor emeritus of Japanese studies at Akita International University.

Finally, in recognition of the centennial of the battle of Jutland in 1916, David Kohnen, in collaboration with Nicholas Jellicoe and Nathaniel Sims, provides a provocative analysis of the effects of the battle and the events of the six ensuing months on the future of the U.S. Navy in "The U.S. Navy Won the Battle of Jutland." David Kohnen is a historian in the Maritime History Department at the Naval War College.

IF YOU VISIT US

Our editorial offices are now located in Sims Hall, in the Naval War College Coasters Harbor Island complex, on the third floor, west wing (rooms W334, 335, 309). For building-security reasons, it would be necessary to meet you at the main entrance and escort you to our suite—give us a call ahead of time (401-841-2236).

THE EVOLUTION OF MODERN U.S. NAVAL STRATEGY

Address by Vice Admiral Frank C. Pandolfe to the Naval Strategy Symposium, Naval War College, Newport, Rhode Island, 13 June 2016

Good morning, everyone. It's a pleasure to be back in Newport, the home of naval strategic thought for well over a hundred years. Thanks to this school—and to the thousands of military officers and civilian strategists who have worked here over the years—our Navy has benefited from farsighted and rigorous thinking about how best to apply maritime power to achieve our nation's goals in ever-changing security environments.

Today we sometimes hear laments about how our nation lacks effective military strategies and strategists. Yet in this room today there are nearly seventy-five naval officers representing a vibrant community of strategic thinking that is growing every year. And when we include civilian members of our strategy community and retired officers, we can appreciate a family that numbers many more.

So, my first message to you today is to take heart regarding the state of our strategic thinking. It is robust, and I predict it will remain so. Why do I say that? Because our Navy has regularly produced timely and innovative strategies over the past thirty years. Let's take a look.

Modern Naval Strategy: An Overview

Let's start with the ***Maritime Strategy of 1986***. I was a junior officer when it came out. I well remember the excitement generated by publication of that unclassified version of our war plan for taking the fight to the enemy at sea and ashore. In a confrontational era, it was a confrontational document. Inside its covers were three complementary essays by the CNO [Chief of Naval Operations], CMC [Commandant of the Marine Corps], and SecNav [Secretary of the Navy]. The *Maritime Strategy* focused on how we would defeat the Soviet fleet, detailed how the Marines would take the fight ashore, and called for six hundred ships to fulfill the strategy.

Critics said the *Maritime Strategy* was nothing more than a marketing tool to justify an expanded Navy and Marine Corps. They were wrong. The *Maritime*

Strategy galvanized the fleet. It provided a strategic context for developing war-fighting instructions and executing bold and innovative tactics that were practiced from the High North to the Mediterranean Sea and the Pacific Ocean. Above all, it was a powerful signal from our leadership that maritime power would play a leading role should global war be unleashed on us.

The *Maritime Strategy,* like all strategies, had to make choices. Its horizon was relatively near term. Specifics of how the services would integrate capabilities largely were left for others to work out. And the fiscal challenges of sustaining such a large fleet were not fully addressed.

Nevertheless, the *Maritime Strategy* succeeded brilliantly in communicating the challenges we faced and our unalterable goal of victory at sea, to be achieved by the simultaneous application of decisive operations in multiple theaters. It called for action by way of an ambitious construction program that would create the instrument of supreme sea power in the late twentieth century and into the twenty-first. It was a strategy that dreamed big and, in doing so, generated strong support to build hundreds of ships, some of which still sail in the fleet today.

Following the collapse of the Soviet Union, the naval services shifted gears and unveiled ***. . . From the Sea*** in 1992. Today it is easy to underestimate how much emotion went into writing that document. The world had fundamentally changed, and a new strategy was needed to address emergent challenges. To be effective, that strategy had to address hard choices, recommending that some capabilities be emphasized going forward and others downsized.

In the absence of the Soviet Union, American sea control was assumed as a fact; an open-ocean fight would not be necessary. Power projection ashore was king. Henceforth, naval forces would focus their efforts in the littorals, ensuring the flow ashore of military capabilities by way of sequential joint operations.

As a result of this shift in naval strategic thinking, a number of submarines and maritime patrol aircraft were cut from the fleet while strike assets and amphibious shipping were prioritized. Adversaries were viewed as regional in nature and with limited reach. Addressing humanitarian concerns emerged as a key mission area, rivaling war fighting in competing for institutional attention. Political theorists spoke of great-power convergence, working toward an increasingly free, prosperous, and peaceful world order. A terrible day in September 2001 ended such utopian dreams.

In October 2002, our Navy unveiled its ***Sea Power 21*** strategy. *Sea Power 21* described the capabilities needed to meet nation-state challenges but also to address growing transregional threats posed by substate actors employing terror to undermine established political orders.

Sea Power 21 emphasized the centrality of networked information in generating joint effects. It moved beyond the sequential prescriptions of . . . *From the*

Sea to envision a unified battle space within which the oceans would be a vast maneuver area from which to deliver offensive fires and—for the first time—defensive protection deep inland. It stated that in the future the positioning of BMD [ballistic-missile defense] ships would rival that of aircraft carriers, while computer network defenses would be as important as missiles in ensuring mission success. It directed radical change in how we managed the fleet, implemented innovation, and trained our people.

Sea Power 21, like its predecessors, emphasized some things over others. It largely spoke to exploiting U.S. unilateral advantages, stressing the development of advanced capabilities that would widen the gap between America and its partners. If the heart of the *Maritime Strategy* was an operational war plan, *Sea Power 21* fundamentally was a vision document. Both, to be fully implemented, required significant increases in naval funding.

Sea Power 21 served us well. It set the course for our Navy's capability development. Today, nearly fourteen years later, most of the programs it recommended are present or arriving in the fleet; we are implementing increasingly responsive, transparent, and tailored training and assignment processes; and we continue our efforts to capture institutional efficiencies.

In 2007, the naval services updated our strategic guidance yet again by unveiling ***A Cooperative Strategy for 21st Century Seapower***. *CS-21,* as it became known, was a hopeful strategy. It emphasized the collective strength to be derived from leveraging a global coalition of like-minded nations. It foresaw the possibility of creating, in effect, a "thousand-ship navy" dedicated to patrolling the sealanes, policing up international outliers, and providing humanitarian assistance and disaster response (HA/DR).

While the *Maritime Strategy* emphasized war fighting at sea, . . . *From the Sea* stressed enabling sequential joint power projection, and *Sea Power 21* envisioned networked capabilities generating joint effects across a unified battle space, *CS-21* highlighted the value to our nation of time-tested maritime core capabilities: forward presence, deterrence, sea control, power projection, maritime security, HA/DR.

CS-21 proved right for its time, as well. It demonstrated immense international appeal owing to its inclusive nature and relatively modest capability demands. It was the perfect vehicle for rallying broad efforts to combat piracy, which had emerged as a significant problem for international commerce. It came to life as an array of navies from around the globe worked together to shepherd merchant ships through dangerous waters. And it fostered navy-to-navy cooperation in other ways. For example, at various times both Russian and Chinese senior officers attended the International Seapower Symposium in Newport.

CS-21 also had its critics. It struck some as overly optimistic in implying that growing economic integration would lead to political convergence. It also was accused of de-emphasizing war fighting. But such issues did not compromise its effectiveness. In the end, *CS-21* was remarkably successful in inspiring greater international naval cooperation.

More recently, as international tensions have increased from the Baltic to the South China Sea, our strategy has been revised yet again. Introduced just last year, ***CS-21 Revised*** (2015) has a sharper edge than its predecessor. It emphasizes five essential functions, the first of which is all-domain access to counter growing antiaccess/area-denial (A2/AD) threats, followed by deterrence, sea control, power projection, and maritime security. The previous emphasis on coalition efforts is balanced with the need to develop higher-end war-fighting capabilities. HA/DR is dropped as a major focus area. Russia and China are named as growing sources of international instability. CNO [Admiral John] Richardson underlines this evolving challenge in his *Design for Maintaining Maritime Superiority,* writing that "[f]or the first time in 25 years, the United States is facing a return to great power competition."

Lessons Learned

What lessons can we take away from this brief review of the evolution of naval strategy over the past three decades?

First, naval strategic thinking is not on holiday today and never has been. To the contrary, the naval services have compiled an impressive record of updating their strategic guidance documents on a regular basis to reflect an ever-changing world.

Also, all these documents emphasized time-tested maritime strengths, including the importance of being forward to reassure allies, deter adversaries, and respond to crises. They prescribed the application of both sea-control and power-projection capabilities, adjusting the balance between them to reflect the prevailing threat environment. And they conveyed an appreciation for the importance of allies and partners while illuminating the need to develop and, when necessary, to employ unilateral capabilities. They built on one another—they evolved—in recommending actions required to meet changing threats. And they conveyed an appreciation for the importance of teamwork within and among services, departments, agencies, and nations.

Yet each of these documents was distinct in how it emphasized the three pillars of strategy: ends, ways, and means. For example, *Sea Power 21*'s strength was its vision of a future fleet, illustrating the *ends* of strategy. The *Maritime Strategy* of 1986, on the other hand, was most effective in detailing how the United States would destroy the Soviet fleet and project power ashore, a brilliant illustration of

strategic *ways*. And *CS-21* was unique in emphasizing the power of partnering, placing an emphasis on employing shared *means* toward common purpose.

As times changed, so did our strategic guidance. Yet when looking across these documents, are there lessons to be learned? I believe there are. In drafting future strategies, I recommend employing the following principles:

1. *Address the main challenge*. A successful strategy must focus on the most pressing challenge facing our Navy at the time. Defeat the Soviets, enable joint operations ashore, envision the future, leverage cooperative action—each naval strategy in its own way addressed the most immediate need before us.

2. *Call for action*. An effective strategy must inspire change. The *Maritime Strategy* galvanized support to build a six-hundred-ship Navy. . . . *From the Sea* led to tough choices that had far-reaching impact. *Sea Power 21* called for leveraging networked information to improve everything from war fighting to personnel processes. And *CS-21* recommended building innovative coalitions to generate presence beyond the capacity of any one navy.

3. *Feasibility first.* To be effective, a strategy must be achievable. When debating strategic options, the first question to be asked should be "Can we do this?" rather than "Should we do this?" Clausewitz wrote that if the ends of a strategy are beyond its means before the start of conflict, they likely will remain so. Shaping ends to match ways and means is central to developing a solid strategy. Only after the strategy is properly scoped may decision makers answer the policy question: Should we do this?

4. *Keep it short.* American strategy during World War II remains the gold standard for succinctness: Germany first. Two words. That's it. Those two words conveyed the end state we were pursuing, the sequence of major operations, the priority of resourcing and logistics, and the order by which we would begin to rebuild the badly fractured structure of world order. When writing a strategy, plain English is best, keep it unclassified if possible, and be ready to answer concisely the first question always asked: What's new here?

5. *Communicate, communicate, communicate.* For any strategy to be effective, it must be driven home by way of a robust communication plan: many voices singing one song. Never underestimate how difficult it will be to penetrate target audiences with a clear message. Today that is harder than ever before because there is so much competition in the information

space. Everyone is wired, attention spans are short, and there is endless hype out there to steer attention away from your message.

6. *Be generous.* No strategy is "all new." Each of the strategies reviewed here built on its predecessors while introducing fresh thoughts. In writing your contribution, I urge you to consult with those who came before you. At the end of the day, you will want your fellow strategists supporting your efforts.

What does all that amount to in practice? It means this: the most *impactful* strategies drive change—they cast the line far out in the water, seeking big fish; the *best* strategies are feasible and tightly written; the most *effective* strategies are hammered home relentlessly; and the best *supported* strategies leverage the collective wisdom of our strategy family.

All Ahead Flank!

So, where do we go from here? For naval strategists today, there are many rich areas to explore. In writing the next strategy, here are some questions to consider:

- What is the *key challenge* facing our Navy today? Where do we most need fresh guidance?
- Should we more strongly emphasize *sea control,* given the rise of A2/AD threats? Should we go even further and invest more fully in *sea-denial* capabilities?
- Should *nonkinetic* effects become our primary area of focus? Given the number of incoming threats we are likely to face, is it time to rely more heavily on nonkinetic effects?
- Should we concentrate the fleet in *one region*? Is that even possible, given today's transregional threats?
- Should we focus on *restoring readiness* by reducing forward presence, or would doing so invite aggression and drive up demand?
- Should we *shift funding* among communities? We did so effectively to address the challenges of the post–Cold War era. Is it time to do so again, to counter the threats of a globalized era?
- Should we emphasize the *value of partners* to the degree that we have in recent strategy documents? Or is it time, once again, to focus primarily on advancing American capabilities?

Those are just a few of the many vital questions to ponder as you begin writing the next chapter in our strategic story. I urge you to explore them fully. I hope

you will fire up impassioned debates about the future of our Navy, ultimately positioning it to keep our nation safe and to shape the world to be a better place. That is your challenge, and I wish you every success on your journey!

Thank you.

VICE ADMIRAL FRANK C. PANDOLFE, USN

Vice Admiral Pandolfe serves as assistant to the Chairman of the Joint Chiefs of Staff, representing the chairman in interagency matters, focusing on international relations and political-military concerns and acting as military representative to the Secretary of State. He graduated from the U.S. Naval Academy in 1980 (with distinction) and was awarded a doctorate in international relations from the Fletcher School of Law and Diplomacy at Tufts University in 1987. At sea, he has served in USS David R. Ray *(DD 971), USS* John Hancock *(DD 981), USS* Hué City *(CG 66), and USS* Forrestal *(CV 59) and commanded USS* Mitscher *(DDG 57). He commanded Destroyer Squadron 18 from 2003 to 2004, operating as sea combat commander for the* Enterprise *carrier strike group in support of Operation* IRAQI FREEDOM. *From 2008 to 2009, he led the* Theodore Roosevelt *carrier strike group on a combat deployment in support of Operation* ENDURING FREEDOM *in Afghanistan. Ashore, he was assigned to the Navy Staff as executive assistant to the Chief of Naval Operations, the Joint Staff as deputy director for strategy and policy, and the White House staff as military aide and adviser to the vice president of the United States. He also was Director, Surface Warfare Division, OPNAV N86, and Commander, Sixth Fleet / Striking and Support Forces NATO. Most recently, he served as director for strategic plans and policy (J5) on the Joint Staff.*

Rear Admiral Jeff Harley is the fifty-sixth President of the U.S. Naval War College. He attended the University of Minnesota, graduating with a bachelor of arts in political science, and received master of arts degrees from the Naval War College and the Fletcher School of Law and Diplomacy, Tufts University. Additionally, he served as a military fellow at the Council on Foreign Relations in New York and is a member of the council.

Admiral Harley is a career surface warfare officer whose sea-duty assignments have included command of USS Milius *(DDG 69), Destroyer Squadron 9, and Amphibious Force Seventh Fleet. Additionally, he has served as Director, White House Situation Room; Vice Director, Strategy, Plans, and Policy (J5) at U.S. Central Command; President, Board of Inspection and Survey; and, most recently, Assistant Deputy Chief of Naval Operations for Operations, Plans, and Strategy.*

PRESIDENT'S FORUM

The Past Is Prologue

Change—continual unremitting change—it is the law of the universe. It's not enough for us to keep abreast of times. This College must be in the very front rank of the advancement of progress.

REAR ADMIRAL STEPHEN B. LUCE

YOUR U.S. NAVAL WAR COLLEGE continues to be the premier institution of its kind in the world. It is truly the Navy's "home of thought," and it quite simply excels at educating and preparing the national security leaders of today and tomorrow.

I was blessed and humbled to assume duties as the fifty-sixth President of the College this summer, and it brought to mind Admiral Chester Nimitz's note of 17 December 1941 upon assignment as Commander in Chief, U.S. Pacific Fleet, in which he wrote, "It is a great responsibility but I shall do my utmost to meet it." I share this sentiment, and will strive to help make this great institution even better.

I am also humbled by the extraordinary history of the College and the need to maintain our hard-earned reputation for excellence, while maintaining the flexibility to adapt to the unrelenting change of our dynamic world. The international security environment is not only dynamic but complex, and the need for strategic thinking about the full range of challenges of our time is more critical than ever. At the same time, globalization and information technologies have made our world smaller and, some would argue, even more dangerous. Our military forces must understand and embrace the promises of emerging technologies and apply them to the new perils on the horizon, or we may find ourselves competing from a position of weakness rather than the overwhelming power we possess today.

To keep ahead of the changes and risks we face as a Navy and a nation, the College is embarking on a series of modest course changes to enhance the institution's contributions. The College will continue to evolve to meet the specific needs of our student body while simultaneously addressing the higher-order needs of leaders and organizations across the global security arena. Our critical missions

remain the same: to educate and develop leaders, to help define our future Navy, to support combat readiness, and to strengthen global maritime relations.

To stay abreast of the changes in our strategic environment and best fulfill our mission, the College will do the following:

- *Continue to operationalize* our efforts to optimize support to the fleet. In particular, the College will provide greater focus on understanding today's emerging threats while further enhancing combat readiness through expanded teaching of maritime warfare.
- *Expand the navalization* of our curriculum to balance joint warfare concepts with an increased understanding of what sea control means in the modern era. The strategic environment of today presents access challenges that make sea control more critical than ever before.
- *Inculcate an understanding of future technologies through "futurization."* We must continue to prepare our students for the extraordinary, dynamic, and ever-increasing pace of change.

With these efforts—whether they be labeled "back to the future," "revolutionary," or merely "keeping pace with rapid change"—we will always contribute to the national and naval dialogue about how to fight and win our nation's wars. The strength of our military forces has always been an important deterrent to war—and we must be ready to answer the clarion call to duty. At the same time, we will honor Admiral Stephen Luce's foundational guidance to be a place of original research on all questions relating to war and to statesmanship connected to war or the prevention of war. These continuing efforts reflect the remarkable heritage of this great College and will help us to run in step with the future.

As I return to the College, I find that my perspective on life here from the vantage point of the President's office is a bit different, but I am just as energized by the gravitas of the institution and the intellectual buzz of the scholars in residence as I was when I arrived as a curious young lieutenant commander in 1995. A great deal has happened to the world in the twenty-one years between my two sets of orders to the College, but I believe these global changes have made the work being done on the shores of Narragansett Bay more important than ever. I look forward to the journey ahead!

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POSTURE VERSUS PRESENCE

The Relationship between Global Naval Engagement and Naval War-Fighting Posture

Robert C. Rubel

There has occurred of late a controversy of sorts regarding the vector of investment by the U.S. Navy. Secretary of Defense Ash Carter overruled certain aspects of the Navy's fiscal year 2016 budget, directing funds away from presence-related items such as the littoral combat ship (LCS) and toward high-end combat capabilities such as the F-35.[1] Chief of Naval Operations (CNO) Admiral John Richardson categorized the ensuing debate about the functions of presence versus high-end military posture as a "false choice," asserting that the Navy must provide both in a balanced manner.[2] However, in an era of budget squeezes, marginal trade-offs meant to solve the problem, such as Carter's Navy budget alterations, could result in a Navy that will be able to provide neither to a sufficient degree. Decisions on "fleet design" should be informed by an understanding of the relationship between forward engagement, in all its forms, and combat posture.[3] Regarding these two functional elements of the Navy's mission as either mutually exclusive or having a primary/collateral relationship is a recipe for strategic error.

Naval officers traditionally have viewed war-fighting readiness and dispersed presence as conflicting strategic functions. This view goes all the way back to Alfred Thayer Mahan, who wrote:

> Police duty, it was called, and quite accurately, for the distribution was that of police, not that of a military organization calculated for military use. So American ships, and those of other nations, were dotted singly around the world, in separate ports; with single beats, like that of a policeman.

> How changed present conditions, how entirely concentration—which is military—has taken the place of dispersion, it is needless to insist. This is the effect of Naval Strategy, adapted to changes in conditions.[4]

For most of the post–World War II history of the U.S. Navy, the issue of war-fighting readiness versus presence essentially was moot because fleet size was large enough and geopolitical conditions were such that the two functions were carried out adequately and appropriately by the array of large combatants that constituted the fleet. However, after the collapse of the Soviet Union, fleet size began to shrink as a result of the "peace dividend," and after the 9/11 attacks the geopolitical character of the world changed.

These were tectonic shifts for the Navy, and the previously mooted question of presence versus war-fighting posture became relevant again. The tension was illustrated by a disagreement that arose in 2005 between the Commander, Fleet Forces, Admiral John Nathman, and the Deputy CNO for Operations and Strategy, Vice Admiral John Morgan.[5] At the time, two Middle East wars, the requirement to secure the homeland from terrorist attack, and a progressively shrinking fleet were putting enormous pressure on the Navy. CNO Admiral Mike Mullen was searching for some new strategic recipe to reconcile and accommodate all the demands.

Admiral Morgan devised what he called the "3/1" strategy, which was really a template for fleet design. He depicted it as a sort of Venn diagram, with a large circle labeled "Major Contingency Operations" representing war-fighting readiness. On the perimeter of the circle he positioned three smaller circles, labeled "Global War on Terror," "Shaping," and "Homeland Defense." These circles only partly overlaid the big circle, implying that these missions required forces that were not suitable for high-end combat—smaller, cheaper, and thus more numerous units that could generate more widespread presence, among other things.

Admiral Nathman disagreed with the depiction, and in his subsequent briefings showed a slide that moved the smaller circles completely within the large one, implying that the forces designed for combat could perform these other missions as a collateral duty. Nathman's logic was that if the Navy's budget is tightly constrained, such that a choice between presence and war-fighting capability is forced, then war fighting gets the priority. Secretary Carter's modification of the Navy's budget indicates that this outlook is still held by at least some leaders in the Department of Defense, if not by many in the Navy itself.

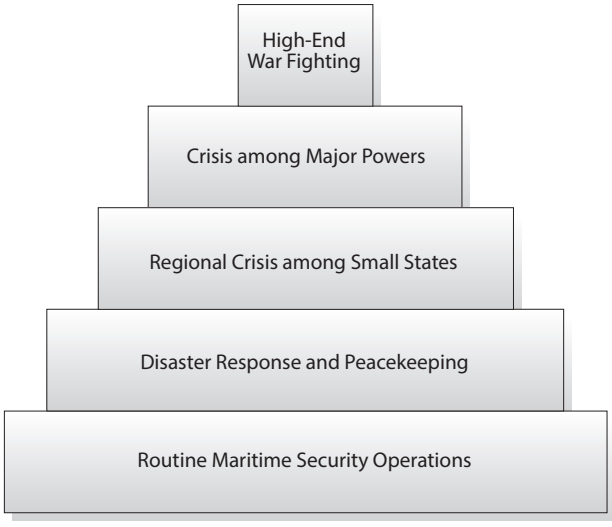
However, that logic is a bit too simplistic for today's world. The United States does not face a single global competitor as it did during the Cold War, and threats to both the homeland and American strategic interests around the world are far more diverse and varied than at any time in the past. Conventional forces are neither numerous enough nor suitable for addressing all the different threats that

confront the nation. The United States needs help from other countries if it is to maintain a favorable world order—help at almost all levels of conflict. Constricting the Navy to a unilateral conventional combat design will compromise its ability to conduct the global engagement necessary to create the interoperability as well as the trust and confidence needed to obtain that help.

THE ENGAGEMENT LAYER CAKE

The premise of this article is that there is a positive relationship between international naval engagement and a robust war-fighting posture. That relationship is neither simple nor easy nor straightforward. However, the framework for it can be depicted with some clarity via the metaphor of a multitiered cake, each higher layer having a smaller diameter than the one below, with diameter denoting the number of nations participating. Our cake will consist of five layers, as shown in the figure, starting at the top and working down.

The first thing to note is that the prospects for wide international cooperation decrease at each higher level of conflict, with war fighting that involves major powers featuring either few or no allies. The Navy's 2007 strategy document entitled "A Cooperative Strategy for 21st Century Seapower," or CS21, established the lowest layer—routine maritime security in defense of the global system of commerce and security—as a universal mission.[6] However, it also said that in times of crisis trust and confidence cannot be surged; they must be built progressively day by day. If the United States and its Navy do this well, then the hoped-for effect is that the diameter of the upper layers will expand: the United States will have more potential coalition partners available. Of course, not every nation has the means to join in major naval operations, but this is not necessary to expand the layer. Supporting functions such as allowing overflights or providing basing or simply political support can improve the Navy's prospects in combat significantly. These are national policy issues, but a strong naval relationship can have a positive influence.



The 9/11 attacks demonstrated that terrorists can do serious damage to the nation; the economic and political disruptions of the 2001 attacks are being felt still. Whereas in the past the threat to the homeland was from either nuclear or conventional military forces of another

nation, now terrorism constitutes the main worry. However, whatever the military outcomes achieved in Afghanistan, Iraq, Syria, and other places, there still exists the inherent danger of some previously unknown terrorist organization mounting a 9/11-style attack. The air transportation system has been substantially secured, but the nation's coastline is extensive and the continued flow of illegal drugs into the country via the sea serves notice that maritime security requires continuing attention. In the wake of the 9/11 attacks the Navy and Coast Guard engaged in considerable planning and gaming to concoct a strategy for securing America's coastline. It quickly became clear to both services that there were not enough forces to adopt a patrolling strategy. After several years of working the issue, the only solution that presented itself was a global partnership for maritime security among as many world navies as possible. Information sharing, lubricated by trust and confidence built through routine and repeated peacetime engagement, was key to its effectiveness. However, the invasion of Iraq generated a lot of international discomfort with and resentment toward the United States, making the securing of such cooperation problematic.

The 2007 CS21, while pitched as a comprehensive new national maritime strategy, had an underlying purpose (intended or not) that was relatively narrow: to help engender a global maritime partnership that would reduce the chances that terrorists could use the seas as avenues of attack on the homeland of the United States or those of friendly nations.[7] The document called for concentrating "combat credible" forces in the Middle East and Far East, and distributing "mission tailored" forces around the world to conduct engagement and cultivate the global maritime security partnership. A key tenet of the document was that, as mentioned above, trust and confidence among navies must be built patiently day by day and cannot be "surged" in times of crisis.

During the Cold War, U.S. membership in NATO provided the U.S. Navy a built-in alliance with European navies, supported by a formalized command structure and set doctrine and procedures. In the post–Cold War era, NATO nations have reduced their defense spending and have reduced their naval forces significantly. Moreover, the locus of potential major-power conflict has shifted to the Middle East and East Asia. Outside of defense pacts with Japan, with its growing navy, and South Korea and Australia, the United States has little in the way of formal arrangements that would underpin joint naval operations. However, nations such as the Philippines, Indonesia, and even Vietnam possess small but potentially significant navies and strategic geography that could be valuable to the United States in the event of conflict with China. Similarly, a variety of nations in the Persian Gulf region possess both navies and geography of potential utility to the United States if war with Iran breaks out. However, without an alliance structure like NATO's, the framework for and details of cooperation either

must be ad-libbed in crisis (surging trust and confidence) or, preferably, worked out deliberately in peacetime.

Most nations not bound into an alliance, while happy to conduct joint training with the U.S. Navy, are not anxious to commit to an a priori anti-Iran or anti-China alliance. However, as Iranian and Chinese aggressiveness build over time, the United States needs to weave together as many threads of a naval coalition as possible, both to enhance deterrence and to complicate potential opponents' military operations. This fabric must be woven, per the logic of the 2007 CS21, gradually over time. Familiarity and confidence that would lead to close cooperation in the event of war are never givens; each state will act according to its sovereign interests. However, routine and iterative engagement on peacetime missions such as maritime security helps increase the odds that effective cooperation at higher levels on the spectrum of conflict will emerge more effectively and in a more timely manner.

ENGAGEMENT AS A COMPONENT OF FLEET DESIGN

There are various reasons for a navy to want as many ships as it can get. The traditional and obvious reason is to outnumber a potential enemy in whatever class of ship is regarded as the "counting unit" of seapower. This increases the odds of victory in case of war, and thus also presumably enhances deterrence. However, if fewer ships can be had, then each one, under this logic, ought to be as powerful as possible. This approach makes perfect sense if the key to national security is the ability to win a decisive naval battle. Alfred Thayer Mahan advocated such a strategy, and in the geopolitical conditions of his day it made sense. It also makes sense if one's ships individually decisively outclass any capability any potential enemy could bring to bear. This has been the case with American aircraft carriers up until the last decade or so. They could approach virtually any shore with impunity and use their embarked airpower to deter or defeat local aggression. However, as they have become fewer in number and threats to them have become more credible, the logic of trading numbers for capability is starting to fray.

Another reason for having numerous ships is to be able to bring power and influence to bear in multiple locations at the same time. Since its founding, the United States routinely has dispersed naval forces around the globe to protect its commercial and political interests. Most often, this aspect of naval strategy has not required powerful forces, only individual ships or small squadrons. On the other hand, during the Cold War, the United States needed powerful forces for routine forward presence at multiple locations around Eurasia, and so maintained at least fifteen carrier battle groups. The collapse of the Soviet Union removed the compelling reason to have so many groups, and the number has shrunk gradually to eleven. There are still reasons to have powerful groups forward, but eleven

carriers is not enough to use them as the default presence platform in a strategically comprehensive manner.

The 9/11 attacks produced a new kind of naval dispersion requirement: global maritime security. To protect America's homeland and those of allies and friends from terrorist smuggling via the sea, the entire maritime environment has to be secured. As previously stated, the 2007 CS21 provided the basis for securing the international naval cooperation needed to attain comprehensive maritime security. Beyond the interaction of individuals in symposia such as the International Seapower Symposium (ISS) and the Indian Ocean Naval Symposium, international war games, and personnel exchanges, the Navy found itself conducting large numbers of port visits in areas it normally had not frequented, such as the littoral of Africa, to increase the capabilities of smaller navies and reinforce commitment and resolve. Initially the Navy conducted such engagements with its combatants and amphibious ships, but experience indicated that these smaller navies felt intimidated by such ships, so the Navy took to using smaller vessels, such as the catamaran high-speed vessel (HSV). This was at least a partial validation of Vice Admiral Morgan's "3/1" strategy.

While Al Qaeda may have been crippled over the past fifteen years, it still maintains some capability. The rise of the Islamic State and the continuing viability of the Taliban indicate that maritime security is a strategic naval mission that cannot be taken for granted. While enormous gains in the development of a global maritime security partnership have been made, the structure is informal and voluntary, and so requires continuous effort to keep it going; and because it is not yet globally comprehensive, work is needed to bring more navies into the framework. While individual and organizational engagement constitutes a large part of the effort, ship visits and joint exercises are still required, and these missions demand a fleet of vessels tailored to the job, in both character and number. Given the potential strategic damage that an attack—say, a biological one—from the sea could cause, or the impact on the economy of shutting down air traffic after an airliner has been brought down by a smuggled man-portable surface-to-air missile, maritime security is an inherent and critical component of the Navy's strategic mission portfolio, and therefore a necessary component of fleet design.

Cooperation on maritime security is based on a shared unity of purpose among nations. As former Colombian CNO Admiral Guillermo Barrera has said, "Any nation that benefits from the sea has a responsibility to help secure it."[8] That unity of purpose is based on the notion that globalization has created a world economic system in which every nation has a stake. But the system is subject to any number of threats and disruptions, ranging from maritime piracy to major-power war. In theory, missions involving defense of the system that occur at any level of the layer cake become a responsibility of all nations, contributing as each

is able. Such an attitude is strategically important to the United States in its efforts both to secure its coasts and to deter aggression by "rogues" and near peers. This attitude was evinced to some extent during the Korean War, when twenty-two nations joined the United Nations Command in one way or another. The argument advanced by this article is that such cooperation can be made more likely and more widespread in the maritime realm by constant engagement and cooperation on maritime security, disaster relief, and a host of other peacetime missions.

The linkage between routine maritime security work and higher levels of conflict can be illustrated by a notional example. In the South China Sea there are numerous overlapping territorial claims. Currently China is building artificial islands to create military bases to back up its extensive—and illegal—claims. Southeast Asian nations mostly have small coastal navies that are unable to operate very far out at sea for very long. One method of maritime security cooperation in the capacity-building realm would be for the U.S. Navy to configure one of its *San Antonio*–class amphibious transport docks (LPDs) to function as a mother ship or sea base for Philippine, Vietnamese, Bruneian, and other navies' patrol craft to build experience and confidence operating to the limit of their claimed exclusive economic zones. Routine operations by a number of nations inside contested waters could complicate the politics for China; China's scope for easy expansionism would become more limited if such operations stimulated the confidence of Southeast Asian nations and resulted in their developing greater war-at-sea capabilities.

A governing concept of engagement is to avoid the perception that the United States simply is attempting to drag other nations into its own quarrels or to advance its own parochial strategic interests. This was a perception problem for the Navy in 2003–2006 as it attempted to secure international maritime security cooperation in the wake of the Iraq invasion. The United States was seen as an interventionist power pursuing its own agenda, and this interfered with the ability of international naval leaders to develop closer ties with the U.S. Navy or to buy into the notion of global maritime security cooperation. The 2007 CS21 was able to reverse that perception both by involving a range of international navies in its development and through its inclusion of (1) the key concepts of defense of the global system; (2) the statement that preventing wars is as important as winning them; and (3) the framework of globally deployed, mission-tailored forces for engagement.[9] Efforts such as Secretary Carter's to curtail engagement capability (through reducing the buy of LCSs) to enhance war-fighting posture run counter to that concept.

The U.S. Navy's latest strategy document, "A Cooperative Strategy for 21st Century Seapower: Forward, Engaged, Ready" (CS21R), is supposed to be a "refresh" to the 2007 CS21. However, in this writer's view, it is a completely different

document with different purposes. Whatever the new document's virtues with respect to its intended purpose (and there are many), some of its language is at cross-purposes with the intent of its predecessor and could undermine the Navy's efforts to engender increased levels of international naval cooperation. This concern will not be readily apparent to most who read the new document, as it does contain language that calls for such cooperation.[10] However, several sections of the document contain statements such as "Enhance the ability to command and control operations to project power from the sea in contested environments, including interoperability with partner nations."[11] There is good reason for the U.S. Navy to try to achieve interoperability with other navies for high-end combat operations, but CS21R does not distinguish clearly between cooperation for maritime security and cooperation in combat. Other navies will parse the document closely, looking for hidden agendas. Conflating all naval cooperation functions from low end to high end will spark suspicions that the United States will try to drag international navies into wars in which their nations do not want to participate. This was precisely the problem Admiral Mullen faced back in 2005–2006 as he attempted to put together the "thousand-ship navy" for maritime security purposes. It took the indirect approach of the 2007 CS21 to allay those fears.

This article contends that expanded engagement at lower levels of the engagement layer cake will enhance, over time, the prospects for wider participation in higher-tiered missions. However, the process requires patience, commitment, and continuity over time to generate trust and confidence. Establishing a sense of unity of purpose is critical, and focus on the lower tiers is the most promising way to get that process started. As it evolves, work on training and equipping for higher-tiered missions can be undertaken as other countries and their navies become politically ready for such moves. Of course, the U.S. Navy already conducts extensive engagement activities around the world; the issue is how future fleet design will affect the process.

RECOMMENDATIONS

It is, of course, simply not the case that the Navy's high-end power should be designed on the basis of a bottom-up application of the global naval layer cake concept. However, as the Navy gets smaller even as its global commitments remain constant or even increase, and as the cost of high-end combat units escalates, the Navy has to find relief somewhere. Forward-basing schemes and blue/gold crewing concepts require various regional nations to agree to allow the U.S. Navy to establish at least temporary facilities in their territories. At the very least, application of the naval engagement layer cake theory could facilitate the statesmanship needed to obtain such permission. Success along this line of effort would result

in more forward combat power at key locations. But this is more in the way of expressing a desired outcome than a recipe for implementation.

An obvious first step is for the Navy, via some new strategy document, to acknowledge the importance of engagement work and to counteract any suspicions raised by CS21R. This would be not so much a sop to foreign navies as a course change to the internal culture of the Navy. Here again, quite obviously, the foundation of the Navy ethos is war fighting and the warrior. However, given the long, glorious history of the Navy executing both strategic functions, the ethos of the naval warrior and that of the naval diplomat can exist side by side, with neither diluting the other. A new document must be developed with a clear understanding of its purpose and its intended audience. It should distinguish clearly among the levels of naval cooperation and avoid language that could be interpreted as default U.S. presumptions of other nations' policies in particular sets of circumstances. Despite its many strengths, CS21R contains such language.

As a midshipman and junior officer, I was taught that a naval officer is capable of performing literally any task that might come along—sort of a glorious amateur, in the Royal Navy tradition. And in fact, I have witnessed naval officers of all designators performing brilliantly in positions and situations way outside their backgrounds and training. That said, if the Navy is to take the engagement function seriously, it should have a cadre of personnel who can build progressive professional experience over time, allowing them to perform in a more sophisticated manner than would be possible on a one-tour basis. It does not seem necessary to establish a new designator when the Navy has at its disposal the existing foreign area officer (FAO) program. This program could be modified to include enlisted personnel and involve progressive assignments that would include mission command of partnership stations and perhaps command of HSVs or other ships that are most appropriate for engagement missions. A full definition of the engagement function could include designated flag billets, providing a viable promotion path for FAOs.

The big question in the minds of many is whether the Navy ought to divert shipbuilding and other programmatic resources to the engagement mission. The fear of those who regard such work as collateral is that any such diversion of resources will reduce unwisely the number of combatants the Navy has—a legitimate fear in a highly constrained budget environment. There are two ways of addressing this concern. First, as it happens, the Navy already has made a program decision to procure a number of HSVs for logistic work, and already they have proved useful as platforms for various partnership station initiatives in Latin America and Africa. They are relatively cheap and the Navy is getting double use from them, as both a useful logistic platform and a useful engagement platform.

In the future, the Navy might get an additional use from them if a variety of antiship and other missiles are containerized. The HSVs could become lethal combatants for specific purposes in specific areas under the emerging "distributed lethality" concept.[12]

There is also the matter of day-to-day execution of the layer cake theory. All the sea services must work together to make the process yield results. Wide dispersion of forces is necessary to conduct the engagement that widens the lower layers, but even with full Navy buy-in of the engagement function, ships and other resources still will be relatively scarce. A strategy must be developed for focusing resources where they will do the most good on a global basis. Not long after the issuance of the 2007 CS21, the Navy established the Global Engagement Strategy Division (N52), which was supposed to do that very thing. However, despite a good start, it was populated subsequently with desk officers whose purpose was to prepare the CNO for foreign engagements, thus changing the division's focus from planning to execution. The Navy's current force-distribution strategy is to "satisfice" combatant commander (COCOM) demands as best it can, but there is no global vision behind this, since each COCOM is interested almost exclusively in conditions in his theater. Most recently, the Navy's "supply side" deployment scheme is based on availability of forces rather than strategy, and is receiving pushback from the COCOMs.[13] The Navy must rehabilitate the strategy-development function of N52 so it can arm the CNO with arguments for force distribution that may not accord with COCOM requests for forces.

Normally, engagement is regarded as what forward-deployed forces do on a day-to-day peacetime basis. However, there is more to it. Foreign naval officers attend U.S. Navy education and training courses, and any number of naval training and education activities are undertaken in foreign countries. These are relatively inexpensive measures compared with ship visits and exercises. The Navy ought to take more advantage of its shore establishment, especially by including such activities in its global engagement strategy. Clearly, such activities must be coordinated with COCOM theater security cooperation plans and policies, but—unlike the distribution of forces afloat—the Navy has near-definitive authority for planning and executing them. Part of this branch of global naval engagement is the biennial ISS held at the Naval War College. Increasing attendance since the issuance of the 2007 CS21 has been an indicator of the health of the global maritime security partnership. In 2009–11, then-CNO Gary Roughead linked international war gaming conducted by the Naval War College to the ISS, with significant benefit. This linkage ought to be renewed, and a strategy for using the ISS to advance maritime security cooperation developed.

Finally, even if the Navy leverages the FAO corps for leadership in the engagement function, the operant element of Navy culture is that diplomacy and

engagement are everybody's business, from seaman to admiral. In the day-to-day process of honing the Navy's combat prowess, care should be taken to avoid presumptions that foreign navies might construe as arrogance. This is part and parcel of Theodore Roosevelt's admonition that the United States should speak softly but carry a big stick. The Navy is precisely the big stick Roosevelt had in mind, but without deft international statesmanship on the part of all naval officers and sailors, that stick becomes increasingly brittle. To secure maximum international cooperation in times of crisis and war, patient, steady attention to the engagement function in peacetime will pay dividends. This is the connection between maritime security and naval war fighting.

NOTES

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3. For fleet design, see Adm. John Richardson, "A Design for Maintaining Maritime Superiority," January 2016, available at www.navy.mil/.
4. Alfred Thayer Mahan, *Naval Strategy Compared and Contrasted with the Principles and Practice of Military Operations on Land: Lectures Delivered at U.S. Naval War College, Newport, R.I., between the Years 1887 and 1911* (Boston: Little, Brown, 1911), p. 5.
5. The description of this disagreement is based on personal observation by the author, who was then chairman of the War Gaming Department and later dean of the Center for Naval Warfare Studies at the Naval War College.
6. J. T. Conway, G. Roughead, and T. W. Allen, "A Cooperative Strategy for 21st Century Seapower," October 2007, available at www.navy.mil/; repr. *Naval War College Review* 61, no. 1 (Winter 2008), pp. 7–19.
7. For a more extensive account of the development of CS21 and a strategic analysis of its logic, see Robert C. Rubel, *The Home Fleet: Pivot of Maritime Strategy,* Corbett Centre Paper 16 (London: King's College London, May 2015), available at www.kcl.ac.uk/.
8. Adm. Guillermo Barrera, discussion with the author, Bogotá, Colombia, ca. 2009.
9. The author directed the Naval War College research and gaming effort that underpinned development of the 2007 CS21. At subsequent International Seapower Symposia, a number of foreign heads of navies told the author that the document provided top cover with their respective governments, allowing them more easily and fully to cooperate with the U.S. Navy.
10. J. F. Dunford, J. W. Greenert, and P. F. Zukunft, "A Cooperative Strategy for 21st Century Seapower: Forward, Engaged, Ready," March 2015, pp. 13–18, available at www.navy.mil/.
11. Ibid., p. 34. See also statements on pp. 8, 9, 33.
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DISTRIBUTED STOVL OPERATIONS AND AIR-MOBILITY SUPPORT

Addressing the Mismatch between Requirements and Capabilities

Robert C. Owen

This article examines the logistical support requirements of distributed short-takeoff–vertical-landing (STOVL) operations (DSOs) by U.S. Marine Corps F-35B Lightning II fighters, and alternative solutions to fulfilling those requirements. As presently envisioned by Marine planners, DSOs will improve the operational flexibility, survivability, and lethality of F-35Bs by operating them from constantly shifting networks of mobile forward arming and refueling points (M-FARPs). Current Marine Corps planning calls for deployed Marine expeditionary brigades (MEBs) to support DSOs both from the ships comprising their sea bases and by using their organic ground and aviation transportation assets. Studies show that this "organic" support concept is viable up to a multisquadron scale of operations.

However, this article suggests that a joint logistics approach based on U.S. Air Force (USAF) air-mobility assets can offer significant advantages in the flexibility and sustainability of DSOs and in reducing their risks, particularly in the face of enemies possessing sophisticated antiaccess/area-denial (A2/AD) capabilities. This article also assesses that the addition of a medium-sized tanker/transport aircraft would greatly enhance the capability of the current and planned USAF air-mobility fleet to support DSOs at the widest

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possible range of places that Marine Corps and combatant commanders might want to establish M-FARPs. Given the possibility that DSOs may offer the best, or even the only, opportunity to base fifth-generation fighters forward in strong A2/AD environments, the value of assessing these logistical alternatives is clear.

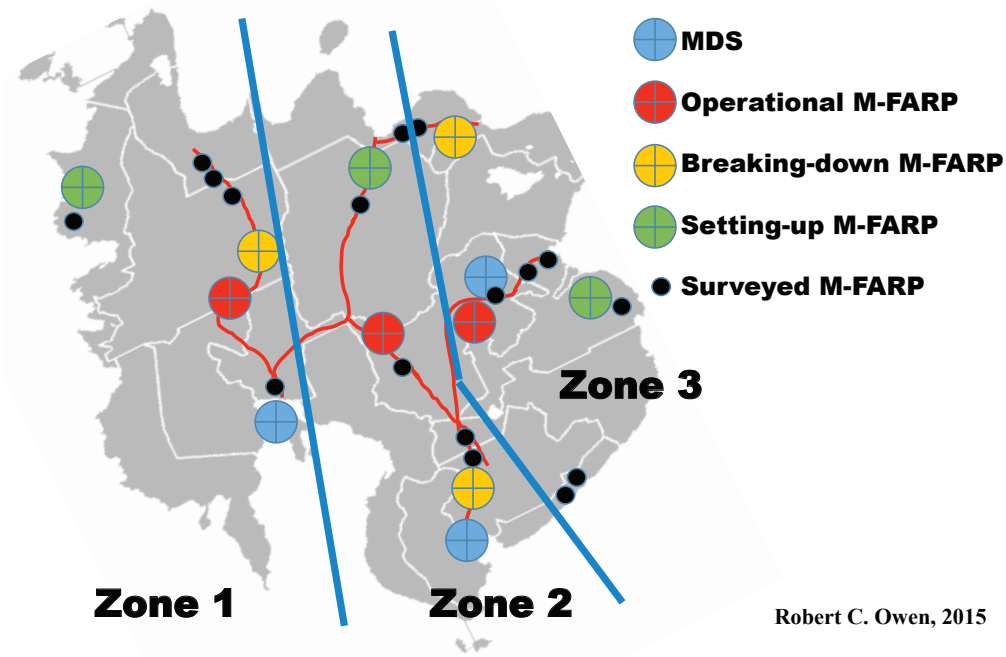
From an operational and logistical perspective, it is important to understand that sustained and successful DSOs will draw on the support of other Marine and joint forces and operations. Deception operations in the form of decoy facilities, along with counterintelligence signals and misinformation, will degrade and delay enemy efforts to locate and target active DSO elements with enough certainty to justify releases against them of high-value, short-supply weapons systems. Marine and host-nation security, combat-engineering, and logistics support will be needed to defend and sustain DSO units in the presence of differing combinations of enemy air and ground threats. F-35Bs operating from M-FARPs will often achieve their best successes as elements of broader air-component information, surveillance, reconnaissance, counterair and air-defense missile, and counterair operations. Although operating F-35Bs from M-FARPs could reduce demands on air-refueling (AR) forces, tanker support also can enhance the operational advantages of forward basing. Thus, while this article focuses on M-FARP logistics, logistical and operational planners should be aware of the full contexts and costs of such operations.

CONCEPT AND OPERATIONAL VIABILITY

Marine Corps planners expect DSOs to enhance the depth and power of F-35B operations through frequent and unpredictable relocation of their bases. More specifically, the 2015 Marine Aviation Plan explains that "DSO asymmetrically moves inside of the enemy targeting cycle by using multiple mobile forward arming and refueling points . . . [u]sing existing infrastructure (multi-lane roads, small airfields, damaged main bases) . . . [to provide] strategic depth and operational resiliency to the joint force . . . [and provide] the Marine Air-Ground Task Force (MAGTF) with game-changing strategic access inside of the enemy weapons engagement zone."[1] The success of the concept, therefore, rests on the ability of Marine commanders to shift force elements among networks of austere bases faster than enemies can locate, target, and release attacks against them.[2] These MAGTF assets may include actual and decoy M-FARPs, sea bases, mobile distribution sites (MDSs) linking sea bases to M-FARPs logistically, and the full range of MAGTF air transport, amphibious craft, and trucks to maintain robust supply flows.[3]

Consider a conflict with China in the western Pacific as a potential—although one hopes an unlikely—worst case. This scenario offers insight into the viability of the DSO concept. Most importantly, China's capacity to launch long-range

FIGURE 1
CURRENT-CONCEPT M-FARP LAYDOWN MAP



strikes against fleeting targets *decreases* significantly over distance. (1) Out to about four hundred nautical miles (nm) from its land bases, China can launch powerful, robust, all-capabilities (cyber, space, air, naval, and special-operations) "gorilla" strikes.[4] These capabilities draw on magazines of about twelve hundred short-range ballistic missiles (SRBMs), several hundred medium-range ballistic missiles (MRBMs), hundreds of cruise missiles, and around 2,100 (six hundred modern) combat aircraft. (2) Beyond the "gorilla ring," however, China's strike capabilities shrink to its MRBMs and cruise missiles, a few squadrons of medium bombers, and whatever fighter forces its limited AR fleet can project. (3) Beyond a thousand miles from the homeland, China's standoff strike capabilities are limited to cruise missiles carried by surface ships, submarines, and handfuls of air-refueled bombers, all operating at great risk in contested battle zones and generally far from their weapons-reload facilities.

China's ability to provide timely targeting data for M-FARP attacks also decreases quickly with increased distance from the homeland. Within the range of gorilla strikes, for example, China could search for DSO forces with a layered and robust network of information, surveillance, and reconnaissance (ISR) assets. These would include satellite-borne radar, optical, and other sensors; seaborne and airborne line-of-sight radar and optical systems; special operations forces (SOF); local fifth columnists; and even news reporters looking for scoops. Although some or all of these capabilities would be vulnerable to degradation or

destruction by U.S. and allied attacks, they could for some periods provide near-continual, although not always detailed, surveillance of selected areas of interest.

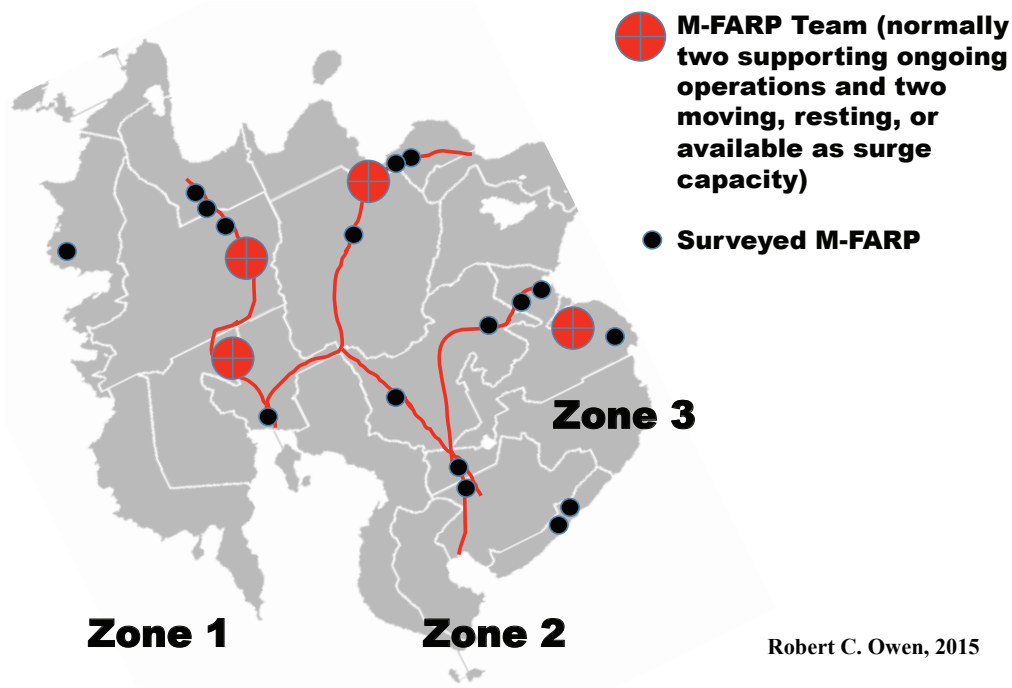
Beyond the gorilla ring, however, China's ISR capabilities would reside in a less-complete array of systems. These would consist of space and airborne systems, which would be sporadic, limited, or both in their ability to detect small and fleeting targets and subject to interference or interdiction; over-the-horizon, high-frequency radars, which are limited in their locational accuracy and target discrimination; and perhaps SOF and fifth-column elements, which would operate under significant limitations on their movements and communications.[5] Even in the face of an enemy possessing a strong suite of these capabilities, such as China, the Marine DSO study anticipates that the daily shifting of actual and decoy M-FARPs could allow them to evade detection for six to nine hours from the time they set up for a new day's operations.[6] Given the frequent relocations of these FARPs, the short ti me spans for which aircraft would occupy them, and the ability of M-FARP ground crews to disperse aircraft service points at random, information that was six to nine hours old would be stale and unusable for targeting long-range systems at M-FARPs with any confidence of actually hitting anything of value. Under such circumstances, DSO forces could do their jobs and survive.

Finally, some assessments of China's decision-making and command-and-control (C2) cultures offer additional hope for the success of DSOs. Given the limited supply and strategic importance of China's long-range missile and aircraft-attack systems, there is good reason to anticipate that the country's leaders would be reluctant to expend them on elusive M-FARPs that might or might not have aircraft on them when their warheads struck. They might think it better to hold back those weapons for use against targets of greater operational and strategic value, such as C2 centers, major air bases, aircraft carriers, supply ships, and fixed surface-to-air missile sites. Also, a number of experts on Chinese strategic issues recognize significant disconnects in trust, understanding, goals, and coordination between and within Chinese civil and military elites. These disconnects could delay or block weapons-release decisions against difficult or lesser-value targets.[7] For instance, civil leaders determined to preserve the deterrent value of the few hundred DF-21 MRBMs in their arsenal might refuse military requests to use them in speculative attacks against troublesome M-FARPs. In a major conflict, these weapon-management and civil-military disconnects probably would not provide reliable sanctuary for DSO units, but they might help delay or minimize the frequency, weight, and timeliness of attacks against them.

LOGISTICAL CHALLENGES

Given reasonable expectations that DSOs can be executed successfully, logistics emerges as a critical challenge to the concept's viability. DSOs involve a lot of

FIGURE 2
AIR MOBILITY–SUPPORTED M-FARP LAYDOWN MAP



moving parts, substantial supply requirements, and shifting lines of communication. The recent Marine Corps study of the organic transportation assets available to a MEB to support DSOs reveals just how big and complex the logistical challenge can be (see figure 2).

The study was based on a reinforced complement of thirty-six F-35Bs operating from a MEB sea base or an expeditionary airfield and supported by an onshore network of three MDSs, each supporting an operational M-FARP, plus one setting up and another breaking down.[8] For logistics-planning purposes, the study postulated that the air-combat element would launch twenty-eight aircraft daily, each flying an initial combat air patrol sortie, refueling and rearming at an M-FARP, flying another sortie, resetting again at an M-FARP, flying a third sortie, and then recovering to the sea base. Each F-35 would load missiles and six tons of fuel after each sortie. Together, then, the three M-FARPs would require resupply of 336 tons of fuel and up to 280 tons of containerized munitions each day.

Depending on the number of transportation and other vehicles deployed ashore to connect the MDSs to their M-FARPs, and on whether the F-35s bedded down on the sea base or an expeditionary airfield ashore, the total tonnage of fuel required to support the ground and air elements of DSOs would range from 544 to 1,337 tons per day, plus the nonfuel sustainment requirements of shore complements ranging from eight hundred to eighteen hundred personnel.[9]

FIGURE 3
NOTIONAL F-35B COMBAT AIR PATROL SCHEDULE

Source: System Planning and Analysis, "STOVL Operations," p. 37.

Whatever the basing model, satisfying these requirements likely would consume the lift capacity of almost all of a MEB's rotary-wing transport aircraft (CH-53Ks and MV-22s), amphibious craft, and trucks.[10]

Consequently, relying on MEB organic transportation assets to support DSOs could pose significant operational risks for Marine and joint commanders. Most importantly, tying DSOs to organic capabilities could limit the operational flexibility and overall responsiveness of the MAGTF in an unfolding campaign. Tailoring the MAGTF to support such an unusually large complement of F-35s likely would require leaving some of its normal complements of air- and ground-combat and support assets and personnel ashore to make room for additional F-35Bs and their support equipment and personnel. That, and the debarkation of so many vehicles and personnel ashore, could increase the time needed for the MAGTF to reconfigure and deploy for other missions elsewhere in a theater of operations.

An "organic" approach to DSO support also would increase the vulnerability of sea bases and transportation connectors to detection and attack. Trucks driving perhaps hundreds of miles between MDSs and shifting M-FARPs would be subject to the normal hazards of travel on sometimes primitive road systems, and vulnerable to long-range attacks at choke points and to harassment by SOF and locals sympathetic or beholden to the enemy. The short operating ranges of amphibious craft and CH-53 and MV-22 rotary-wing aircraft carrying externally slung loads of fuel bladders and missile containers would restrict the maneuver space available to ships in the sea base to within twenty-five to fifty nautical miles of their supported MDSs.[11] Thus, enemies detecting the presence of M-FARPs in an area would not have very far to look for their support ships, MDSs, and choke points along surface lines of communication. Reasonably, they would realize that striking those relatively fixed and thus vulnerable targets would be a more remunerative strategy for shutting down DSOs than expending precious ISR and long-range strike assets to snipe at elusive M-FARPs.

OPTIONS FOR MITIGATING LOGISTICAL RISKS

There are at least three options for reducing the logistical risks inherent in DSOs.

First, the Marine Corps could increase the size of supporting sea bases. For example, adding the twenty-aircraft capacity of an *America*-class amphibious

assault ship (LHA) to a sea base could allow a MEB to support expanded F-35B operations with minimal reconfiguration of its other ships. The MEB, consequently, would remain ready for quick application to other missions.

Second, the Marines could allocate KC-130Js to carry some or all aviation sustainment supplies directly into supported M-FARPs. The KC-130s' ability to operate on multilane highways, damaged air bases, or unpaved airstrips would allow them to deliver support directly to or very near almost any location employed by F-35Bs. The advantages of this approach would be a reduction in shore complements and the risks associated with surface transportation between MDSs and M-FARPs.

The third option would be for Marines to draw on Air Force air-mobility assets to provide direct or near-direct support to the M-FARPs. The obvious advantage of this is that the air component's tanker and transport forces have greater range and capacity than organic Marine lift assets.

Each of these options offers significant advantages to DSO planners; but they also present significant concerns.

Expanding sea bases to support F-35B operations would present commanders with several operational and risk challenges. The first is finding a "spare" LHA and supporting ships somewhere in the world that could arrive on the scene of DSOs in a timely manner without imposing offsetting risks on the readiness of other MAGTFs. However, even presuming that operational urgency justified such a move, expanding a sea base would not mitigate the vulnerability of its ships or of the MEB's transportation assets ashore to long-range attack. In short, bringing in additional ships would be more about preserving the flexibility and responsiveness of the MAGTF than about improving the viability of DSOs.

FIGURE 4

Two J-35Bs prepare to refuel from a Marine KC-130J

USMC photo

Although applying Marine KC-130Js to M-FARP support could both enhance MAGTF readiness and reduce risks, the Marine airlift fleet generally is inadequate to the task. C-130J payload-distance characteristics often will fall short of need in theaters that are geographically expansive, such as the Asia-Pacific and Africa. For illustration, "Js" flying unrefueled, 2,800 nm round-trip missions between Tinian, an island outside the range of China's current MRBMs and land-based cruise missiles, and M-FARPs on the Philippine island of Luzon could deliver a maximum load of fifteen tons per sortie. C-130s operating from expeditionary bases outside the range of Chinese gorilla strikes but within range of heavy missile attacks—say, over the 1,380 nm round-trip between General Santos Airport in southern Mindanao and the Luzon M-FARPs—could deliver twenty-two tons per sortie. From a conservative estimate that air transports would have to deliver about 666 tons of cargo per day (336 for aviation fuel, 280 for munitions, fifty for all else), the impact of the distances involved and the C-130's payload-range performance becomes clear. On the basis of the data in table 1, a presumption of only one sortie per day per aircraft, and an 80 percent aircraft availability rate, the Marines would have to deploy fifty-six of their worldwide fleet of around sixty KC-130Js to support the Luzon M-FARPs. Assuming the same data, except now a two-sortie-per-day rate, twenty-eight C-130s would be needed to support the mission from Mindanao. Moreover, those C-130 units probably would have to conduct their own version of DSOs to survive operations within the enemy missile ring, with all the logistical burdens that would imply.[12]

It is also worth considering that, while the cargo decks of KC-130s would be capable of accommodating all the sustainment supplies and most of the vehicles M-FARPs would need, they would not be capable of handling some critical assets. These would include LVSR SIXCON refuelers (critical for getting fuel across rough terrain), fully assembled seven-ton trucks, and all-terrain forklifts. They also could not carry slat-armored light assault vehicles and some civil engineering equipment that might be needed to open and defend M-FARPs and lines of communication. The reality is that the Marine C-130 fleet is too small and limited in its cargo-handling features to deploy and sustain DSOs fully under the circumstances discussed above.

At first glance, the big transports and tanker/transports in the Air Force's global fleet appear to be a ready solution to the problem of reducing risks to sea bases and personnel during DSOs. Consisting of around 220 C-17 and 350 C-130 transports and fifty-nine KC-10 and four hundred KC-135 tankers, with KC-46 tankers to be added soon, the gross capacity of the mobility fleet dwarfs the most ambitious DSO requirements. Ten KC-46s flying 1.5 missions per day out of Tinian, for instance, could satisfy the 666-ton logistical requirements of the notional Luzon M-FARPs, and offer the added flexibility of aerial refueling.[13]

TABLE 1

Performance Specification	C-17A	C/KC-130J	A400M	KC-46A	KC-135R
General Aircraft Characteristics					
Maximum takeoff weight (MTOW) (lbs.)	585,000	164,000	310,850	415,000	322,000
MTOW for unsurfaced airfield (lbs.)	447,000	135,000	286,600	N/A	N/A
Maximum cargo load (short tons), surfaced runway	82	24	41	60	18
Tactical takeoff distance over 50′ obstacle, sea-level conditions	4,200	2,600	3,700	8,000 (normal MTOW field length)	11,000 (normal MTOW field length)
Tactical takeoff roll, no payload, fuel for 1,000 nm + reserve, standard sea-level conditions	2,500	1,700	1,640	N/A	N/A
Aircraft Classification Number, MTOW, concrete pavement, high-strength subgrade	52	27	18	44	37
Cruise fuel burn (pounds per hour)	21,000	5,500	8,500	10,500	11,200
Cruise speed (knots)	440	340	433	460	460
Length	174′	122′9″	148′	165′6″	136′4″
Wingspan	169′10″	132′7″	139′	157′8″	132′6″
Wheelbase	33′8″	14′3″	20′5″	30′6″	22′1″
Range (nm), MTOW, Normal Fuel Reserves + 1-Hour Refueling-Track Fuel When Operating as Tankers					
100% payload/fuel transfer (tons)	2,400 (80)	800 (22 cargo) 1,480 (30 fuel)	1,700 (41 cargo) 0 (69 fuel)	0 (106 fuel)	0 (100 fuel)
50% payload/fuel transfer (tons)	4,000 (40)	3,200 (12 cargo) 3,200 (15 fuel)	3,500 (20 cargo) 2,300 (35 fuel)	4,556 (52 fuel)	3,600 (50 fuel)
25% payload/fuel transfer (tons)	5,600 (20)	3,500 (6 cargo) 4,100 (7.5 fuel)	4,350 (10 cargo) 3,650 (17 fuel)	5,900 (26 fuel)	5,600 (25 fuel)

Flying the same profiles, seven C-17s could do the job, although without offering the AR option. In combination, then, relatively small numbers of Air Force air-mobility aircraft could obviate the need to keep sea bases close to shore and to put hundreds of Marines at risk driving and protecting trucks between MDSs and M-FARPs.

Unfortunately, the interplay of the payload-range and airfield infrastructure requirements of the Air Force's current and planned air-mobility fleet would limit its ability to support directly the austere M-FARP clusters favored by DSO planners. The big C-17s in the fleet can bring a lot of fuel and supplies into short and unsurfaced or weakly paved runways; however, just a few landing and takeoff passes will render such airstrips unusable through rutting and gouging.[14] Air Force C-130s could get into most M-FARPs, but they would suffer the same range, payload, and cargo-dimension limitations as their Marine cousins. Even worse, from a DSO perspective, all Air Force long-range tankers are modified airliners. As such, they are efficient load carriers, but capable of operating only from first-class airfields possessing long, hard-surfaced runways, taxiways, and parking areas. In many cases, therefore, joint air components will not be capable of transporting adequate amounts of cargo and fuel over theater distances and delivering them directly into M-FARPs. To the extent that these shortfalls in direct delivery capacity oblige MAGTF commanders still to put people and vehicles on the ground to move supplies from MDSs and big airfields to M-FARPs, the opportunities offered by air mobility to enhance operational flexibility and reduce risks will be lost.

MITIGATING THE AIR-MOBILITY SHORTFALL

Despite its present limitations, the potential of air-mobility support to mitigate the operational and logistical risks of DSOs justifies a search for ways to mitigate its inadequacies in support of M-FARPs. Of course, to be useful in the current financial environment, any opportunity considered must prima facie promise to improve operational capabilities significantly while imposing minimal or even reduced burdens on defense budgets.

These considerations suggest at least two courses of action worth pursuing.

First, Marine and Air Force logistical and operational experts must figure out how to get the most from the existing air-mobility fleet in the DSO context. This effort must include studies, discussions, and exercises that examine the full operational, logistical, and threat contexts of DSOs in the presence of moderate-to-high A2/AD threats. Such a learning process would improve the ability of all parties to use creative combinations of Marine and Air Force lift assets to conduct DSOs in a wider range of places than currently possible, and burden the budget only with the costs of thinking and training.

Second, the joint community should consider adjusting the air-mobility fleet to include an increment of aircraft better suited to support DSOs. At minimum, such an aircraft should have payload-range and cargo cabin dimensions suitable for transporting all DSO logistical requirements over strategic distances (meaning from bases outside the range of all, or at least most, enemy missile and aircraft strikes) and delivering them directly to or very near M-FARPs. Support from such an aircraft would allow Marine commanders to conduct maximal DSOs from the widest range of locations. Such aircraft also would improve the mobility fleet's capacity to support other operations requiring logistical throughput directly to points of need/employment, such as Army and Marine deep-maneuver operations, and resupply of air bases damaged or under the threat of damage by enemy A2/AD operations.[15] The utility and survivability of such a system would be further enhanced if it also possessed AR capabilities.

CASE STUDY

This section presents a case study to illustrate the leverage provided by a medium-weight, austere airfield–capable tanker/transport aircraft to DSOs. It is simplistic; clearly a full analysis of all the relevant mobility options available is beyond the scope of this article. But by providing an analysis of the effect of integrating Airbus A400Ms into DSOs, it should at least illustrate the value of this type of aircraft to operations in regions characterized by sparse airfield infrastructures.

The A400M is an "outsize" military transport/tanker aircraft capable of operating into virtually any airfield or multilane highway strip usable by the C-130.

FIGURE 5

A400M in flight

Courtesy of Airbus

FIGURE 6

A400M refueling F-18s

Airbus Defense and Space 2015; Photo by Master Films / A. Doumenjou, used with permission

In airlift parlance, *outsize* refers to an aircraft that has larger cargo deck cross-section dimensions than a standard military 463L cargo pallet. In this case, the A400's cabin, including the loading ramp, is 74′ length × 13′ width × 12.6′ height (minimum), while a standard-length Marine Corps C-130J's similar dimensions are 50′ × 10′ × 9′, including the loading ramp. The A400M's greater internal volume and up to forty-one-ton payload enable it to carry all the logistic vehicles, engineering equipment, and combat vehicles that DSOs are likely to require.

A400s provide a valid—and, realistically speaking, an unavoidable—baseline for this analysis, not because it is impossible to imagine a better design for DSO support, but because A400s offer the only option in this class of aircraft likely to be available to the U.S. Air Force for the next twenty or more years. The moribund Antonov AN-70 and the developmental Xian Y-20 are in the same class as the A400M, but are not likely candidates for the United States to acquire. For its part, the Air Force abandoned successful programs to develop outsize, short-takeoff-or-landing transports, the YC-14 and YC-15, in the late 1970s in favor of developing the C-17, a design that represented a greater trade-off of short-field capabilities for increased range and payload. While the service has studied the issue numerous times since, it has taken no concrete action to develop a new type of theater airlifter. Similarly, tanker aircraft based on repurposed airliner designs are not suitable. Importantly, one of the Air Force's most recent assessments of options for acquiring a new theater airlifter found that even a modest acquisition program carried thirty-year life-cycle costs of $62–$128 billion. The Air Force's study also found that purchasing an outsize "conventional takeoff and landing" aircraft (one possessing performance characteristics similar to those of the A400M) was the least expensive near-term option for enhancing support for Army deep-maneuver forces, apart from simply buying more C-17s and C-130s.[16] So, the analysis below is based on the A400M, in full awareness that the other option—building a new aircraft—remains on the table, although the experience of acquiring the C-17 suggests it could take ten to fifteen or more years from program approval to get the first squadron operationally ready.

The case examined here is postulated on an escalating conflict over Chinese base building and oil drilling in the South China Sea, and efforts by the commander of U.S. Pacific Command (CDRUSPACOM) to deter Chinese action. In such a situation, if deterrence fails, CDRUSPACOM will want to have forces postured to seize the operational initiative anywhere along the Pacific Rim. Accordingly, CDRUSPACOM orders his Marine component commander to posture his on-scene MEB to support a reinforced component of thirty-six F-35Bs for high-intensity DSOs from a network of M-FARPs (see figure 2) on the island of Luzon. These operations could range from presence patrols over the central South China Sea to strike operations on its periphery. The PACOM commander further orders that the F-35Bs available be deployed as rapidly as possible, even as the MEB continues its organization and embarkation activities at Guam. Seeking further to preserve the readiness of the MEB for rapid movements in response to unfolding events, CDRUSPACOM directs his air-component commander to deploy an expeditionary group of A400Ms to an agile base complex around the Bohol Sea area to deploy and sustain DSO units and operations to the north.[17] As part of this commitment, the A400M force also will conduct AR operations in the vicinity of refueling track 1 (RT 1), west of the F-35B FARP complex. As soon as possible, the MEB and its sea base position themselves in a relatively secure maneuver area east of the central Philippines, from where rotary-wing assets can move relief personnel, fresh food, aircraft parts, and other light items to and from the M-FARPs.

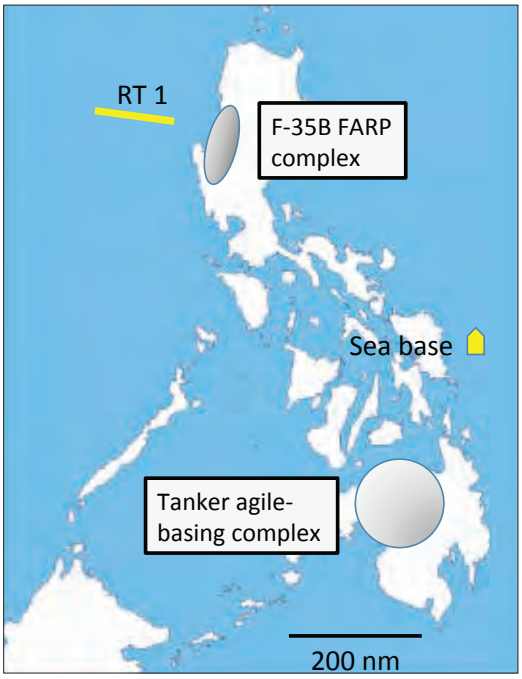
Given this complex set of requirements, the Marines would posture their DSO force to reflect the robust air-mobility support available. Accordingly, the force laydown does *not* include MDSs and long road lines of communication between them and the M-FARPs. Few or no dedicated long-haul transportation assets go ashore. Instead, the Marine commander plans on air-deploying four complete M-FARP teams from Guam to Luzon, each postured to support up to twenty-four F-35B sorties per day from highway airstrips, and possessing the organic transportation assets needed to be fully mobile, including rolling storage of a day's supply of fuel and munitions. With all assets and supplies on vehicles, each M-FARP team is capable of breaking down and departing an M-FARP site in one hour, driving up to twenty miles to a new site in another hour, and setting back up for operations in a third hour. Thus, each M-FARP is expected to shift locations at least daily. Generally, any two M-FARP teams can support the pace of sustained F-35B patrol operations while the others are in motion or resting their personnel. All might be required to support offensive and defensive surges, but only for a few hours per day. The general complement of each M-FARP team is 150–60 personnel, four heavy LVSR SIXCON refueling trucks, sixteen seven-ton cargo trucks, eight MK970 five-thousand-gallon refueling trailers, thirty-three vehicles of the

high-mobility multipurpose vehicle type, a large all-terrain forklift, and about a dozen miscellaneous trailers.[18]

The A400Ms working out of the Bohol Sea area turn out to be well suited to the mission of supporting DSOs. About twenty-eight A400M sorties suffice to move the 750 tons or so of vehicles and supplies needed to put an M-FARP in place and ready for the first day's operation.[19] A modest commitment of twenty A400Ms based around the Bohol Sea area could transport the first M-FARP team from Guam to Luzon in twenty-four hours, and move all four teams in just over three days. Once full-scale operations began, as few as ten to twelve A400M sorties per day could deliver the 666 tons of daily replenishment supplies needed by the M-FARP teams to support a combined daily tempo of twenty-eight F-35B missions, each stopping twice at an M-FARP to pick up full loads of fuel and munitions (see figure 3). Further, since these aircraft deliver their loads directly to, or very near to, the FARPs, their use eliminates the need to keep sea bases close inshore for their short-range amphibious and rotary-wing connectors to supplement the bulk logistics flow, and they eliminate the need for long, potentially vulnerable overland supply routes.

In comparison with the scenario laid out above, an effort to move and sustain this force by a combination of C-17s and C-130s would be more complex, would involve more sorties, and would increase operational risk. Moving the four M-FARP teams from Guam directly to their initial operational locations would require approximately 176 KC-130 sorties, plus a significant number of A400Ms or C-17s to move vehicles too large or too heavy to fit into a C-130.[20] Relying on C-17s to deploy the M-FARP teams and their daily supply requirements would greatly reduce the required sorties for the mission; but there are only eight developed airfields on Luzon capable of handling C-17s on a sustained basis; all are in or near major cities; and most have limited parking areas.[21] So aircraft flying into them on a repetitive basis would be visible to hundreds of thousands of people with cell phones, including many enemy nationals, and they would park at easily predicted and targeted spots.[22] Conducting sustained resupply operations into those airfields would undermine the flexibility and security of the MAGTF and its sea base by obliging it to debark substantial numbers of vehicles and personnel to transport supplies out to M-FARPs that could be a hundred miles or more away from an active aerial port of debarkation. A DSO logistics concept based on even minimal use of major airfields, therefore, might force sea bases back inshore to support the increased supply flows incumbent in the enlarged ground transportation effort, or drastically increase the amount of airlift required. In either case, much of the logistical, operational, and security benefits to be gained by bringing Air Force air-mobility aircraft into the picture would be lost.

FIGURE 7
FARP SCENARIO MAP



An additional benefit of operating outsize transport/tankers from the agile base network around the Bohol Sea would be the availability of AR support for the F-35Bs. Presuming, as an example, a sequence of three four-plane formations taking off at one-hour intervals to provide continuous coverage in one area, and potentially expending their advanced medium-range air-to-air missiles (i.e., AMRAAMs) on each sortie, the operational profile could look like this: each formation would depart the sea base, top off its fuel from A400Ms at RT 1 (see figure 7), patrol for one hour, proceed to an M-FARP for fuel and reloads, proceed back to its patrol area for an hour, return again to the M-FARP, patrol again for forty-five minutes, top off at RT 1, and then fly back to the sea base. Flying this pattern, the three formations would produce 2.8 hours of on-station time for each flight and cover the patrol area for 8.5 hours. For their part, the tankers would land at the M-FARPs as necessary to off-load munitions and recharge fuels-support vehicles. The basic logistics effort would be as follows.

Munitions required at M-FARPs	117 tons
Fuel required at M-FARPs	106 tons
AR fuel required (before first orbit and after last)	77 tons

Using the data in table 1, the chart below reflects the comparative capabilities of the A400M and the KC-130J to support this scenario from the Bohol Sea area.

Aircraft	A400M	KC-130J
Sorties required	9	18
Aircraft required	7	15
Fuel consumed by tanker/transport aircraft (thousand lbs.)	333	384
Ratio of fuel consumed / delivered to F-35Bs	.86	1.06
Required tanker/transport parking spots at each M-FARP	1	2

LIGHTNING RAIDS

Before summarizing the implications of this discussion of the integration of common-user air-mobility support into the DSO concept, it will be valuable to consider an important variation on that theme: the raid. There is a long history of air forces extending the practical depth of their offensive operations by teaming transports and tactical aircraft to establish temporary operating locations from which to conduct small-scale raids deep into enemy territories. The Marines, of course, are zealous practitioners of the art. Recently, the U.S. Air Force and Royal Air Force (RAF) have revived their interests in this concept. USAF experiments with the "Rapid-X" concept involve pairing two to four fighters with a single C-17 carrying the personnel, equipment, fuel, and munitions needed to generate sorties from isolated locations. Often this team would conduct operations in a "flex basing" mode: sitting at a particular airfield just long enough to launch a few sorties, then moving on to another location—always a step ahead of an enemy's targeting cycle.[23] Similarly, the RAF has received briefings from Airbus Defense and Space Corporation on using A400Ms to support forward fighter operations. In the Airbus scenario, an individual A400M or teams of them would deploy to austere, forward airfields, each with enough fuel and munitions to regenerate two to four fighters for an additional strike sortie. By eliminating return trips to distant main bases for rearming, this concept can nearly double the number of strike sorties available from a given force of F-35Bs over given spans of time, while nearly halving the amount of fuel burned.[24]

Once again, medium-weight, short-field tanker/transport aircraft offer attractive opportunities to exploit these linked transport-fighter and forward-operating-location concepts. Teams of A400M-equivalent aircraft and F-35Bs could operate into and from asphalt and concrete runways and highway strips of four thousand feet in length or less, presuming the fighters used vertical-rolling-takeoff-and-landing (VRL) procedures.[25] A pairing of C-17s and conventional-takeoff-and-landing F-35As and Cs, in comparison, would need runways approximately seven thousand feet in length for conventional fighter takeoffs and landings, and with high load-bearing capacities to accommodate the heavy transports. C-130s can match the airfield performance of the A400M, of course, but their operational radii generally would be smaller in support of DSOs, and they would require more sorties to support a given effort.

IMPLICATIONS

Particularly if they are augmented by medium-weight, austere airfield–capable tanker/transports, the potential benefits of using Air Force air-mobility forces to support DSOs include these:

1. Providing a flexible and reliable option for supporting DSOs in a wide range of situations
2. Preserving the operational readiness of an embarked MEB by substantially reducing the size of the onshore forces needed to support DSOs
3. Reducing the vulnerability of the sea base and onshore forces to A2/AD threats
4. Reducing the need to move carrier battle groups into forward threat zones to extend their strike range, contribute to extended deterrence, or protect Marines ashore
5. Facilitating flexible deterrence by permitting the placement of strong and survivable air forces inside enemy threat rings; indeed, air mobility–supported deployments of DSO forces may in many cases be the only effective means to exploit the short windows of opportunity available to deter enemy actions that might convert confrontations into wars
6. Improving the effectiveness of the overall air-mobility fleet in support of DSOs and other important missions, such as supporting land force deep-maneuver and battle-damaged air bases

The way forward seems clear. For a start, Marine DSO and Air Force mobility planners need to meet, learn each other's "language" and operational issues, and then rigorously examine the ability of the program-of-record fleet to support DSOs in a resilient and operationally effective manner. This discussion should include Marine and Army ground-warfare experts, since the final answer on whether the Department of Defense should acquire a new transport aircraft will rest in part on its relative value to requirements in addition to DSOs.[26] Finally—and particularly if an international design comes into the spotlight—it would not hurt to involve interested congressional, Defense Department, and civil experts in the discussion from the start. In the quest for offsets and trade-offs to finance a new fleet segment, the support of those experts will be important to the outcome of the unavoidable political fights with the stakeholders and proponents of existing aircraft programs. In other words, this is a big issue, but one that is strategically important to the warfighting capabilities of the Marines and, indeed, all the service components.

NOTES

1. U.S. Marine Corps, *Marine Aviation Plan 2015* (Washington, DC: November 2014), p. 2.3.7.
2. The term "austere airfield" has many meanings in defense literature. In regard to support infrastructure, the term generally implies very

limited or nonexistent facilities for storing fuel, housing personnel and maintenance activities, parking aircraft on paved surfaces, and the like. In regard to runways, the term here indicates paved or unpaved surfaces characterized by length and load-bearing features that restrict the types of aircraft that can use them or that require "tactical" landing and takeoff procedures by the aircraft that do use them. A three-thousand-foot-long stretch of highway, for example, is "austere" because it offers no aircraft support facilities, and the F-35Bs using it would have to employ short-field landing and takeoff procedures to use it.

3. Bill Sweetman, "Fast Movers: Marines Push Shell-Game Plan for JSF Survival," *Aviation Week and Space Technology* (15/22 December 2014), p. 42.

4. "Gorilla" is a standard U.S. military brevity code for a "large force of indeterminate numbers and formation of unknown/nonfriendly aircraft." See Air Land Sea Application Center, *Brevity: Multi-service Brevity Codes,* June 2005. The four-hundred-nautical-mile boundary of the gorilla ring reflects a reasonable guess that the unrefueled combat radii of Chinese J-20 and J-31 fighters will be roughly equivalent to those of weapons-laden F-16s and F-18s, respectively. However, China's SRBMs have ranges of three hundred nautical miles or less. See U.S. Defense Dept., *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2015* (Washington, DC: April 2015) [hereafter DoD, *Annual Report 2015*], pp. 8–15, 34, 39, and 87–89 for details on China's air and missile orders of battle.

5. Jonathan F. Solomon provides a useful discussion of the theoretical limitations of long-range ISR systems in support of long-range attacks in "Defending the Fleet from China's Anti-ship Ballistic Missile: Naval Deception's Roles in Sea-Based Missile Defense" (master's thesis, Georgetown University, April 2011). For those with a deeper technical curiosity about the propagation and control of backscatter signals, see Gary S. Sales, "OTH-B Radar System: System Summary," U.S. Air Force Systems Command, Phillips Laboratory, May 1992.

6. System Planning and Analysis, Inc., *Distributed Short Take-Off Vertical Landing (STOVL) Operations: An Initial Look at Concept Development and Feasibility Final Report* (Washington, DC: 13 February 2014) [hereafter System Planning and Analysis, *STOVL Operations*], pp. 45–56.

7. The conflicting perspectives and barriers to communication among China's civil and military leadership groups are discussed in Michael Kiselycznyk and Phillip C. Saunders, *Civil-Military Relations in China: Assessing the PLA's Role in Elite Politics* (Washington, DC: National Defense Univ. Press, 2010), pp. 6–7, 11–28; and in DoD, *Annual Report 2015,* p. 32. See also James Mulvenon, "Rearranging the Deck Chairs on the *Liaoning*? The PLA Once Again Considers Reorganization," *China Leadership Monitor,* no. 43 (14 March 2014), www.hoover.org/.

8. System Planning and Analysis, *STOVL Operations,* pp. 36 and 59.

9. Ibid., pp. 59–60, 64, 70–72.

10. Ibid., p. 36.

11. Ibid., p. 64, estimates that moving the sea base out to one hundred nautical miles from the M-FARPs would reduce its support capacity to 57 percent of the fuel and 21 percent of the ordnance needed by DSO units.

12. I explored the possibility of using ships to support distributed and agile basing for air-refueling operations in "Sea-Land Basing of Air Refueling Forces: A Concept for Resiliency and Efficiency," *Air and Space Power Journal* 29, no. 2 (March–April 2015), pp. 5–28. The concept is viable, but the return on investment is directly proportional to the capabilities of the aircraft supported and the number of airfields they are capable of using.

13. Estimates based on KC-46s with an 80 percent availability rate and flying the 2,800-mile round-trip at 460 knots, taking off with 106 tons of fuel, burning thirty-two tons getting to and from their refueling orbits, allowing for another fifteen tons for two hours in a refueling orbit and an hour of flight reserve, leaving a maximum fifty-nine tons of off-load fuel per mission. These estimates are close approximations based on Boeing 767 data available in Boeing, "767 Airplane Characteristics for Airport Planning," September 2005; *Air Mobility Planning Factors,* Air Force Pamphlet 10-1403, 18 December 2003; and

"Boeing 767-300ER," in *Jane's All the World's Aircraft 2012–13,* ed. Paul Jackson (London: IHS Global, 2012), p. 998.

14. Air Force Civil Engineer Support Agency, "Engineering Technical Letter 97-9: Criteria and Guidance for C-17 Contingency and Training Operations on Semi-prepared Airfields," 25 November 1997, p. 10; Lockheed Martin Corporation, "C-130J Super Hercules: Whatever the Situation, We'll Be There," n.d., p. 18, retrieved from cc-130j.ca/. See also Erik W. Hansen, "Evaluating the C-17 Semi-prepared Runway Capability—An Off-Road Map" (graduate research project, Air Force Institute of Technology, Wright-Patterson AFB, Ohio, June 2002), p. 6, for a well-reasoned argument that the C-17's semi-prepared runway capability "is not as routine as many interested parties would think."

15. Robert C. Owen, "Theater Airlift Modernization: Options for Closing the Gap," *Joint Force Quarterly* (4th Quarter 2014), pp. 13–18.

16. Air Mobility Command, *Joint Future Theater Lift: Technology Study Final Report,* 20 February 2013, p. 125.

17. For discussion of this concept, see Owen, "Sea-Land Basing."

18. These personnel and vehicle numbers are derived from data in System Planning and Analysis, *STOVL Operations,* pp. F-2–9, with extrapolations to allow for increased rolling fuel-storage capacity.

19. Estimate based on moving the vehicle and personnel complements and first-day supplies of fuel and munitions described and the loading information provided in Airbus Industries, "A400M: Combat Delivery to the Point of Need" (briefing, 2012), slides 4–9.

20. Estimates based on C-130 load data provided in Lockheed Martin Corporation, "C-130J Super Hercules," pp. 4, 7, 8–12, and bits and pieces of data extracted from other sources. While these estimates certainly are not definitive, they should be close enough to reality to support comparisons between the aircraft involved.

21. These are Bagio, Clark, Fort Magsaysay, Laoang, Ninoy-Aquino, San Fernando, Subic, and Tuguegarao airports.

22. There were 28,750 Chinese nationals residing in the Philippines in 2010, along with 29,959 U.S. citizens. "Foreign Citizens in the Philippines (Results from the 2010 Census)," *Philippine Statistics Authority,* 19 November 2012, psa.gov.ph/. There also are about thirty million Philippine citizens of Chinese descent, including two million of pure Chinese ancestry. *Wikipedia,* s.v. "Chinese Filipino," en.wikipedia.org/.

23. Earlier experiments in this concept were conducted with F-22s, and hence the concept was called "Rapid Raptor." Blake Mize, "Rapid Raptor: Getting Fighters to the Fight," *Pacific Air Forces Public Affairs,* 20 February 2014, www.pacaf.af.mil/; Robert D. Davis, "Forward Arming and Refueling Points for Fighter Aircraft: Power Projection in an Antiaccess Environment," *Air and Space Power Journal* 28, no. 5 (September–October 2014), pp. 5–28.

24. Airbus Defense and Space, Inc., "A400M Forward Arming and Refueling: An Illustrative U.K. and Coalition U.K./U.S. Somalia Air Strike Scenario" (briefing, 26 February 2015).

25. VRLs involve the use of thrust vectoring to shorten takeoff and landing rolls, while minimizing or eliminating damage to asphalt and concrete surfaces. In theory, VRLs would enable F-35B operations on hard-packed unpaved airfields as well, but I am not aware of the Marines' testing that concept.

26. Owen, "Theater Airlift Modernization," p. 18.

WHEN ROBOTS RULE THE WAVES?

Robert Sparrow and George Lucas

Robotic weapons are widely believed to be the future of war.[1] Dramatic progress in the science and engineering of robotics, alongside the perceived success of the U.S. Predator and Reaper drones in Iraq and Afghanistan, has led many commentators to conclude that the wars of the twenty-first century increasingly will be fought, by industrialized nations at least, using remotely piloted and autonomous weapon systems (AWSs).[2] This belief also is playing an important role in shaping the thinking and practice of militaries around the world, which are scrambling to purchase drones and to develop and deploy robots for both combat and combat-support roles. Thus, for instance, all the U.S. armed services have published "roadmap" documents detailing ambitious plans to integrate unmanned systems (UMSs) into their forces.[3]

The new enthusiasm for robots in military and policy circles has led to philosophers and ethicists paying increased attention to issues surrounding the military uses of robots. In particular, there is now a flourishing literature on the ethics of drone warfare and an emerging literature on the ethics of the development and deployment of *autonomous* weapon systems.[4] However, the high profile of aerial drones in the public eye—along with the fact that these are the systems that have seen most active service—has led to the latter literature focusing almost entirely on the ethical issues raised by autonomous uninhabited aerial vehicles and

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uninhabited combat aerial vehicles. To date there has been comparatively little discussion of the ethical issues raised by the prospect of autonomous submersibles or autonomous surface vessels.[5]

We believe it is high time that philosophers and military ethicists begin to address this lacuna, especially given the rapid development and military potential of autonomous unmanned underwater vehicles (UUVs) and unmanned surface vehicles (USVs).[6] Moreover, we believe that there are a number of ethical dilemmas specific to these technologies by virtue of the distinctive character of war at sea. This paper represents its two authors' initial attempt to collaborate —from somewhat contrasting ideological perspectives—in surveying and discussing these issues. We suggest that a number of unique and complex ethical questions are likely to arise regarding the applications of autonomous UUVs and USVs, including the following:

1. Should armed autonomous UUVs and USVs be understood (as the comparatively modest body of legal literature to date has posed the problem) as "vessels" or as "weapons"?
2. With what sorts of operations might autonomous UUVs and USVs legitimately be tasked in international, as opposed to territorial, waters?
3. Is the operation of armed autonomous systems compatible with freedom of navigation in international waters?
4. What is the capacity of future maritime and underwater autonomous systems, when weaponized, to abide by the requirements of distinction and proportionality in naval warfare?
5. What are the implications, with regard to the design and the ethics of the use of autonomous UUVs and USVs, of customary maritime duties, e.g., toward persons lost at sea?

Several of these issues may stand as significant barriers to the ethical deployment of autonomous UUVs and USVs, in some roles at least, for the foreseeable future.[7]

Our investigation of these questions proceeds through eight sections. In section 1, we provide a brief account of our reasons for believing that unmanned systems will come to play an increasingly vital role in future naval combat, and, by way of illustration, we introduce briefly a number of UUVs and USVs already deployed by the U.S. Navy or currently under development. In section 2, we argue that war at sea has a distinctive ethical character. Consequently, the use of unmanned—and especially autonomous—systems in this context may generate ethical issues that the larger discussion of the ethics of unmanned systems may have missed. Section 3 highlights the importance of a question about the appropriate

way to conceptualize *armed* USVs and UUVs. We suggest that whether we think of particular systems as "vessels" or "weapons" will have implications for our understanding of the ethics of their applications, beyond merely the distinct legal regimes that apply to each, which we explore further in subsequent sections. Section 4 examines a range of issues that will arise about the operations of UUVs and USVs in different sorts of waters (e.g., territorial, international). In particular, we examine at length the implications of the operations of armed AWSs for freedom of navigation on the high seas. We then turn, in section 5, to discussing the ethical issues raised by the requirements of the principle of distinction for the operation of AWSs. While there are a number of reasons to believe that distinction poses fewer problems for AWSs on and under the seas than in other domains of warfare, we highlight the existence of four different cases in which it nevertheless remains a profound challenge. Section 6 considers the question of proportionality. As was the case with distinction, there are some reasons to expect proportionality calculations regarding civilian casualties to be easier in the context of war at sea than in other forms of warfare. However, once we acknowledge that both damage to the environment and enemy combatant casualties are relevant to the ethical (if not the legal) requirement of proportionality, even at sea proportionality also looks very difficult for machines. Section 7 complexifies the discussion of the preceding two sections by considering the standard of compliance with the principles of distinction and proportionality that we should require of AWSs; the possibility that maintaining a human being "in the loop" (or perhaps "on the loop") could prevent attacks on illegitimate targets; and the implications of the UMS for the requirement of "precautions in attack." In section 8 we discuss the implications of the duty of rescue that exists in the context of war at sea for the design and applications of UUVs and USVs. We suggest that the fact that coming to the rescue of combatants lost at sea would not risk the lives of the crew in the case of UMSs means that the duty of rescue may be especially stringent on such systems; on the other hand, unless they are designed to possess the *capacity* to rescue, they may have no such obligation. It will be especially important therefore to think through the question of the obligations on UMSs in war at sea when it comes to rescue before many (more) such systems are designed and deployed. Finally, by way of a conclusion, we offer some brief remarks about the overall nature of our discussion and some suggestions for productive lines of inquiry for further research.

SECTION 1: ROBOTIC WEAPONS FOR WAR ON AND UNDER THE SEA

While aerial drones may have been hogging the limelight thus far when it comes to the military uses of robotics, there is currently an enormous amount of interest

in the development and application of remotely piloted, semiautonomous and autonomous weapons to fight wars on and under the sea.[8]

The existence of waves, currents, tides, and submerged obstacles and the difficulties of maintaining reliable communications through water in some ways make the oceans a more difficult environment for robots than the air. However, remaining afloat or submerged at a given depth is less technically demanding than remaining airborne, and surface vessels need to move in only two dimensions rather than the three required of aerial vehicles. The relatively small number of terrain types in war at sea and the virtual nonexistence of legitimate commercial traffic beneath the sea, as well as the fact that blue-water operations often may proceed without regard to concerns about running aground, also mean that for robots the oceans are a more tractable environment in which to conduct warfare than is the land.

Moreover, the results that might be achieved through the further development and deployment of UUVs and USVs are substantial. Operations at sea—especially underwater—are always dangerous, often dull, and often dirty, at least in the sense of being uncomfortable for and wearing on those involved. As such, many missions at sea are well suited to being assigned to robots. As we discuss further below, the military advantages to be secured by the development of autonomous systems for war on and under the seas, in particular, are enormous.[9]

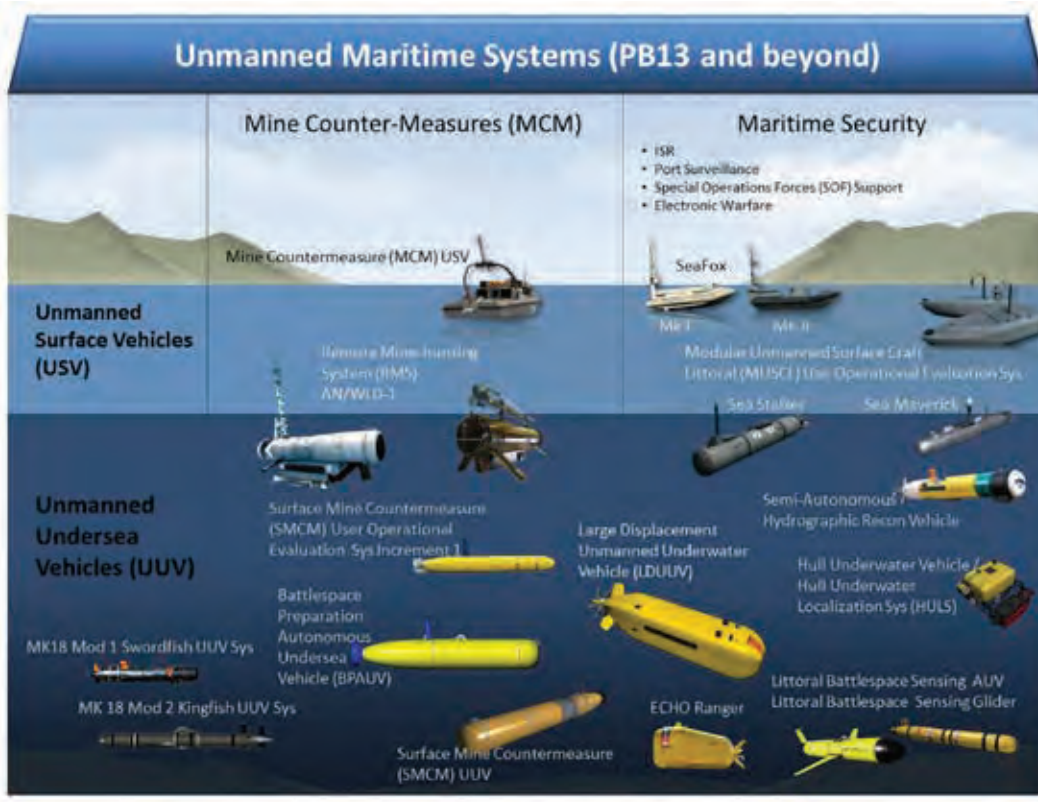
For all these reasons, we expect that naval operations will be the next frontier for the development and deployment of robotic weapons in the coming decade(s). As we are most familiar with the U.S. UUV and USV programs, we will support and illustrate this claim with a brief discussion of the U.S. Navy's progress in this area. However, a number of countries currently are developing such systems.[10]

A graphical overview of the U.S. Navy's inventory of systems at the time of writing may be found in *Unmanned Systems Integrated Roadmap FY2013–38.*

Surface Vessels

Unmanned surface vehicles have enormous potential in naval operations, although this potential is just beginning to be explored. The fact that these UMSs operate on the surface means that maintaining a human being in (or on) the loop is more feasible than it is for submersibles. Nevertheless, as in the case of UMSs more generally, there are still powerful military and economic dynamics pushing toward the development of systems that are capable of fully autonomous operations.

The U.S. USV inventory already includes a number of systems of different sizes and intended for different roles, with more under development. Navy scientists are using self-propelled, self-guided, and self-sufficient "wave gliders" (essentially modified solar- and wave-powered surfboards) manufactured by Liquid Robotics to gather meteorological and oceanographic data; in the future



these systems might be used for intelligence, surveillance, and reconnaissance (ISR) missions.[11] The U.S. Navy has trialed USVs for maritime security and fleet protection. The Spartan Scout is a rigid-hull (aluminum) inflatable boat that is capable of remote-controlled and semiautonomous operations. Software called CARACaS (for "Control Architecture for Robotic Agent Command and Sensing"), which allows one human supervisor to oversee the operations of a number of USVs, has been used to provide USVs with the capacity for swarming to intercept enemy vessels.[12] Of course, the same systems might serve as weapons platforms that could be deployed in aggressive forward postures without placing crews at risk. The U.S. Navy tested a version of Spartan Scout armed with .50 caliber machine guns as early as 2002 and successfully demonstrated the firing of missiles from it in 2012.[13] The technology that makes possible defensive swarming also enables unmanned craft to swarm offensively, with the aim of overwhelming enemy ship-based defenses.

The U.S. Navy is also actively interested in developing an antisubmarine warfare (ASW) capability using USVs. The Defense Advanced Research Projects Agency (DARPA) has responded to the threat posed to U.S. vessels by the new generation of quiet diesel submarines by initiating a program to build and test an autonomous trimaran capable of tracking submerged enemy submarines for extended periods.[14] The Anti-submarine Warfare Continuous Trail Unmanned

Vessel, or "Sea Hunter," is currently scheduled for trials beginning in 2016; the key navigational and collision-avoidance systems for this vessel underwent successful trials using a test boat in January 2015.[15] Should this project come to fruition, we would expect to see extended-range autonomous navigation and collision-avoidance capabilities rolled out to any number of other surface vessels.

Submersibles

Submarine operations are notoriously dangerous, so removing human crews from submersibles wherever possible is arguably a moral imperative; it also has a number of other benefits. Because unmanned systems carry no crew, they can be significantly smaller than the manned systems required to carry out similar operations. This permits UUVs to operate more quietly, for longer periods, and with a longer range. Autonomous UUVs, in particular, show enormous potential for operating for very long periods without needing to surface to replenish oxygen or fuel supplies or to return to base to rotate crews. This renders them ideal for roles in which the capacity to loiter undetected is an advantage. Indeed, because any emissions risk giving away two of the most vital secrets of a submersible—its presence and its location—the capacity to operate autonomously is a requirement for an effective unmanned submersible.

It is therefore no surprise that the U.S. Navy has an ambitious program of research and development of UUVs, especially autonomous UUVs, as well as a number of existing systems already deployed. For reasons of space, we will discuss only a few of these.[16]

UUVs' capacities for stealth and for use in circumstances in which it might be too expensive or dangerous to deploy a manned vessel make them ideal for ISR. Almost every UUV we have seen discussed in the literature is advertised as having a valuable role to play in ISR. For instance, the Sea Maverick and Sea Stalker UUVs (see the figure) are small(ish) semiautonomous submarines intended to carry out reconnaissance missions in depths of up to one thousand feet.[17] The Littoral Battlespace Sensing-Glider uses an innovative propulsion system involving changes of buoyancy to travel the oceans for up to a month at a time and return oceanographic data useful for submarine warfare.[18] The U.S. Navy also is experimenting with more-speculative systems such as the Cyro jellyfish, with the thought that a network of small, submersible, low-cost but hard-to-detect systems could provide valuable intelligence on enemy activities in contested waters.[19]

Similarly, UUVs have an obvious utility in countermine warfare, which role can be especially dangerous for manned vehicles. The U.S. Navy possesses a number of systems intended to perform this function, including the Mark 18 (Mod 1) Swordfish, the Mark 18 (Mod 2) Kingfish, and the Littoral Battlespace Sensing autonomous underwater vehicle (AUV), all derived from variants of the Remote

Environmental Monitoring Unit System (known as REMUS) AUV manufactured by Hydroid, as well as the AN/BLQ-11 autonomous unmanned underwater vehicle (formerly called the Long-Term Mine Reconnaissance System), which may be launched from the torpedo tubes of *Los Angeles*– and *Virginia*-class submarines.[20] The mine countermeasures package for the littoral combat ship is based around an autonomous remote multimission vehicle (RMMV) that detects mines with a variable-depth, towed-array sonar.[21]

Importantly, as we discuss further below, armed UUVs themselves share much in common with naval mines (what is an autonomous torpedo but a "swimming" mine?) and may be used in a similar role. Indeed, mine warfare is on the verge of a profound revolution, made possible by the capacity to separate the sensor packages that detect enemy vessels from the submerged ordnance that is tasked with destroying them. While the U.S. Mk 60 en*cap*sulated *tor*pedo (CAPTOR) deepwater mine already had provided proof-in-principle of this possibility, recent innovations in sensors, marine propulsion, and autonomous navigation have expanded the prospects for development of such systems radically. In the future, nations may defend themselves—or deny the sea to others—using large arrays of networked sensors that communicate targeting information directly to a smaller number of autonomous armed UUVs lurking in the depths nearby.[22]

Finally, perhaps the most ambitious set of roles anticipated for any UUV consists of those the large-displacement unmanned underwater vehicle (LDUUV) is supposed to fulfill. The LDUUV is an experimental autonomous submarine intended to be able to navigate and operate under water for extended periods after being launched from a shore-based facility, an appropriately equipped nuclear submarine, or a surface vessel. The tasks envisioned for it include underwater reconnaissance and mine countermeasures, but extend to carrying and deploying smaller UUVs, or even to launching aerial drones for surface reconnaissance.[23] The U.S. Department of Defense recently announced a tender process to provide LDUUVs with an ASW capability.[24]

It is clear that the ultimate conclusion of the technology trajectory being explored in this system is a fully autonomous submersible capable of the same range of operations as a manned submarine.[25] In the discussion that follows, it is often the LDUUV, including future developments thereof, that we have in mind when we discuss the issues raised by the prospect of armed autonomous UUVs.

SECTION 2: THE DISTINCTIVE ETHICAL CHARACTER OF WAR AT SEA

There has been a small but productive discussion in the literature concerning the legal status of UUVs and USVs.[26] However, to date there has been little discussion of the *ethical* issues these systems raise. Our concern here is primarily with

the latter topic. Insofar as legal instruments reflect, at least in part, the existing consensus on the duties and obligations of those whose activities they govern, we sometimes will refer to legal texts and precedents in the course of our argument. Nevertheless, we write in the conviction that the law does not exhaust ethics. Not only do provisions of the law fail to address ethical concerns, but those very legal constraints may pose moral dilemmas that will need to be addressed in operational policy and naval warfare strategy. In addition, there may be obvious ethical demands on warfighters that are yet to be codified in law. Indeed, there may be activities that are legally permitted but morally impermissible.[27] Ethical principles may provide useful guidance to warfighters where current law is silent or lacking. They also may motivate and inform attempts to revise, extend, or supplement existing law.

One reason to believe that the development of robotic weapons for naval warfare might raise new ethical issues is that war at sea differs in important respects from war in (most) other environments.[28] As a result, the moral norms and customs that have evolved to regulate naval warfare are arguably more demanding than those regulating warfare elsewhere, are more deeply entrenched in the consciousness of warfighters, and have distinctive elements.

A full investigation of what is ethically distinctive about naval warfare is beyond the scope of this article. However, a brief excursion into this topic will prove useful to frame our subsequent discussion. We believe that four features of war at sea play a key role in shaping the ethical (and legal) codes that regulate the activity of naval combatants.[29]

(1) In wartime as in peacetime, the sea itself is a deadly adversary of those who travel on or under it. Even in peacetime, hazards—in the form of strong winds, rough seas, and hidden reefs—abound, while shipwreck and drowning are ever-present dangers. In wartime, seafarers who are forced to abandon ship after an enemy attack may find themselves facing nearly certain doom: alone in freezing waters or floating in a small life raft, and thousands of miles from land.

(2) Because of the hostile nature of the marine environment, life at sea is primarily a collective life, one in which men (and increasingly women) are thrown together in a mutual endeavor framed by the possibility of misadventure.[30] Few people go to sea by themselves. Rather, people go to sea together in vessels, and therein form miniature—or, on modern capital ships, quite large—societies in the midst of a hostile environment.

These first two facts already have two important consequences for ethical understandings regarding war at sea.

First, the collective nature of life at sea and the shared vulnerability of all seafarers to misadventure and drowning mean that a strong expectation of mutual aid has grown up among those who go to sea. In particular, all those who go

to sea are understood to have a duty to come to the aid of those who are lost at sea, whenever it is possible to do so without serious danger to themselves. This duty transcends ordinary national loyalties and has no direct analogue in land warfare.[31] The development of this expectation may be accounted for as a function of the need for a form of social insurance for this risky endeavor; each and every person at sea is safer if there is an expectation that everyone will come to the rescue of anyone as required, and consequently it is in each and every individual's interest if this expectation is promulgated widely and failures to live up to it are subject to sanctions, both formal and informal. Obviously, war—and the dehumanization of the enemy that often accompanies it—places this expectation under stress. Nevertheless, because enemy sailors in the water are no longer combatants, by virtue of being hors de combat, and because the risk of being in need of rescue is higher for all seamen during wartime, the expectation remains that vessels will render aid to, and will attempt to rescue, individuals lost at sea regardless of their nationality *when they have the capacity to do so and as long as doing so would not jeopardize the safety of the vessel and those on board*.[32] Moreover, the extent to which all those who go to sea share a distinct way of life compared with those who remain on land—and the solidarity that this encourages—along with the constant danger posed by the sea to all combatants ensures that this duty of rescue remains central to maritime culture, even in wartime.[33]

Second, the ethical and legal codes that govern war at sea are primarily concerned with the activities and fates of "vessels." As the operations of a ship are the result of a cooperative activity, it is often not possible to distinguish between the intentions of the commanding officer and that of his or her crew. Nor is it usually possible to attack some persons on board a vessel without targeting the vessel as a whole and thus risking the lives of everyone aboard. For these reasons, seamen literally sink or swim together. Thus, it is both natural and appropriate that the vessel be the primary locus of attention in ethical (as well as legal) deliberation about naval warfare.

Two other features of war at sea are important to bear in mind when thinking about ethics in that context. These concern the unique relationship between combatants and noncombatants in naval combat.

(3) The sea is more sparsely populated than the land, and in wartime the vessels that sail on or under it divide more or less naturally into those that are participating actively in the conflict and those that are not.[34] That is to say, especially with the benefits of modern sensor packages, military vessels are distinguished more easily from civilian vessels than groups of armed men are distinguished from civilians in land warfare, and it is more difficult for combatants to hide among the noncombatant population. Thus, with the exception of merchant vessels (of which, more below), which might have been pressed into service to

carry cargo or personnel for military purposes, it is generally much easier to distinguish legitimate from illegitimate targets at sea than it is in other forms of warfare.[35]

On the other hand, (4) the comparatively featureless nature of the oceans and the lack of local geographical references for national and other relevant political boundaries mean that it is harder to separate combatants and noncombatants geographically. This problem is exacerbated by the fact that oceangoing commerce is essential to the flourishing—and even to the survival—of modern nations, with the consequence that, even during wartime, merchants will continue to ply the seas with their goods and passenger ships and ferries will continue to transport civilians.[36] At least partly in recognition of this fact, the high seas remain a "commons," owned by no one and available for use by everyone.

These latter two features of war at sea have led to the development of a sophisticated set of practices and agreements around the activities of belligerent and neutral parties intended to allow neutral parties to continue to navigate the seas peacefully even when wars are being fought. Customary international law relating to naval warfare attempts to balance the competing demands of national sovereignty and freedom of navigation, and distinguishes among belligerent and neutral nations' internal waters, territorial waters, and exclusive economic zones (EEZs) as well as the high seas, and places limits on the sorts of activities that legitimately may be pursued in each.[37] As we shall see below, understanding the competing considerations informing these treaties also will prove useful to resolving ethical issues relating to the areas and roles in which UUVs and USVs legitimately may be deployed.

We do not want to exaggerate the extent to which the ethics of war at sea differs from the ethics of fighting wars in other environments. The fundamental moral framework for naval warfare, as for land or air warfare, is outlined in just war theory. The special features we have highlighted here may be accounted for as consequences of the application of just war theory to the peculiar character of war at sea. Moreover, each of the various features of war at sea highlighted above may have some counterparts in other domains of warfare.[38] Nevertheless, drawing attention to the way in which the ethics of war at sea is structured by its special contextual circumstances may productively inform deliberation about the ethics of the development and deployment of robotic weapons in this context.

SECTION 3: THE STATUS OF ARMED USVS AND UUVS—VESSELS OR WEAPONS?

As noted above, the legal and ethical codes that govern war at sea are mostly concerned with the activities of ships and submarines and place demands on

individuals primarily—although not exclusively—through their roles on these vessels.

A number of legal authorities already have begun to consider whether or when UUVs and USVs should be considered "vessels" under the law of the sea. The emerging consensus seems to be that autonomous UUVs and USVs, at least above a certain size, *should* be classed as vessels.[39] While remotely piloted vehicles plausibly might be held to be extensions of the vessel(s) from which they are operated, systems capable of extended autonomous operations should be understood as vessels in their own right.[40]

As we shall see below, the question of how we understand USVs and UUVs is also central to the ethics of their design and application. The more we think of these systems as autonomous and controlled by an onboard computer, and the more roles they become capable of fulfilling, the more natural it is to think of them as vessels. However, as the discussion below highlights, understanding them as vessels appears to impose demanding ethical requirements on their capacities and operations, especially relating to distinction, proportionality, and the duty of rescue.

An alternative way of addressing these requirements, in the light of such conundrums, is to think of armed autonomous USVs and UUVs themselves instead as *weapons,* which may be *deployed by warfighters,* who then become *responsible* for ensuring that the *use* of the weapon meets the requirements of distinction, proportionality, and so on.[41] Yet as we shall see, this way of proceeding generates its own challenges. An important early finding of our research, then, is that much work remains to be done to clarify the best way of understanding the status of armed UUVs and USVs in the context of the larger ethical framework governing war at sea (as opposed merely to their current legal status).

SECTION 4: DEPLOYMENT—WHERE, WHEN, AND WHY?

The UN Convention on the Law of the Sea (UNCLOS) attempts to balance the competing claims of national sovereignty and freedom of navigation in peacetime by distinguishing among different sorts of waters regarding their statuses and the permissibility of different sorts of activities therein. Customary international law relating to naval warfare extends this to regulate the relations between belligerent and neutral parties insofar as possible. The research and analysis required to assess the operations of USVs and UUVs within these frameworks are beginning to be undertaken now, and some initial results are starting to emerge.[42] Thus, for instance, Andrew Henderson suggests that "UUVs may operate freely in both the high seas and the EEZ while exercising the requisite due regard for the interests of other vessels and posing no threat to the territorial integrity of the coastal state"

and remain submerged while exercising transit passage in international straits and archipelagic-sea-lanes passage in archipelagic sea-lanes. In territorial seas, he suggests, UUVs must operate on the surface to exercise the right of innocent passage and display appropriate lights and make sound signals to facilitate safety of navigation.[43] Brendan Gogarty and Meredith Hagger also suggest that USVs and UUVs would be restricted in the activities they can undertake while exercising the right of innocent passage.[44] Rob McLaughlin emphasizes that USVs and UUVs are clearly subject to the Convention on the International Regulations for Preventing Collisions at Sea (COLREGs) and must be capable of avoiding collisions to such a degree that they could be said to maintain what he paraphrases as a "proper and sufficient lookout." He also allows that the presence of a foreign submerged UUV within a nation's territorial waters might constitute a sovereign affront justifying the use of armed force.[45]

We leave the task of settling the legal questions raised by the deployment of UUVs and USVs in various sorts of waters to others qualified to complete it. However, some discussion of the deeper ethical questions underpinning and surrounding the relevant legal frameworks is appropriate here, and we hope it will inform the ongoing legal debate usefully.

It does seem reasonable, for instance, that the moral right nations have over their territorial waters, and to a lesser extent their continental shelves and EEZs, should allow them to exclude USVs and UUVs conducting—or perhaps just capable of conducting—certain sorts of operations. If nations have a right to prevent other nations from conducting mining or survey operations in their EEZs or carrying out operations injurious to their security in their territorial waters, this right surely would carry over consistently to exclude unmanned vessels just as much as manned vessels. Indeed, arguably the fact that UUVs and USVs are unmanned makes their use in these sorts of waters *more* suspicious and threatening to the interests of sovereign governments, on the assumption that other nations will be more likely to deploy such vessels in hazardous environments that might generate a military response, given that doing so will not place a human crew at risk of death or capture. Requiring such systems to confine themselves to innocent passage through territorial waters is at least a partial solution to this problem.

The ethics of the use of autonomous UUVs and USVs on the high seas remains an open—and controversial—matter. At first sight at least, the right to freedom of navigation in international waters appears to extend to inclusion of these systems, presuming that they do not pose too much of a navigational hazard to other vessels. However, interestingly, this presumption rests on an understanding of them as vessels and may be unsettled when we start to consider the prospect of *armed*

autonomous UUVs and USVs and whether such systems should be thought of, instead, as weapons.

Roughly speaking, the operations of vessels in international waters are permissible as long as they are compatible with the right of free navigation of other vessels through the same waters. Thus, if they are to operate on the high seas, UUVs and USVs must have the capacity reliably to avoid posing a hazard to other vessels. At a bare minimum, this requires taking the appropriate measures to minimize the risk of collision. While the COLREGs spell this out as requiring all vessels "at all times [to] maintain a proper lookout by sight and hearing"—phrasing that encourages the reader to presume a human being will be on board, or at least supervising remotely—we can see no reason why a fully autonomous system that proved equally capable of avoiding collision with other vessels without human supervision should not be judged to meet the appropriate standard.[46]

Of course, *armed* UUVs and USVs operating on the high seas would appear to pose risks to commercial shipping and to the warships of neutral nations beyond simply the risk of collision; they might (accidentally) fire on them, for example. Their significance for the right of freedom of navigation is therefore likely to depend on their capacity to distinguish between legitimate and illegitimate targets of attack, as discussed in sections 5 and 6 below.

A key question in the larger debate about the ethics of autonomous weapons concerns whether—by analogy to what we suggested was the case with regard to the capacity to avoid collision—it would be sufficient to render the use of such weapons permissible if they were capable of achieving results similar to the standard required of human beings with respect to compliance with the moral principles of distinction and proportionality. Those inclined to understand the principles of *jus in bello* as grounded primarily in a concern for the rights of noncombatants are likely to believe that this would be sufficient to render the use of AWSs permissible—and indeed may be tempted to the conclusion that their use will be *mandatory* once such weapons become capable of exceeding human performance in this regard.[47] On the other hand, a number of authors have suggested that if we think of the requirements of *jus in bello* fundamentally as ethical demands on the human being making the decision to use lethal force, we may conclude that the absence of a human will at the moment the attack is carried out means that autonomous weapons cannot be said to comply with these principles at all.[48] Insofar as our concern is with the compatibility of the operations of AWSs with the right to freedom of navigation rather than with the wider conceptual debate concerning the ethics of autonomous targeting, though, it appears that the relevant standard of discrimination is just that required of human beings in similar circumstances.

However, there is another reason to worry that achieving a high standard when it comes to the capacity to distinguish between legitimate and illegitimate targets may not be sufficient to render the use of AWSs ethical on the high seas. The presence of AWSs operating in particular waters might exercise a "chilling" effect on commercial shipping over a wide area—and thus impinge on the right of freedom of navigation—even if the chance of an accidental attack by AWSs was extremely remote, given the capacities of these systems. This possibility seems especially likely if we think of autonomous UUVs and USVs as weapons rather than vessels. Indeed, one well might argue that armed autonomous UUVs at least should be understood as sophisticated versions of free-floating mines, and consequently should be prohibited.[49] The use of drifting mines that do not disarm themselves within an hour is prohibited under international law because of the threat they pose to freedom of navigation.[50] The fact that the chance of any particular ship being struck by any particular drifting mine is small does not seem to affect the force of this concern.

An important point of reference for our intuitions here is CAPTOR, which is a moored torpedo-launch system capable of detecting the acoustic signature of approaching enemy submarines and firing a torpedo to destroy them.[51] This system is arguably already autonomous insofar as the "decision" to launch a torpedo is made without direct human input at the time. Versions of the system have been in use since 1979 without causing significant international outcry, which suggests that concerns about freedom of navigation in open waters need not rule out the deployment of autonomous weapon systems.

However, there are at least three reasons to be cautious about this conclusion. First, because the CAPTOR itself is fixed—even if its range of operations is extended—the system would appear to pose less of a danger to navigation than hypothetical free-ranging AWSs.[52] Second, insofar as this weapon is advertised as an antisubmarine system, those plying the surface of the waters may feel they have little to fear from it. International opinion might be very different should it become common knowledge that similar systems were being tasked with destroying surface vessels. Finally, the absence of any outcry against CAPTOR and similar systems needs to be understood in the context of a history over which they have not been responsible—to date—for any noncombatant casualties. The first time an AWS deployed at sea attacks a commercial—or, worse, a passenger—vessel, we might expect public and international opinion about their legitimacy to change dramatically.

Even very reliable AWSs therefore may jeopardize freedom of navigation if vessels are unwilling to put to sea in waters in which AWSs are known to be operating. While fear of (accidental) attack by an AWS might appear to be irrational when compared with the risks that manned systems pose, beliefs about risk are

notoriously complex and difficult to assess because they often contain hidden value judgments. In this case, a reluctance to risk attack by an AWS may express the value judgment that human beings alone should be responsible for decisions to take human lives. Insofar as the right of freedom of navigation exists to protect and sustain international commerce, what matters is the willingness of ships to ply the oceans. Subjective judgments of risk may be just as significant for the existence of freedom of navigation as—indeed, may be more so than—the objective risks that ships actually take when they leave port.

Therefore, it may turn out that the international community will be required to adjudicate on the balance of the interests of states in deploying AWSs and the desire of operators of civilian vessels not to be at risk of attack by an autonomous weapon. Any attempts to embed this judgment in legislation also will need to consider what is realistically achievable in this regard, especially given the military advantages associated with unmanned systems and the force of the logic driving their uptake. In many ways, such a debate would hark back to that which took place with the advent of submarine warfare, which effectively was resolved in favor of permitting the operations of military submersibles. We suspect that this is the most likely outcome with regard to armed autonomous UUVs and USVs as well. However, it is important to acknowledge the competing considerations in this debate, summarized above.

A number of further questions may arise concerning the operations of armed autonomous UUVs and USVs in various waters, but space limitations permit mere mention of them here. The difficulty in imagining autonomous weapons having the capacity to capture enemy or neutral vessels suggests that they could play at most a limited role in naval blockades or taking neutral merchant vessels as prizes.[53] The requirement to record the locations of mines so that they can be removed or rendered harmless after the cessation of conflict would appear to be moot, when "mines" are themselves mobile and autonomous.[54] However, the considerations motivating this requirement—reducing the subsequent hazards to shipping postconflict—imply that autonomous weapons must be able reliably to render themselves harmless on instruction or after some defined period. There undoubtedly are other issues that require further investigation.

SECTION 5: DISTINCTION

Perhaps the most fundamental ethical requirement in wartime is to confine one's attacks to enemy combatants, and as much as possible to try to avoid civilian casualties. Thus the *jus in bello* principle of distinction requires that warfighters refrain from targeting noncombatants and take appropriate care to minimize the noncombatant casualties caused by attacks targeted at combatants.

Much of the current criticism of AWSs proceeds from the claim that robotic weapons are unlikely to be capable of meeting the requirements of distinction for the foreseeable future. In counterinsurgency warfare in particular, identifying whether someone is a combatant requires a complex set of contextual judgments that probably will be beyond the capacity of machines for the foreseeable future.[55] Whether this problem is insurmountable or exists in all roles in which we might imagine AWSs being used is a controversial question that is larger than we can resolve here. In this context we will settle for observing that the problem of distinction is arguably less demanding in naval warfare because there are fewer potential targets and because sonar and radar are more capable of distinguishing between military and civilian vessels than image recognition, radar, and lidar (light detection and ranging—"laser radar") are at distinguishing among targets in land warfare.[56] Indeed, one reason advanced for favoring the use of autonomous systems on or under the sea, especially in blue-water missions, is that, in comparison with on the land or in the air, on the high seas the "civilian footprint" is comparatively small, even allowing for commercial shipping and recreational boating. Moreover, the problem of distinction looks especially tractable in the context of ASW, given the relative paucity of civilian submarines with tonnages or acoustic signatures comparable to those of military submarines, and the fact that those few civilian systems that do exist tend to operate in a limited range of roles and locations (primarily around oil rigs and submarine cables). Therefore we might expect that if robots are to become capable of distinction in any context, they will become capable of it in war on and under the sea.

Nevertheless, there are at least four sorts of cases in which the requirements of distinction pose a formidable challenge to the ethical operation of autonomous weapons in naval warfare.

First, to avoid attacks on military ships of neutral nations, AWSs will need to be able to identify the nature and the nationality of potential targets, not just to determine that they are warships. In some cases, in which ships of the enemy's fleet are easily distinguishable from those of other nations because of distinctive radar or acoustic profiles, this problem may not arise. However, in some circumstances identifying that a ship carries guns or torpedoes, is of a certain tonnage or class, or both will not be sufficient to establish that it is an enemy warship. Instead, making this identification will require the ability to form reasonable conclusions about its identity on the basis of its historical pattern of activity and its threat posture within the battle space. One obvious way to solve this problem would be to program autonomous UUVs and USVs to confine their attacks to targets that are themselves firing weapons.[57] However, this would reduce significantly the military utility of AWSs, especially in strike and area-denial roles.

Whether computers ever will be able to make the necessary judgments to avoid the need for this restriction remains an open question.

Second, as enemy vessels that have clearly indicated their surrender are no longer legitimate targets under the Geneva Convention, AWSs must be able to recognize surrender.[58] It is possible that in the future warships may be expected to carry a "surrender beacon" capable of communicating to any AWS operating in the area that in fact they have surrendered. Until that day, however, AWSs will need to have the capacity to recognize and respond to the communication of surrender under existing conventions, i.e., through changes in threat posture and display of signal lights or flags. Again, at this stage it is unclear whether robots ever will be able to do this reliably.

Third, AWSs must be able to identify when an enemy ship is hors de combat by virtue of being so badly damaged as to be incapable of posing any military threat. In rare circumstances it may not be possible for a badly damaged and listing ship to signal surrender. Thus, morally, if not legally, speaking, even an enemy warship that has not indicated surrender is not necessarily a legitimate target if it is no longer capable of engaging in hostilities.[59] Human beings are (sometimes) able to discern when this circumstance applies, using their rich knowledge of the world and of the motivations and likely actions of people in various situations. Before the use of AWSs would be ethical, they would need to be at least as capable as human beings of making such discriminations.

Importantly, these last two issues appear in a different light depending on whether we think of AWSs as vessels or as weapons. If an enemy warship surrenders after a torpedo is launched from a manned submarine, for instance, the ship's destruction would be a tragedy but not a crime. However, if a ship fires on an enemy vessel that clearly has indicated surrender, that *is* a war crime. If we think of an AWS as a weapon, therefore, then as long as the officer who deploys it does not do so knowing the intended targets have surrendered or otherwise become hors de combat, its use will be legitimate even if there is some chance that the status of its targets may change after it is deployed. On the other hand, if we think of the USV or UUV as a vessel, then it seems it must have the capacity to detect whether a potential target has surrendered or otherwise become hors de combat to avoid attacks in such circumstances. Of course, if the delay between deploying an AWS understood as a weapon and its carrying out an attack is too long—a matter of days rather than hours, for instance—this might shake our conviction that it is sufficiently discriminating to be ethical.[60]

Fourth, when it comes to operations to interdict or attack merchant shipping, the problem of distinction is especially challenging just because it is so sensitive to context. AWSs would seem to be poorly suited, for instance, to making

judgments about whether merchant vessels are carrying enemy troops or "otherwise making an effective contribution to military action."[61] The fact that AWSs are unlikely to be capable of searching or capturing merchant ships also limits their utility in making this discrimination.

SECTION 6: PROPORTIONALITY

The ethical requirements of proportionality under *jus in bello* ask whether the military advantage to be gained by an attack on a military target is sufficient to justify the death and destruction the attack reasonably might be expected to cause. Importantly, while the *legal* requirement of proportionality usually is understood to require only that the noncombatant casualties ("collateral damage") that it is reasonable to expect an attack on a military target to cause are not excessive in relation to the military advantage the attack seeks to secure, the *ethical* principle grants weight to the lives of combatants in this calculation as well.[62] Thus, for instance, a deliberate attack on an enemy military installation housing a large number of enemy warfighters who posed no immediate threat, when it was already known that the enemy had signed an agreement to surrender effective the next day, would be unethical by virtue of being disproportionate.

One of us (Sparrow) previously has argued elsewhere that the requirements of proportionality stand as a profound barrier to the ethical use of AWSs.[63] The calculations of military advantage required to assess whether a given number of civilian (or military) casualties is proportionate are extremely complex and context sensitive. They require a detailed understanding of the way the world works that is, Sparrow has argued, likely to remain beyond the capacities of autonomous systems for the foreseeable future.[64] The other of us (Lucas) is less pessimistic, believing that AWSs' potential to exceed the limited abilities of human beings when it comes to making judgments of proportionality is an important part of their promise.[65]

Regardless, there are reasons to believe that these sorts of calculations of proportionality are likely to be easier in the context of war at sea. To begin with, as noted above, the relative lack of civilian "clutter" on the oceans means that the risk of civilian casualties in attacks on legitimate military targets in naval engagements is much lower than in land warfare, reducing the number of circumstances in which a judgment of the proportionality of anticipated civilian casualties is required. There are also typically fewer units involved in naval engagements than in land warfare and the scope of operations available to individual units is less, which makes it more plausible to think that a computer could calculate the military advantage associated with a particular attack and thus whether a given number of military deaths would be justified.[66]

On the other hand, there is another proportionality calculation that is especially difficult in the context of war at sea. Military operations may have significant and long-term implications for civilian life via their impact on the environment.[67] Consequently, combatants now are also held to be under an obligation to consider and, where possible, to minimize the damage to the environment their activities cause. These obligations must be balanced against considerations of military necessity. In practice, then, combatants are required to make a calculation of proportionality when contemplating an attack to determine whether the military advantage the attack will achieve justifies the environmental damage it is likely to cause. However, the role played by wind, waves, and tides in distributing the debris resulting from war at sea and the complex nature of marine ecosystems make calculations of the environmental impacts of naval operations especially difficult. Determination of the intrinsic value of significant features of the environment (such as, for instance, clean rivers, coral reefs, or the spawning grounds of fish) is controversial, as is assessment of the instrumental value they have in terms of their contribution to human well-being. Judgments about such matters inevitably involve balancing a range of complex considerations as well as arguments about matters of (moral) value. For both these reasons, calculations of proportionality in attack in relation to damage to the environment seem likely to remain beyond the capacity of computers for many years yet.

Thus, once we admit that the marine environment and enemy combatant casualties are relevant to the proportionality calculation (in ethics, if not in law) and we take the broader strategic context into account, as well as the possible interactions of naval, ground, and air forces, it once more appears that making judgments of proportionality is fiendishly difficult and requires knowledge of the world and reasoning capacities that computer systems currently lack and seem likely to continue to lack for the foreseeable future.[68] Thus, at the very least, proportionality appears to remain a more difficult issue for AWSs in naval warfare than distinction.

SECTION 7: AWSS, "SUPERVISED AUTONOMY," AND PRECAUTIONS IN ATTACK

Of course, human beings also have significant limitations when it comes to their capacity to achieve distinction and make judgments of proportionality, so it might be argued that machines eventually will be able to perform at least as well as humans at these tasks.[69] This is an empirical matter. However, there is also a deeper philosophical question involved regarding the nature and force of the ethical imperatives underpinning the requirements of *jus in bello*. While human beings often fail to behave ethically, when it comes to the duty to avoid

taking human life unnecessarily, morality demands perfection. Consequently, it might be argued that there is something troubling about justifying the use of an autonomous weapon solely on the basis that it makes as few mistakes as or fewer mistakes than the alternative.[70]

We cannot hope to settle these questions here. Indeed, the authors well may disagree upon them.[71] A partial solution to both the problem of distinction and proportionality *might* be achieved by requiring AWSs to seek input from a human supervisor whenever the risks of attacking an illegitimate target exceed some predetermined threshold. A number of authorities already advocate "supervised autonomy" as a way of attempting to combine the benefits of autonomous operations and human decision making in complex environments.[72] Yet this proposal has obvious limitations. To begin with, it presumes that the task of accurately assessing the risk of inadvertently attacking an illegitimate target is easier than identifying a potential target as legitimate or not in the first place, which may not be the case. Perhaps more importantly, relying on human supervision to carry out combat operations ethically would sacrifice two of the key benefits of autonomous operations. It would require maintaining a robust communications infrastructure sufficient to allow the AWS to transmit the relevant data to a base station and receive instructions from the human operator, which is especially challenging in the context of operations under water. It also would jeopardize the capacity of autonomous systems to conduct stealthy operations. In particular, submersibles would need to transmit and receive signals in real time—and thus risk giving away their locations—to allow a human supervisor to provide input to their decisions. While supervised autonomy may be a solution in the context of operations against technologically unsophisticated adversaries without the capacity to contest the electronic battle space or launch kinetic attacks against communications infrastructure, it seems unlikely to be an attractive solution in the longer term.

There is, however, a further complexity here. The *jus in bello* principles of distinction and proportionality not only distinguish between legitimate and illegitimate targets but also demand that warfighters make all feasible efforts to avoid attacking illegitimate targets in circumstances in which, for various reasons, it is difficult for them to distinguish between the two. Thus, as the *San Remo Manual on International Law Applicable to Armed Conflicts at Sea* notes, warfighters "must take all feasible measures to gather information which will assist in determining whether or not objects which are not military objectives are present in an area of attack" and "take all feasible precautions in the choice of methods and means to avoid or minimize collateral casualties or damage."[73] While the question of what sorts of measures or precautions are "feasible" in a

given context is obviously complex and often controversial, the level of risk to warfighters involved in the various options available to them is clearly relevant: there must be some limit to the amount of risk that we can reasonably expect warfighters to take on to achieve any given degree of confidence about the nature of the targets they intend to attack. The fact that no human lives would be placed at risk—directly (see below)—by requiring autonomous UUVs and USVs to take any given sort of actions to minimize the chance of inadvertently attacking civilian targets or causing disproportionate casualties suggests that the requirements to take "all feasible measures" and "all feasible precautions" might be significantly more demanding for these systems.

Thus, for instance, unmanned submersibles might be required to launch sensor buoys, use active sonar, or even surface to facilitate identification of targets. Indeed, AWSs might even be required to await authorization from a human supervisor before carrying out an attack.[74] According to the strongest version of this line of argument, *fully* autonomous operations of a UUV or USV (or, one suspects, any AWS) would be unethical.

There are two obvious ways in which this conclusion might be resisted. First, given the military utility of unmanned systems—and an argument from military necessity—it might be argued that the risk to the "vessel," regardless of the absence of any crew on board, is properly relevant to judgments about feasibility: it would be unreasonable to include in the range of "feasible" precautions those that likely would result in the destruction of the system if carried out during an engagement. Second (in addition), while exposing an unmanned system to risk may not threaten any lives directly, the destruction of the vessel *would* jeopardize the safety of friendly forces who might have been relying on it to carry out its mission. Thus, human lives may well be at stake when we risk the safety of a UMS. These two considerations speak in favor of allowing autonomous systems to prioritize their own "safety" over the safety of those whose lives they potentially threaten through their targeting decisions.

The capacity of UMSs to take more precautions prior to launching an attack often is cited as an argument in favor of developing and deploying them.[75] The fact that they are unmanned means that they plausibly might be used in more-risky operations to try to achieve any worthwhile goal. Perversely, when the goal is the preservation of the lives of noncombatants, this might even mean placing (what would otherwise be) autonomous systems at risk by requiring them to seek authorization for each attack from a human operator. Yet this would vitiate many of the military advantages of autonomous operations, including the extent to which the use of UMSs reduces the risk to the lives of friendly forces.[76] The advent of armed autonomous systems therefore will require a potentially difficult

conversation within the international community about the balance to be struck between military necessity and humanitarian considerations and about the role of human supervision of autonomous systems in securing this balance.[77]

SECTION 8: RESCUE

While the details of what is needed to satisfy the requirements of discrimination and proportionality may differ somewhat in naval warfare from war on land or in the air, these principles themselves apply to all warfare by virtue of their place at the heart of the doctrine of *jus in bello*. However, the duty of rescue that exists in the context of war at sea is especially stringent in, if not entirely unique to, naval warfare.[78]

We have suggested that, even in wartime, all vessels are ethically required to render aid to and attempt to rescue individuals lost at sea, regardless of their nationality, *when they have the capacity to do so and as long as doing so would not jeopardize the safety of the vessel and those on board*. Both clauses in the italicized caveat merit some discussion in the context of the operations of UUVs and USVs.

Whether this duty of assistance will impinge on the operations of USVs and UUVs will depend on whether we think these systems have, or should have, the capacity to conduct rescue operations. For instance, the fact that cruise missiles have no capacity to rescue those rendered helpless in the water after an attack is not thought to rule out their use in attacks on ships. It therefore seems likely that some AWSs—particularly those that we are inclined to classify as weapons, such as "smart" long-loiter-time torpedoes—will be excused from any obligation in this regard. However, when it comes to the operations of (currently hypothetical) larger autonomous USVs and UUVs, themselves armed with weapons—those it would be more natural to regard as vessels—the question will arise whether they should be required to have at least some capacity to conduct rescue operations. Even if such vessels were, as seems likely, incapable of taking prisoners on board, they might be provided with the capacity to launch inflatable life rafts or deploy emergency locator beacons to draw the attention of other vessels to the presence of people requiring rescue. In all likelihood, the costs associated with fitting such systems would be significant in terms of the military utility of the vessel, not least because deploying them might give away the location of a submersible. What seems clear, though, is that vessels without this capacity would be significantly less capable of achieving proportionality in attack. It might even be argued that the deployment of armed autonomous vessels without the ability to contribute to rescue operations would be unethical on this basis.[79]

Like the concepts of "feasible precautions" and "feasible measures" in attack, the duty of rescue is qualified with reference to the risk involved in attempting to provide assistance. Thus, because any attempt to provide assistance while combat

is ongoing in the area would expose a vessel to a high risk of destruction by other enemy ships, in wartime this duty is understood to exist only "after an engagement."[80] However if UUVs or—more plausibly—USVs did have the capacity to conduct rescue operations, they might be held to be under a stronger obligation to do so than manned vessels simply because doing so, even in the course of a military engagement, would not endanger any human lives directly. Acknowledging this fact may even strengthen the intuition that AWSs *should* be provided with the capacity to conduct rescue operations.

Again, focusing on the safety of the vessel rather than that of its (nonexistent) crew, the lives of friendly combatants elsewhere (which might be threatened if the UUV or USV was destroyed), or both might provide grounds to resist this conclusion. We certainly expect that states deploying armed autonomous vessels will be reluctant to risk those vessels' destruction by programming them to provide assistance to enemy combatants lost at sea. Nevertheless, we expect it will be tough to sell the international community on prioritizing the "safety" of a machine over the lives of human beings lost at sea. Whether autonomous UUVs and USVs should be required to have some capacity to provide assistance to those lost at sea and the extent of their obligation to provide this assistance when they do have the capacity to do so are key questions to be answered by further research on this topic.

We are conscious that our deliberations have raised more questions than they have answered. We cannot claim that this survey of the main issues is exhaustive; there are undoubtedly further issues to be considered than those we have had the opportunity to discuss here.

Nevertheless, our investigations suggest that the distinctive ethical character of war at sea generates a number of novel ethical dilemmas regarding the design and use of UUVs and USVs, dilemmas that do not arise for unmanned systems operating in the air or on land. In particular, the importance of freedom of navigation on the high seas and the obligation to come to the aid of those shipwrecked or lost at sea pose difficult challenges for the ethical operation of UUVs and USVs, especially armed and autonomous systems. Moreover, some of the ethical issues that do arise regarding the (hypothetical) operations of armed autonomous systems more generally are differently inflected in the context of war on and under the seas, including the implications of the requirements of proportionality and distinction for the operations of these systems.

Finally, what seems clear to both authors, despite specific differences, is that much more work remains to be done to resolve the question whether—or perhaps which—UUVs and USVs should be conceptualized as vessels or weapons, and to settle the role that should be accorded to legal conventions and historical

debates about mine warfare in shaping future practice regarding UUVs. The fact that such systems blur the lines between weapons platforms and weapons means that ethical as well as legal frameworks may need to be rethought and refined in the pursuit of an appropriate balance between the demands of military necessity and humanitarian concerns in the naval warfare of the future.

We hope that our discussion of these issues here will prove a useful starting point for future research into these questions.

NOTES

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1. Thomas K. Adams, "Future Warfare and the Decline of Human Decisionmaking," *Parameters* 31, no. 4 (Winter 2001/2002), pp. 57–71.
2. Gary E. Marchant et al., "International Governance of Autonomous Military Robots," *Columbia Science and Technology Law Review* 12 (2011), pp. 272–315; P. W. Singer, *Wired for War: The Robotics Revolution and Conflict in the 21st Century* (New York: Penguin Books, 2009).
3. U.S. Navy Dept., *The Navy Unmanned Surface Vehicle (USV) Master Plan* (Washington, DC: 2007); U.S. Army, *U.S. Army Unmanned Aircraft Systems Roadmap 2010–2035: Eyes of the Army* (Fort Rucker, AL: U.S. Army UAS Center of Excellence, 2010); U.S. Air Force, *RPA Vector: Vision and Enabling Concepts 2013–2038* (Washington, DC: 2014); U.S. Defense Dept., *Unmanned Ground Systems Roadmap* (Washington, DC: Robotic Systems Joint Project Office, 2011); U.S. Defense Dept., *Unmanned Systems Integrated Roadmap: FY2013–2038* (Washington, DC: 2014).
4. For drones, a useful starting point in what is now a very large body of work is Bradley J. Strawser, ed., *Killing by Remote Control: The Ethics of an Unmanned Military* (New York: Oxford Univ. Press, 2013). For AWSs, see, for instance, Jürgen Altmann, "Arms Control for Armed Uninhabited Vehicles: An Ethical Issue," *Ethics and Information Technology* 15, no. 2 (2013), pp. 137–52; Kenneth Anderson and Matthew C. Waxman, "Law and Ethics for Robot Soldiers," *Policy Review,* no. 176 (2012), pp. 35–49; Kenneth Anderson and Matthew C. Waxman, "Law and Ethics for Autonomous Weapon Systems: Why a Ban Won't Work and How the Laws of War Can" (national security and law essay, Jean Perkins Task Force on National Security and Law Essay Series, Hoover Institution, Stanford University / WCL Research Paper 2013-11, American University / Columbia Public Law Research Paper 13-351, 10 April 2013), available at papers.ssrn.com/; Ronald C. Arkin, "The Case for Ethical Autonomy in Unmanned Systems," *Journal of Military Ethics* 9, no. 4 (2010), pp. 332–41; Peter Asaro, "On Banning Autonomous Weapon Systems: Human Rights, Automation, and the Dehumanization of Lethal Decision-Making," *International Review of the Red Cross* 94, no. 886 (2012), pp. 687–709; Jason Borenstein, "The Ethics of Autonomous Military Robots," *Studies in Ethics, Law, and Technology* 2, no. 1 (2008); Armin Krishnan, *Killer Robots: Legality and Ethicality of Autonomous Weapons* (Farnham, U.K.: Routledge, 2009); Alex Leveringhaus and Tjerk de Greef, "Keeping the Human 'in-the-Loop': A Qualified Defence of Autonomous Weapons," in *Precision Strike Warfare and International Intervention: Strategic, Ethico-legal and Decisional Implications,* ed. Tom Dyson et al. (Abingdon, NY: Routledge, 2014); Marchant et al., "International Governance of Autonomous Military Robots"; Mary E. O'Connell, "Banning

Autonomous Killing: The Legal and Ethical Requirement That Humans Make Near-Time Lethal Decisions," in *The American Way of Bombing: Changing Ethical and Legal Norms, from Flying Fortresses to Drones,* ed. Matthew Evangelista and Henry Shue (Ithaca, NY: Cornell Univ. Press, 2014); Michael N. Schmitt, "Autonomous Weapon Systems and International Humanitarian Law: A Reply to the Critics," *Harvard National Security Journal,* 5 February 2013, harvardnsj.org/; Michael N. Schmitt and Jeffrey S. Thurnher, "'Out of the Loop': Autonomous Weapon Systems and the Law of Armed Conflict," *Harvard National Security Journal* 4, no. 2 (2013), pp. 231–81; Noel E. Sharkey, "The Evitability of Autonomous Robot Warfare," *International Review of the Red Cross* 94, no. 886 (2012), pp. 787–99; Robert Sparrow, "Killer Robots," *Journal of Applied Philosophy* 24, no. 1 (2007), pp. 62–77; Robert Sparrow, "Robots and Respect: Assessing the Case against Autonomous Weapon Systems," *Ethics and International Affairs* 30, no. 1 (2016), pp. 93–116.

5. Those few discussions of which we are aware include William Matthews, "Murky Waters: Seagoing Drones Swim into New Legal and Ethical Territory," *Defense News,* 9 April 2013, available at auvac.org/, and Donald P. Brutzman et al., "Run-Time Ethics Checking for Autonomous Unmanned Vehicles: Developing a Practical Approach" (proceedings of the Eighteenth International Symposium on Unmanned Untethered Submersible Technology [UUST], Portsmouth, NH, 2013), available at calhoun.nps.edu/.

6. As is often the case, science fiction is ahead of philosophy here, with a recent novel—P. W. Singer and August Cole, *Ghost Fleet: A Novel of the Next World War* (New York: Houghton Mifflin, 2015)—describing the near-future history of a war fought by autonomous robot ships and submarines. Singer is, of course, also the author of the most widely read book to date on the remarkable advances in (and policy challenges posed by) military robotics: Singer, *Wired for War.*

7. There is, it is important to acknowledge, a larger debate going on at the moment about the ethics of autonomous weapons per se, in which both authors are actively involved, albeit on different sides. We have deliberately undercommitted on this question in the current manuscript to concentrate on the ethical issues that might arise out of the use of UUVs and USVs in particular. If the use of autonomous weapon systems is unethical in and of itself, their use in war at sea will, of course, also be unethical.

8. Bruce Berkowitz, "Sea Power in the Robotic Age," *Issues in Science and Technology* 30, no. 2 (2014), pp. 33–40; Matthews, "Murky Waters"; U.S. Navy Dept., *The Navy Unmanned Surface Vehicle (USV) Master Plan;* U.S. Defense Dept., *Unmanned Systems Integrated Roadmap,* pp. 8, 80–91. A particularly interesting—and arguably problematic—category of AWSs would be vessels that were autonomous in some of their operations but were also staffed by human beings. Thus, we might imagine an autonomous submersible that navigated and chose targets autonomously but relied on onboard human engineers to maintain its mechanical and hydraulic systems. Similarly, we might imagine autonomous light attack craft that require human beings to carry out these roles. Finally, one might imagine vessels that were controlled by humans but that carried guns or missile systems that chose targets and fired autonomously (indeed, on some accounts any vessel that carries the Phalanx or Aegis system is already in this category). To our knowledge, there has been little discussion anywhere in the literature to date of the issues raised by these classes of systems.

9. Matthews, "Murky Waters."

10. Drones launched from land, ships, or submersibles clearly have tremendous potential in the context of war at sea. However, given that the ethics of the military uses of drones has been extensively discussed elsewhere, we will not consider them here except insofar as their activities may also be subsumed under our discussions of the ethics of attacks on vessels on or under the water.

11. "Sea Maverick UUV," "Sea Stalker UUV," and "Wave Glider," *Naval Drones,* www.navaldrones.com/; Clay Dillow, "Drones Come to the High Seas," *Fortune,* 11 April 2013, fortune.com/; "Reimagine Ocean Monitoring and Operations. Unmanned Robots Powered by Nature," *Liquid Robotics,* liquid-robotics.com/.

12. Jeremy Hsu, "U.S. Navy Tests Robot Boat Swarm to Overwhelm Enemies," *Automaton*

(blog), *IEEE Spectrum,* 5 October 2014, spectrum.ieee.org/.

13. Gary Martinic, "Unmanned Maritime Surveillance and Weapons Systems," *Headmark* 151 (March 2014), pp. 86–91, available at www.informit.com.au/; Matthews, "Murky Waters"; "Spartan Scout USV," *Naval Drones,* www.navaldrones.com/. Since 2009 Israel has deployed an armed USV, "The Protector," a nine-meter, four-thousand-kilogram-displacement, remotely operated vessel manufactured by Raphael. See "Protector Unmanned Surface Vehicle (USV), Israel," Naval-Technology.com, and Carl O. Schuster, "Drones Take South China Sea Plunge," *Asia Times Online,* 29 August 2012, www.atimes.com/.

14. See Scott Littlefield, "Anti-submarine Warfare (ASW) Continuous Trail Unmanned Vessel (ACTUV)," *DARPA: Defense Advanced Research Projects Agency,* www.darpa.mil/.

15. "Anti-submarine Warfare (ASW) Continuous Trail Unmanned Vessel (ACTUV) 'Sea Hunter,'" *Naval Drones,* www.navaldrones.com/. Scott Littlefield, at DARPA, was kind enough to clarify the revised date for the beginning of the trials of Sea Hunter, which were originally scheduled to begin in 2015.

16. UUVs may be divided up by tonnage/displacement or by intended role; we have chosen the latter schema to better bring out the ethical issues that might be raised by operations in each role.

17. "Sea Maverick UUV"; "Sea Stalker UUV."

18. Alan M. Petrillo, "Navy Plans Fleet of Unmanned Underwater Gliders," *AUVAC: Autonomous Undersea Vehicle Application Center,* auvac.org/.

19. Fiona Keating, "Jellyfish 'RoboCop' Will Help Save the World's Oceans by Patrolling US Waters like an Aquatic Spy," DailyMail.com, 29 March 2013, available at www.dailymail.co.uk/.

20. "Remote Environmental Monitoring Unit System (REMUS)," *Naval Drones,* www.navaldrones.com/; "AUV System Spec Sheet: LMRS Configuration," *AUVAC: Autonomous Undersea Vehicle Application Center,* auvac.org/.

21. Strictly speaking, the RMMV is semisubmersible rather than fully submersible. See "United States Navy Fact File: Remote Minehunting System (RMS)," *America's Navy,* www.navy.mil/.

22. An early proposal along these lines, Sea Predator, was later cancelled. For discussion of ongoing research into distributed networks and their potential for area denial, see Joshua J. Edwards and Capt. Dennis M. Gallagher, USN, "Mine and Undersea Warfare for the Future," U.S. Naval Institute *Proceedings* 140/8/1,338 (August 2014), available at www.usni.org/; Bryan Clark, *The Emerging Era in Undersea Warfare* (Washington, DC: CSBA, 2015); and Scott C. Truver, "Taking Mines Seriously: Mine Warfare in China's Near Seas," *Naval War College Review* 65, no. 2 (Spring 2012), pp. 30–66.

23. David Larter, "ONR: Large Underwater Drone Set for 2016 West Coast Cruise," *Navy Times,* 16 April 2015, www.navytimes.com/; Clark, *The Emerging Era in Undersea Warfare,* p. 13.

24. R. Scott, "ONR to Swim Ahead on ASW Package for Large UUV," *IHS Jane's Navy International,* 20 November 2014.

25. See, for instance, U.S. Defense Dept., *The Role of Autonomy in DoD Systems* (Washington, DC: Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics, 2012), p. 85.

26. See, for instance, Brendan Gogarty and Meredith Hagger, "The Laws of Man over Vehicles Unmanned: The Legal Response to Robotic Revolution on Sea, Land and Air," *Journal of Law, Information and Science* 19, no. 1 (2008), pp. 73–145; Cdr. Andrew H. Henderson, USN, "Murky Waters: The Legal Status of Unmanned Undersea Vehicles," *Naval Law Review* 53 (2006), pp. 55–72; Rob McLaughlin, "Unmanned Naval Vehicles at Sea: USVs, UUVs, and the Adequacy of the Law," *Journal of Law, Information and Science* 21, no. 2 (2011), pp. 100–115; and Capt. Andrew Norris, USCG, *Legal Issues Relating to Unmanned Maritime Systems* (Newport, RI: Naval War College, 2013).

27. While any particular claim will inevitably be controversial, a plausible example in the military realm might be the use of nuclear weapons. That the law does not determine what is ethical is amply demonstrated by the long history of the legal toleration of practices

(such as slavery) that we now acknowledge to have been profoundly morally wrong.

28. For another account of these differences, along similar lines, see Geoffrey S. Corn et al., *The Law of Armed Conflict: An Operational Approach* (New York: Wolters Kluwer Law & Business, 2012), pp. 418–19.

29. Note that we are here concerned primarily with war among ships and submarines, not fire from oceangoing systems directed at targets on the land or in the air.

30. War itself, more generally, has always been a collective endeavor, to be sure. However, the boundaries of the social collectivity in naval warfare are inevitably, if not exclusively, the physical confines of particular vessels.

31. This obligation is reflected in the International Convention for the Safety of Life at Sea, 1 November 1974, 32 U.S.T. 47, 1184 U.N.T.S. 278, chap. V, regulation 10(a), and United Nations Convention on the Law of the Sea, 1982, UN Doc. A/CONF.62/122 and Corr., art. 98(1). For a useful discussion, see Martin Davies, "Obligations and Implications for Ships Encountering Persons in Need of Assistance at Sea," *Pacific Rim Law and Policy Journal* 12, no. 1 (2003), pp. 109–41. Walzer seems to suggest, in his discussion of the *Laconia* affair, that the duty of rescue applies only to noncombatants, and thus in the context of attacks on merchant shipping. Michael Walzer, *Just and Unjust Wars: A Moral Argument with Historical Illustrations,* 4th ed. (New York: Basic Books, 2006), p. 147. On the other hand, article 18 of the Second Geneva Convention of 1949 refers specifically to shipwrecked members of the armed forces—a matter that for decades complicated the formation of international law governing submarine warfare. Geneva Convention (II) for the Amelioration of the Condition of Wounded, Sick and Shipwrecked Members of Armed Forces at Sea, 12 August 1949 [hereafter Geneva Convention 1949], available at www.icrc.org/.

32. As we will see below, the interpretation of the italicized clause is central to the operationalizing of this duty and also to the question of its implications for unmanned systems.

33. The legal formulation of this duty, in article 18 of Geneva Convention 1949, specifies that it applies "after each engagement," but it is hard to see why this duty should lapse before or between engagements. This restriction is most naturally understood as acknowledging that parties to the conflict are unlikely to have the capacity to conduct rescue safely in the midst of combat rather than as denying the existence of a generalized duty to rescue. For some discussion, see Wolff Heintschel von Heinegg, "Submarine Operations and International Law," in *Law at War: The Law as It Was and the Law as It Should Be,* ed. Ola Engdahl and Pål Wrange (Leiden, Neth.: Nijhoff, 2008), pp. 160–61.

34. Walzer, *Just and Unjust Wars,* p. 147.

35. The legal right of warships to fly "false flags" during wartime complicates this claim somewhat when it comes to the challenges human combatants face. However, it is unlikely that autonomous systems will be relying on visual sightings of national flags to identify the nationality of vessels; they are much more likely to rely on acoustic signatures or radar silhouettes, which are harder to disguise.

36. W. Heintschel von Heinegg, "The Protection of Navigation in Case of Armed Conflict," *International Journal of Marine and Coastal Law* 18, no. 3 (2003), p. 402.

37. Ibid.

38. Thus, for instance, identification of legitimate targets in air-to-air combat is also arguably easier than in land warfare, while an obligation to provide assistance to those who are hors de combat may also exist in other extreme environments, such as deserts and snowfields.

39. There is also a debate about when and whether such systems can be considered "warships," especially in relation to the status of merchant shipping. See, for example, McLaughlin, "Unmanned Naval Vehicles at Sea."

40. Ibid., pp. 108–109, 112; Gogarty and Hagger, "The Laws of Man over Vehicles Unmanned," pp. 114–16; Heintschel von Heinegg, "Submarine Operations and International Law," p. 146; Henderson, "Murky Waters," p. 66; Norris, *Legal Issues Relating to Unmanned Maritime Systems*. McLaughlin thinks they should be granted sovereign immunity on the basis that they are "government ships

operating for noncommercial purposes," even though he thinks it is a stretch to argue that they are themselves "warships." He agrees, however, that they are "vessels" under COLREGs. The question he raises—whether unmanned systems are "warships"—is an issue with implications mostly for the ethics of attacks *on* these systems rather than attacks *by* them, and as such is of less interest to us here.

41. Cdr. Chris Rawley, USN, "Return to Trust at Sea through Unmanned Autonomy," *U.S. Naval Institute,* www.usni.org/.
42. Gogarty and Hagger, "The Laws of Man over Vehicles Unmanned."
43. Henderson, "Murky Waters," pp. 68–69.
44. Gogarty and Hagger, "The Laws of Man over Vehicles Unmanned," pp. 117–18.
45. McLaughlin, "Unmanned Naval Vehicles at Sea," pp. 113–14.
46. Convention on the International Regulations for Preventing Collisions at Sea, 20 October 1972, 1050 U.N.T.S. 16, rule 5.
47. George R. Lucas Jr., "Automated Warfare," *Stanford Law and Policy Review* 25, no. 2 (2014), pp. 317–39.
48. Asaro, "On Banning Autonomous Weapon Systems"; Sparrow, "Robots and Respect."
49. Berkowitz, "Sea Power in the Robotic Age." Under the *San Remo Manual,* part 4, section 1, p. 79, "it is prohibited to use torpedoes which do not sink or otherwise become harmless when they have completed their run." Louise Doswald-Beck, ed., *San Remo Manual on International Law Applicable to Armed Conflicts at Sea* (Cambridge, U.K.: Cambridge Univ. Press, 1995). See also part 4, section 1, p. 82, on free-floating mines, which are prohibited unless they are directed against military objectives and become harmless an hour after being deployed.
50. The 1907 Hague Convention VIII prohibited the use of "automatic contact mines." However, as Heintschel von Heinegg notes, these principles "are generally recognized as customary international law and thus also govern the use of modern naval mines." Heintschel von Heinegg, "The Protection of Navigation in Case of Armed Conflict," p. 415.
51. "MK 60 Encapsulated Torpedo (CAPTOR)—Dumb Bombs," *Federation of American Scientists,* www.fas.org/.
52. The *San Remo Manual* (p. 169) notes that CAPTOR should arguably be considered a system capable of delivering a weapon rather than a weapon itself. Heintschel von Heinegg also argues that this system should be governed by the rules applicable to torpedoes. Heintschel von Heinegg, "Submarine Operations and International Law," p. 154.
53. Heintschel von Heinegg, "Submarine Operations and International Law," p. 149. However, they might play a useful role in supporting manned operations—as long as effective communications with the autonomous system could be maintained.
54. For a discussion of these obligations, see Doswald-Beck, *San Remo Manual,* pp. 172, 174–76.
55. Marcello Guarini and Paul Bello, "Robotic Warfare: Some Challenges in Moving from Noncivilian to Civilian Theaters," in *Robot Ethics: The Ethical and Social Implications of Robotics,* ed. Patrick Lin, Keith Abney, and George A. Bekey (Cambridge, MA: MIT Press, 2012), pp. 129–44; Noel Sharkey, "Autonomous Robots and the Automation of Warfare," *International Humanitarian Law Magazine* 2 (2012), pp. 18–19, available at www.redcross.org.au/.
56. Brutzman et al., "Run-Time Ethics Checking for Autonomous Unmanned Vehicles," p. 3.
57. John S. Canning, "A Concept of Operations for Armed Autonomous Systems" (paper presented at the Third Annual Disruptive Technology Conference, National Defense Industrial Association, Washington, DC, 2006), available at www.dtic.mil/.
58. Robert Sparrow, "Twenty Seconds to Comply: Autonomous Weapon Systems and the Recognition of Surrender," *International Law Studies* 91, no. 699 (2015), pp. 699–728; Protocol Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection of Victims of International Armed Conflicts (Protocol I), 8 June 1977, art. 41, available at www.icrc.org/.
59. The destruction of a crewed ship in these circumstances would generate disproportionate casualties.

60. McLaughlin, "Unmanned Naval Vehicles at Sea," pp. 105–106, offers a useful discussion of relevant considerations in this and similar contexts; see also Sparrow, "Twenty Seconds to Comply."

61. Doswald-Beck, *San Remo Manual,* p. 20.

62. Walzer, *Just and Unjust Wars,* p. 156.

63. Sparrow, "Robots and Respect." See also Heather M. Roff, "Killing in War: Responsibility, Liability, and Lethal Autonomous Robots," in *Routledge Handbook of Ethics and War: Just War Theory in the 21st Century,* ed. Fritz Allhoff, Nicholas G. Evans, and Adam Henschke (New York: Routledge, 2014), pp. 352–64; Human Rights Watch, *Losing Humanity: The Case against Killer Robots* (19 November 2012), available at www.hrw.org/; and Markus Wagner, "Taking Humans Out of the Loop: Implications for International Humanitarian Law," *Journal of Law, Information and Science* 21, no. 2 (2011), pp. 155–65.

64. Sparrow, "Robots and Respect."

65. Lucas, "Automated Warfare."

66. On the other hand, to the extent that it is difficult to predict whether a given munition will sink or merely damage a vessel, the number of combatant deaths likely to result from any given attack is *harder* to calculate in naval warfare than in land or air warfare.

67. For an extended discussion of the legal obligations on combatants in this regard, see Yoram Dinstein, *The Conduct of Hostilities under the Law of International Armed Conflict,* 2nd ed. (Cambridge, U.K.: Cambridge Univ. Press, 2010), pp. 197–217. See also Doswald-Beck, *San Remo Manual,* p. 15; Philippe Antoine, "International Humanitarian Law and the Protection of the Environment in Time of Armed Conflict," *International Review of the Red Cross* 32, no. 291 (1992), pp. 517–37; Richard Desgagné, "The Prevention of Environmental Damage in Time of Armed Conflict: Proportionality and Precautionary Measures," *Yearbook of International Humanitarian Law* 3 (December 2000), pp. 109–29; and Richard G. Tarasofsky, "Legal Protection of the Environment during International Armed Conflict," *Netherlands Yearbook of International Law* 24 (December 1993), pp. 17–79.

68. Walzer, *Just and Unjust Wars,* p. 156.

69. Arkin, "The Case for Ethical Autonomy in Unmanned Systems"; Ronald C. Arkin, "Lethal Autonomous Systems and the Plight of the Non-combatant," *AISB Quarterly* 137 (2013); Ronald C. Arkin, Patrick Ulam, and Alan R. Wagner, "Moral Decision Making in Autonomous Systems: Enforcement, Moral Emotions, Dignity, Trust, and Deception," *Proceedings of the IEEE* 100, no. 3 (2012), pp. 571–89. See Lucas, "Automated Warfare," for an account of the origins and components of this test of satisfactory robot behavior.

70. Sparrow, "Twenty Seconds to Comply"; Sparrow, "Robots and Respect"; George R. Lucas Jr., "Industrial Challenges of Military Robotics," *Journal of Military Ethics* 10, no. 4 (2011), pp. 274–95; George R. Lucas Jr., "Engineering, Ethics, and Industry: The Moral Challenges of Lethal Autonomy," in *Killing by Remote Control,* ed. Strawser, pp. 211–28.

71. Compare, for instance, Sparrow, "Robots and Respect," and Lucas, "Automated Warfare."

72. Ronald Arkin, *Governing Lethal Behaviour in Autonomous Robots* (Boca Raton, FL: CRC Press, 2009); Brutzman et al., "Run-Time Ethics Checking for Autonomous Unmanned Vehicles"; Leveringhaus and De Greef, "Keeping the Human 'in-the-Loop.'"

73. Doswald-Beck, *San Remo Manual,* p. 16.

74. Even if AWSs were as reliable as human beings at discriminating between legitimate and illegitimate targets, checking with a human being might nonetheless be a further reasonable precaution.

75. Arkin, *Governing Lethal Behaviour in Autonomous Robots,* pp. 29–30, 108–109; Arkin, "The Case for Ethical Autonomy in Unmanned Systems."

76. Adams, "Future Warfare and the Decline of Human Decisionmaking."

77. See, for discussion, Anderson and Waxman, "Law and Ethics for Robot Soldiers"; Aaron M. Johnson and Sidney Axinn, "The Morality of Autonomous Robots," *Journal of Military Ethics* 12, no. 2 (2013), pp. 129–41; V. Kanwar, "Post-human Humanitarian Law: The Law of War in the Age of Robotic Weapons," *Harvard National Security Journal* 2, no. 2 (2011), pp. 616–28; and Wagner, "Taking Humans Out of the Loop."

78. It might be possible, we suspect, to account for the duty of rescue as a function of the ethical requirement of proportionality within *jus in bello*. Rescuing combatants who have been rendered hors de combat by virtue of being lost at sea after an attack serves to reduce the number of deaths that are effectively surplus to the military advantage secured by the attack on their vessel. If this is true, a duty of rescue may also exist in war in other inhospitable environments, such as deserts or areas of extreme cold.

79. The *San Remo Manual* (and Additional Protocol I, art. 40) notes that "it is prohibited to order that there shall be no survivors, to threaten an adversary therewith or to conduct hostilities on this basis." Doswald-Beck, *San Remo Manual,* p. 15.

80. Heintschel von Heinegg, "Submarine Operations and International Law," p. 160.

A THOUSAND SPLENDID GUNS

Chinese ASCMs in Competitive Control

Alan Cummings

In *Out of the Mountains,* David Kilcullen provides a framework for his "theory of competitive control." His work focuses on irregular warfare, and in general he addresses nonstate armed groups as one increment along a spectrum of actors competing to control a population. He theorizes that the competitor who can impose predictable norms through *persuasive, administrative,* and *coercive* means will succeed. The members of the target audience, for their part, need consistency, and will adhere to this normative system regardless of whether they inherently agree with it or with the competitor's values.[1] What do we learn when we apply Kilcullen's core principles to China and its conduct in the wider western Pacific as a state-level competitor?

China's overwhelming role in regional trade is certainly *persuasive,* often causing regional governments of their own volition to dilute their public response to Chinese actions rather than risk economic turmoil. Next, China's island-building campaign coupled with China Coast Guard (CCG) support of aggressive commercial activity demonstrates the regime's intent to exert *administrative* control over disputed areas, even in the face of dissent from the United Nations and the international community in general. Finally, this article examines the presence and lethality that China's surface navy provides as a key element of the country's *coercive* capacity vis-à-vis the United States and our regional partners.

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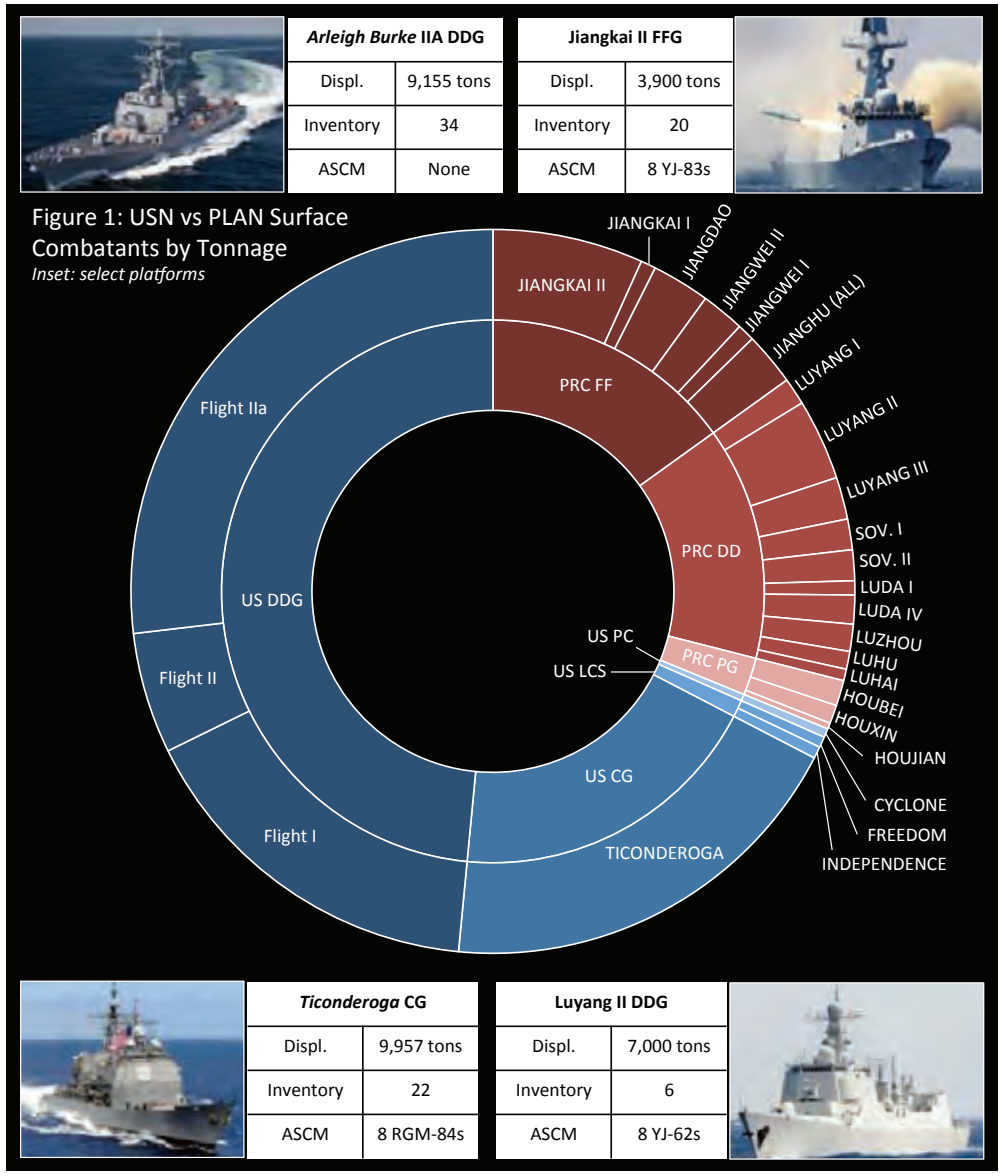
WEIGHING THE COMPETITORS

Like infantry units ashore, surface combatants are the grunts of naval maneuver. The quickest method of comparing U.S. Navy combatants with those of China's People's Liberation Army Navy

TABLE 1
ALPHABETICAL REFERENCE OF USN AND PLAN SURFACE COMBATANTS WITH INVENTORY AND TONNAGE; SEE COMPANION FIGURE 1

Class	Displacement (tons)	Inventory	Force Tonnage (tons)
Arleigh Burke Flt I DDG	8,950	21	187,950
Arleigh Burke Flt II DDG	8,946	7	62,622
Arleigh Burke Flt IIa DDG	9,155	34	311,270
Cyclone PC	354	13	4,602
Freedom LCS	3,089	2	6,178
Independence LCS	2,790	2	5,580
Ticonderoga CG	9,957	22	219,054
USN Total	—	101	797,256
Houbei PTG	220	60	13,200
Houjian PGG	520	6	3,120
Houxin PGG	478	20	9,560
Jiangdao FFL	1,500	20	30,000
Jianghu I FF	1,702	9	15,318
Jianghu I (upgrade) FF	1,702	6	10,212
Jianghu III FF	1,924	1	1,924
Jiangkai I FF	3,900	2	7,800
Jiangkai II FFG	3,900	20	78,000
Jiangwei I FF	2,250	4	9,000
Jiangwei II FF	2,250	10	22,500
Luda I DD	3,670	2	7,340
Luda IV DD	3,730	4	14,920
Luhai DD	6,000	1	6,000
Luhu DD	4,600	2	9,200
Luyang I DDG	7,000	2	14,000
Luyang II DDG	7,000	6	42,000
Luyang III DDG	7,258	3	21,774
Luzhou DDG	7,000	2	14,000
Sovremenny I DDG	7,940	2	15,880
Sovremenny II DDG	7,940	2	15,880
PLAN Total	—	184	361,628

FIGURE 1



(PLAN) is a simple hull count: the United States has 101 in its inventory, while China comes to the table with 184. China's numerical advantage gives it more flexibility in distributing its surface forces to contest or exercise sea control while maintaining an adequate coastal defense. Taking size (displacement measured by tonnage) into account yields a superficial advantage for the United States: nearly 800,000 tons of warship compared with China's 362,000 tons. Taken together, however, the distribution of greater U.S. tonnage into fewer hulls means a more vulnerable concentration of power and faster losses in war. Table 1 and figure 1 illustrate these comparisons.

OUR KNIFE AT THEIR GUNFIGHT

The various vessels' antiship cruise missiles (ASCMs) are the key differentiator when comparing their organic lethality. Only fifty of the U.S. Navy's 101 surface combatants are equipped to carry a dedicated ASCM: the Flights I and II *Arleigh Burke*–class destroyers and the *Ticonderoga*-class cruisers. These ships each carry eight 1990s-era RGM-84 Harpoons capable of delivering a 488-pound warhead over sixty-seven nautical miles (nm). These ships plus an additional thirty-four Flight IIa destroyers also can fire the SM-2 in antisurface mode, but the SM-2 is a poor substitute because it was designed for air defense; for surface engagements it provides only a small warhead and a limited range. The SM-2 is counted here for fidelity purposes, with the assumption that each U.S. vessel would load forty of its vertical launch cells with SM-2s.

By comparison, all 184 ships listed for the PLAN have an ASCM capability. Most carry the YJ-83, a domestic version of the C-802A that advertises a 419-pound warhead and a 100 nm range. Some vessels have older missiles, but the Luyang II and Luyang III destroyers carry the modern YJ-62 (661-pound warhead, 150 nm range) and the YJ-18 (661-pound warhead, 290 nm range). These missile capabilities are based on available open-source data, frequently meaning the information describes the characteristics of export variants such as the C-802A. As the Office of Naval Intelligence states, "It is likely the domestic versions of these systems have much longer ranges."[2] Table 2 lists these vessels' ASCM capabilities.

This is prima facie evidence that the U.S. Navy has been outmatched in the brute-force lethality of its surface combatants. Applying Commander Phillip Pournelle's strike-mile metric quantifies that evidence.[3] His metric (listed first) is based on delivery of a one-thousand-pound warhead across a given distance; subsequent measurements are derived below:

$$\text{Strike-mile} = \text{warhead weight (pounds/1,000)} \times \text{range (nm)}$$

$$\text{Individual vessel lethality} = \text{ASCM's strike-mile} \times \text{vessel's ASCM load}$$

$$\text{Class lethality} = \text{vessel lethality} \times \text{fleet inventory}$$

$$\text{Type lethality} = \text{sum of subordinate classes' lethality}$$

Applying these formulas leads to table 3 and figure 2.

PLAN surface combatants' ability to deliver antisurface warfare (ASuW) ordnance exceeds the U.S. Navy's by a factor of three. U.S. regional partners are important, but add little to our collective ASCM capability since they are equipped largely with Exocets, the same RGM-84s as the U.S. Navy's (or older), and, ironically, China's export C-802s—all of which can be generalized as being less capable than China's domestic ASCMs.

TABLE 2
USN AND PLAN SURFACE COMBATANTS' ASCM CAPABILITIES

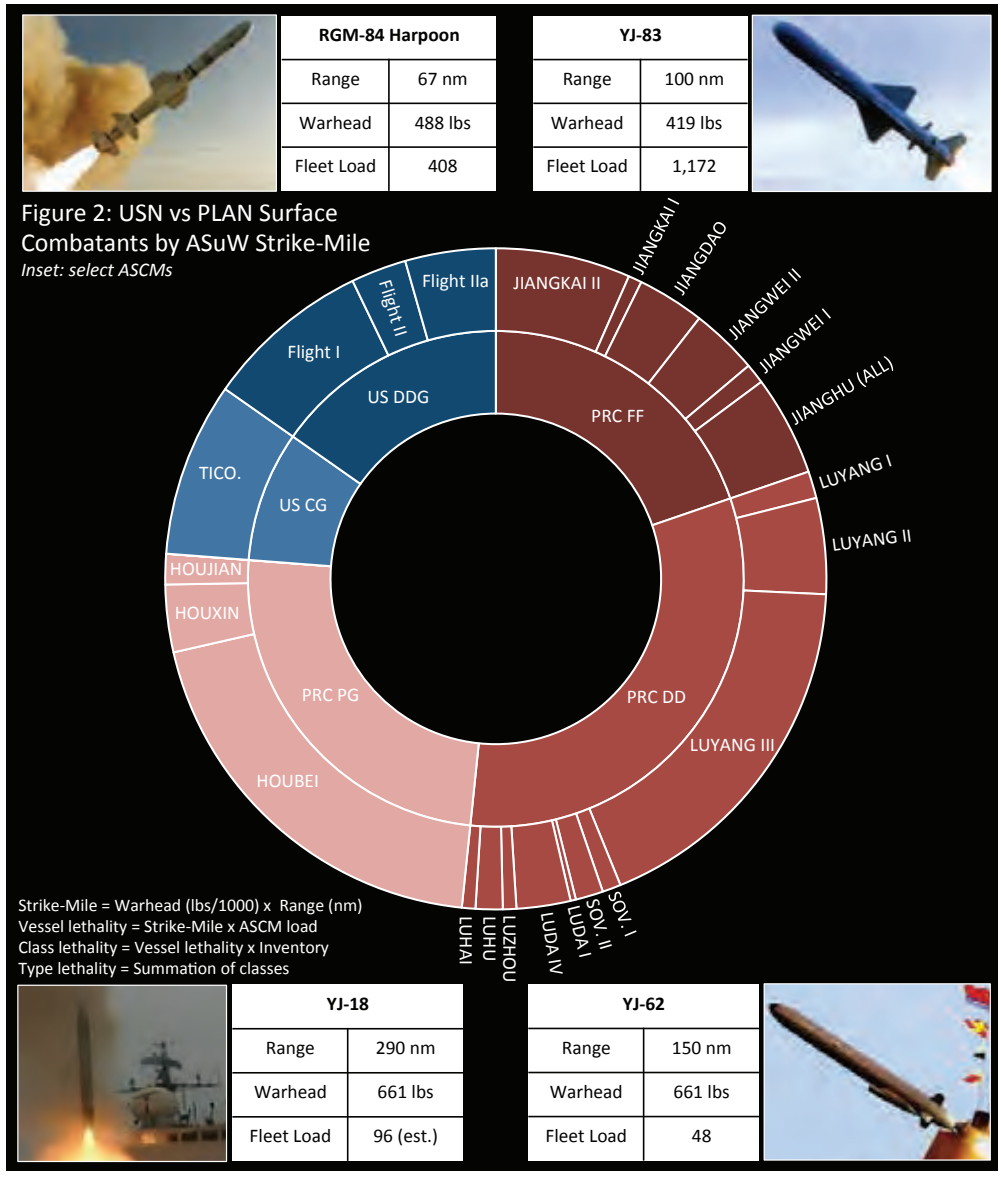
Class	ASCM	Capacity	Range (nm)	Warhead (lbs)
Arleigh Burke Flt I DDG	RGM-84 SM-2*	8 40 (est.)	67 13 (est.)	488 254
Arleigh Burke Flt II DDG	RGM-84 SM-2*	8 40 (est.)	67 13 (est.)	488 254
Arleigh Burke Flt IIa DDG	SM-2*	40 (est.)	13 (est.)	254
Cyclone PC	Griffin	8	5	13
Freedom LCS	None	—	—	—
Independence LCS	None	—	—	—
Ticonderoga CG	RGM-84 SM-2*	8 40 (est.)	67 13 (est.)	488 254
Houbei PTG	YJ-83	8	100	419
Houjian PGG	YJ-83	6	100	419
Houxin PGG	YJ-83	4	100	419
Jiangdao FFL	YJ-83	4	100	419
Jianghu I FF	HY-2	6	43.2	1,131
Jianghu I (upgrade) FF	YJ-83	8	100	419
Jianghu III FF	YJ-83	8	100	419
Jiangkai I FF	YJ-83	8	100	419
Jiangkai II FFG	YJ-83	8	100	419
Jiangwei I FF	YJ-83	6	100	419
Jiangwei II FF	YJ-83	8	100	419
Luda I DD	CSS-N-2	6	22	1,000
Luda IV DD	YJ-83	16	100	419
Luhai DD	YJ-83	16	100	419
Luhu DD	YJ-83	16	100	419
Luyang I DDG	YJ-83	16	100	419
Luyang II DDG	YJ-62	8	150	661
Luyang III DDG	YJ-18	32 (est.)	290	661
Luzhou DDG	YJ-83	8	100	419
Sovremenny I DDG	SS-N-22a	8	87	661
Sovremenny II DDG	SS-N-22b	8	130	661

* The SM-2 is an air-defense missile capable of being employed in a secondary ASuW mode.

TABLE 3
ALPHABETICAL REFERENCE OF USN AND PLAN SURFACE COMBATANTS WITH VESSEL AND CLASS LETHALITY; SEE COMPANION FIGURE 2

Class	Inventory	Single Vessel Lethality (strike-miles)	Class Lethality (strike-miles)
Arleigh Burke Flt I DDG	21	261.57	5,492.93
Arleigh Burke Flt II DDG	7	261.57	1,830.98
Arleigh Burke Flt IIa DDG	34	132.08	4,490.72
Cyclone PC	13	.52	6.76
Freedom LCS	2	0	0
Independence LCS	2	0	0
Ticonderoga CG	22	261.57	5,754.50
USN Total	101	—	17,575.89
Houbei PTG	60	335.20	20,112.00
Houjian PGG	6	251.40	1,508.40
Houxin PGG	20	167.60	3,352.00
Jiangdao FFL	20	167.60	3,352.00
Jianghu I FF	9	293.16	2,638.40
Jianghu I (upgrade) FF	6	335.20	2,011.20
Jianghu III FF	1	335.20	335.20
Jiangkai I FF	2	335.20	670.40
Jiangkai II FFG	20	335.20	6,704.00
Jiangwei I FF	4	251.40	1,005.60
Jiangwei II FF	10	335.20	3,352.00
Luda I DD	2	132.00	264.00
Luda IV DD	4	670.40	2,681.60
Luhai DD	1	670.40	670.40
Luhu DD	2	670.40	1,340.80
Luyang I DDG	2	670.40	1,340.80
Luyang II DDG	6	793.20	4,759.20
Luyang III DDG	3	6,134.08	18,402.24
Luzhou DDG	2	335.20	670.40
Sovremenny I DDG	2	460.06	920.11
Sovremenny II DDG	2	687.44	1,374.88
PLAN Total	184	—	77,465.63

FIGURE 2



This is not surprising, given the U.S. Navy's neglect of the ASuW mission following the end of the Cold War. The price we pay for this neglect is a surface fleet doctrinally focused on air defense but relatively incapable of delivering an offensive punch at sea. China, by contrast, has engineered a credible threat that constitutes the maritime cornerstone of its coercive capability in the western Pacific.

DISTRIBUTED LETHALITY IN ACTION

The magnitude of the ASuW mismatch contributed to the U.S. surface navy's 2015 debut of the distributed lethality concept.[4] This is a new conceptualization

of old ways, returning the fleet to the premise that every ship should be able to contribute to the ASuW fight. While the United States arguably remains ahead of China in command and control at sea (a gap that China doubtless is closing), the PLAN has been implementing distributed lethality's underlying weapons capability since day one of its modern shipbuilding program. This allows China to contest and exercise tactical sea control by using distributed lethality exactly as the U.S. Navy envisions it: by operating deadly warships independently and in small groups.

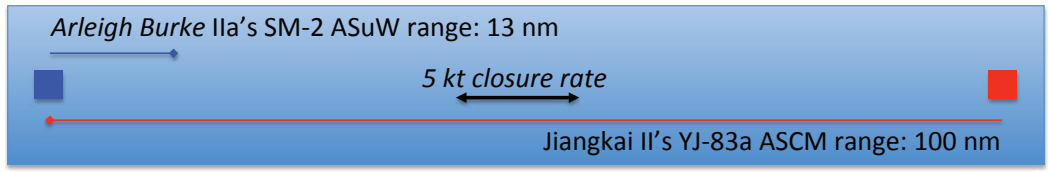
An individual warship's immediate combat influence rests on its ability to deliver ordnance (its strike-mile metric). Translating that to control of "real estate" at sea depends on the range of the warship's ASCMs. A single PLAN combatant carrying the YJ-83 can influence a 200 nm–wide circle that covers 31,400 nm^2 of sea space. Any vessel in that circle, warship or otherwise, is subject to engagement by the PLAN combatant. This certainly represents a, if not the, coercive force acting on any ship captain, commercial company, or fleet commander who is considering whether to hazard vessels through an opposed environment picketed by PLAN combatants.

Consider a linear one-against-one engagement between the most numerous blue-water ships of the U.S. Navy and the PLAN: an *Arleigh Burke*–class Flight IIa destroyer (DDG) and a Jiangkai II–class frigate. At problem start, the two vessels are 100 nm apart. The *Burke* is making thirty knots toward the Jiangkai, but the Jiangkai's simplest option is to exhaust the *Burke* by making a tactical withdrawal at, say, twenty-five knots, yielding a five-knot closure rate. This puts the U.S. DDG within enemy weapons range for more than seventeen hours before it is able to return fire. The most dangerous time comes around hour 16 when air-defense watchstanders are fatigued, the *Burke* is just outside the SM-2's ASuW range, and the Jiangkai can launch a rapid saturation attack with some or all of its YJ-83s. Even when the *Burke* gets within range, it can engage only by using SM-2s that (1) have not been used already in self-defense against the YJ-83s, and (2) are fired in a secondary ASuW mode.

Unfortunately, the underlying premise of this theoretical engagement is itself a tactical error: sending an air-defense destroyer to run down a surface-warfare frigate. That error precisely illustrates the limitations we have imposed on our fleet commanders and ourselves. The PLAN has gained the initiative by being able to outgun our surface combatants in a kinetic engagement.

Combining three or four PLAN combatants into a surface action group (SAG) magnifies their lethality. The SAG gains maneuver and attack-vector options, complicates its adversary's targeting requirements, and increases the combat environment's ASCM density—the tenets of Vice Admiral Thomas Rowden, Rear Admiral Peter Gumataotao, and Rear Admiral Peter Fanta's distributed lethality.[5]

FIGURE 3
ASCM VULNERABILITIES IN A NOTIONAL 1 VS. 1 ENGAGEMENT BETWEEN A USN *ARLEIGH BURKE* FLT IIA DDG AND A PLAN JIANGKAI II FFG



Problem start: 100 nm separation, 5 kt closure
YJ-83a transit at 0.8 Mach = 11.2 minutes

Start + 16 hours: 20 nm separation, 5 kt closure
YJ-83a transit at 0.8 Mach = 2.2 minutes

Start + 17.4 hours: 13 nm separation, 5 kt closure
YJ-83a transit at 0.8 Mach = 1.5 minutes

The SAG also gains redundancy and the ability to share tasks—for example, by sectoring engagement responsibilities or delegating air-defense and antisubmarine warfare duties. When it comes to sea control, the commander of a four-ship PLAN SAG can turn the coercive influence of a single vessel into a formation that provides ASCM coverage over the majority of a 400 × 400 nm box while keeping every component vessel within mutual-support range. Today that means one SAG can distribute enough firepower to cover the Spratly Islands' 120,000 nm^2.[6] This indeed represents the sharp edge of China's coercive capability at the tactical level.

ON STRATEGY

The specter of a maritime war, more than any other military threat, is the iron fist beneath the not-so-velvet glove of Chinese policy assertions in the East and South China Seas (the ECS and SCS). China's current military strategy document espouses a policy of "active defense in the new situation," explained as "adherence to the unity [among] strategic defense and operational and tactical offense." The document states more specifically regarding the maritime domain, "The traditional mentality that land outweighs sea must be abandoned."[7] So as dialogue

covers trade and diplomacy, China's military policy appears to advance a limited-war doctrine focused on the sea. At present, China relies on challengers vividly perceiving the tactical implications of its naval presence to provide Kilcullen's coercive component at the national level.

The strategic cohesion of China's persuasive trade, administrative presence, and coercive capability is particularly visible for policy makers in China's near abroad. For instance, trade with China constituted 14.5 percent (U.S.$366.5 billion) of total trade for the Association of Southeast Asian Nations (ASEAN) in 2014—ASEAN's largest single-country trading partner. The United States provided more than one-third less, at 8.4 percent, or U.S.$212.4 billion.[8] Even Vietnam and the Philippines, which have significant disagreements with China in the SCS, list China as their first- and second-largest partner, respectively, in terms of total trade.[9] Japan, one of the staunchest U.S. allies in the Pacific, lists China as its largest overall trading partner as well, and has done so since 2008.[10] Yet also in 2014, China "reclaimed" and militarized thousands of acres in the Spratly Islands disputed with the Philippines, used dozens of vessels to escort an oil-prospecting platform through Vietnam's exclusive economic zone (EEZ), and enforced a controversial air-defense identification zone above the ECS west of Japan.

Beyond such gross trade metrics, economic analysis in the Asia-Pacific is intensely complicated, with additional factors to be considered that include foreign direct investment, labor costs, and capital flows. An aggressive policy by Beijing could move China's economic influence from persuasive to coercive, but this likely would result in only a Pyrrhic victory, by smothering regional economies under a mercantilist blanket. However, as China's actions indicate, the country's naval power, especially the lethality of its warships, makes this escalation unnecessary. The fact that PLAN combatants fulfill the military (i.e., coercive) element of Chinese national power means Beijing can keep the setting of its economic throttles squarely on "persuasive."

It is worth noting that although CCG vessels conducted many of China's more questionable presence activities, PLAN surface combatants were often just around the corner. It is reasonable to conclude that these warships take note of CCG practices in relation to their own future operations. Herein lies one subtlety of the PLAN's coercive force at the strategic level: it would be equally reasonable for a government in the region to infer that China one day could replace the front line of CCG vessels with ASCM-armed PLAN ships. That change in presence would increase China's sea control exponentially by allowing it to hold an entire region at risk physically and economically—strong incentives to dissuade any leader from responding strongly.

Nations with deep economic interests at stake but insufficient military force to defend them often feel compelled (1) to seek powerful allies and (2) to make

deeper concessions to avoid conflict. This is especially so in the present situation, in which overwhelming military advantage undergirds China's position. The Philippine government provides one example: it has experienced failure in attempts to enforce the sovereignty of the country's territory (such as the oft-thwarted efforts to resupply RPS *Sierra Madre*) and to use its EEZ (its fishing vessels frequently are bullied out of the area). This is precisely because the Philippine navy cannot compete against the CCG, let alone the PLAN.[11] The Philippine government is limited to diplomatic appeals because, in the absence of allies, the PLAN easily could defeat the Philippine navy at sea.

Enter the United States. One anonymous senior official from an SCS state told Robert Kaplan in 2011, "Plan B is the U.S. Navy. . . . An American military presence is needed to countervail China, but we won't vocalize that."[12] The weight of U.S. economic diplomacy and the prestige of our military bring balance to the western Pacific. For now, we are the partner of choice.

The PLAN's ASCMs have narrowed that choice, though, and have gained strategic influence for China by developing a capability precisely where the U.S. Navy is weak. Sea control is vital to the Pacific economy, so when considering who is best able to provide a predictable order in peace or war, "a more capable PLAN" should be read as "a PLAN more capable of defeating the U.S. Navy." This matters immensely to our regional partners as they weigh U.S. commitment and capability against the same traits of the Chinese government, with the added consideration of China's superiority in trade, presence, and proximity.

USING THE RIGHT TOOL

When it comes to sea control, the U.S. Navy by doctrine is centered on aviation and the carrier strike group (CSG). Even the authors of distributed lethality refer to the U.S. surface navy's high-value-asset defense as "our core doctrine."[13] First and foremost, this doctrine relies on a no-fail premise of carrier survival in combat; the CSG's lethality is contingent on having a platform from which to launch and recover aircraft. Second, a U.S. carrier is an impressive sight, but arguably it is an inefficient and expensive way to provide presence at sea anytime there is no additional concurrent mission, such as combat, strike, or humanitarian assistance. Third, China's Dragon Eye shipborne phased-array radar, HHQ-9 surface-to-air missile, DF-21 antiship ballistic missile, and carrier aviation (the latter under development, with *Liaoning*) all are eroding the U.S. asymmetric advantage of effectively delivering carrier-based ordnance outside enemy weapons range.

The U.S. Navy's submarine force frequently is cited as a powerful, lethal component, and rightly so. But the strength of the silent service lies in its stealth. In what China calls the "informationized environment" of the western Pacific, a stealthy threat contributes little to public narratives, with the phrase "out of sight,

out of mind" applying. Even the current advantages that submarines provide to the United States in surveillance and wartime lethality are shrinking as more-expensive platforms lead to fewer hulls. Our adversaries may take into account the superb lethality of a U.S. submarine, but that vessel is not the right tool for reassuring our partners when it comes to countering the PLAN's coercive presence.

Whether U.S. or Chinese, a fleet of well-armed surface combatants provides the most economical, resilient, and visible force in the western Pacific. Such vessels are indispensable to sea control—the classic enablers of other activities. The human security of maritime cultures, their use of natural economic resources, and the flow of licit trade require a predictable peacetime environment to thrive. If conflict comes, the mobility, defense, and resupply of ground troops, land-based aviation assets, and ballistic missile defenses need enduring sea control to be effective.

The U.S. Navy cannot let "better" be the enemy of "good" in reinvigorating ASuW capabilities. Implementing distributed lethality, developing ASCM programs, and acquiring affordable small- to medium-sized surface combatants must be a priority for the U.S. Navy (especially in the Pacific) because they do not constitute mere upgrades to an existing ASuW capability—they are a revival from near zero.

Beyond our own, the maritime forces of our Pacific allies are crucial, regardless of our collective ASCM shortfalls. The western Pacific is as familiar to Japan Maritime Self-Defense Force and Royal Australian Navy vessels as the Virginia Capes and Southern California operation areas are to the U.S. Navy. There is no reason the United States and these strategic partners should not collaborate to close the ASCM gap by sharing technology, employing our platforms together, and sharing the burden of development and production costs. After all, history has shown that committed allies are greater than the sum of their parts.

However, our collective ASuW gap is symptomatic of a larger strategic issue: China's coercive naval force is already a compelling feature of the western Pacific. Our National Security Strategy recognizes China's "new situation" (its desired normative order) in the SCS, stating, "On territorial disputes, particularly in Asia, we denounce coercion and assertive behaviors that threaten escalation."[14] The National Military Strategy cites China more explicitly as "adding tension to the Asia-Pacific region," making claims "inconsistent with international law" and undertaking "aggressive land reclamation efforts that will allow it to position military forces astride vital international sea lanes."[15] China is succeeding in these contentious actions because it has laid the foundations of competitive control. It has made its trade *persuasive,* if not vital, to regional economies; has

built a capability to assert *administrative* control; and, most importantly, has underwritten all of this with a *coercive* force. Finally, China uses these levers in the diplomatic, informational, military, and economic ecosystem to spin the situation for external consumption.

Fortunately, the United States does not need its own coercive force per se; many nations in the region want to partner with us, and our diplomatic positions comport with the norms of international law. What is needed is the presence of a balanced fleet to support the policies laid out in our strategy documents and to reassure partner nations of our readiness to oppose coercion while they develop their own capabilities. Rebalancing our fleet is not a threat to the sovereignty of any country that conducts itself by the rule of law. It most certainly should be viewed, though, as a potent counter to every country that makes illegitimate claims against our allies and partners.

China and the United States are not yet adversaries—but we are competitors. China's recent devaluation of the yuan is indicative of long-discussed economic vulnerabilities that may herald a decline in the country's persuasive trade influence. Exploiting that decline with a strategy that unites U.S. economic diplomacy and a rule-of-law narrative with a balanced maritime force can counter the components of China's competitive control in the western Pacific. Successful implementation will incline all parties toward a diplomatic solution that averts armed conflict. However, the mismatch between China's rhetoric and its disregard for international standards does not bode well. And intentions change faster than capabilities.

NOTES

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CULTIVATING SAILOR ETHICAL FITNESS

Michael Hallett

The Navy's rollout of its Leader Development Strategy provides an opportunity to think about new approaches to sailor training and education on ethical behavior.[1] The current approaches are not entirely satisfactory, as they focus predominantly on sanctions for ethical failures, such as misallocation of funds and extramarital affairs. As former President of the Naval War College and then–rear admiral Walter E. Carter Jr. explained in his *Ethics in the U.S. Navy* in March 2014, "the current culture for Navy ethics is one based on obeying the rules in order to avoid punishment."[2] Admiral Carter called for a new approach to Navy ethics training and education, making six recommendations; the third was to "[b]uild a culture for Navy ethics beyond compliance."[3] This article weaves multiple philosophical threads together into an ethical fitness concept as a contribution to practical implementation of this recommendation. It is designed for sailors engaged in combat, both at sea and on land.

This sketch of an ethical fitness concept aims to contribute to a strategic-level Navy ethics program that both avoids a legalistic focus on rule breaking and moves beyond exhortations to "act with integrity" to develop practical, actionable, ethical decision-making skills. The goal is a concept of ethical competence that is both operationally effective in time-constrained, dynamic environments, including combat, and useful for sailors performing their daily tasks. Part 1 argues that

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adding specific ethics training for warriors is required; relying solely on standard, academic, off-the-shelf ethics training will not meet program requirements. Part 2 introduces the concept of "ethical fitness" as a guiding metaphor, using the Marine Corps's creation of the Combat Fitness Test as a model for development of a sailor ethical fitness concept. Part 3 describes the advantages of the concept of ethical fitness as a way to move beyond compliance. Part 4 explores implementing the ethical fitness concept in part by employing senior leaders as coaches.

PART 1: WARRIORS REQUIRE A WARRIOR-FOCUSED ETHICS TRAINING AND EDUCATION REGIMEN

Before attempting to offer a concept for sailor-as-warrior ethical competency development, we must draw a preliminary distinction between sailors as bureaucrats and as professionals. As Rear Admiral P. Gardner Howe, President of the Naval War College, points out, "Our Navy has a dual character. On one hand, it is a military department organized as a bureaucracy. The bureaucratic dimension of our organization is unavoidable for any organization of our size and complexity. But on the other, it is an organization dedicated to supporting a military profession. It is this dual nature as both a bureaucracy and a profession that shapes our key challenge as Navy leaders."[4]

Current Navy ethics training emerged from a legal compliance paradigm and often has focused on sailors as they operate within the bureaucratic dimension of the Navy. While necessary, such training lacks the content necessary to inspire sailors operating in complex, violent, uncertain environments. The Navy Code of Ethics provides a list of dos and don'ts and includes the following:

- Place loyalty to the Constitution, the laws, and ethical principles above private gain.
- Act impartially to all groups, persons, and organizations.
- Give an honest effort in the performance of your duties.
- Protect and conserve Federal property.
- Disclose fraud, waste, and abuse, and corruption to appropriate authorities.
- Fulfill in good faith your obligations as citizens, and pay your Federal, State, and local taxes.
- Comply with all laws providing equal opportunity to all persons, regardless of their race, color, religion, sex, national origin, age, or handicap.[5]

Regular civilian ethical decision making, such as that captured in the Navy Code of Ethics, is governed by the rules of what Nassim Taleb in his book *The Black Swan* describes as "Mediocristan." The supreme law of Mediocristan is "When your sample is large, no single instance will significantly change the aggregate or the total."[6] In this world, traditional ethical guidance, such as Kant's categorical imperative or utilitarian precepts, is often valid. The exceptional

situation generating suboptimal outcomes (e.g., an ax-wielding madman kills an innocent person) is so rare as not to require special attention.

Yet the ethical behavior rules in normal society poorly prepare warriors for combat. As Karl Marlantes in his book *What It Is like to Go to War* argues, "Our young warriors are raised in possibly the only culture on the planet that thinks death is [merely] an option. Given this, it is no surprise that not only they but many of their ostensible religious guides . . . enter the temple of Mars unprepared. Not only is such comfort too often delusional; it tends to numb one to spiritual reality and growth. Far worse, it has serious psychological and behavioral consequences."[7]

Today a full range of tools is available to prevent or reduce the moral injuries to which sailors become subject while performing the ethical tasks associated with combat risks. If we do not use these tools to supplement the existing ethics training and education (which emphasize compliance), we fail to prepare our sailors effectively for what they will face.[8] This is important, because warriors reside in what Taleb refers to as "Extremistan," where the consequences of action are amplified beyond the normal range. Individual actions, taken or not taken, can generate consequences at levels ranging from the individual through the tactical to the grand strategic, and do so regularly as part of normal professional activity.[9]

The normal ethics training is not entirely adequate for comprehensively meeting the ethical training and education needs of the military professional dimension of the Navy, which includes the sailor as warrior. Sailors require an approach to ethics training and education tailored for naval professionals, who are, as Admiral Howe points out, professional warriors who also, but not exclusively, act in bureaucratic ways as part of performing their professional functions.

The foundation of warrior ethics is the awareness with which warriors take sides and accept the risks associated with that decision. They are cognizant of the risk-transference impacts of their actions, internalize the tensions in their decision making, and do not push the negative externalities onto others. As Marlantes puts it,

> Choosing sides is the fundamental first choice that a warrior must make. . . . The second fundamental choice of the warrior is to be willing to use violence to protect someone against even intended or implied violence. This second fundamental choice engenders an additional choice, which is accepting the risk of death and maiming that usually results from the decision to use violence against violence. To become a warrior requires making these two fundamental choices and accepting the risks entailed. Doing the above eliminates any need to use the adjective "ethical" in front of the noun "warrior." A warrior, by my definition, acts ethically.[10]

This tripartite decision bundle places warriors in a position that requires meta-ethical principles to guide their application of ethical principles. Ethical

principles, while congruent parts of an overarching ethical system, are not always identical in formulation and application when applied to combat conditions versus ordinary life. Informed examination of the principles and how they operate in the various domains is necessary. In other words, combat demands a supplemental ethical operating system. Think of it as a turbocharger, which adds to an engine an additional physical capability for extreme situations. The supplemental ethical operating system enables effective ethical decision making across the full range of life experiences. Building this "turbocharger" requires additional efforts to facilitate the development of sailors' ethical competence.

Therefore, the bulk of traditional academic, off-the-shelf ethical training —based on the Golden Rule and fundamental prohibitions such as "do not kill"—is not entirely adequate for the sailor-as-warrior. This training starts from the assumption that the subjects of the training are rational actors operating in accordance with what Nobel Prize–winning thinker Herbert Simon described in *Reason in Human Affairs* as the Single Expected Utility model of rationality, which is characterized by well-ordered conditions and a set of tame, if perhaps complicated, problems.[11] Gary Klein, an expert on recognition-primed decision making, in his *Streetlights and Shadows,* refers to such conditions as "streetlight" situations.[12]

However, warriors must conduct ethical decision making not only under streetlights but in poorly illuminated ethical environments, characterized by chaotic situations in which individuals must deal with other impassioned individuals through the filters of their own passions. They must engage in activities considered unethical under normal circumstances. Therefore practical ethical decision making requires an understanding of what Benedict de Spinoza in his book *Ethics* designated "human bondage," within which people are ruled by passions, not the clear exercise of reason.[13] Warriors' efforts to manage wicked, complex problems in dynamic, agonistic environments therefore demand decision-making techniques different from those provided by traditional, rational actor model–based ethics training.[14]

What qualifies as "common sense" under the streetlight does not apply comprehensively to the shadow situations of combat. Carl von Clausewitz, in the beginning of his book *On War,* states that a different ethical framework must be used when thinking about war. He writes, "Kind hearted people might of course think that there was some ingenious way to disarm or defeat an enemy without too much bloodshed, and might imagine this is the true goal of the art of war. Pleasant as it sounds, it is a fallacy that must be exposed: war is such a dangerous business that mistakes which come from kindness are the worst."[15] Within the traditional ethical perspectives, such as the Kantian, virtue ethics, or utilitarian, the idea that such things as "mistakes from kindness" exist is at first glance amoral and unethical.

However, as Socrates pointed out, the commonsense answer to a dilemma is often wrong. In book 1 of *The Republic,* Socrates, the combat veteran, points out that the simple ethical commands to give people what they are owed and never tell a lie are not automatically just. He says, "Everyone would surely agree that if a sane man lends weapons to a friend and then asks for them back when he is out of his mind, the friend shouldn't return them, and wouldn't be acting justly if he did. Nor should anyone be willing to tell the whole truth to someone who is out of his mind."[16] In his search for a definition of justice, Socrates goes on to reject the idea that whatever is done to members of the out-group (enemies) is automatically just. The ethical category applying to another person can shift in an instant (for example, from enemy combatant to injured prisoner), changing the appropriate set of ethical behaviors that apply to that person. Socrates thus articulates the complexity of the warrior's ethical understanding, which includes awareness of the risks associated with both action and inaction, for self and others, and the central role that time and context play in the ethical treatment of people. This is not to say that ethics are relative, only that ethical behavior in Extremistan must attend to what Heraclitus referred to as the *concealed logos,* which in this context of ethical decision making can be understood as constituting the meta-level ethical principles governing when to apply specific ethical principles.[17] Discerning, while in the shadows, the ethically appropriate action requires robust competency development.

This is not to say that the traditional approaches are invalid, only that they are not entirely sufficient for military professionals. As Klein explains in discussing the need for appropriate action in both the streetlights and the shadows, "The way we see in bright light differs from the way we see in shadows. Neither is the 'right' way. We need both. This dual viewpoint of light and shadow affects how we make decisions and how we make sense of situations. It affects how we plan and how we manage risks and uncertainty. It guides how we develop expertise and how we use our intuition."[18] Bureaucrats operate under the streetlights; warriors often, but not always, in the shadows.

The warrior's ethical decision making is different from the normal ethic of society. This is so not only because killing, for example, is permissible but because the warrior internalizes the full risk-management constellation. The warrior understands the risk of action and inaction, and takes more risk on him- or herself so as to reduce it for others. In other words, the warrior confronts the ax-wielding madman if necessary, instead of simply allowing that risk to pass him or her by; an example of the latter would be to follow the categorical imperative to tell the truth ("Which way did that kid go?!" "That way.") as a means to avoid making an appropriate decision ("Put down the ax.").

Thus, warriors require a specific ethics training and education program, in addition to but distinct from the conventional programs available. The "ethical fitness" concept constitutes a framework for this ethical competency development program.

PART 2: THE MARINE CORPS COMBAT FITNESS APPROACH AS A MODEL FOR CULTIVATING SAILOR ETHICAL FITNESS

The Marine Corps approach to physical fitness offers a model for an approach to cultivating warrior ethical fitness. It demonstrates the necessity to add training, education, and assessment metrics in order to develop and assess specific combat-required capabilities. In 2008 the Marines added a Combat Fitness Test (CFT) to their existing Physical Fitness Test. As MCO 6100.13 explained, "As professional warrior-athletes, every Marine must be physically fit, regardless of age, grade, or duty assignment. . . . The Physical Fitness Test (PFT), Combat Fitness Test and Remedial Conditioning Program (RCP) are components of an effective organizational Combat Conditioning Program."[19] Why did the Marines add another *fitness,* not wellness, test to the existing PFT? Greg Glassman's definition of fitness in his article "What Is Fitness?" provides an answer. Fitness is the positive pole of the health continuum demarcated by sickness, wellness, and fitness.[20] Thus, fitness represents a higher degree of health than wellness, and professional warrior-athletes must operate at the higher end of the fitness zone of the health continuum if they are to execute their missions effectively. Therefore, the Marines deemed a combat-specific test necessary because combat requires a bundle of physical competencies not cultivated by traditional athletic activity. It is possible to be an effective athlete—say, a runner or football player—and yet not possess the physical capabilities required for combat. As a result, normal physical fitness tests fail to evaluate these competencies adequately, not because the tests are flawed, but because they focus on noncombat-related measures of performance and effectiveness. Therefore, the Marines deemed necessary an additional set of competencies, training to cultivate those competencies, and an assessment mechanism to check both the effectiveness of the training and the individual possession of the competency.

Just as the Marines have two approaches to developing and testing physical fitness, the traditional PFT and the CFT, specific ethical competency development would benefit from a structured approach consisting of both the traditional and warrior-specific applications of traditional ethical systems. While conventional ethical training can and does meet many of the warrior ethical competency requirements, providing both principles and guidance for the application of those principles, it is insufficient. The addition of training and education on combat-focused application of principles, in accordance with the concept of ethical

fitness for warriors, constitutes a necessary expansion to meet the ethical needs of twenty-first-century warriors.

Definition of Ethical Fitness

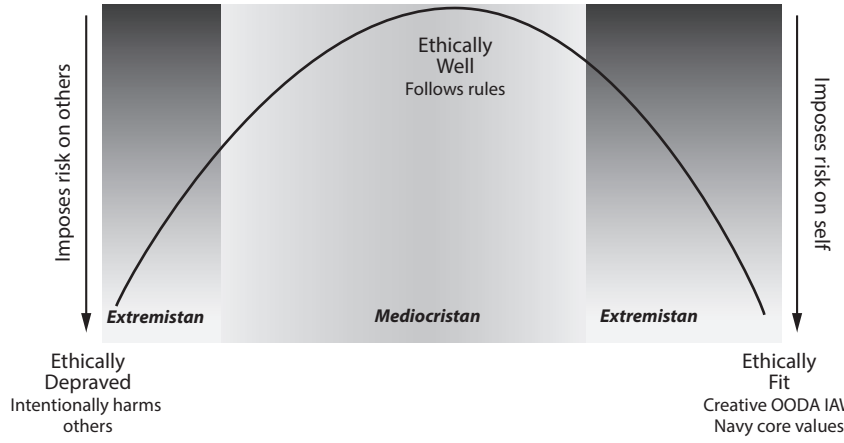
Borrowing the concept of "fitness" from the physical domain provides a model for thinking about enhancing sailor-warriors' ethical competencies to inform their daily decision making in both combat and noncombat conditions. Ethical fitness consists of effective orientation, observation, decision, and action; with full cognizance of the risks; in accordance with Navy core values; applied in a violent, uncertain, extreme world.

Mapping ethics onto an ethical health bell curve, with depravity constituting the deficient condition, wellness the normal condition, and fitness the highest level of ethical competence, clarifies the distinction between the ethically well and the ethically fit. As shown in the figure, most people abide in the "ethically well" section, following rules and getting along under the normal conditions of everyday life. A few are depraved: intentionally harming others; constantly attempting to shift risk from themselves; and lying, cheating, and stealing as a normal part of their life practices. At the other pole are the ethically fit. The few people at this pole take risks on themselves to reduce the risk to others, while operating in extreme conditions such as combat.

Applying Ethical Fitness

John Boyd's presentation "The Essence of Winning and Losing" lays out the observation and orientation steps of his observe—orient—decide—act (OODA) loop. An individual warrior is ethically fit when he or she can apply these cognitive skills while operating in the dynamic conditions of Extremistan. Ethical fitness metaprinciples enable warriors to orient themselves appropriately in the

FIGURE 1
ETHICAL HEALTH BELL CURVE



context of engagement space, understand their own observations, and use them to inform their decisions and actions. Boyd explains that "[o]rientation is the *Schwerpunkt* [focus point]. It shapes the way we interact with the environment —hence orientation shapes the way we *observe,* the way we *decide,* the way we *act*. . . . Orientation shapes the character of present observation—orientation—decision—action loops—while these *present* loops shape the character of *future* orientation."[21] Ethical principles structure this orientation, and the meta-ethical principles informing warrior orientation provide an additional layer of insight into their application that helps to make sense of observations and inform decisions and actions across all possible environments.

PART 3: ADVANTAGES OF THE ETHICAL FITNESS CONCEPT

The ethical fitness concept has three major advantages over current ethics training and education.

First, the ethical fitness concept provides an overarching training, education, and practice paradigm, thereby helping to implement Rear Admiral Carter's recommendation to move "beyond compliance" in ethics training and education.[22] Framing ethics training and education as the cultivation of ethical fitness constitutes a positive approach to the sort of life-and-death decision making that is the specific task of warriors. It does so in a way that enables the flow of passion and enthusiasm to "do the right thing" that is the default setting for sailors. In contrast, the current Navy ethics guidance is a list of dos and don'ts for bureaucrats, not warriors. By avoiding a focus on the negative "don'ts" and "ought nots" from philosophers who have never faced combat, the ethical fitness concept provides a way for warriors to take the ethical initiative when they find themselves in a conflict. This enables sailors to perceive the ethical components of military decision making not as restraints (can't do) but as fertile constraints (must do) that enable long-term mission success.

Second, the ethical fitness concept provides a framework for the development of ethical decision-making habits. Ethical fitness, like physical fitness, arises from habitual exercise of the capability, appropriately guided through training and deliberative practice. As Aristotle said, "Thus the virtues arise in us neither by nature nor against nature, but we are by nature able to acquire them, and reach our complete perfections through habit."[23] Habitual (regular, repeated) application of the desired behavior is necessary for humans actually to possess a competency. Aristotle compared the process of acquiring ethical competency to the sort of hands-on training that builders receive. Aristotle explained, "Virtues, by contrast, we acquire, just as we acquire crafts, by having previously activated them. For we learn a craft by producing the same product that we must produce when we have learned it, become builders, e.g., by building and harpists by playing the harp: so

also, then, we become just by doing just actions, temperate by doing temperate actions, brave by doing brave actions."[24] Athletic habituation ingrains appropriate movement patterns, just as experience, including imaginative experience generated through training and education, ingrains ethically fit behavior.

Third, the ethical fitness concept provides a framework for ethical behavior in multiple contexts. Warriors engage in activities not obviously justifiable using the conventional ethical metrics of Mediocristan. As General James Mattis said in his 2004 William C. Stutt Ethics Lecture at the U.S. Naval Academy, entitled "Ethical Challenges in Contemporary Conflict: The Afghanistan and Iraq Cases," "Your job, my fine young men and women, is to find the enemy that wants to end this experiment and kill every one of them until they're so sick of the killing that they leave us and our freedoms intact."[25]

However, a warrior is not engaged in killing all the time or in all places, or even indiscriminately in any one place or at any given time. Therefore, to act appropriately in multiple contexts, warriors must build, on the foundational ethical habits, what the German philosopher Friedrich Nietzsche referred to as "brief habits." Nietzsche wrote, "I love brief habits and consider them an invaluable means for getting to know many things and states down to the bottom of their sweetnesses and bitternesses; my nature is designed entirely for brief habits, even in the needs of its physical health and generally as far as I can see at all, from the lowest to the highest."[26] By extending the range of human experience, and of expertise within that experience, brief ethical habits inform individual warrior decisions and actions and thus foster the advanced level of ethical development necessary for warriors and leaders. A life in which the same ethical habits are applied in all contingencies will fail to correspond appropriately to the demands of an Extremistan ethical situation, just as performing the same set of exercises (even with good technique) without variation can lead to decreases in physical capability. Training and practice consisting of varied stimuli and responses are necessary for ethical growth, and challenges stimulate development.[27] The warrior requires multiple brief habits for ethical decision making to facilitate decision making across the full range of life activities.

The employment of the various ethical habit sets can be thought of as corresponding to weapons readiness levels.[28] Weapons status readiness levels describe the appropriate posture for weapons employment; similarly, the ethical habit set articulates the balance of risk (between self and other) and the appropriate level of violence available to respond to adversary action. The ethical habit set for combat is different from that for an exercise, just as weapons readiness levels change with the situation. Hence, "mere" ethical wellness is insufficient for warriors; they require education, training, and practice to become ethically fit to enable them to shift rapidly among appropriate ethical habits.

FIGURE 2

Weapon Conditions	Weapon Status	Likelihood Weapon Use Required
Condition 1	Magazine inserted, round in chamber, slide forward, and decocking/safety lever on	High
Condition 2	Not applicable	Medium
Condition 3	Magazine inserted, chamber empty, slide forward, and decocking/safety lever on	Medium
Condition 4	Magazine removed, chamber empty, slide forward, and decocking/safety lever on	Low

The concept of brief habits has the advantage of opening space for forgiveness, respect for the enemy, treatment of the dead, etc. He who is an enemy in one moment can become a prisoner or a fellow human being whose life has ended in the next. In dynamic combat conditions, such a shift can occur faster than it can be articulated explicitly. The training task is therefore to infuse warriors' intuition (their tacit understanding), and thus their decisions and actions, with the appropriate ethical operating system. Brief habits, as part of ethical fitness, provide a way to think through how to deal with these varying circumstances. The ethically fit individual will have ingrained the correct "movement patterns" and thus possess the "muscle memory" necessary to decide and act appropriately in every situation.

PART 4: CONCEPT IMPLEMENTATION—COACHING THE ETHICAL FITNESS WORKOUT

Implementation of the ethical fitness concept requires appropriate training and education—in other words, the development of an effective ethical habituation process. Indeed, the Navy as an institution has a responsibility to provide robust and effective ethics training. As General Mattis has said, "A tragedy is when one of your beloved young sailors or Marines, who will literally die to carry out your orders, does something, and now you have to court-martial him. That is the last thing you ever want to do, because you failed to talk your people through it, to illustrate for them what it's going to be like."[29] Ethics training for bureaucrats based on ethical habits developed for everyday life in Mediocristan will not avert the tragedies to which General Mattis refers.

Yet simply saying that we need more and better ethics training is an inappropriate response. Effective ethics training must overcome two challenges: the scarcity of attention resources and the rules-based compliance model. Ethical fitness provides a framework for developing an ethical training regime that meets both these challenges.

Scarcity of Attention

As Herbert Simon has pointed out, in a time of nearly unlimited information, the critical limiting factor is attention.[30] Even as the increasing complexity of Navy

tasks demands additional training, attention resources available to focus on training decrease. As a result, the reliance on more training to solve organizational problems creates its own ethical challenges. As Leonard Wong and Stephen J. Gerras point out in their *Lying to Ourselves: Dishonesty in the Army Profession,* the well-intentioned effort to provide more training to deal with problems can have "detrimental effects on training management due to the suffocating amount of mandatory requirements imposed upon units and commanders."[31]

Similar tensions exist in the Navy. Therefore the training dedicated to ethics must be sensitive to this attention-constrained environment instead of simply adding more training as the answer to every challenge. Effective training will provide the minimum effective dose of ethics training in a way warriors find useful. A list of dos and don'ts is unlikely to meet this need. While compliance with rules is essential, it is not sufficient. Thus, warrior ethics training must go beyond a compliance-based set of rules on what to do and not do. It must provide principles that not only explicitly guide action but intuitively inform the moral operating system that animates the orientation of decision making. This enables warriors to make value-based judgments that are always in accordance with the highest ethical standards.

The How-To

So how do we capture the warrior's attention and provide the minimum effective ethics training and education dose in time-constrained, complex environments?

Effectively capturing the warrior's attention requires that training and education be delivered not by an outsider but by a leader who is on the field of Mars with the warrior. Just as a team coach provides expert advice on techniques and training for the sport, so the military has coaches: senior leaders with expertise in navigating ethical situations. These coaches, serving as role models, provide positive tools to enhance the warrior's competency to move through the OODA loop ethically.

Coaches facilitate warrior ethical competencies by developing their ethical decision-making mental models through the pathways of life experience and education, similar to the development of physical competency through drills in the weight room and on the sports field. As Klein writes, "Mental models are developed through experience—individual experience, organizational experience, and cultural experience."[32] By guiding reflection on experience and discussing imaginative experience gained through training and educational activities, coaches facilitate development of the ethical competencies that together constitute ethical fitness, just as a physical coach guides a workout. Coaches do not simply point out mistakes; they are sensitive to tacit knowledge derived from understanding the context of an action, and help to sensitize those they coach to the weak signals emerging from the shadows.

Coaching takes many forms, including "workouts" that cultivate ethical competency. Admiral Carter articulates possible coach-provided ethical training and education content:

> *[S]potlight examples of good ethical choices and behavior; as well as examples that favorably represent the naval profession. . . . [I]nstitutionally reward good decisions and actions that reinforce Navy Core Values and the Navy Ethos.* Tend to the moral development of our Sailors—i.e., helping them develop habits for making the right ethical choices and utilizing proper discretionary judgment. . . . *[P]rovide opportunities for facilitated dialogues, peer discussions, and open roundtables around topics of motivation, reasoning, and processing of moral choices.* Capitalize on existing training and education that present opportunities to instill ethics discussions and learning.[33] [italics in original]

Ethical fitness workouts can vary significantly in length and intensity. Examples include plan of the day (POD) notes requiring a minute to read;[34] complex, multiactor scenarios as capstone events in schools; asides in lectures; boxed texts in doctrinal manuals; and commentaries on recommended texts. Such material exists: Steven Pressfield's *The Warrior Ethos,* Karl Marlantes's already-mentioned *What It Is like to Go to War,* Nicholas Monsarrat's *The Cruel Sea,* E. D. Swinton's *Defense of Duffer's Drift,* and many others; it need only be placed in the appropriate package for sailor use. The lessons literature need not focus on mistakes; especially for those beginning their ethical fitness workouts, providing positive role models for making ethically fit decisions in complex, chaotic situations provides outstanding value. For example, Steven Pressfield's book *The Lion's Gate* offers multiple positive examples, such as the way Ran Ronen dealt with his mistake in combat during the Six-Day War: by taking more risk on himself and his squad by flying his plane under the other Mirage formations (so low, in fact, that he created a wake on the Mediterranean Sea below) so as to avoid transferring that risk onto others through failure to hit his targets at the assigned time.[35]

Ethical fitness can be achieved only by engagement—by wrestling with ethical issues in a wide variety of environments. Its relationship to rules (rules are necessary but not sufficient and not always available) makes ethical fitness difficult, both for practitioners and for those working to train and educate warriors aspiring to ethical fitness. The ethically fit must decide and act both in compliance with explicit rules and dynamically in accordance with core values.

This article offers the ethical fitness concept as a contribution to implementing previous calls to enhance the Navy's approach to ethics training and education. The addition of an active growth and exercise component to ethics training and education, based on an analogy to the physical demands of combat (sprinting, climbing through warped hatches, lifting ammunition, etc.), provides a readily

comprehensible, accessible, and actionable methodology for engaging in ethical decision making both in the extremes of combat and in everyday life. Ethical fitness therefore provides a way to think about ethics training and practice that goes beyond exhortations to "be good." The goal is to provide sailors with practical, actionable ethical decision-making skills. Importantly, the ethical fitness concept adds to the rich set of images, such as "moral compass," "golden rule," and "straight and narrow," that already shape ethics education and practice.[36]

NOTES

1. U.S. Navy Dept., *The Navy Leader Development Strategy* (Washingon, DC: 2013).
2. Walter E. Carter Jr. [Rear Adm., USN], *Ethics in the U.S. Navy* (Newport, RI: Naval War College, 2014), p. 11, available at www.usnwc.edu/.
3. Ibid., p. 13.
4. P. Gardner Howe III [Rear Adm., USN], "Rear Adm. Howe: Professionalism, Leader Development Key to Future," *U.S. Naval War College,* 19 May 2015, www.usnwc.edu/.
5. Secretary of the Navy, "Navy Code of Ethics," 2005, available at www.secnav.navy.mil/. The Navy Ethos is more suited to the sailor as bureaucrat.
6. Nassim Taleb, *The Black Swan: The Impact of the Highly Improbable,* 2nd ed. (New York: Random House, 2010), p. 32.
7. Karl Marlantes, *What It Is like to Go to War* (New York: Grove, 2011), p. 8.
8. Shira Maguen and Brett Litz, "Moral Injury in Veterans of War," *PTSD Research Quarterly* 23, no. 1 (2012), pp. 1–3. The bibliographic essay accompanying this work discusses major articles within the growing body of literature on moral injury.
9. Taleb, *The Black Swan,* p. 33.
10. Marlantes, *What It Is like to Go to War,* p. 222.
11. See Herbert A. Simon, *Reason in Human Affairs* (Stanford, CA: Stanford Univ. Press, 1983), for a discussion of the rational actor model and its limitations.
12. Gary Klein, *Streetlights and Shadows: Searching for the Keys to Adaptive Decision Making* (Cambridge, MA: MIT Press, 2009), p. 7.
13. See Spinoza's discussion of human bondage in section 4 of the *Ethics.* He writes, "Man's lack of power to moderate and restrain the affects [passions] I call bondage." Benedict de Spinoza, *A Spinoza Reader: The* Ethics *and Other Works,* ed. and trans. Edwin Curley (Princeton, NJ: Princeton Univ. Press, 1994).
14. The challenges that combat generates for the development of ethics competency are not new. For example, W. Somerset Maugham's *The Razor's Edge,* published in 1944, is about a veteran who is on a quest for an ethical system appropriate for a returned warrior. Maugham contextualizes the World War I veteran's struggle by having the character compare his struggles to those of Civil War veterans.

    "We all know how after the war between the states there were men who never did a stroke after they came back from it. They were a burden to their families and useless to the community." Also, "'The war did something to Larry. He didn't come back the same person that he went. . . . Something happened that changed his personality.'

    "'What sort of thing?' I asked.

    "'I wouldn't know. He's very reticent about his war experiences.' Dr. Nelson turned to Mrs. Bradley, 'Has he ever talked to you about them, Louisa?'

    "She shook her head.

    "'No. When he first came back we tried to get him to tell us some of his adventures, but he only laughed in that way of his and said there was nothing to tell'" (W. Somerset Maugham, *The Razor's Edge* [Philadelphia: Triangle Books, 1946], pp. 26–27).

The tensions inherent in the ethical implications of combat are recurring issues that require continuous engagement.

15. Carl von Clausewitz, *On War,* ed. and trans. Michael Howard and Peter Paret (Princeton, NJ: Princeton Univ. Press, 1976), p. 75.
16. John M. Cooper, ed., *Plato: Complete Works* (Indianapolis, IN: Hackett, 1997), book 1, p. 331c.
17. On "concealed logos," Dr. Thomas Robinson explains, "And truth about the real can be known; for while it is no doubt the case that '<the world's(?)> real constitution has a tendency to hide itself' (fragment 123), it is none the less, with effort, ascertainable (fragments 1, 22), and this bears implications for conduct." Heraclitus, *Heraclitus: Fragments; A Text and Translation with a Commentary,* trans. T. M. Robinson (Toronto: Univ. of Toronto Press, 1987), p. 154.
18. Klein, *Streetlights and Shadows,* p. 6.
19. U.S. Navy Dept., *Marine Corps Physical Fitness Program,* MCO 6100.13 (Washington, DC: U.S. Marine Corps, 2008).
20. Greg Glassman, "What Is Fitness?," *CrossFit Journal* (October 2002), p. 3.
21. "The second O, orientation—as the repository of our genetic heritage, cultural tradition, and previous experiences—is the *most important part* of the O-O-D-A loop since it shapes the way we observe, the way we decide, the way we act." John R. Boyd, "Organic Design for Command and Control," *Defense and the National Interest,* 2005, slides 16, 26, www.dnipogo.org/.
22. Carter, *Ethics in the U.S. Navy,* p. 13.
23. Aristotle, *Nicomachean Ethics,* trans. Terence Irwin (Indianapolis, IN: Hackett, 1985), book 2, sect. 1103a, lines 20–25.
24. Ibid., lines 25–30.
25. Lieut. Gen. James N. Mattis, *Ethical Challenges in Contemporary Conflict: The Afghanistan and Iraq Cases* (Annapolis, MD: U.S. Naval Academy, 2001), p. 9.
26. Friedrich Nietzsche, *The Gay Science: With a Prelude in German Rhymes and an Appendix of Songs,* ed. Bernard Williams, trans. Josefine Nauckhoff (Cambridge: Cambridge Univ. Press, 2001), p. 167.
27. The idea of brief habits can also provide insight into post-traumatic stress disorder (PTSD). PTSD may be understood, in some cases, as a healthy, appropriate adaptation (or brief habit of living) to combat conditions, but an adaptation that later continues to inform observation, orientation, decision, and action even when translated into an environment in which other habits would be more appropriate. Thinking of the life of a warrior as requiring the development of many different brief habits, and the subsequent discarding of some of those habits in favor of others, can help conceptualize the transitions from training to predeployment preparations, to combat, and to the return home, followed by another cycle. Warriors can think of the skills they acquire (and that they need to survive in complex, violent environments) as brief habits, to be set aside upon return, then taken up again when necessary.
28. U.S. Marine Corps, *Pistol Marksmanship,* MCRP 3-01b (Washington, DC: 2003), available at www.marines.mil/.
29. Mattis, *Ethical Challenges in Contemporary Conflict,* p. 17.
30. See Herbert A. Simon, *The Sciences of the Artificial,* 3rd ed. (Cambridge, MA: MIT Press, 1996), p. 144.
31. Leonard Wong and Stephen J. Gerras, *Lying to Ourselves: Dishonesty in the Army Profession* (Carlisle, PA: U.S. Army War College, Strategic Studies Institute, 2015), p. 5.
32. Klein, *Streetlights and Shadows,* p. 104.
33. Carter, *Ethics in the U.S. Navy,* p. 13.
34. An example of such a POD note while under way: "During tonight's showing of the movie *Gettysburg,* pay special attention to Chamberlain's speech prior to the battle. What are the ethical foundations of the ideas he articulates?"
35. See Steven Pressfield, *The Lion's Gate: On the Front Lines of the Six Day War* (New York: Penguin, 2014), pp. 144–49.
36. For example, see Adm. Jonathan Greenert's *Proceedings* article "The Moral Component of Leadership" for its use of "moral compass." The admiral also writes, "We keep ourselves ethically fit through contact with one another." Adm. Jonathan Greenert, "The Moral Component of Leadership," U.S. Naval Institute *Proceedings* 141/9/1,351 (September 2015).

WARS AND RUMOURS OF WARS

Japanese Plans to Invade the Philippines, 1593–1637

Stephen Turnbull

On three occasions between 1593 and 1637, the incumbent rulers of Japan gave serious consideration to sending military expeditions against the Spanish rulers of the Philippines. None of these proposed invasions ever set sail, but an examination of the plans made and the reasons they were not put into effect sheds considerable light on Filipino-Japanese relations during the late sixteenth and early seventeenth centuries. As all three ventures foundered partly because of a lack of naval capacity, these little-known schemes also provide important information about Japan's military capabilities at this time in its history.

Spanish colonists first arrived in the Philippines in 1564 as a result of an expedition from the Americas under Miguel López de Legazpi, and on 23 July 1567 in a letter to King Philip II, this "very humble and faithful servant who kisses your hands and feet" notes that Chinese and Japanese came to trade on the larger islands, bringing with them "silks, woolens, bells, porcelains, perfumes, iron, tin, colored cotton cloths, and other small wares."[1] The letter is the first acknowledgement of peaceful encounters between the Spanish and the Japanese.

It was not long before there were interactions of a very different kind, involving marauding bands of *wakō,* the pirate gangs who were usually perceived to be Japanese even when they included an international component. In 1572, Juan de Salcedo fought Japanese junks off the coast of Pangasinan

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and Pablo Carrion drove Japanese pirates from an enclave at the mouth of the Cagayan River.[2] It is in the accounts of such operations that we find the first descriptions in any European language of Japanese military techniques and martial customs, from death-defying charges to acts of ritual suicide. So impressed were the Spanish by these warriors that they began to recruit mercenaries from pacified *wakō* and also from within the expatriate Japanese community. However, even though Japanese bravery was recognised and valued, there was a noticeable undercurrent of fear that one day these independent-minded warriors might rise up against their employers. In its most extreme form, that fear envisaged a local uprising in support of an invasion of the Philippines from Japan—an event that was by no means a remote possibility.

HIDEYOSHI AND THE PHILIPPINES, 1592–98

The earliest written mention of fears of a Japanese invasion in the broadest sense of the word appears in a *Memorial to the Council* of 1586, in which there is speculation within Manila that the Japanese *wakō* might have greater ambitions beyond mere plunder: they "make a descent almost every year, and, it is said, with the intent of colonizing Luçon [Luzon]."[3] That never happened, but in 1591 the first proper invasion scare began when the Philippines entered the consciousness of Toyotomi Hideyoshi (1536–98). By means of a series of brilliant military campaigns, Hideyoshi had reunified Japan after the chaos of a century of civil war, and he now set his mind on overseas expeditions. The addition of the Philippines to his megalomaniac aims was credited to a certain "Farandaquiemon [Faranda Quiemon]—a Japanese of low extraction," who induced Hideyoshi "to write in a barbarous and arrogant manner to the governor, demanding submission and tribute, and threatening to come with a fleet and troops to lay waste the country."[4]

Farandaquiemon was a Japanese Christian merchant from Sakai called Harada Kiemon. He had visited Manila on several occasions, most recently in 1591, and, having looked at its defences, he returned to Japan convinced that the city could be taken easily.[5] Together with his colleague Hasegawa Sōnin, described as a "court favourite," Kiemon persuaded Hideyoshi to write his arrogant letter to the governor of the Philippines.[6] Hideyoshi's military strength and his unification of Japan had become known in Manila, so the bombastic letter begins with a reference to these military triumphs and his miraculous birth that had augured Hideyoshi's destiny to rule other nations. The threats appeared later in the missive: "If an ambassador is not sent, I shall unfurl my banner and send an army against that country to conquer it with a multitude of men; so that that country will repent at not having sent me an ambassador."[7]

The Spanish sent back a reply dated 1 May 1592 that was delivered to Hideyoshi by the Dominican friar Juan Cobo. Cobo traveled to Japan with a Chinese

Christian called Antonio López, who appears to have been sent as a spy. Cobo and López met Hideyoshi at Nagoya Castle, the military base in Kyushu built for the invasion of Korea. "Cobo showed the king of Japon [Japan] the kingdoms of our king on a globe. He gave this to the king, with the names of the kingdoms written in Chinese characters, with the distances between them."[8] Harada Kiemon then took personal charge of a second Japanese embassy to Manila. The Japanese delegation and Cobo's embassy left for the Philippines in two separate ships, which was fortunate in view of the disaster that would overcome the embassy, because Cobo's ship was wrecked off Taiwan and he died at the hands of aboriginal headhunters. Antonio López arrived safely in Japan aboard Harada's vessel.[9]

Harada Kiemon began his address to the council in Manila by stating that Hideyoshi had laid on a magnificent reception for Juan Cobo because he "knew that the Spaniards are a warlike nation."[10] Impressive though Kiemon was, the council gave much more attention to debriefing Antonio López, who certainly knew how to gather information. On 1 June 1593, López was questioned closely under oath about what he had seen and done in Japan, with most of the questions relating to his knowledge of any Japanese plans for an attack on the Philippines. López said first that he had heard that Hideyoshi had entrusted the conquest to "Kunquyn," which probably refers to Harada Kiemon.[11] There was also a possible motive, because "[i]n Japon there is universal talk of the abundance of gold in this land. On this account, the soldiers are anxious to come here; and are coming, as they do not care to go to Core [Korea], which is a poor country."[12] López also stated that the Japanese had interrogated him about the military strength of the Philippines. He seems to have tried misinformation on that point, even though his initial reply had caused some arrogant amusement: "The [Japanese] laughed when they heard Antonio say that these islands contained four or five thousand Spaniards. They said that the defense of these islands was merely a matter for jest, for one hundred of the Japanese were worth two or three hundred of us."[13]

López also mentioned that three large ships were being built in Japan, although he did not know their purpose, and he warned his hosts that in his opinion the Chinese community in Manila could not be trusted.[14] López also had overheard the Japanese discussing the likelihood of the Philippines being reinforced when under attack. "[F]our months are needed to go from Mexico to Luçon," said López, "and on this account but few soldiers could come from Mexico. Japan is not more than twenty days' journey distant, and therefore it would be well for us to appreciate this fact."[15] In terms of Harada Kiemon's personal ambitions, everyone López had met believed that when the Philippines were conquered he would become the governor.[16]

More interesting details then emerged about the size of the invading army, although the figures were very vague. López heard in "Hunquin's house" (probably

referring to Hasegawa Sōnin) that one hundred thousand would be sent, but when López (modifying his earlier figures) told them that the Philippines only contained five to six thousand soldiers, of whom no more than three to four thousand guarded Manila, the Japanese said that ten thousand would suffice. His host later told him that they had decided further that no more than five to six thousand men would be needed, conveyed on ten large ships.[17]

The final point López covered was the invasion route: "[T]hey will come by way of Liuteui [the Ryukyu Islands, modern Okinawa Prefecture]."[18] An invasion route via the Ryukyus and then Taiwan was the sensible one; it avoided open seas for the maximum amount of time, and it is only five hundred miles from Taiwan to Luzon. This was exactly the route the Japanese chose in World War II, when they attacked the Philippines from Taiwan, with additional forces landing farther south on Luzon from Amami-Ō-shima.

The threat was sufficiently serious for the Spanish to take specific defensive precautions, and López's information, limited though it was, probably proved helpful. A document entitled "Luzon Menaced by Japanese" by Governor Gómez Pérez Dasmariñas ordered the citizens to stockpile food and arms. All ships coming from Japan were to be searched. Twenty vessels would be stationed in the river below the artillery of the fort, with all other boats being moved upstream. The invaders could not then use the latter to build defences, and the seacoast would be kept clear for fighting. No ship was to leave without permission lest its crew be caught and interrogated, nor should any gold or silver be moved out of Manila. It also was recommended that the Japanese residents of Manila be moved to a settlement outside the city, and Japanese servants monitored closely.[19] Then a review was held of the available troops, including retired men who still held weapons. It was estimated that the defence of Manila alone required one thousand men, or six hundred at the least. The latter figure was the one included in the document, which implies that six hundred men were all they had. Other strongpoints required fewer, and there would be twenty-five soldiers on board each of four vessels to guard the coasts. The total strength available to withstand a Japanese attack was put at a disappointing 1,517 men, only a quarter of the number about which López had told the Japanese in Nagoya. Spanish defenders were outnumbered four to one, using his lowest estimate of the invading forces.[20]

The Philippines remained on high alert for four years after Harada's visit, and during that time the Spanish authorities closely monitored Hideyoshi's military expedition against Korea. It was launched during the summer of 1592 and rapidly changed from being a blitzkrieg success to a long and painful retreat. The Korean campaign revealed a major Japanese weakness in naval warfare and support, and one of the main reasons for Japan's eventual defeat was that the Korean navy severed Japan's lines of communication between Busan and the Japanese island

of Tsushima.[21] The encouraging lesson was not wasted on Manila. If Hideyoshi could not control the Tsushima Strait, how could he ever contemplate sending an invasion fleet as far as Luzon?

As his Korean incursion dragged on, Hideyoshi grew increasingly suspicious concerning the activities of Portuguese and Spanish missionaries in Japan. An active persecution of Christianity followed, and Japan's first martyrs died in February 1597. One of them, Fray Martin of the Ascension, wrote a letter to the governor of the Philippines as he was on his way to his execution. It includes what he had heard about Hideyoshi's intentions toward the Philippines. "It is said that next year he will go to Luzon, and that he does not go this year because of being busy with the Coreans."[22] Martin also commented on the invasion route, whereby "he intends to take the islands of Lequios and Hermosa [Ryukyus and Taiwan], throw forces from them into Cagayan, and thence to fall upon Manila, if God does not first put a stop to his advance."[23]

Manila gave some consideration to a preemptive Spanish occupation of Taiwan but, as Fray Martin had envisaged, God put a stop to Hideyoshi's plans. Hideyoshi died in 1598, the troops in Korea were recalled, and no fleet sailed for Manila. A Spanish reconnaissance of Taiwan may well have been carried out at this time, but no attempt was made to exert control over the island. That had to wait until 1626, when the Spanish established Fort San Domingo (modern Keelung).[24]

THE PHILIPPINES AND THE MATSUKURA FAMILY, 1630–31

Japanese naval weakness would come up again as a crucial factor when an invasion of the Philippines was considered for a second time, in 1630.[25] Japan was now under the rule of the Tokugawa family.

The persecution of Christians had intensified since the time of Hideyoshi, and now the only contact Japanese Christians had with the outside world was a handful of brave priests who entered Japan secretly. The Japanese authorities believed they spread sedition and encouraged disobedience, and most of them came by way of Manila, so an invasion of the Philippines would be a heavy-handed way of closing the loophole once and for all.[26]

However, trade between the two countries was acceptable to both sides. Silver was an important commodity, and Japanese mines yielded perhaps a third of global silver production during the period covered by this article.[27] As Antonio de Morga wrote, "[I]t is well to keep the king of Japon friendly by this means. For if he were not so he would be the greatest enemy that could be feared, on account of the number and size of his realms, and the valor of the people therein, who are, beyond comparison, the bravest in all India."[28]

The 1630 invasion scheme was associated almost completely with a single enthusiast: Matsukura Bungo-no-kami Shigemasa (1574–1630), the *daimyō*

(great lord) and notorious tyrant of Shimabara in Hizen Province, whose cruel treatment of the people and persecution of Christians is very well recorded.[29] The Philippines entered Shigemasa's consciousness in 1624 when two ships belonging to the Matsukura were blown off course and ended up on the islands. On returning to Japan, their captains spoke enthusiastically about the considerable mercantile activity that existed between Japan and the Philippines and how Shigemasa might be able to gain control of it by means of a military expedition.[30] Shigemasa took no immediate action, because it would have been without precedent for any *daimyō* to act in such a manner purely on his own initiative, rather than by direction of the shogun. But then an incident occurred that provided him the opportunity for an authorised expedition to the Philippines—to avenge an insult to Japan.

The affront had its roots in Macao, where in 1622 the Portuguese heroically had beaten off a Dutch attack. A handful of Japanese mercenaries had served on the Dutch side.[31] The attempt caused such alarm in Manila that the Spanish sent reinforcements to Macao in case of a renewed incursion. The Spanish troops were ordered to stand down in 1624, but instead of sailing straight home to the Philippines their leaders chose to engage in a leisurely piratical expedition.[32]

Among their targets was Siam, where they preyed on the local freight vessels "carrying as merchandise, rice, considerable pepper, and some cloth. The last named was much needed by the infantry, who already had no shirts on account of the long voyage."[33] One of the ships they attacked and burned belonged to the king of Siam, but the Spanish pirates really exceeded their brief when they attacked a Japanese "red seal" ship—an authorised trading vessel. It had been sent to Siam by the *machidoshiyori* (town elder) of Nagasaki, Takaki Sakuzaemon.[34]

The Spanish account of the affair is very shamefaced; it admits that "[o]ne [ship] was Japanese, and carried drugs and merchandise. It was captured in good faith, but the justification of this act is being discussed. It is thought that the Japanese will be remunerated for the injury received, as they ought not to have been harmed."[35] The most serious aspect of the incident was the appropriation of the red seal—an act that amounted to an attack on the shogun's personal authority.[36] A profound apology subsequently was conveyed to Nagasaki.

No acknowledgement came from the Japanese side, and at its meeting in Manila on 16 January 1629 the council decided to take the matter no further, while minuting four reasons why relations between Spain and Japan were at such a low level. The first was that Spanish trade had been embargoed, not for commercial reasons, but because of its links to Christianity. The second point was that the Japanese had refused to receive any Spanish ambassadors. The third referred to the "old time robberies" of the Hideyoshi era and his threats of invasion, a theme echoed in the Spaniards' understanding of the current situation in their fourth point:

> Because . . . the Japanese had news of the richness of these islands, they have always tried to conquer them, by endeavoring to get a foothold on the island of Hermosa, in order to make it a way-station for the conquest of Luzon. That has caused the governors of Philipinas to make great expenditures and vast preparations during the past few years; and but recently it is learned that discussions of this kind are rife in Japon and that their reason for not doing it is not the lack of malice but of power.[37]

Matsukura Shigemasa possessed both malice and power. He realised the opportunity that had fallen into his lap, and he addressed the *rōjū* (the shogun's senior advisory council) in Edo as follows:

> Luzon is governed by the Western country [Spain], and that country in conjunction with Namban [Portugal] is ever looking for an opportunity to invade this empire. For that reason there is a fear that our country will be disturbed. All who come from Spain to Japan touch at Luzon. Therefore if I shall conquer that country with my own troops, place my own agents there, and thus destroy the base of the Westerners, this country will be secure for years to come. If I be permitted I will cross over to Luzon and conquer it. I pray that the vermilion seal of the Great Lord, giving me an estate of 100,000 koku there, may be granted me.[38]

To his own desire for territorial expansion and personal wealth Shigemasa therefore had added as justification the possibility of invasion of Japan by Spain. While holding back from a binding commitment to send Japanese troops to Manila, the shogun gave Shigemasa permission to investigate it as a potential target and to make military preparations. On 14 December 1630, with the cooperation of the Nagasaki *bugyō* (commissioner) Takenaka Umene, Shigemasa sent two retainers called Yoshioka Kurōemon and Kimura Gonnojō to Manila to spy out the Spanish defences.[39] They were disguised as merchants and their cover story was that they wished to discuss the development of trade. Each had ten *ashigaru* (foot soldiers) under his command, but during a stormy return crossing all ten of Kimura's men perished.

While they were away, Shigemasa continued his military preparations. The paucity of sources for what appears to have been the most serious attempt to invade the Philippines is regrettable, although the omissions may indicate simply that certain crucial aspects were never considered. All that is known for certain is that Shigemasa amassed three thousand bows and muskets for his army.[40] As these are foot-soldier weapons, one might envisage an additional 1,500 foot-soldier spearmen and half that number of samurai with noncombatant support troops, making the total numbers in Shigemasa's army about the same as the five to six thousand reported by Antonio López in 1593. There is no mention of naval support in the very meagre sources, nor is any indication given that Shigemasa knew that the important way station of Taiwan had acquired a Spanish fort since the time of Hideyoshi. Finally, no consideration was given to the

need for artillery against the walls of Manila, but that omission possibly could be explained by the fact that Shigemasa was awaiting the arrival of his spies with the relevant information.

The men returned to Japan in July 1631. No records of the intelligence they brought back with them have survived, but their information is unlikely to have been either profound or accurate, because they were a far cry from the ninja of Japanese martial fantasy. The authorities on the Philippines knew exactly who they were and the real purpose of their visit, as is confirmed by the unsigned "Events in Filipinas" of 2 July 1632:

> In Japon they are still pricked with the thorn of the ship which some years ago our galleons captured and burned on the bar of Sian. To avenge this, notable councils have been held in Japon, in order to come and wage war against this land; in order beforehand to have it well explored, they sent last year in January two merchant ships, under cloak of trade and traffic. Although in Manilla warning of this double object had been received, this was not made known; and they were received and regaled as ambassadors from the Tono of Arima and Bungo. A ceremonious reception and very handsome present were given to them; but the city was put in readiness for whatever might happen.[41]

A separate Jesuit source suggests that a deliberate attempt was made to impress on the spies the futility of attempting to take Manila by force. It comes in a report sent to Spain on 29 July 1631 by Hernando Pérez. In it he stated unambiguously that Yoshioka and Kimura were "sham envoys sent to investigate our situation in order to have an easy conquest of our country." Pérez confirmed that presents were given and banquets were held. "However, although on the surface there was a warm reception, in reality there was a display of military strength in accordance with a situation of war. As the envoys passed through the town the army units were lined up from the seashore to the governor's residence." Pérez concluded that the envoys were "amazed" by what they saw.[42] Their undercover mission therefore came to nothing.

The mission was nullified anyway by the unexpected death of the invasion commander, Matsukura Shigemasa.[43] He had died suddenly in a bathhouse in Obama while his spies were still in Manila. Murder was suspected.[44]

THE DUTCH AND THE FINAL INVASION PLANS, 1637

No further considerations were given to an expedition against the Philippines for another five years, but while Christian refugees from Japanese persecution continued to arrive in Manila, so also continued the much smaller reverse flow of secret priests to Japan. The last of the line, Father Sidotti, would arrive in Japan in 1708. It may have been only a trickle, but it was enough evidence of a continuing Christian problem to ensure that the idea of an invasion of the

Philippines rumbled on after Shigemasa's death. Shigemasa was succeeded by his son Matsukura Nagato-no-kami Katsuie, who proved to be as much of a tyrant and enemy of Christianity as his father, and it is during Katsuie's reign as *daimyō* of Shimabara that we encounter the hatching of the final scheme to invade the Philippines. Once again there was concern about the lack of Japanese naval capacity—a deficiency that possibly could be made up by Japan's loyal trading partners from the Dutch East India Company (the Company).

The instigator of the 1637 invasion plans was neither Matsukura Katsuie nor his master, the shogun Tokugawa Iemitsu, even though the Dutch were convinced the shogun was to blame.[45] Instead it appears to have been the brainchild of the two current *bugyō* of Nagasaki, Sakakibara Hida-no-kami Toshishige and Baba Saburōzaemon Motonao, who hoped thereby to curry favour with their superiors. The matter was raised at a meeting held toward the end of September 1637 with François Caron of the Company.[46] Caron long had been insisting that all Japanese trade should be shifted from the Portuguese to the Dutch, and one plank of his argument had been to contrast the Portuguese willingness to flout Japanese laws with the Dutch attitude of docile obedience.[47]

The *bugyō* listened respectfully to Caron, then changed the subject to help from the loyal Dutch to destroy the Iberian bases of Manila, Macao, and Keelung.[48] Of these three potential targets, the *bugyō* believed Manila was the top priority because its status as the source of supply for Catholic priests would be the best bargaining counter to use with their superiors in Edo when the time came to gain official permission to invade.

That was of course essential, but so was an army—and the *bugyō* were civilian officials, not commanders of samurai. The invading army would have to be supplied either by the shogun or by a *daimyō,* such as Matsukura Katsuie, acting on the shogun's behalf. As for numbers, apparently an expeditionary force of ten thousand men was envisaged, although this is only a supposition based on comments made after the expedition had been canceled.[49] That figure would have been twice the estimated number that Matsukura Shigemasa had planned for 1630, so other *daimyō* would have had to be involved as well. The *bugyō* were, however, astute enough to realise that once again naval power would be a serious weakness, so a guarantee of Dutch naval support would ensure that the army could be transported. It also would reduce the costs of the operation, which was another positive point to place before the shogun.

The *bugyō* did not approach the matter as supplicants. Instead they broached the subject in an assertive manner by challenging the Dutch to explain why, if they had the command of the sea, as they so often claimed, Manila had not become theirs already. Was it not also true that they had made an attack on Macao in 1622 and had been repulsed? Caron replied with a long and not entirely

accurate account of the 1622 expedition that sidestepped the reasons for the defeat. The inclusion of Japanese mercenaries in the Dutch attacking force was not mentioned; the *bugyō* were unlikely to have heard of it, and the Dutch would not have admitted that Japanese were involved on the losing side.[50]

As for attacking Manila in 1637, it was by then one of the most heavily fortified places in East Asia. Caron had no desire to assault it, nor even to transport samurai to do so, and he finished by suggesting meekly that the Dutch were now more merchants than soldiers. Besides that, he said, their fleet was already fully committed to existing responsibilities. One of the *bugyō* seemed to accept Caron's excuses, while the other kept shaking his head, but neither was inclined to give up. The next day Heizō Ietsugu, the *daikan* (magistrate) of Nagasaki, presented a document for the Dutch to sign that would commit them in no uncertain terms to supporting an invasion:

> Recently we have understood that the people of Manila are breaking the emperor's prohibitions and are sending priests, who are forbidden in Japan. As a result, they are viewed as criminals by Your Honours. If the High Authorities decide to destroy this place, the Hollanders, who bring a good number of ships to Japan every year, are always ready, in time or opportunity, to present our ships and cannon for your service. We ask that Your Honours trust and believe that we are, in all matters without exception, ready to serve Japan.[51]

The text of the document contained such a firm commitment to act that Caron could not have signed it there and then; it would have to be passed up the Company's chain of command. The *bugyō* were not surprised by that response, but before taking their leave they took pains to remind the Dutch that their reputation for loyalty was regarded as akin to the fidelity pledged to the shogun by his own *daimyō*. That point was not lost when the document came to be discussed by the Dutch at a higher level, where the choice was clear. They had to decide between abandoning their reputation as servants of the shogun, with all the implications for trade such a move would have, and the huge dangers of committing men and resources to an overseas military expedition that could result in the destruction of the Company's entire fleet. They chose danger, and agreed to convey the Japanese army of invasion to the Philippines on six Dutch vessels.

Dutch support having been pledged, the matter was placed before the shogun, who agreed that the invasion should go ahead. His decision may have been influenced by the recent arrival of another group of missionaries from Manila under Father Marcello Mastrilli.[52] No mention was made of who would supply the invading army.

Matsukura Katsuie was the obvious candidate, but he soon became involved in a serious development that would sound the death knell for the entire expedition. An uprising on the nearby Amakusa Islands quickly spread to the Matsukura

territory of Shimabara. The predominantly Christian rebels barricaded themselves inside Hara Castle, the dilapidated fortress that Matsukura Katsuie's father had replaced with Shimabara Castle. The quelling of what became known as the Shimabara Rebellion soon proved to be beyond the capabilities of Matsukura Katsuie. It sucked in all the military resources of the Tokugawa shogunate for well over a year, and the Dutch naval support promised so loyally for the Philippines expedition was used instead for a reluctant and largely ineffective bombardment of the rebel castle.[53] There was no spare military capacity for an invasion of the Philippines, and even less of a stomach for one.

When the shogun's advisers reviewed the Shimabara Rebellion a few months later, a comparison was drawn between the efforts needed to take flimsy Hara Castle and the plans to transport a similar-sized army with similar naval support many hundreds of miles through occupied territory to take on the European fortifications of Manila. The comment was made that the ten thousand men they had earmarked for the Philippine invasion should have been one hundred thousand —the number of troops that had to be deployed against Hara to overcome one-third that many rebels.[54] Yet such a calculation was now only an academic point, for no further attempt would be made against the Philippines for over three hundred years.

The shock caused by the Shimabara Rebellion then brought about the worst fears for the remaining Portuguese in Japan: the shogun decided they should follow the Jesuits in being deported. With the Sakoku Edict of 1639, all contact was cut off from Catholic Europe, and even the loyal Dutch were confined to the artificial island of Deshima in Nagasaki Bay.

Of the three schemes for invading the Philippines between 1593 and 1637, the vast armies at Hideyoshi's disposal in his 1593 plan could well have succeeded against the meagre garrison of Manila had he not been humiliated already in Korea by a woeful lack of naval support. Two seaborne attempts against Taiwan in 1609 and 1616 were also failures, and an annexation of the Ryukyus in 1609 was to be contemporary Japan's only overseas gain.[55]

The 1630 effort against the Philippines was to be led by someone who was committed to the scheme, but there was apparently no improvement in the seaborne capacity. The chances of success also were reduced because the defences of Manila were by then stronger than in 1593 and Taiwan had a Spanish fort on it instead of a Japanese one. These points alone may well have led to the cancellation of the project if the Matsukura spies had ever had the chance to report back to Shigemasa.

The popular view of the 1637 attempt gives the impression that a fleet was ready to set sail and was stopped only by the Shimabara Rebellion, but this does

not appear to have been the case. The Dutch made a commitment to provide naval support and the shogun approved the scheme, but there is no evidence that Matsukura Katsuie was waiting for the go-ahead. It is more than likely that the invasion plans had advanced no further than the two Nagasaki officials with their ill-informed "back of an envelope" calculations. The subsequent experience at Hara Castle then betrayed a huge Japanese deficiency in siege artillery.[56] The walls of Manila would have been safe even if the Japanese had succeeded in getting beyond fortified Taiwan.

The issue of Japanese naval capacity would not be resolved until the twentieth century, so when the Shimabara Rebellion forced the cancellation of the 1637 Philippines expedition it marked a point in time when Japan turned its back on the notion of an overseas empire for three hundred years. As for the problem of Christianity, an invasion of the Philippines would have cut off the supply of subversive secret priests, but the flow was always only an ideological annoyance, never an armed flood. Instead Japan responded to this minor threat by its dramatic and fateful decision in 1639 to isolate itself from European nations.

Throughout the decades under discussion, the Spanish took the Japanese threats seriously and always responded on the basis of good intelligence. Their exposure of Matsukura's spies shows that their considered response to a notional Japanese threat was managed as carefully in 1630 as it had been in 1593. Their preparations always involved the monitoring of a potential fifth column of Japanese residents in Manila, but even when brief uprisings occurred, other Japanese could be found fighting loyally for their Spanish masters elsewhere, so the Spanish never feared any great threat from that quarter. Their defensive actions were prompted only by rumours of war, not war itself.

NOTES

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9. M. T. Paske-Smith, "Japanese Trade and Residence in the Philippines," *Transactions of the Asiatic Society of Japan* 42, no. 2 (1914), pp. 696–97.
10. Faranda Quiemon (Harada Kiemon), statement incorporated in report by Governor Gómez Pérez Dasmariñas to the king of Spain on the second embassy to Japan, April–May 1593, in *The Philippine Islands, 1493–1803,* ed. Blair and Robertson, vol. 9, p. 27.
11. Francisco de Lorduy, statement incorporated in report by Governor Gómez Pérez Dasmariñas to the king of Spain on the second embassy to Japan, April–May 1593, in *The Philippine Islands, 1493–1803,* ed. Blair and Robertson, vol. 9, p. 39. The reference may be to Kiemon's close associate Hasegawa Sōnin instead.
12. Ibid., p. 41.
13. Ibid., p. 39.
14. Ibid., pp. 39–41.
15. Lorduy statement, pp. 47–48.
16. Ibid., p. 48.
17. Ibid., pp. 51–53.
18. Ibid., p. 54.
19. Governor Gómez Pérez Dasmariñas, "Luzon Menaced by Japanese—Precautions Submitted to the War-Officials and Certain of the Cabildo of the City," 1591, in *The Philippine Islands, 1493–1803,* ed. Blair and Robertson, vol. 8, pp. 284–85.
20. "Memorandum of Troops Required in the Philippines," [1593?], in *The Philippine Islands, 1493–1803,* ed. Blair and Robertson, vol. 9, pp. 74–75.
21. Park, Yune-Hee, *Admiral Yi Sun-shin and His Turtleboat Armada* (Seoul, S. Kor.: Hanjin, 1978).
22. Martín de la Ascensión to Doctor Morga, 28 January 1597, in *The Philippine Islands, 1493–1803,* ed. Blair and Robertson, vol. 15, p. 125.
23. Ibid.
24. Ibid.
25. The most detailed account of the 1630 venture is Seiichi Iwao, "Matsukura Shigemasa no Ruzonto ensei keikaku," *Shigaku Zasshi* 45, no. 9 (1934), pp. 81–109.
26. Ibid., p. 83.
27. Dennis O. Flynn, "Comparing the Tokugawa Shogunate with Hapsburg Spain: Two Silver-Based Empires in a Global Setting," in *The Political Economy of Merchant Empires: State Power and World Trade, 1350–1750,* ed. James D. Tracy (Cambridge, U.K.: Cambridge Univ. Press, 1991), pp. 332–59.
28. Antonio de Morga, "Report from the Council of the Indias," 31 March 1607, in *The Philippine Islands, 1493–1803,* ed. Blair and Robertson, vol. 14, p. 229.
29. *Nagasaki-ken shi* [History of Nagasaki Prefecture] (Tokyo: Yoshikawa Kōbunkan, Shōwa 48, 1973), pp. 242–43.
30. Senkichi Hayashi, ed., *Shimabara Hantō-shi* (Shimabara, Japan: Minamitakaki-gun Shi Kyōikukai, Shōwa 29, 1954), vol. 2, p. 980.
31. C. R. Boxer, "The 24th June 1622—A Portuguese Feat of Arms," in *Estudos para a história de Macau: Séculos XVI a XVIII (Obra Completa I)* (Lisbon: Fundação Oriente, 1991), p. 49.
32. C. R. Boxer, "Portuguese and Spanish Rivalry in the Far East during the 17th Century," *Journal of the Royal Asiatic Society of Great Britain and Ireland* 2 (1946), pp. 158–59; Iwao, "Matsukura Shigemasa," pp. 87–89.
33. Father of This Residence of Manila, "Relation of 1627–28," 1628, in *The Philippine Islands, 1493–1803,* ed. Blair and Robertson, vol. 22, p. 193.
34. The *machidoshiyori* had responsibility for affairs in the inner wards of Nagasaki and was equivalent to the *daikan* (magistrate) who covered the outer wards.

35. Father of This Residence of Manila, "Relation of 1627–28," p. 193.
36. Michael S. Laver, *Japan's Economy by Proxy in the Seventeenth Century: China, the Netherlands and the Bakufu* (London: Cambria Press, 2008), p. 72.
37. Juan Niño de Tavora to Felipe IV, 1 August 1629, in *The Philippine Islands, 1493–1803,* ed. Blair and Robertson, vol. 23, p. 65.
38. James Murdoch, *A History of Japan* (London: Kegan Paul, Trubner, 1903), vol. 2, p. 631.
39. Iwao, "Matsukura Shigemasa," p. 98. The Nagasaki *bugyō* were the chief representatives of the Tokugawa regime in the city. Following Hideyoshi's confiscation of Nagasaki from the Jesuits in 1587, the place was not given to a *daimyō* (the normal procedure elsewhere in Japan) but retained as "crown property" under the *bugyō,* a word best translated as "commissioners." For most of the period under discussion there were two *bugyō* in office at the same time. As part of their duties involved the supervision of international trade, it was only appropriate that Takenaka was involved in the espionage.
40. Hayashi, *Shimabara Hantō-shi,* p. 980; *Nagasaki-ken shi,* p. 246.
41. [Antonio Yxida?], "Events in Filipinas, 1630–32," 2 July 1632, in *The Philippine Islands, 1493–1803,* ed. Blair and Robertson, vol. 24, pp. 229–30.
42. Arcadio Schwade, "Matsukura Shigemasa no Ruzonto ensei keikaku," *Kirishitan Kenkyū* 7 (1964), p. 345.
43. Iwao, "Matsukura Shigemasa," p. 101.
44. Hayashi, *Shimabara Hantō-shi,* p. 980; the theory about his assassination is discussed in detail in Schwade, "Matsukura Shigemasa," pp. 346–48.
45. Hirofumi Yamamoto, *Nihon Rekishi Sōsho,* vol. 39, *Kanei Jidai* (Tokyo: Yoshikawa Kobunkan, 1989), pp. 54–55.
46. François Caron and Joost Schouten, *A True Description of the Mighty Kingdoms of Japan and Siam: Reprinted from the English Edition of 1663 with Introduction, Notes and Appendices by C. R. Boxer* (London: Argonaut Press, 1935), pp. xlii–lv.
47. The perceived status of the Dutch as the shogun's "loyal vassals" is brilliantly analysed in Adam Clulow, *The Company and the Shogun: The Dutch Encounter with Tokugawa Japan* (New York: Columbia Univ. Press, 2014).
48. Caron and Schouten, *A True Description,* p. xliv.
49. Ibid., p. xlv.
50. The twenty Japanese had in fact been recruited in the Philippines to defend Macao against the expected Dutch attack. The Spanish ship had been involved in a fight with the Siamese and the vessel was destroyed. The Japanese were saved by the Siamese and offered their services to the Dutch, who willingly enlisted them to attack Macao instead of defending it! Boxer, "The 24th June 1622" p. 49.
51. Clulow, *The Company and the Shogun,* pp. 123–24.
52. C. R. Boxer, *The Christian Century in Japan 1549–1650* (Berkeley: Univ. of California Press, 1951), p. 373.
53. C. R. Boxer, *Jan Compagnie in Japan, 1600–1850: An Essay on the Cultural, Artistic and Scientific Influence Exercised by the Hollanders in Japan from the Seventeenth to the Nineteenth Centuries* (The Hague: Martinus Nijhoff, 1950), p. 29.
54. Caron and Schouten, *A True Description,* p. xlv.
55. For a full account of the Taiwan expeditions, see my article "Onward, Christian Samurai! The Japanese Expeditions to Taiwan in 1609 and 1616" *Japanese Studies* 30, no. 1 (2010), pp. 3–21. For the Ryūkyūs, see my *The Samurai Capture a King, Okinawa 1609* (Oxford: Osprey, 2009) for a good introduction.
56. Within a year of the Shimabara Rebellion the Dutch were demonstrating mortars to the Japanese. Mortars, with their higher trajectory, could have been useful at Hara and against Manila. For a full description of the trials see Boxer, *Jan Compagnie in Japan, 1600–1850,* pp. 32–37.

David Kohnen earned a PhD with the Laughton Chair of Naval History at the University of London (King's College London). As a maritime historian, he concentrates on naval strategy, operations, and organizational group dynamics. He edited the works of Commodore Dudley W. Knox in 21st Century Knox: Influence, Sea Power, and History for the Modern Era *(Naval Institute Press, 2016). A previous book,* Commanders Winn and Knowles: Winning the U-boat War with Intelligence *(Enigma Press, 1999), focused on the transatlantic alliance between the British Empire and the United States. A book in progress,* Commander in Chief, U.S. Navy: Admiral Ernest J. King and His Headquarters during the Second World War, *reconsiders the underlying influence of history on American concepts of "sea power."*

Nicholas Jellicoe's grandfather, Sir John Jellicoe, commanded the Grand Fleet at Jutland; his father, George, was a minister of defence for the Royal Navy and the last man to hold the time-honored post of first lord of the Admiralty. Jellicoe is active in historical research and contributed to the 2016 Battle of Jutland Centenary Initiative, which brought together internationally renowned historians as well as the immediate families of battle of Jutland veterans from both sides and provided educational programming about the First World War for the public. He is the author of Jutland: The Unfinished Battle; A Personal History of a Naval Controversy *(Naval Institute Press, 2016). Jellicoe's career was in communications, finishing with responsibility for Rolex's worldwide communications.*

The grandson of U.S. Navy admiral William S. Sims, Nathaniel Sims, MD, is a cardiac anesthesiologist at Massachusetts General Hospital, an assistant professor at Harvard Medical School, and a researcher and medical device inventor. Dr. Sims holds numerous U.S. patents and has received awards for his contributions to patient safety, including the 2016 establishment of the Nathaniel M. Sims, MD, Endowed Chair in Anesthesia Innovation and Bioengineering at Massachusetts General Hospital. Dr. Sims remains heavily involved with the Naval War College, where his grandfather twice served as President (February–April 1917 and April 1919–October 1922).

THE U.S. NAVY WON THE BATTLE OF JUTLAND

David Kohnen, with contributions from Nicholas Jellicoe and Nathaniel Sims

In 1914, the European empires muddled into a world war of unprecedented scale, which destroyed the global economic and diplomatic system. Initially remembered as the "Great War," the First World War would influence concepts of strategy and professional education within the U.S. Navy.[1] While the United States remained neutral, the war dominated strategic discussions at the Naval War College in Newport, Rhode Island. U.S. naval professionals monitored the conflict from afar, using the innovative "chart maneuver" methods of Captain William McCarty Little and information from all available sources to reconstruct battles.[2] Following the earlier battles of the Falkland Islands and Dogger Bank, the epic battle of Jutland of 31 May and 1 June 1916 particularly sparked major debate within the ranks of the U.S. Navy about the future of naval warfare. This article is the first to analyze the USN studies of the battle of Jutland that were conducted within weeks of the actual battle in 1916.

Battleships remained the predominant focus within the Navy Department, but Captain William S. Sims advocated for the continued development of a "balanced" American fleet.[3] He believed the U.S. Navy also required lighter armored battle cruiser designs that offered firepower similar to that of battleships, combined with speed and endurance.[4] Yet the British battle cruisers had suffered withering losses at Jutland. The poor performance of British battle cruisers prompted Navy Secretary Josephus Daniels to consider cancelling further American investment in battle cruisers. Sims strongly disagreed, warning Daniels to avoid drawing false conclusions from newspaper accounts about Jutland. Sims acknowledged having "read carefully the American press accounts of the action," but claimed special insight gained from a "considerable number of clippings received from England which give a much fuller account."[5]

Captain William S. Sims, USN. Circa 1910.
Naval War College Collection

Sims applied Naval War College methods of analysis to reconstruct the battle of Jutland in detail. He then offered a strikingly accurate assessment of the strategic consequences of Jutland in an 8 July 1916 report to Daniels. Sims also enjoyed unique access to information provided by his longtime friend Royal Navy admiral Sir John Jellicoe—the commander of the Grand Fleet during the battle of Jutland. Shortly after the battle, in June 1916, Jellicoe sent a packet to Sims that included an advance copy of his official report, appended to another study of the battle by British journalist Arthur Pollen. Few outside the Admiralty had access to such information at the time.

These documents enabled Sims to begin framing the basic chronology of the battle of Jutland.[6] Of special note, Sims filed other reports in a paper folder marked in his hand as "Admiral Jellicoe's Report of the Battle of Jutland Bank."[7] The body of information Sims compiled in the summer of 1916 demonstrates the importance U.S. naval professionals placed on the battle at the time. However, after the publication in 1942 of the only comprehensive biography of Sims, *Admiral Sims and the Modern American Navy* by Elting Morison, these particular records fell into general obscurity within the historiography.[8]

Yet it was over the course of this half a year—from the time of the battle of Jutland to the end of 1916—that domestic and external events and the efforts of Sims (and others) combined to set precedents for naval officer education, historical and strategic study, USN fleet organization, and concepts of combined and joint command that informed American naval strategic thinking through the Second World War and into the Cold War era. A century ago, Sims and his associates set the course that led to the U.S. Navy of the twenty-first century.

THE JELLICOE CONNECTION

A century after the battle of Jutland and other battles of the First World War, contemporary naval professionals may gain fresh insight on questions of strategy and command by revisiting pertinent original documentary sources.

There have been recent studies of Jutland, many centering on Jellicoe's decision making. The admiral's grandson Nicholas offered a provocative analysis by addressing popular myths surrounding the battle in *Jutland: The Unfinished Battle; A Personal History of a Naval Controversy*. James Goldrick provided important context to the battle in his study *Before Jutland: The Naval War in Northern European Waters, August 1914–February 1915*. In another analysis, *The Rules of the Game: Jutland and British Naval Command,* Andrew Gordon suggested that the

bureaucratic culture of the Royal Navy contributed to strategic mistakes during the battle. The edited publication of the original British naval staff appreciation, as compiled by William Schleihauf and Stephen McLaughlin, highlighted the bitter debates within the Admiralty, as many questioned decisions Jellicoe made during the battle of Jutland.[9]

However, among such published histories of the battle, few researchers examined the obscure role of the U.S. Navy in efforts to understand what actually happened at Jutland. The key to unlocking this major gap in the historical record may be found within the close correspondence between Jellicoe and Sims. Their collaboration began in China after the Boxer Rebellion in the early 1900s and continued to flourish thereafter. Jellicoe's exploits in China, as reported by newspapers throughout the British Empire, had earned him international renown as a naval hero. He was presented as a figure reminiscent of Horatio, Lord Nelson, even as the Royal Navy prepared to mark the centennial, in 1905, of the battle of Trafalgar; the first sea lord, Sir John "Jackie" Fisher, explicitly referred to Jellicoe as the "future Nelson."[10] Jellicoe carried the millstone of Nelson for the remainder of his career, suffering the burdens of unanticipated popularity.[11]

Jellicoe's fame on the international naval stage greatly impressed Sims, while Jellicoe recognized Sims as a unique figure in the U.S. Navy. (They also shared similar interests in the technical field of naval gunnery.) As Sims earned fame within the ranks for fighting the bureaucracy of the Navy Department, Jellicoe initiated correspondence with him. Sims demonstrated acute political sense, gaining access to the highest levels of American command as the naval aide to President Theodore Roosevelt. Through Roosevelt's good offices, Sims secured command of the battleship USS *Minnesota* (BB 22)—as a junior commander. This appointment sparked controversy within the service, as commanding officers of battleships typically were full captains.[12] However, Rear Admiral Jellicoe, then third sea lord at the Admiralty in London, warmly encouraged Sims. "I congratulate you and the United States Navy. . . . I hope if you do come over [to Britain] I shall see you."[13]

Admiral John Rushworth Jellicoe, RN, Grand Fleet commander at Jutland, as a captain. Circa 1905. His appearance on a cigarette package highlights the superstar status he held in the Royal Navy—before Jutland.

Wikipedia, s.v. "John Jellicoe, First Earl Jellicoe," en.wikipedia.org/

As skipper of an American battleship, Sims then symbolically sailed into the limelight of the international media: six years before the battle of Jutland, Jellicoe and Sims celebrated an undeclared Anglo-American alliance. The Royal Navy hosted the USN battleships of the Atlantic Fleet's 3rd Battle Squadron for Thanksgiving of 1910. As skipper of *Minnesota,* the flagship, Sims reveled in the spirit of Anglo-American collaboration. In early December, Sims and his crew attended a series of events at Guildhall in central London. Commenting on the traditional maritime connections

between Britannia and the Americas, Sims was quoted as saying that if the "British Empire is seriously menaced by an external enemy, it is my personal opinion that you may count upon every man, every dollar, every drop of blood, of your kindred across the sea."[14]

The empires of Germany and Japan flooded the American Departments of State and the Navy with strongly worded official complaints about the remarks Sims had offered in London. President William H. Taft removed Sims from command.[15]

"CHEER UP" AT THE NAVAL WAR COLLEGE

Sims received orders to the Naval War College for temporary duty in 1911, which later resulted in an extended assignment to the College's "Long Course." Sims hoped the Naval War College appointment would end up being a mere waypoint, writing that maybe "things will blow over to such an extent that I may get some duty that I would like better than the War College—something in closer touch with practice and less on the theoretical side."[16]

Sims regarded the assignment as a complete setback, far from the sort of duty that would lead to higher command within the ranks of the U.S. Navy. Given the seagoing priorities of the service, the College remained modestly equipped, understaffed, and inadequately funded. Since its establishment in 1884, the College had struggled to survive as a unique venue for professional naval education. War games conducted on the third floor of Luce Hall inspired U.S. naval professionals to gain fresh perspectives by examining historical events, using methods of decision analysis to develop naval tactics and to consider transcendent strategic factors applicable to planning future operations. Following the controversy surrounding the Guildhall remarks, many supporters encouraged Sims to treat assignment to the College as an opportunity to "tone down his ideas."[17] Typically, Sims instead pursued a radical course, refining his radical views about the future strategic role of the Naval War College in relation to the operational forces of the U.S. Navy.

Sims used the Naval War College to open a fresh front in his campaign against USN bureaucracy. During his studies, he produced a series of provocative essays for publication in the Naval Institute *Proceedings* about the importance of education, doctrine, and strategic studies of history.[18] Sims treated the assignment to study at the College as an opportunity to work with the institution's founders, retired rear admirals Stephen B. Luce and Alfred Thayer Mahan. Other officers affiliated with Sims at the College included Commander William V. Pratt, Lieutenant Commanders Dudley W. Knox and Arthur MacArthur III (Douglas's brother), Lieutenants William S. Pye and Royal E. Ingersoll, and Marine captains Earl "Pete" Ellis and Frederick Delano (the cousin of Franklin Delano Roosevelt).

Personal associations established during their studies at the Naval War College fueled a competitive spirit among graduates to read, write, and fight for the vision of a U.S. Navy "second to none."[19]

On graduation, Sims secured command of the then-named Atlantic Fleet Destroyer and Torpedo Boat Flotilla. In this role, he assembled a unique team of younger officers to apply the Naval War College approach to examining questions of strategy and tactics for practical application to operations at sea. Sims referred to his flotilla skippers as a Nelsonian "band of brothers."[20] He recruited Pratt to serve as his chief of staff and Knox as aide. With Sims establishing temporary headquarters in the flagship USS *Dixie* (AD 1), at anchor off Newport, Lieutenant Commander John V. Babcock served as the staff operations officer. Destroyer skippers serving under Sims in the flotilla developed lasting ties that later proved crucial in wartime, including Lieutenant Commanders Ernest J. King, Harold R. Stark, Harry E. Yarnell, and William F. Halsey Jr.[21]

Working for Sims could be draining. Sims relied heavily on the advice of his staff in organizing the flotilla into a cohesive team. He decided to shift from *Dixie* to the cruiser USS *Birmingham* (CL 2), and leaned on Pratt, Knox, and Babcock to oversee the work involved with refitting *Birmingham*. This took its toll on Knox; he developed ulcers, then collapsed under the stress. However, even after King took his place, Knox continued acting as an adviser to Sims throughout an extended medical convalescent leave ashore.[22] It was at Knox's recommendation that Sims in the summer of 1914 recruited King to serve as aide. Sims and Pratt arranged early detachment orders for King as skipper in USS *Terry* (DD 25) during operations off Veracruz.[23] Surprised by his reassignment, King was perplexed to receive orders for duty as skipper in USS *Cassin* (DD 43);[24] at the time, *Cassin* was sitting in dry dock at the Boston Naval Shipyard, undergoing an extended refit.[25]

In a wireless message, Sims advised King to recognize the orders to *Cassin* as an opportunity to build a reputation within the ranks. Then, shortly after King took command of *Cassin* in Boston, he received additional orders to report to the flagship *Birmingham* for duty immediately under Sims on the destroyer flotilla staff. King wished to avoid staff duty and preferred to remain in command of *Cassin,* although he sent a deferential letter stating that "I am ready to come to the *Birmingham* if, in your opinion, I ought to come."[26] Sims recognized King as an officer with great potential, and left King to make the choice on whether to remain in command of *Cassin*. "I can quite understand your desire to get some experience in command [and will] try and get a man to take Knox's place." However, Sims pointedly told King that, as "the efficiency of the whole flotilla of course comes ahead of that of any one boat or individual, I may have to ask you to help us out."[27] Thus, while Sims allowed King to make the decision whether to

remain in *Cassin,* he at the same time appealed to King's sense of teamwork by referring to the broader mission of the flotilla.

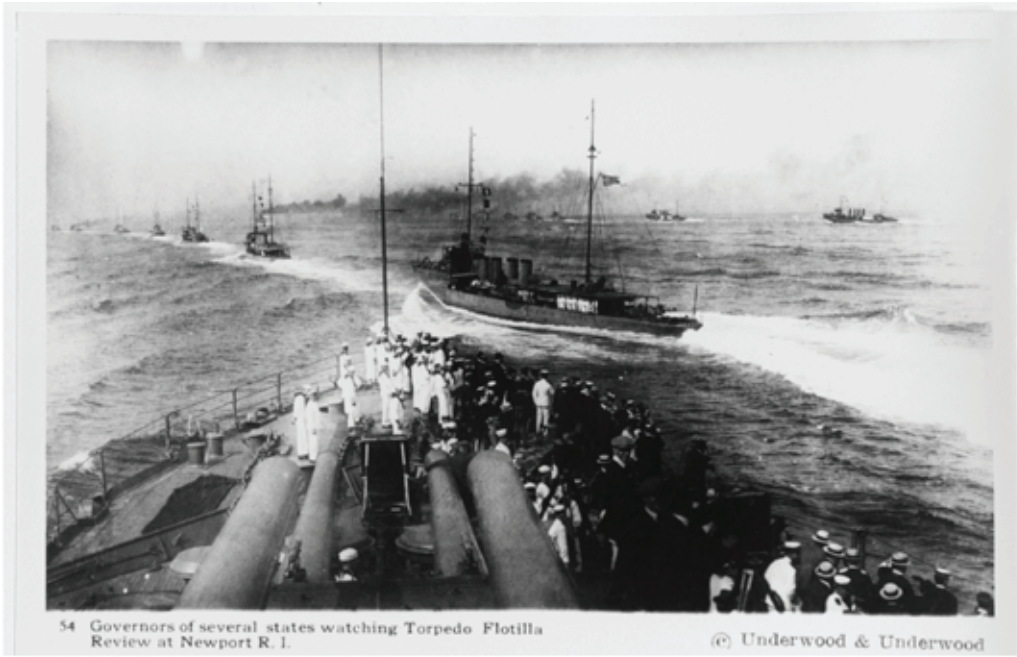
"Captain Sims himself was an officer of extraordinary energy," King recalled; Sims exhibited decisiveness as a commander in that "all matters were clear white or dead black."[28] King remained skipper in *Cassin* and simultaneously accepted the additional duty under Sims on the flotilla staff. On a daily basis, King traveled between Boston and Newport, balancing his responsibilities to both the *Cassin* crew and the flotilla staff.[29] Reflecting on this experience, King maintained that he was "never one of the group of Sims's devoted disciples and followers."[30] Nevertheless, Sims remained a mentor to King as the latter ascended the ranks to higher command, and later in his career King would employ an approach similar to Sims's in organizing fleets and meeting the higher responsibilities of naval command.[31]

Because destroyers largely were relegated to secondary status compared with the battleships and battle cruisers of the Atlantic Fleet, Sims and the destroyer flotilla often operated with significant independence. Sims organized tabletop war games, chaired professional discussions, and engaged in debates about esoteric points of maritime history.[32] Through these discussions, Sims and his staff developed totally new tactics for maneuvering destroyers in unison. In the waters of Narragansett Bay, under the very shadow of the Naval War College, Sims used the smaller destroyers to test theories. He maneuvered his warships in simulated combat exercises off Newport, employing wireless instead of the traditional semaphore and light signals, using a communications system of no more than thirty-one words. Sims and his destroyers successfully demonstrated the "War College afloat" concept.[33]

All this activity provided much entertainment to the many skeptical observers among the larger line-of-battle warships of the Atlantic Fleet. But Sims, with his destroyer skippers, was pioneering new tactics that had potential for application to larger fleet operations, while saving considerable expense by using destroyers instead of battleships. Together, Sims and the destroyer flotilla completely rewrote existing U.S. naval doctrine and tactical procedures.

One of the innovative tactics was the "ripple maneuver."[34] Using a single wireless signal, Sims and his destroyers executed simultaneous turns in unison. Traditionally, fleet commanders had run the risk of collision while maneuvering a number of warships together in combat. While Sims's methodology seemed basic, conducting such maneuvers with wireless and in the absence of visual signals proved revolutionary.[35]

German naval strategists apparently noted the success of Sims and the now-named Atlantic Fleet Destroyer Flotilla. During the battle of Jutland, the German fleet executed the very difficult maneuver of turning simultaneously away from the British Grand Fleet. After the war, Sims invited some of the German skippers



Atlantic Fleet Destroyer Flotilla in action in Narragansett Bay in 1914.

U.S. Navy Photograph (NH 93694)

to deliver lectures for the educational benefit of the U.S. Navy. In one lecture on Jutland, German rear admiral Paul Behnke told Naval War College students that the German High Seas Fleet commander, Admiral Reinhard Scheer, executed the "ripple manoevre" as perfected by Sims and the Atlantic Fleet destroyers.[36] Although Behnke may have been attempting to ingratiate himself with former American enemies, Sims, the War College afloat concept, and the tactics developed by the Atlantic Fleet Destroyer Flotilla clearly resonated among naval thinkers on the international stage.

Despite the educational benefits the Naval War College offered, Navy Secretary Daniels questioned the cost of maintaining it. Notwithstanding the particular Newport focus on maritime aspects, the strategy and doctrine covered appeared comparable to that studied at the Army War College in Carlisle, Pennsylvania. In discussions with the newly appointed Chief of Naval Operations (CNO), Admiral William S. Benson, Daniels proposed organizing a unified army and navy war college, which could be established in closer proximity to the capital. As the first to hold office as CNO, Benson recognized the politics inherent in the idea. Given Daniels's point of view, Benson gave serious consideration to the idea of a joint war college.[37]

However, it seemed outrageous to Sims to consider closing the Naval War College while the U.S. Navy was navigating the difficult waters of neutrality. He considered the College's location an advantage, because he valued the intellectual

objectivity enhanced by the distance between the political arenas of Washington and the classroom battlefields of the war colleges. In this discussion, Sims regarded the mission of the Naval War College as strategic in nature, and he defended the separateness of America's war colleges on the basis of the differences between the land and sea services. Sims viewed the Naval War College as foundational for shaping the future of the U.S. Navy.[38] On behalf of the College, he fought against the entrenched bureaucracy of the Navy Department. "The Naval War College should be made one of the principal assets of the Naval Service," he opined. If cost savings were necessary, he argued that the service should place warships "out of commission in order to avoid decreasing the efficiency of the education of our officers."[39]

Sims alternately scolded fellow U.S. naval professionals and sought to enlist their support in the fight. He challenged them to seek perspective from history, arguing that they should recognize the fundamental role historical studies played in framing contemporary plans for the future. Sims published an article in *Proceedings* under the provocative title "Cheer Up!! There Is No Naval War College." The piece offered a counterfactual argument that allowed him to make "plain that he [was] a thorough and enthusiastic advocate of the college, and that he deplore[d] the failure of many officers to understand its vital importance to the efficient conduct of our fleet." "When I went to the college," Sims exclaimed, "the service was very generally ignorant of its purposes and the great practical value of its teachings." Sims chastised critics of the Naval War College, suggesting that they suffered from "wholly unpardonable ignorance"; he railed against complaints from within the seagoing ranks that many needed a "dictionary to tell them the meaning of the commonest terms." Sims and his associates believed that the U.S. Navy suffered under officers of the highest rank who were "'educated' only in preparation for the lowest commissioned grade."[40]

NEUTRALITY AND WAR

In this fight to maintain the Naval War College, the European conflict amplified Sims's assertions. War among the European empires inevitably spread beyond the poisoned trenches of the western front, immediately affecting affairs within the American sphere of influence. British, French, and Dutch targets attracted German warships into American waters.[41] The reverse occurred as well; for example, the German auxiliary cruisers SMS *Kronprinz Wilhelm* and *Prinz Eitel Friedrich* drew Royal Navy and French warships into American waters. Under the international laws of the time, President Woodrow Wilson allowed these German commerce raiders to seek sanctuary in American ports, but British and French warships maintained a steady presence off the U.S. coast in case the German vessels attempted to escape their internment.[42] British and German warships also battled

off the Falkland Islands—which brought warfare into the Western Hemisphere, albeit far away. Clearly, these actions challenged the assertions of the Monroe Doctrine of 1823 and the Roosevelt Corollary of 1904.

As the European navies fought for control on the high seas, the U.S. Navy conducted separate operations against Mexican insurgents in the Veracruz campaign.[43] American forces in the Asiatic theater also stood watch as Japanese forces seized German-claimed territories in China and the Pacific. With the First World War thus raging in both Europe and Asia, the distracted Wilson administration struggled to keep foreign wars from spreading farther into the Americas. Both Germany's commerce-raiding operations at sea and its clandestine terrorist attacks in New York further amplified tensions: the 1915 sinking of RMS *Lusitania* off the Irish coast by a German submarine coincided with a terrorist campaign by German navy captain Franz von Rintelen inside the United States. Rintelen's activities inspired German saboteurs to bomb USN facilities on Black Tom Island off the New Jersey coast in July 1916. The resulting explosion damaged the Statue of Liberty and scarred the New York City skyline.[44]

Headlines about the Black Tom explosion and those about the battle of Jutland appeared contemporaneously. Having recently won reelection on a platform of neutrality, President Wilson directed Navy Secretary Daniels to examine the naval options against imperial Germany. By 1916, Wilson and Daniels had largely accepted the ideas of Assistant Secretary of the Navy Franklin D. Roosevelt, embracing the notion of employing the U.S. Navy as a buffer against foreign naval operations in American waters. To these ends, Congress passed the Naval Expansion Acts of 1915 and 1916, which advocated an American navy "second to none."[45] As the U.S. Navy stood fast in anticipation of war with Germany, the battle of Jutland seemed very close in the minds of many Americans.

JELLICOE, SIMS, AND THE BATTLE OF JUTLAND

Jellicoe, as commander of the Royal Navy Grand Fleet at Jutland, had faced a difficult decision: to seek a smashing victory akin to Trafalgar, or to ensure the preservation of the Grand Fleet so as to maintain the ability to fix the imperial German High Seas Fleet in place. During the action in the North Sea approaches to the Skagerrak, British battle cruisers under Vice Admiral Sir David Beatty had charged ahead of the Grand Fleet, into the teeth of the battleships of the High Seas Fleet—and sustained heavy losses. Heroic accounts of the British battle cruiser action at Jutland made it appear comparable to the charge of the light brigade at Balaclava or the dramatic last stand at the Little Bighorn—at Jutland, battle cruisers seemed to have been completely inadequate compared with battleships. Within minutes of Beatty making contact with the German battle cruisers, under Vice Admiral Franz von Hipper, the Germans sank two battle cruisers

under Beatty's immediate command. As the Grand Fleet under Jellicoe closed with Beatty and the remaining battle cruisers, and as the Germans maneuvered to the sanctuary of port, the latter continued inflicting heavy damage on the former. While the Germans lost one battle cruiser, four light cruisers, one predreadnought, and five torpedo boats at Jutland, the British lost three battle cruisers, three armored cruisers, and eight destroyers. Within seventy-two hours, an estimated 2,551 Germans and 6,094 British sailors were killed in the battle of Jutland.

The Grand Fleet at Jutland ultimately achieved its actual mission—forcing the Germans to withdraw from the battlefield. Jellicoe successfully maintained the integrity of the Grand Fleet, ensured Royal Navy superiority in European waters, and retained for Britain the strategic advantage at sea. But the German High Seas Fleet remained a potent threat after the battle. Critics castigated Jellicoe for being indecisive, while his subordinate Beatty blamed the Grand Fleet for failing to support the battle cruisers at Jutland. British newspapers also highlighted the losses the Royal Navy had sustained under Jellicoe, which seriously damaged his reputation as a "future Nelson."[46] Facing the media, Jellicoe fueled perceptions of a Pyrrhic victory at Jutland. He emphasized the strategic necessity of preserving the superiority of the Royal Navy so as to keep the German High Seas Fleet in check. Jellicoe also believed that Beatty had acted on his own initiative, charging headlong with the Battle Cruiser Fleet into the mist.

Jellicoe was frustrated by the severe price he paid in the popular media for failing to deliver a spectacular victory akin to that at Trafalgar. While he grappled with that imperfect victory, Jellicoe turned to his old American friend, Sims. Additionally, from the British perspective, Jellicoe recognized the importance of fostering ties between the Royal Navy and the U.S. Navy.

On the other side of the Atlantic, reports of the stunning losses of the British battle cruisers inspired members of Congress to make official inquiries. Within the Navy Department, Secretary Daniels considered the option of cancelling construction of USN battle cruisers because of the British losses at Jutland. Learning of these discussions, Sims warned Daniels to avoid making false assumptions about the lessons of Jutland.[47] As early as 8 July 1916, Sims applied Naval War College methods of analysis to construct a detailed study of what actually had happened during the battle of Jutland, which he then submitted to Daniels.[48] By refuting Daniels's assertions about battle cruisers, Sims sparked even greater interest within Congress to understand the consequences of Jutland. Congress launched an official inquiry to determine whether the U.S. Navy should continue constructing battle cruisers. In response, Sims produced two highly detailed reports in July 1916.

First Sims provided an astonishingly accurate account of the battle of Jutland, suggesting that "the action in question was in reality a skirmish."[49] He then

defended Jellicoe's actions by placing responsibility for the ambiguous results of the encounter squarely on Beatty's shoulders. In a six-page report, Sims suggested that

> of course the Germans knew that Admiral Beatty would come after them with his battlecruiser squadrons. Doubtless, also, they assumed, from his supposed reputation for impetuosity and ambition for distinction, that he would attack at once and try to head them off at their base. He apparently did so, and the battleships came up and pounded him between the two forces, with the inevitable result that he got the worst of it until the British battleships [of Jellicoe] came to his support and forced the Germans to retreat.[50]

Evaluating all available evidence, Sims concluded on 31 July 1916 that Jellicoe had acted correctly and Beatty had mishandled the battle cruisers at Jutland by ignoring the "fundamental principle that involves bringing against the enemy a greater force than he has *at* [emphasis in original] the point of contact."[51] Sims argued that Jellicoe had acted in the better strategic interests of the Royal Navy, whereas Beatty had violated the basic rule of using "just plain common sense unrestricted by any sentimental fool traditions of the glory type."[52] Sims concluded that "control of the sea is accomplished when the enemy's fleet is defeated or 'contained'; and the German fleet has been contained since the beginning of the war, is now contained, and doubtless will remain so."[53]

Sims strongly cautioned American policy makers against abandoning the construction of battle cruisers. "There is nothing," Sims argued, "in the incidents of the [Jutland] fight to justify any argument against the necessity of battlecruisers."[54] According to Sims's conclusions, Beatty had employed his battle cruisers improperly. Sims also rushed to the defense of his friend Jellicoe. By implication, Sims argued that Jutland actually resulted in as decisive a British victory as that of Trafalgar more than a hundred years earlier.

To prove these points, Sims used war-gaming and chart-maneuver methods to produce objectively detailed studies of the battle of Jutland. Fighting the separate battle for the future of professional education within the U.S. Navy, he also organized a war-game study of Jutland at the Naval War College. This took place a short two months after the actual battle, in September 1916.

JUTLAND WITH "TOYS" IN 1916

Jellicoe maintained regular correspondence with Sims, which provided unique means for the U.S. Navy to evaluate the broader significance of the battle of Jutland. During the summer of 1916, while at sea off the American east coast supervising shakedowns as skipper in USS *Nevada* (BB 36), Sims again employed the War College afloat method. Sailing off the Virginia Capes for gunnery exercises in August 1916, he organized Jutland war games in *Nevada*'s wardroom.[55] Sims

wrote of his observations about Jutland to his protégés Pratt and Knox, now at the Navy Department, and encouraged them to gather newspaper accounts, personal letters from their foreign contacts, and U.S. naval attaché reports from London, Paris, Rome, and Berlin.[56]

Given the political stakes involved, USN studies of Jutland had significant strategic ramifications for the future of American naval policy. Following Sims's lead, the faculty and students at the Naval War College took great interest in the battle. Sims pooled his information with that of his Naval Academy classmate Captain Albert P. Niblack, who was completing studies at the College. Niblack shared the information Sims supplied with Lieutenant Commander Harry E. Yarnell and Lieutenant Holloway H. Frost, among others. Using the Sims material as a basis, Niblack, Yarnell, and Frost amassed additional information from other sources.[57] They then conducted a war game to replicate the battle of Jutland in September 1916.

As with their Naval War College studies of Civil War battles, U.S. naval professionals recognized that the scope and complexity of Jutland offered useful foundations for examining transcendent questions of command, the answers to which would have application to future operations. The pioneering methods of McCarty Little, whose service on the Naval War College faculty began in the 1880s, inspired Sims and his associates to recognize that "tactics is the servant of strategy [and] every tactical problem should have a strategic setting, or at least keep in view the master idea which it is intended to subserve [*sic*]. That is the reason why tactics left to develop by itself is like servants without a master." In examining historical battles such as Trafalgar, McCarty Little had emphasized the importance of evaluating decisions made in combat by first considering the strategic context to gain a holistic understanding of the tactical details.[58]

Seeking to attain an objective, firsthand understanding of historical wars, McCarty Little used nautical charts and tiny model ships to replicate situations faced on the battlefield. The curious practice of wargaming past battles appeared trite to some—at first glance. Similarly to many Naval War College graduates, Ernest J. King joked about the practice of using "toys" and "play things" in the serious studies involved with decision analysis and war gaming.[59]

Nonetheless, in the fall of 1916 faculty members and students at the Naval War College played out the Jutland scenario with toy ships, chalk, and measuring sticks. Drawing on newspaper accounts and naval attaché reports, the Naval War College undertook one of the earliest detailed studies of the battle of Jutland. In September 1916, Sims and Knox traveled to Newport to assist the students and faculty at the College, whose members included their close associates Niblack, Yarnell, and Frost. Working together, they adapted one of the historical battles already in use within the Naval War College curriculum—they used the rules for

Examining the battle of Jutland on the third floor of Luce Hall, Naval War College. Circa 1916.

Naval War College Collection

the battle of Trafalgar of 1805 to reconstruct the more recent battle of Jutland of 1916.[60]

Following the war-game reconstruction of Jutland, Frost took the lead in producing an official Naval War College report on 26 November 1916.[61] Coincident with the strategic study of Jutland at the College, Sims received orders to testify about the battle before Congress.

At that time, Rear Admiral Bradley Fiske also told Sims of the latter's tentative selection for promotion to rear admiral. "They could not have done otherwise," Sims understood, "without precipitating a storm that would have wrecked the keeping of selection in navy hands."[62] Under restrictions established by congressional appropriations, Sims now stood thirty-first on a roster limited to thirty rear admirals; according to the *Naval Register,* his status was "awaiting commission" in the rank of captain.[63] Given congressional interest in the battle of Jutland, Sims recognized that his opportunity to discuss the subject in Congress constituted a unique opportunity to make a lasting impression and thereby to secure a fruitful assignment in the rank of rear admiral in the near future.[64]

On 19 December 1916, Sims explained to Congress the strategic consequences of Jutland. In answering queries about the tactical role of battleships and battle cruisers in the context of that particular engagement, Sims more broadly outlined

the potential influence of wireless communication, intelligence, submarines, and aircraft on naval warfare.[65] When discussing the strategic priorities of the U.S. Navy, Sims specifically referred to the Naval War College report about the battle. "There is a typewritten copy of an analysis made at the Naval War College," Sims explained in testimony, "simply compiled from official and semiofficial published reports."[66]

GERMANY INTRUDES

Within the same context of his remarks concerning the battle of Jutland, Sims also answered congressional queries about recent visits to American ports by German submarines. Between July and November 1916, the German submarines *U-Deutschland* and *U-53* visited the ports of Baltimore, New London, and Newport.

Of particular interest, *U-53*'s skipper specifically targeted the Naval War College for an unannounced visit. On 7 October 1916, Lieutenant Hans Rose sailed *U-53* into Narragansett Bay and brazenly anchored under the shadow of the Naval War College. He appeared on shore in proper dress uniform, wearing white starched collar, bowtie, and cap—cocked at an angle. Rose casually walked from the Naval War College pier up a hill, knocked on the front door of Luce Hall, and introduced himself to the President of the Naval War College, Rear Admiral Austin Knight.[67]

The appearance of a German submarine coincided with the College's efforts to compile the official report on Jutland. Clearly, Knight avoided discussing these

Lieutenant Thomas Symington, USN, aide to Commander, Atlantic Fleet Destroyer Flotilla, shakes hands with Lieutenant Hans Rose, IGN, on board *U-53* at buoy two at the Naval War College, 7 October 1916.

U.S. Navy Photograph

studies in conversations with Rose. Rose later recalled that he "was received in the roomy naval station," but that "[Knight] was not quite sure what he ought to do."[68] After the brief meeting in the office of the President, Rose hosted a number of USN officers for drinks in *U-53*. During these conversations, the Germans joked about speaking in English (the language of the enemy) by claiming, "I speak American."[69]

Despite the bonhomie, Rose's targeting of the Naval War College had demonstrated the capacity of German submarines to reach American waters. When *U-53* departed for operations in the Atlantic, local Newport yachtsmen trailed behind. Rose took station near the Nantucket lightship in the approaches to Narragansett Bay—just beyond American territorial waters. On 8 October 1916, the day after his visit to the College, he sank five vessels, three from Britain and one each from Norway and the Netherlands—an implied challenge to the warships of the Atlantic Fleet sitting at anchor a mere boat hail from the College.[70]

Such acts of German aggression fueled tensions within the Wilson administration, as did British disclosure of the so-called Zimmermann telegram, which revealed a German plot to support Mexican and Japanese attacks on the United States, information the British shared with American journalists as early as January 1917.[71] The cybernetic implications of the Zimmermann telegram would coincide with Germany's reintroduction of unrestricted submarine warfare in February 1917. These developments ultimately forced the Wilson administration to make strategic preparations for war against imperial Germany.[72]

Falling as it did chronologically between the Jutland war game and Frost's report on the Naval War College's analysis of the battle of Jutland, *U-53*'s visit to the College brought home more forcefully the importance of thinking deeply and carefully ahead of time about what might be involved in fighting the German navy. As the U.S. Navy anticipated war with Germany, the battle of Jutland remained the focus of heated discussion regarding the prospective focus of American strategy in the spring of 1917.

NO EQUAL IN HISTORY

Early USN studies of Jutland focused on Jellicoe's operational decisions by examining the battle through the separate lenses of strategy and tactics. Among other major tactical findings, Frost concluded that "Jellicoe was well served by his division commanders [who] brought the battle line in order despite his confusing and conflicting signals."[73] Frost found that "Beatty committed numerous errors . . . and did not show tactical skill [whereas] Jellicoe executed a poor conception of war excellently."[74] Drawing debatable analogies, Frost found Jellicoe most closely comparable to Union Army general George B. McClellan from the American Civil War. This critique perhaps reflected a predetermined conclusion

on Frost's part; previous studies of Civil War battles may have tainted Frost's objectivity in examining Jellicoe's decisions. Sims, taking a different approach, recognized that Jellicoe had made all the correct strategic decisions by focusing on the ultimate objective: containing the High Seas Fleet.[75]

Having examined British and German naval operations at Jutland in detail, Sims drew a variety of conclusions for future application within the U.S. Navy. He refuted critics of Jellicoe by suggesting that "there is no reason to believe that the Germans have ever intended to risk their fleet in a decisive action against a greatly superior British fleet[;] . . . they accomplished what they intended, namely, the trapping and pounding of the British battle cruisers." Sims then hastened to press the point that "to the surprise of Naval critics, and doubtless to the Germans, was the extraordinary resistance battle cruisers can sustain and the extraordinary amount of damage they can inflict, even against battleships which indicates a greatly enhanced value when they are employed in their proper role in a general naval engagement."[76]

Seizing on Sims's assertions, Assistant Navy Secretary Roosevelt fostered a political alliance with Virginia senator Claude A. Swanson. Together, Roosevelt and Swanson circumvented Daniels in their effort to continue the construction of battle cruisers for the U.S. Navy.[77] In the winter of 1916, Roosevelt used Sims and the findings of the Naval War College war-game report on Jutland to frame future American naval policy.

Following his testimony on Jutland in Congress, Sims received orders to the Naval War College. In February 1917 he assumed duty as the President of the College. Sims then received secret orders to sail for London with verbal authorization to assume rank as a rear admiral on 21 March.[78] Concurrently, Navy Secretary Daniels and CNO Benson directed Sims to act as the Navy Department liaison to the Admiralty in London.[79] The United States declared war on Germany while Sims was at sea in April. Shortly after their first meetings in London, Sims and Jellicoe built on their personal friendship to facilitate the broader collaborative relationship between the Royal Navy and U.S. Navy.[80]

By the manner in which the Admiralty headquarters synthesized operations at sea with intelligence, Jellicoe enabled Sims to assume a more strategic role in framing combined strategy and in conducting U.S. naval operations at the front. As Commander, U.S. Naval Forces in Europe after April 1917, Sims pioneered new American concepts of combined and joint command. He also set a new precedent when he assumed temporary command over Royal Navy forces with the arrival of USN destroyers in Queenstown (Cobh), Ireland.[81] Having thus pioneered new concepts of combined and joint naval command, Sims returned from wartime service for duty as President, Naval War College in April 1919.[82]

Rear Admiral Sims, standing at center, pioneered new concepts of U.S. naval organization in wartime as Commander, U.S. Naval Forces in Europe and as senior naval representative of the American Expeditionary Force on the Supreme Allied Naval Council between 1917 and 1919.

U.S. Navy Photograph (NH 52790)

Sims overhauled the Naval War College curriculum by recruiting veterans of the London headquarters to the faculty. Among them, Sims appointed Knox to serve as chief of staff. Knox also reorganized the Department of Command, within which he organized the Historical Section, under Lieutenant Tracy Barrett Kittredge, U.S. Naval Volunteer Reserve. During their watch, the Naval War College archives served as the repository for the USN records of the First World War. Sims also approved the titles that Knox and Kittredge selected to expand the library from fewer than 7,000 to more than 45,000 volumes.[83] Carl von Clausewitz and Henri de Jomini remained required reading, along with Colmar von der Goltz and other Franco-German military thinkers. Looking outward from the lectures of Stephen B. Luce and the quasi-historical studies of Alfred Thayer Mahan, Sims expanded the reading curriculum to include the works of foreign naval strategic thinkers, including Sir John Knox Laughton, Spenser Wilkinson, and Sir Julian Corbett.[84]

Along with other faculty in the Sims era, Knox helped expand the role of historical studies in framing critical discussions of contemporary doctrinal

assumptions about future wars. While maintaining the traditional focus on battles such as Trafalgar and the American Civil War studies of the Union blockading strategy, Sims and Knox placed the battle of Jutland at the center of the basic curriculum on strategy and tactics after 1919.[85] Through the 1920s and '30s, students attending the Naval War College examined Jutland in ever-greater detail. The influence of Jutland on the U.S. Navy appeared within the studies completed by Naval War College students in the generation of William D. Leahy, Ernest J. King, Harold R. Stark, Chester W. Nimitz, and William F. Halsey Jr.

By intermixing strategic discussions of history with decision analysis reconstructions of past battles, the U.S. Navy arguably "won" the battle of Jutland in the classrooms and on the war-gaming floors of the Naval War College. Because of Jellicoe and Sims, the battle of Jutland influenced the perspectives of countless U.S. naval officers. For example, Commander Chester W. Nimitz mused in his Naval War College "Thesis on Tactics" that the battle of Jutland had "no equal in history [and that] it is doubtful if the total forces engaged in the battle of Jutland will be exceeded[,] at any rate during our time."[86] Nimitz recalled studying the battle in such detail that he knew every commander intimately and every decision they made "by heart."[87] Twenty years later, Nimitz commanded battles that far exceeded in scope the battle of Jutland, such as at Coral Sea, Midway, and Leyte Gulf. Arguably, education at the Naval War College provided the critical foundations that enabled him and his contemporaries to secure decisive victory in the Second World War.

THE CENTENNIAL

Through such deep and careful study, the U.S. Navy won the battle of Jutland in the classrooms and on the war-gaming floors of the Naval War College after the First World War. To highlight this rich history and to mark the centennial of Jutland, the Naval War College replicated the war game that Sims and his associates conducted in the battle's immediate aftermath. In May 2016, the College revisited the battle on the historic war-gaming floors of Pringle Hall. Jellicoe's grandson Nick provided a video with a narrative animation of the epic battle, while Sims's grandson, Nat, observed the battle's replication. Among other participants in the Jutland war game, Rear Admiral Sam Cox, USN (Ret.), the director of naval history, filled the role of Jellicoe, while the President of the Naval War College, Rear Admiral P. Gardner Howe III, USN, assumed the role of the German High Seas Fleet commander, Admiral Reinhard Scheer.

The Jutland war game of 2016 allowed faculty and student participants to gain fresh insight not only into the original battle of a century ago but also into the war game as conducted at the Naval War College later in 1916. By emphasizing the historical influence of Jutland on the curriculum of the College, the war game

evoked how the battle resonated through the history of the U.S. Navy over the intervening hundred years. The College intends to stage a series of similar events and educational programs between 2017 and 2023 as the U.S. Navy marks the centennial of its involvement in the First World War and its aftermath.

During the century since Jutland, the Naval War College has maintained the study of history and war-gaming analysis as central components in the professional education of American strategic thinkers. When Sims attended the long course with the class of 1913, he examined the 1805 battle of Trafalgar more than a century after the actual battle. Using the same methodology, he applied the War College afloat method to reconstruct the battle of Jutland within weeks of the actual battle. He helped compile the official report on the Jutland war game and decision analysis, published in November 1916. Sims then used this study to inform Congress on questions of American naval strategy, just three months before the American declaration of war against Germany in April 1917. After the First World War, Sims again referred to Jutland in overhauling the College curriculum, producing the course of study that educated the strategic minds of the American naval professionals who would win decisive victory in the Second World War.

Over the two hundred years since Trafalgar and the one hundred since the battle of Jutland, the strategic perspectives gained from studying this rich history remain relevant to contemporary strategic thinkers as the U.S. Navy charts a fresh course through the twenty-first century and beyond.

Naval War College faculty and students revisiting the battle of Jutland on the historic war-gaming floors of Pringle Hall, May 2016.
Naval War College Collection

NOTES

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REVIEW ESSAYS

JUTLAND: ACRIMONY TO RESOLUTION

Holger Herwig

Jutland: The Naval Staff Appreciation, ed. William Schleihauf. Barnsley, U.K.: Seaforth Publishing, 2016. 316 pages. $34.95.
The Jutland Scandal: The Truth about the First World War's Greatest Sea Battle, by J. E. T. Harper and Sir Reginald Bacon. Barnsley, U.K.: Frontline Books, 2016. 252 pages. $24.99.
Jutland: The Unfinished Battle, by Nicholas Jellicoe. Barnsley, U.K.: Seaforth Publishing, 2016. 402 pages. $35.95.

Shortly after 2 PM (GMT) on 31 May 1916 the Danish tramp steamer *N. J. Fjord* blew off steam and came to a halt in the North Sea just west of the Skagerrak, the maritime strait between Denmark and Norway. To the northwest, its captain spied the British light cruiser HMS *Galatea;* to the southeast, the German light cruiser SMS *Elbing*. Thus was established the first contact in what the British would call the battle of Jutland, and the Germans *die Schlacht vor dem Skagerrak:* 151 ships of 1,700 guns and 60,000 sailors under the command of Admiral Sir John Jellicoe, and 100 ships of 900 guns and 45,000 sailors under the command of Vice Admiral Reinhard Scheer. In the ensuing twelve hours, there took place several battles: the initial battle cruiser engagement; the British Battle Cruiser Fleet's "run to the north"; two main fleet engagements; and finally several violent and confused night actions by light cruisers and destroyers. About 6,800 British and 3,000 German sailors died or were wounded. The Royal Navy lost three battle cruisers, three armored cruisers, and eight destroyers of 115,025 tons; the High Sea Fleet, one battle cruiser, one predreadnought, four light cruisers, and five destroyers of 61,180 tons.

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Conventional wisdom has it that the battle was a German tactical victory but a British strategic victory. There should have been little controversy about the only great sea battle of World War I, but controversy there was. Roughly 458,000 Google hits for the entry "battle of Jutland" attest to the ferocity of the "real war" waged, especially in Britain in the 1920s between the supporters of Admiral Jellicoe, commander in chief of the Grand Fleet, and Vice Admiral Sir David Beatty, commander of the British Battle Cruiser Fleet. The four books in the three volumes under review will give the reader an appreciation of that acrimony—and, it is hoped, offer resolution.

Why was Jutland not a second Glorious First of June 1794? The nation demanded an answer—but it got none. In fact, the Germans won the opening round in the public relations campaign over Jutland when its admiralty staff, on the morning of 1 June 1916, issued a formal press communiqué listing the heavy British losses while downplaying their own. A terse British Admiralty statement, which hit the newspapers on 3 June 1916, seemed merely to confirm the German accounts of the battle. The "magic of Trafalgar [1805]," Kaiser Wilhelm II crowed, "has been broken."

To mitigate the continuing public relations disaster, in January 1919 the first sea lord, Rosslyn Wemyss, appointed Captain John Harper to "prepare a record" of "what actually happened in the battle." Harper and his team worked fast, completing their report early in October of that year. It was cold, clinical—and devastating. Beatty, having been promoted to full admiral and appointed Wemyss's successor, was livid. The "Harper Record" threatened to tarnish Beatty's public image as the hero of the battle of Jutland. For, in the first phase of the battle, Harper noted, it was "extremely unpalatable" that Beatty with a force of four battleships and six battle cruisers "failed to defeat a weaker enemy who made no effort to avoid action" (Vice Admiral Franz von Hipper's five German battle cruisers), "but in the space of 50 minutes, suffered what can only be described as a partial defeat." Moreover, Harper charged that Beatty on HMS *Lion* repeatedly had kept Jellicoe on HMS *Iron Duke* ignorant of the enemy's position, that when closing up with the Grand Fleet his battle cruisers "puzzlingly" had performed a complete circular turn, and that Beatty's signaling during the battle had been abysmal. Unsurprisingly, the new first sea lord made certain the "Harper Record" never saw the light of day; it was consigned to the shelves of the British Library archives.

Still, not even David Beatty could kill the nation's interest in Jutland. In November 1920, as pressure from within the service mounted to set the Jutland record straight, the first sea lord asked Captains Alfred and Kenneth Dewar, both strong supporters, to write up a staff appreciation of the battle of Jutland. In 1922,

the Dewars published the *Naval Staff Appreciation*—the most "grotesque account of the battle," in the words of official historian Sir Julian Corbett (*History of the Great War, Naval Operations,* vol. 3).

Beatty was the hero; Jellicoe was the villain. With regard to the first phase of the battle, the Dewars laid the blame for the ten-mile separation between the Battle Cruiser Fleet and the 5th Battle Squadron squarely on the latter's commander, Rear Admiral Hugh Evan-Thomas, for having failed to follow Beatty's signal to close up. They declined, however, to mention that Beatty had failed to signal Evan-Thomas by searchlight after wind and smoke had obscured flag signals. Nor did they mention that faulty signaling resulted in a mistaken distribution of fire, leaving SMS *Derfflinger* undisturbed. Again, there was no mention of Beatty's steaming in a complete circle with *Lion, Princess Royal, Tiger,* and *New Zealand* after the "run to the north"; nor of his failure to communicate the whereabouts of Scheer's Main Fleet between 5 and 5:30 PM. Front and center, on the other hand, was the Dewars' criticism of Jellicoe's decision to deploy on his port wing (to the south) at 6:54 PM, which, in their view, moved him away from the guns of the High Sea Fleet and denied him a "second Trafalgar." In fact, the deployment on a southeast-by-east course put Jellicoe between Scheer and his bases, gave the gunners of the Grand Fleet the best light, and exposed the High Sea Fleet to the fire of the maximum number of British ships.

Perhaps the most mischievous statements in the *Naval Staff Appreciation* were that the Grand Fleet "was only occasionally in action," that its actual firing was "confined to two intervals of about [a] quarter of an hour each," and that after Scheer's brilliant "battle turn away" to the west, "no attempt was made to follow" on Jellicoe's part. The "idea of attack was lacking." This smacked of incompetence, if not downright cowardice. Finally, the Dewars detected the Nelsonian touch in Beatty's dramatic signal at 7:47 PM, "Submit that the van of the battleships follow me; we can then cut off the whole of the enemy fleet." Seeing that "alone and unsupported he could not engage the whole of Scheer's Battle Fleet," Beatty had called on Jellicoe finally to join the fight. Instead, the commander in chief had altered course "two points away from the enemy." After the High Sea Fleet had swept safely across the stern of the Grand Fleet during the night, the latter returned home "with two killed and five wounded. It had never been seriously in action."

Rubbish. John Jellicoe's Grand Fleet at Jutland fired 1,539 shells from the main batteries, scoring 57 hits; David Beatty's Battle Cruiser Fleet loosed 1,469 shells for 21 hits. Put differently, the battleships were the source of 35 percent of the heavy-caliber gunfire and scored 46 percent of the hits the British fleet obtained.

But in critiquing the Royal Navy's hallowed single-line deployment and the embodying doctrine of centralized command, the Dewars had gone too far:

Beatty immediately called back all copies of the book, and in 1928 his successor, Admiral Charles Madden, ordered all copies destroyed. Four survived, and they formed the basis for William Schleihauf's critical and annotated 2016 reprint of *Jutland: The Naval Staff Appreciation*.

Nonetheless, the Dewars' damning indictments were taken up quickly by public writers. First off, in 1923 Winston Churchill took up the cause in *The World Crisis,* volume 3, *1916–1918*. Recognizing that he had "only the vaguest idea of what had taken place" at Jutland, the former first lord of the Admiralty called on David Beatty for assistance. The first sea lord could help: he recommended none other than Kenneth Dewar! The result was predictable: Churchill's graphic prose and Dewar's mean-spirited attack on Jellicoe. The latter had been obsessed with the system of centralized command. He had shackled his commanders. He had refused to show initiative. He had possessed a "defensive habit of mind." He had been "ponderous." He had clung to the old single-line formation. Churchill's oft-repeated comment that Jellicoe was the only man who could have lost the war in an afternoon was not meant as praise; its corollary was that Jellicoe was the only man who could have *won* the war in an afternoon.

Churchill was not regarded as a true "navy man," and hence his *World Crisis* treatment of Jutland caused only a minor uproar among Jellicoe's supporters. The same could not be said of Filson Young, the author of a glowing 1921 account of Beatty entitled *With the Battle Cruisers.* In the *Sunday Express* in 1924 and in the *Daily Express* in 1925 Young published articles in which he claimed that Admiral Scheer in an interview in effect had confessed "how I escaped at Jutland." Scheer, of course, was furious. But Young went on to state that, in Scheer's view, Jellicoe, with his cautious approach to the battle, had squandered a perfect opportunity to annihilate the High Sea Fleet. It was now Jellicoe's turn to be furious. All this was but the prelude to two knights in shining armor riding to Jellicoe's defense: Rear Admiral John Harper and Admiral Sir Reginald Bacon.

Livid at Young's treatment of Jellicoe, Harper in 1927 dusted off his unpublished and virtually banned "Harper Record" and published it as *The Truth about Jutland.* It has been reprinted in *The Jutland Scandal* (2016), with only minor editorial corrections. Harper, no longer bound by Admiralty oversight, gave full vent to his deepest emotions. Beatty, the putative hero of Jutland, was unmasked. In the first phase of the battle, he had made the initial "fatal and elementary mistake of dividing his forces." Moreover, by stationing *Barham* five miles distant, Evan-Thomas could not read Beatty's flag signals, with the result that the 5th Battle Squadron was soon some ten miles distant. This, and this alone, Harper argued, had brought about the loss of the battle cruisers *Indefatigable* and *Queen Mary*. As well, Beatty had failed in his primary role: reconnaissance. Jellicoe was reduced to visual signals: "Where is enemy's battle fleet?" With the two fleets closing at

thirty-five to forty miles per hour, time was critical; yet one hour passed without Beatty sighting Hipper's battle cruisers. And hours passed before Beatty informed his commander in chief of the critical losses to his Battle Cruiser Fleet. Harper's final verdict was damning: "Beatty did not maintain contact with the enemy, he lost touch shortly after his turn to the northward, and sent no reports to Jellicoe during the time when accurate information would have been of inestimable value to him." To those in the service who had read the internal "Harper Record," only the harsh tone of *The Truth about Jutland* came as a surprise.

The same could not be said about a second defense of Jellicoe in the face of the Churchill/Young attacks: Admiral Bacon's *The Jutland Scandal,* first published in 1925. It also is included in the 2016 reprint, *The Jutland Scandal*. Like Harper, Bacon sharply criticized Beatty for dividing his forces at the start of the battle, for not closing up with the 5th Battle Squadron sooner, for not keeping Jellicoe informed about the location of Scheer's High Sea Fleet, and for steaming 360 degrees around the Main Fleet after his "run to the north." But Bacon saved his most savage attack for Vice Admiral Beatty's signal at 7:50 PM for Jellicoe's battleships to follow his battle cruisers and "cut off the whole" of Vice Admiral Scheer's battle fleet. "As a matter of fact," Bacon acidly remarked, "there was nothing from which the battle cruisers could cut the German battle fleet off! They had already been cut off from their harbours."

It came as no surprise that First Sea Lord Beatty was annoyed by "that bloody Bacon book," and that it had only added to his "despondency" concerning his waning influence with the government and the navy. Churchill, likely embarrassed by his amateur treatment of the battle of Jutland in *The World Crisis,* in February 1940 vetoed the Royal Navy's suggestion to name its new *King George V*–class battleships *Jellicoe* and *Beatty*.

It now has been one hundred years since the battle of Jutland. Beatty and Jellicoe both rest in the crypt of Saint Paul's Cathedral in London. Armies of naval historians have dissected every aspect of the battle, and have come up with intriguing names such as "Flawed Victory," "Distant Victory," "Jutland Scandal," "The Riddle of Jutland," "The Truth about Jutland," "The Jutland Epic," "The Blindfold Game," "The Rules of the Game," "The Smoke Screen of Jutland," "Sins of Omission and Commission," and "Our Bloody Ships or Our Bloody System," among countless others.

Thankfully, we now have a superb analysis, *Jutland: The Unfinished Battle* (2016), from Nicholas Jellicoe—the admiral's grandson. This source at first sight might seem to be prejudiced, but that is not the case. Obviously aware of the possible suspicion of bias because of his last name, Nicholas Jellicoe has gone out of his way to offer both the general reader and the naval expert a balanced,

measured, and yet nuanced account of the greatest sea battle of World War I. He weighs and measures. He offers conflicting accounts and interpretations. He evaluates sources. He compares British and German eyewitness and official accounts and statistics. He judiciously examines the accounts by John Harper, Reginald Bacon, and the Admiralty discussed above. And then he offers his own best opinion. Along the way, he provides the layman with text boxes and sidebars to explain the complex naval systems in place at Jutland, and he further includes countless diagrams to explain ship locations and movements.

Nicholas Jellicoe apportions praise and criticism in equal amounts. Tactically, Jutland was a German victory and a "bad blow" for both the Royal Navy and the nation. Hipper's leadership of the German battle cruisers had been "brilliant," Scheer's two "battle turns away" and his ultimate escape "remarkable." German signals and communications had been "exemplary," those of the British "lamentable." Jellicoe's system of command had been rigid, a "vestige of the Victorian past." Beatty's reconnaissance and reporting had been a "failure." Beatty's obsession with rapid firing and the resulting storage of cordite next to the gun turrets, rather than improper flash protection, had caused the loss of the battle cruisers. The role of the new weapons of the day—mines, torpedoes, and aircraft—had been overrated before the battle, and negligible in its outcome. Both navies had fought the battle unexpectedly and discovered it to be highly complex, and had fought under difficult conditions of wind, rain, smoke, heavy seas, and fading light. Both sides regarded it as an "unfinished battle."

Strategically, Nicholas Jellicoe joins the bevy of historians who have argued that Jutland was a British victory. "The issue at stake," he writes, "had been sea power." One side exercised it; the other sought to gain it. Afterward, the arteries of seaborne commerce, Alfred Thayer Mahan's maritime highways, remained open to Britain and closed to Germany. Reinhard Scheer, the putative "victor of the Skagerrak," accepted this reality when, in his after-action report of 4 July 1916 to Wilhelm II, he forsook future "Jutlands" in favor of "the defeat of British economic life" by way of unrestricted submarine warfare "against British trade." The High Sea Fleet, in Churchill's stinging remark of February 1912, indeed had been but a "luxury" fleet.

STRATEGY, OPERATIONS, AND THE MARGIN OF VICTORY

Dov S. Zakheim

Margin of Victory: Five Battles That Changed the Face of Modern War, by Douglas Macgregor. Foreword by Robert M. Citrino. Annapolis, MD: Naval Institute Press, 2016. 288 pages. $34.95.

Douglas Macgregor, a decorated Army tank commander who has gone on to become a leading iconoclastic—and prescient—military intellectual, has produced an ambitious evaluation of five key twentieth-century battles and the strategic and operational assumptions that led up to them. *Margin of Victory* examines in great yet readable detail the strategic 1914 battle of Mons and the strategic withdrawal that followed it; the 1937 Japanese battle for Shanghai; the 1944 Soviet destruction of the Wehrmacht's Army Group Center in and around the Belorussian swamps; the Israeli counterattack across the Suez in the 1973 Yom Kippur War; and the crushing American defeat of Saddam Hussein's forces in the 1991 battle of 73 Easting. Taken together, Macgregor argues, these battles have much to offer those who formulate contemporary American strategy and plan its military operations. Indeed, he goes further: those who ignore the lessons of these battles do so at their peril. As he states in his introductory paragraph, "Hell . . . can be defined in three words: defeat in war. *Margin of Victory* is about avoiding hell."

Macgregor devotes a chapter to each of the five major battles he has chosen as object lessons for current civilian and military policy makers. His account of the battle of Mons is actually a panegyric to Richard Haldane, Britain's secretary of state for war from 1905 to 1912. Facing unstinting opposition from a hidebound officer corps wedded to operational concepts that had failed miserably in the Boer War and confronting budget constraints that prioritized the modernization of the Royal Navy, Haldane nevertheless managed to create a general staff, transform the army into a capable expeditionary force, organize a trained reserve, emphasize realistic training, and inaugurate a regimen of professional military education. His reforms, Macgregor states, would be called today "disruptive innovation." As a result, the seriously outnumbered British Expeditionary Force was able both to force the invading German forces to alter their plans for the attack on Paris and to slow them sufficiently to enable the Allies to mount the defenses that stopped the attackers at the battle of the Marne, thereby preventing an attack on the French capital. As Macgregor concludes, "by the standards of the early twentieth

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century, Haldane's reforms achieved miracles." They also prevented what otherwise might have been a quick German victory in what became known as World War I.

Macgregor's account of the battle of Shanghai is essentially a discussion of what happens when a modernizer's efforts are ignored or overridden. General Kazushige Ugaki, Japanese minister of war from 1924 to 1927 and 1929 to 1931, identified the Soviet Union as Japan's primary potential adversary and recognized that, as Macgregor puts it, "in the future the IJA [Imperial Japanese Army] would need the mobility and firepower to conduct sweeping flank attacks, enveloping or encircling the Russian enemy."

Ugaki also challenged the prevailing Japanese view that budgetary priority should be assigned to naval force modernization and expansion. Few of his reforms to realize his objectives outlasted his terms in office, however. As a result, Japan conducted a bloody and far too costly campaign to seize Shanghai from Chiang Kai-shek's more numerous but vastly outgunned and poorly trained troops, only succeeding thanks to firepower support from Japanese naval and air forces. Japan then successfully conquered eastern and southern China, but, as Macgregor points out, "Japan's war with China not only delayed and disrupted the IJA's modernization; it also fatally crippled Japan's northern strategy to defeat the Soviet Union, while putting Japan on a collision course with Britain and the United States. Thus, where Haldane succeeded, at least in part, to the benefit of his country's forces, Ugaki failed completely, to the costly detriment of Imperial Japan."

Ugaki's failures pale by comparison with the mad strategy that propelled Hitler into invading the Soviet Union and then refusing to implement a planned withdrawal that could have saved huge numbers of his troops. It was true that during the 1930s the Germans had increased their tactical fighting power by focusing on attacks at the point of impact. Nevertheless, the Soviet military, recovering from Stalin's purges, centrally driven from the top, with unity of command, and indifferent to massive personnel losses, successfully focused on "integrating and concentrating combat power on the operational level for strategic effect." The results of Hitler's mistakes and the Soviet transformation played out in 1944, when the Red Army was able to destroy the German Army Group Center. Until it was clear all was about to be lost, Hitler vehemently opposed any withdrawal in the face of the advancing Soviet troops, insisting that his soldiers "fight to the last man." His generals, many of whom were nonprofessional party hacks, were unable or unwilling to challenge his decision. Even when he finally consented to an organized withdrawal to more-defensible positions, Hitler insisted that forces remain behind to defend the various towns from which they had operated. As a result, the Soviets were able to bypass what Hitler termed "fortified places," encircle and destroy the retreating army group, and take the towns as well. In Macgregor's

words, the Soviet transformation, encompassing changes in "command structure, organization for combat, and supporting doctrine for the application of military power in the form of strike—artillery, rockets, and airpower—with operationally agile maneuver forces created a margin of victory that changed the course of European and world history."

Macgregor's fourth case study, that of the Israeli counterattack across the Suez Canal, is meant to demonstrate how a culture that fosters flexibility and independent initiative and leadership enabled the Israel Defense Forces (IDF) to offset intelligence misreadings of Egyptian preparations to cross the canal. He also points to Israel's merit-based promotion system and the IDF's recognition that "one size does not fit all"—in other words, its diversity of capacity. Macgregor allows that Ariel Sharon went beyond mere initiative and flagrantly disobeyed orders. But Macgregor also notes that Sharon's admittedly costly efforts to surprise, and contribute to the encirclement of, Egypt's Third Army were a major factor in the success of the Israeli counterattack. Macgregor credits Anwar Sadat with the foresight to recognize that only by redeeming Egypt's honor, which had been crushed in the Six-Day War, could Cairo finally achieve peace with Israel, one that has stood the test of the region's endless crises and wars for the better part of four decades.

Macgregor led a tank battalion in the battle of 73 Easting, a major American triumph in the 1991 war with Saddam Hussein and another source of lessons for achieving a "margin of victory." Macgregor has written about this battle before: in 2009 he devoted an entire volume, entitled *Warrior's Rage: The Great Tank Battle of 73 Easting,* to the events of 26–27 February 1991. The book offers an account of the actions of the 2nd Squadron of the 2nd Armored Cavalry Regiment ("Cougar Squadron"), which surprised and crushed an Iraqi Republican Guard armored brigade by charging out of a sandstorm during Operation DESERT STORM in what became the U.S. Army's largest tank battle since World War II. Macgregor's purpose in repeating the tale is to argue that President George H. W. Bush ordered a cease-fire prematurely, while Norman Schwarzkopf, who commanded Operation DESERT STORM, essentially let fifty thousand Republican Guards escape virtually unscathed, only to be rearmed by Saddam to fight another day. Macgregor is also bitterly critical of the American military's failure truly to integrate its forces, so that the Army, Navy, Air Force, and Marines continue to seek service self-sufficiency, at a cost to overall operational effectiveness.

Macgregor's description of each of the foregoing battles is gripping and fast paced. It is unfortunate that the maps that accompany his prose often do not include the towns, and at times the rivers, to which he refers, so the reader loses track of the tactical ebb and flow of battle. Macgregor's editors also should have ensured a consistent approach to the spelling of towns and other locales whose names are central to the battles. For example, at times the book simply misspells

names, as in Chongming Island (which Macgregor spells *Changming*). Macgregor also is not consistent in his use of romanized forms of the place-names he cites: Chinese place-names employ pinyin, the system introduced by the Communists in 1949, although he is writing about battles that took place when the Wade-Giles system was still in use. On the other hand, he mentions Cheju-do Island, spelled as it was in 1937; the current Korean spelling is Jejudo.

One might quibble with other elements of Macgregor's history. He writes of Field Marshal French's argument with Lord Kitchener in Paris without explaining when French got there, since French last had been mentioned in the context of the battle of Le Cateau. At one point Macgregor erroneously calls Shanghai the capital of Nationalist China. He does not mention that Germany was able to provision the Wehrmacht with considerable matériel thanks to Jewish, Polish, and other slave labor. Nor does he mention the diversion of resources from Wehrmacht fighting power owing to Hitler's mad preoccupation with the extermination of Jews, even as the fortunes of war turned against his forces. And Macgregor does not note that the fact that Sadat ordered his forces to cross the canal on Yom Kippur, when Israelis were preoccupied with the holiest day on their religious calendar, certainly contributed to the Egyptians achieving strategic and operational surprise.

All told, however, Macgregor has written another powerful critique of the American way of planning and developing strategy for war. His lesson for policy makers and strategists alike is that "whenever new military concepts and technologies appear, the complex interaction of national culture, bureaucratic interests, and economic power does not automatically work to support them. . . . [W]hen conditions change and the margin of victory suddenly narrows, frailties and vulnerabilities concealed from view inside the armed forces . . . suddenly produce catastrophic failure." He asserts that Washington needs to focus on its long-standing and still primary strategic concern, namely, prevention of a hostile power from dominating the Eurasian lands. He argues that the American military must increase its force levels, notably those of the Army. And he advocates for the creation of what he terms a "national defense staff" (in other words, a general staff) "to guide the application of American military power," encompassing integrated capabilities across service lines.

Not everyone will agree with Macgregor's prescriptions. Often he has been a lonely voice in the wilderness. Yet as America transitions to a new administration, it would do well at a minimum to pay close attention to what Macgregor has to say. Because one thing is certain: America's next war certainly will not be like those it is fighting today, and those who make the all-too-frequent error of fighting tomorrow's war with today's assumptions and experience surely will regret doing so, as Macgregor has demonstrated so ably yet again in his latest volume.

ECONOMICS AS A SOURCE OF NATIONAL POWER

John A. Cloud

War by Other Means: Geoeconomics and Statecraft, by Robert D. Blackwill and Jennifer Harris. Cambridge, MA: Belknap of Harvard Univ. Press, 2016. 384 pages. $29.95.

In *War by Other Means,* Robert Blackwill and Jennifer Harris are striving to put the *e* (for *economics*) back into the playbook of American power. They argue that the "military-heavy approach" the United States has taken over the past fifteen years is inappropriate to respond to the challenges we face today, which they see coming not from terrorism but from what they call "geoeconomics." In fact, Blackwill and Harris argue that the "current tools of U.S. statecraft, dominated by traditional political-military might, are uniquely unsuited" (p. 7). For example, on an issue on which I have written previously,* they note that there has been "no comparable discussion in Washington of returning Ukraine to economic viability as a way to check . . . Putin" (p. 2). They appear to agree with many of our military leaders, who argue that we need to use all our tools of national power (usually described as DIME, for *diplomacy, information, military,* and *economics*) to meet future challenges.

Blackwill and Harris focus on the use of economic power to achieve geopolitical, not economic, objectives. This is what they term "geoeconomics." The book is replete with examples of not only how the United States used to use geoeconomics but how our so-called near-peer competitors, particularly China and Russia, are using it today as an asymmetric method to accomplish their foreign policy objectives. The authors argue that the United States has neglected this area since Vietnam. While they see it as essential that we become more skilled in the use of geoeconomics, they acknowledge that we will not necessarily be as nimble as China and Russia, given the greater control the Chinese and Russian regimes have over their respective economies.

In taking this position, the authors demonstrate the courage to be out of step within the current political debate. While both parties' nominees are critical of trade deals and of using economics for noneconomic ends, Blackwill and Harris strongly promote exactly that. For example, they argue for the ratification of the

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*John A. Cloud, "Ukraine's Next Big Battleground," *The National Interest,* 4 June 2015, nationalinterest.org/.

Trans-Pacific Partnership (TPP) and the successful conclusion of the Transatlantic Trade and Investment Partnership (T-TIP).

In another area in which the authors defy conventional wisdom, Blackwill and Harris press for the United States to move significant (but unspecified) budgetary funds from the U.S. military to the State Department and other agencies involved in geoeconomics. At a time when the political class is arguing for more money for the military, they argue that "the United States too often reaches for the gun instead of the purse in its international conduct." They further ask, "[W]hat, in power-projection terms, is the United States getting for all of this military spending?" (p. 221).

Blackwill and Harris are up-front in claiming that China is "America's most important foreign policy challenge" (p. 179). They see China as the "leading practitioner of geoeconomics" (p. 11). Their chapter "Geoeconomics in Chinese Foreign Policy" is particularly compelling as it outlines five different uses of geoeconomic tools by China to advance its interests in Taiwan, North Korea, Japan, and Southeast Asia and in its relationships with Pakistan and India. They note that "nations do not fear China's military might; they fear its ability to give or withhold trade and investments" (p. 94).

The authors spend considerable time discussing the energy revolution and the effects of high commodity prices. It is unclear to me how the recent decline of both energy and commodity prices affects their argument. However, I would agree that the use of innovative ways to recover petroleum products—if a sufficient equilibrium price can be found—should have profound implications for the potential for the United States to use geoeconomics.

Blackwill and Harris argue that the United States no longer uses geoeconomics. On the basis of my experience, I disagree. If that were the case, most of the George W. Bush trade negotiations would not have happened. The authors do acknowledge that the trade agreements with Bahrain, Kuwait, and Morocco had counterterrorism goals (p. 175). I would argue that all these agreements had geopolitical as well as economic goals. In fact, it was not until the agreement with South Korea that we had an agreement with significant economic purpose, even though this agreement had important geopolitical goals as well.

Blackwill and Harris also argue that the TPP "was conceived primarily as an economic project" (p. 181). I again disagree. Where I would agree with the authors is that the geoeconomic aspects of these agreements are prominent at their conception and at the end; they are of lesser import in the middle. While the National Security Council system and staff were deeply involved in picking the countries and launching the negotiations, once launched the negotiations quickly devolved to being run by the responsible departments, and the organizational behavior of these departments took over. At that point, the agenda of the

Office of the U.S. Trade Representative (USTR), the Departments of Agriculture and Commerce, their respective congressional committees, and USTR's congressionally mandated advisory committees took precedence over our geopolitical goals. This is, in part, because of the narrow congressional majorities that have supported these agreements in the recent past. Our trade negotiators cannot afford to alienate any interest group that could tip the scales against an agreement. It was only in the endgame that the geopolitical aspects became prominent again.

Another example would be U.S. assistance to eastern Central Europe during the administration of George H. W. Bush—an issue in which Ambassador Blackwill was deeply involved. The United States used economic tools to help integrate these countries into the West and, indirectly, into the European Community. It was only later that the military and NATO became our major tool of integration.

The authors, in their review of the history of U.S. use of geoeconomics, date its decline to Vietnam. I would argue that it was Congress's creation of the Special Trade Representative in the Trade Act of 1962 that precipitated this decline. At that time, Congress removed the trade negotiating lead from the State Department —an agency with geopolitical responsibilities—and put it in the White House. This was done, according to Blackwill and Harris, because "congressional leaders complained that the State Department neither understood nor represented U.S. economic interests" (p. 169).

Blackwill and Harris attribute this change not to Congress but to economic insecurity and to U.S. policy makers who "began to see economics as its own distinctive realm, to be protected from the whims of statecraft" (p. 153). The authors argue that U.S. economists have succeeded in separating economic policy from national security policy (p. 6). I suspect that this statement surprises no one more than U.S. economists. Yes, U.S. economists argue for wise economic policies. They argue against geoeconomic measures that could undermine the fundamental strength of the U.S. economy. As we learned during the Clinton administration, they are mindful of the import of bond traders and others who influence the economy. But in my experience, economists do not see economic policy as a distinct area in which national security goals have no legitimacy. I frequently found that when policy makers were averse to using economic tools it was because those tools were either bureaucratically difficult or their implementation, timing, and effect were believed to be less certain than those of other means.

Robert Blackwill and Jennifer Harris have written a timely and compelling book that provides an important contrary perspective for U.S. national security policy making. It will be fascinating to watch whether and how these ideas get incorporated into the next administration's national security policy.

BOOK REVIEWS

FROM THE MED TO THE WORLD

Seagoing Ships and Seamanship in the Bronze Age Levant, by Shelley Wachsmann. College Station: Texas A&M Univ. Press, 2008. 448 pages. $40.
Homeric Seafaring, by Samuel Mark. College Station: Texas A&M Univ. Press, 2009. 272 pages. $60.
Byzantine Warship vs Arab Warship, 7th–11th Centuries, by Angus Konstam. Oxford, U.K.: Osprey, 2015. 80 pages. $18.95.

These three books reviewed together are not an obvious historical match for each other as comparable scholarly studies; the only chronological thread linking them is their coverage of an era extending from the Bronze Age to the medieval period—a considerable portion of the maritime past. Yet all do focus, mostly, on the eastern Mediterranean.

The first book, *Seagoing Ships and Seamanship in the Bronze Age Levant,* is a monograph of the Institute of Nautical Archaeology at Texas A&M University. The institute, founded by George Bass in 1973, is the flagship for underwater and maritime archaeology programs in the United States; its publications reflect that fact, as does its extensive global outreach resulting from its finds of shipwrecks and other items relating to maritime history covering the past ten thousand years.

As a world pioneer in nautical archaeology, Bass also wrote the foreword to the book. Author Shelley Wachsmann is the maritime archaeologist—now a professor for the institute at Texas A&M—whose research on the "Sea of Galilee boat" conducted for the Israel Department of Antiquities and Museums produced his earlier popular book of that name (New York: Perseus, 2000) on a single two-thousand-year-old landlocked freshwater find.

This comprehensive tome published under the auspices of the institute examines a wide swath of past Mediterranean cultures whose maritime activities led to their evolution as Bronze Age powers. This book explores economic development, by way of Mediterranean Sea trade; how seaworthy ships were built, down to the smallest details; and what technological advances made possible voyages longer than mere coast-hugging itineraries. It also addresses how ships and states dealt with piracy and—extrapolating from epigraphic evidence—what kind of agreements constituted Bronze Age maritime law.

Although such a broadly themed approach makes difficult any organizational scheme for demarcating possibly overlapping domains, this excellent book is divided into two main sections over seventeen chapters: (1) "The Ships: Review of the Evidence," covering Egyptian to Cypriotic, Aegean, Minoan, Sea Peoples, and Homeric beaked ships, as well as extant shipwreck archaeology; and (2) "Aspects of Maritime Activity," ranging from ship construction to types of anchors, methods of propulsion (e.g., sails, oars, or both), navigation, trade, and law. These are followed by conclusions, appendices, endnotes, glossaries, bibliography, and index. The ample illustrations (at least 450) in this book are rich: very few pages are bereft of images, up to the conclusions of chapter 17. They include archaeological fieldwork photos of sites and artifacts, illustrations, maps, drawings, site plans, and reconstructions. There are also tables containing texts and their translations. One of the best results of this monograph is the consideration of nearly every kind of possible historical evidence for Bronze Age seafaring. For example, nearly every known Minoan seal or ceramic shard with a ship image is examined closely for information. The same is true for the Medinet Habu Sea Peoples reliefs in Egypt and the exhaustive analyses of excavated ship anchors. Thus the book is a huge asset for anyone studying maritime history of the Bronze Age eastern Mediterranean.

The second book, titled *Homeric Seafaring,* also published by the Institute of Nautical Archaeology at Texas A&M, is much more specific to a defined time and place. The work is much indebted to a poetic yet historically rich body of epic literary references, especially that of Homer in his famous "Catalogue of Ships" in *Iliad* 2. Yet if it were limited to that epic, the work would not add much to existing philological studies across centuries of painstaking analysis. Author Samuel Mark begins by pointing out (p. 11) that Homer can be a frustrating "siren song," one to which archaeologists and historians, trained in data-mining purviews very different from those of philologists and literary scholars, will apply competing hermeneutics. But Mark reminds us (p. 15) that a skilled storyteller such as Homer (whoever the author behind that name might have been) "was careful to make his characters and events as lifelike as possible," despite whatever chronologically diverse oral redactions changed the text along the way. This book also begins where the pioneer maritime historian Lionel Casson left off in attempting to reconcile the textual with the archaeological details, although not always weighting them equally.

Some of the perhaps surprising conclusions Mark contributes to the available literature include that seafaring was a very common activity even in agronomy-based societies, and that coast hugging can be more treacherous than open-sea sailing because of rocks, shoals, and currents. (Think Strabo's warning in *Geography* 8.6.20 about rounding Cape Malea off the Peloponnesus: "When you double Cape Malea, forget your home.") Mark also concludes that sea battles were more common than prior opinion allowed; that Homeric ships were more for sailing than for rowing; and that the helmsman was a sailor's best hope for a safe return.

The alphabetic Greek glossary is very useful, as is the textual index of all passages on seafaring from at least

thirty-five classical author sources in addition to Homer. This is even an enjoyable read for anyone ready for a different and fresh approach to traversing Homer's "wine-dark seas" and other Greek epics as well as encounters with Herodotus and encyclopedists such as Theophrastus and Pliny. It is well to remember that rarely in ancient Greece could you be more than fifty miles from the sea.

The third and last book is Angus Konstam's *Byzantine Warship vs Arab Warship, 7th–11th Centuries*. Osprey Publishing in Oxford is the prime book source of past military histories. Lavish color illustrations are a constant in Osprey books (of which this reviewer owns more than a dozen) and concise, clear texts are to be expected—and are found here. Angus Konstam is a prolific author, with scores of published books, mainly for Osprey, comparable to this one. He is a former naval officer who is also familiar with museum collections as a curator, so his publishing template and understanding of resources for historical naval warfare are well established.

This book is part of the Osprey Duel: Engage the Enemy series, in which two competing systems, generally enemy forces, are compared across multiple parameters. In the medieval Mediterranean chronology of the post–late antique world, in which Rome is no longer viable and Constantinople has replaced it, the two main fighting vessels under consideration are the Byzantine *dromon* and the Arab *shalandi,* which made up the bulk of the official navies of the opposing powers.

Shared or copied methods and tactics of naval engagement (according to contemporary treatises such as the Greek *Taktika* and the *Naumachika* of Emperor Leo VI [r. AD 886–912] or the Arabic *Al-Adilla al-rasmiyya*) are covered here, from grappling with grapnels, to boarding, to hand-to-hand combat, as well as the maneuverability of both ships by sails, rudders, or oars. Very specific types of weaponry are annotated: bows, *cheirotoxobolistrae* or *tzangrae* (crossbows), catapults, ballista bolts, caltrops, pikes, *corseques* (trident stave weapons), and—the most feared of all—the unquenchable flaming oil known as "Greek fire." (Any of several Greek phrases [e.g., *pyr thalassion,* "sea fire," and *pyr kolletikon,* "sticky fire"] could convey the incendiary nature of this substance forcefully expelled from deck-mounted siphons.)

Ultimately, both opposing forces used nearly the same weaponry. Konstam consulted artifactual material, historical documents, and extant manuscripts revealing many technical specifications for outfitting both Greek and Arab ships, including design features, how the combatants fought, and specific battle outcomes for this fascinating single-subject book. We also should credit Arab navigators who used the measured night stars, hundreds of which still retain names derived from Arabic.

One quirky legacy of the Arabic side of naval warfare comes to us in our English word *admiral,* meaning sea commander, from the later Moorish Arabic term *amir al-rahl,* meaning something akin to "ruler of outfitted [ships]," since the word *amir* or *emir* already meant a type of leader or ruler functioning as war commander. Our word *admiral* thus derives from this seminal time when the Arabic naval command first came to be seen as distinct from a land general's command during the rapid

spread of Islamic hegemony across not just the land but also the sea.

In a world where information has not always been easy to come by, Konstam's small but highly esteemed book does justice to the world of competing Arab-Byzantine interests. It covers the specifics of the fierce at-sea dueling that went on within the larger competition that spread over a sea claimed by both Byzantine Greek and Arab powers, anticipating by half a millennium the Ottoman conflict that would include both the fall of Constantinople and the ensuing battle of Lepanto.

PATRICK HUNT

Mayday: The Decline of American Naval Supremacy, by Seth Cropsey. New York: Overlook, 2014. 348 pages. $29.95 (paperback $17.95).

Mayday is an extended argument for the expansion of the U.S. naval fleet to confront Chinese ambitions in the South China Sea, secure U.S. global interests, and ensure America's future as a great power. The author, Mr. Seth Cropsey, has considerable experience in defense and government, having served as a Deputy Under Secretary of the Navy in two administrations, in addition to other roles; he is associated with various think tanks. He demonstrates an in-depth and well-developed understanding of the strategic issues the Navy faces as he traces the development of U.S. sea power, assesses its current state, and examines a number of proposals before offering his own prescription for the Navy's future.

In many ways this book is a reapplication of pre–World War I naval theory espoused by the Naval War College's own Admiral Alfred Thayer Mahan. The author uses Mahanian thought extensively in his analysis of the historical development of American sea power into its current incarnation, explaining that, because of the U.S. Navy's current build rates and mismatched strategies, it is on a downward trajectory that will result in the loss of U.S. sea power. This, in turn, will result in a loss of U.S. influence and global stability worldwide. This channeling of Mahan is generally well executed, with one exception: at several points within the text, Mahan's equation of naval strength with the size of the national shipping fleet is referenced, without a solid explanation of how that relates to the current U.S. reliance on foreign carriers. The proposed repeal of the Jones Act (which mandates the use of U.S.-produced, -flagged, and -crewed carriers for cargo moved between U.S. ports) appears almost out of nowhere, and while a repeal definitely would improve competition and lower shipping costs, Mr. Cropsey fails to explain how this would be beneficial to the Navy or assist in correcting the strategic issues it faces.

The chapters on China's naval expansion and the ongoing gap between the U.S. Navy's force requirements and the number of hulls that its shipbuilding plan and budget can deliver are very informative and well reasoned. When observed through the Mahanian lens that Mr. Cropsey provides, it is not difficult to see how the People's Liberation Army Navy has embraced the idea that naval power is key to China's ability to influence the region and secure its interests from the African littorals to the deep waters of the Pacific.

The book runs a bit thin in the delivery of economic arguments regarding

the American deficit, national debt, and entitlements, and the occasional departures into partisan rhetoric do not really serve the overall thrust of the book. Some of the arguments it contains are inconsistent or undeveloped. An example is the suggestion to build smaller, single-mission hulls, which is followed later by a diametrically opposite recommendation to build multimission frigates with antiair, antisubmarine, and antisurface warfare capabilities. Additionally, his proposal to relegate much of the Army to National Guard or Reserve status is probably politically infeasible because of the dire effects this would have on the communities around major Army bases. All that aside, it is difficult to disagree with the fundamental tenets of *Mayday*—that a sufficiently sized and equipped Navy is crucial for our continued national security and the maintenance of international order—and on these bases his arguments for a naval expansion are sound.

Mayday provides an excellent case for reversing the piecemeal downsizing of the Navy, a return to pragmatic platform design, and consistent funding of a shipbuilding program to deliver and maintain a fleet sized to secure our interests and achieve our international objectives. Although the quote is not mentioned specifically, this book recalls President George Washington's observation in his letter of 15 November 1781 to the Marquis de Lafayette: "[W]ithout a decisive naval force we can do nothing definitive, and with it, everything honorable and glorious." Mr. Cropsey's recommendations are pragmatic and worth consideration by senior Navy leadership and policy makers alike.

JOSH HEIVLY

Realpolitik: A History, by John Bew. New York: Oxford Univ. Press, 2015. 408 pages. $27.95.

John Bew, a historian at King's College London, provides the first comprehensive intellectual history of the often-misunderstood term *Realpolitik.* Drawing on the experience gained from his acclaimed biography of Lord Castlereagh, the Napoleonic-era British foreign secretary, Bew traces *Realpolitik* from its obscure, nineteenth-century origins in revolutionary Germany to the term's use and misuse in contemporary Anglo-American foreign policy debates. Scholars and practitioners seeking to gain a more nuanced understanding of the evolution of Western foreign policy thinking over the last century, particularly before 1945, would be well advised to consider Bew's compelling narrative.

In the often-glib foreign policy discussions that characterize public understanding of the discipline's key terms and points of contention, *realism* is often supposed to be interchangeable with *Realpolitik.* Bew's greatest contribution is his voluminous research into the term's early history, beginning with the 1853 book *Foundations of Realpolitik* by the little-known German philosopher Ludwig von Rochau. This original formulation, distinct from later uses in both Germany and the Anglosphere, was a creature of its time and place: a disunited Germany torn between the liberal impulses of the 1848 revolutions and the conservatism of its traditional ruling class, as personified by Otto von Bismarck.

Rochau's *Realpolitik* was not an ideology at all; it was a lens for viewing the political circumstances of Germany's

bourgeois liberals at a time of conservative reaction. Rather than continue to build "castles in the sky," as Rochau believed the failed revolutionaries of 1848 had done, he argued for a specific focus on the essential truth that ideas have little currency without some acquaintance with power. To have any hope of success, Germany's liberals had to understand the underlying social, economic, and political context of how power was wielded and the limitations that existed on their freedom of action. A fervent believer in German unification for liberal ends, Rochau supported much of Bismarck's foreign policy under the guise of *Realpolitik*. A sober appraisal of the domestic political situation meant that German unification, even under the leadership of a reactionary conservative such as Bismarck, provided the best long-term prospects for German liberalism.

It was Rochau's unsentimental acceptance of the facts of the situation, as he interpreted them, that defined the original *Realpolitik*. Bew's essential mission is to chart the course from Rochau's relatively benign concept to the fraught foreign policy debates of today, with intermediate stops in Wilhelmine and interwar Germany. In his zeal to demonstrate the laudable breadth of his research on the term's multicentury evolution, Bew occasionally overwhelms the reader with quotes and anecdotes from relatively obscure academics whose opinions of *Realpolitik* and its various permutations have only tangential relevance. His point, seemingly inarguable given the clarity of Rochau's writing, is that the term quickly lost its essential benignity and was co-opted by German intellectuals advocating something very different from Rochau's cold-eyed analysis of the facts on the ground.

Realpolitik's introduction to British and American audiences at the beginning of the twentieth century was in a far different form. Namely, after Germany's nationalist academics transformed the term into an amoral ideology of "might makes right," Anglo-American opinion came to regard it as a synonym for German militarism and ultranationalism. Bew is particularly elegant in his parsing of Rochau's original work and the contrast with much of the ultranationalist proselytizing that came to define Anglo-American understanding of *Realpolitik* before the First World War.

Bew's narrative shines particularly brightly during his analysis of the interwar period, notably the use of *"Realpolitik"* by British prime minister Neville Chamberlain to justify his appeasement of Nazi Germany. The counterreaction to the perceived failures of Woodrow Wilson's liberal internationalism precipitated a reappraisal of the term in London during the 1920s and 1930s, with it coming to be seen more positively as a steady adjustment to facts, as opposed to Wilson's starry-eyed idealism. Bew, seeing the appeasement debate as a critical node in the term's evolution to its ultimate place in the twentieth-century realist paradigm, is convincingly dismissive of Chamberlain's co-option of the term. Quoting at length from contemporary sources, Bew notes that Chamberlain's *Realpolitik* lacked many of the essential elements of commonly accepted foreign policy realism and instead relied on a world-weary pessimism that left Britain unprepared for the Nazi challenge. Winston Churchill's blend of tactical realism, in the form

of advocacy for a British rearmament policy, and ideological opposition to Nazism serves as a powerful contrast to Chamberlain's flawed use of *Realpolitik*.

Bew breaks less original ground in the post-1945 period, as *Realpolitik* in the postwar United States is decidedly intertwined with the much-discussed "realist" school of foreign policy exemplified by academics such as Hans Morgenthau and Kenneth Waltz. The term's Germanic origins and use by discredited proponents of the Second and Third Reichs undoubtedly contributed to a period of limited use, even by self-proclaimed realists. Bew's narrative, post-1945, begins to merge into the broader discussion of the different schools of American foreign policy that emerged during the Cold War—an area of much previous research without room for the compelling scholarship offered in this book's early chapters. Like all who study "realism," Bew is drawn to an extended meditation on Henry Kissinger and his influence on U.S. foreign policy. Refreshingly, Bew is cognizant of the subtlety and nuance of Kissinger's worldview and refuses to paint that enigmatic figure with an overly broad brush.

Realpolitik: A History is an important contribution to international relations scholarship, not least for resurrecting Ludwig von Rochau and the origins of *Realpolitik.* Bew is to be credited with tracing the term's evolution in multiple countries with different political cultures with relative ease and skill, showing time and again the slow metamorphosis of the term into something far different from what its creator intended. Particularly in the interwar appeasement debate, *Realpolitik* found itself misused toward ends that were anything but realist. More broadly, the term has been twisted to mean any policy that is believed to lack a moral foundation or, from the contrary viewpoint, is seen as grounded in realistic levelheadedness. As Bew's narrative ends and the term is gradually subsumed into the broader tradition of American realism, the reader is reminded of the inherent flimsiness of the structure of so many of the terms endemic to the debate over American foreign policy. Professor Bew's new book is a helpful antidote to such rhetorical laziness.

ALEXANDER B. GRAY

Grand Strategy in Theory and Practice, by William C. Martel. New York: Cambridge Univ. Press, 2015. 548 pages. $115.

"The main goal of this book," Martel writes, "is to provide contemporary policy makers and scholars with a rigorous historic and analytic framework for evaluating and conducting grand strategy" (p. ix). Acknowledging that the term itself is "relatively new," although its concepts certainly can be found throughout history, Martel credits academics during World War II (particularly "the founder of modern grand strategy, Edward Mead Earle") with being the first to focus on a nation's "highest political ends," employing all elements of national power—"diplomatic, informational, military, economic"—to achieve global, long-term security goals (pp. 23, 25, 30). He thus elevates grand strategy above "strategy," "operations," "tactics," and "technology" while acknowledging that for most of history "strategy"—how to achieve overall military victory—was

largely identical with "grand strategy" when the other components of national power were inconsequential. Thus, until the twentieth century, the Royal Navy—not English ambassadors nor the East India Company nor the inventors of steam power—dominated Britannia's grand strategy because it determined Great Britain's strategy, i.e., its means of winning important wars.

Martel's theoretical presentation explains strategic thinkers from Sun Tzu, Thucydides, Machiavelli, Hobbes, and Locke through Jomini, Clausewitz, Smith, Hamilton, and List. From the sixteenth to the twentieth centuries, Martel reviews Philip II, Frederick II, Napoleon, Bismarck, and Metternich, then examines the apogees and declines of the British and Ottoman Empires.

"Revolutionary" thinkers—Marx, Lenin, Trotsky, Mao, Hitler, and Ho—are also covered because of their impact on the contemporary world. However, "[w]ith the advent of thermonuclear weapons, classic approaches to strategy [for military victory] became largely irrelevant, having lost any practical meaning in the face of intolerable urban destruction, if not the annihilation of societies and humanity itself. This development effectively shifted strategy from its historical foundations of how to win wars to how to avoid wars" (p. 121).

Turning in the second half of this book to American history, Martel asserts that the nation's grand strategy fundamentally has been that of neither a "status-quo" state nor a "revolutionary" one; it consistently has been that of a "gradualist" state, always seeking change but never rapid and radical change. "Restraining Sources of Disorder" is the chapter title for American foreign policy from Theodore Roosevelt through Franklin D. Roosevelt. Since 1945, the United States has opposed revolutionaries but supported democratic-leaning reform. (Critics certainly would argue specifics, pointing to instances of American to-the-hilt backing of undemocratic rule when specific economic, political, or military priorities submerged sensitivity to social justice.)

The heart of Martel's descriptive review of American grand strategy and his prescriptive conclusion on the future of that strategy rest on three principles that Martel argues always must be balanced. The first is that the domestic foundations of American economic, military, diplomatic, and social power have to be strong. (It is illuminating to view two centuries of American foreign policy from the internal perspective of the influence of slavery, territorial expansion, isolationism, and economic development rather than the usual wars, crises, and treaties. On the other hand, when Martel's "domestic foundations" of national strength extend to "education, health care, and retirement systems," questions about prioritization naturally arise [p. 355].)

The second principle, of leading efforts to restrain "sources of disorder that present direct threats to U.S. vital interests," is complicated by Martel's assertion that "America needs to stand for and defend principles that promote human rights and dignity, equality for all peoples—men and women—freedom of expression, free enterprise, and fair elections" (pp. 357–58). Thus, realist attempts to distinguish American "vital interests" from Wilsonian idealism are rejected. But how then are extensive economic relations with China or Saudi Arabia to be weighed in light of

blatant human rights violations if all are "American vital interests"? Yes, it can be done—but the argument is less clear.

Martel's final principle is that the nation must strengthen alliances and partnerships to promote shared responsibilities effectively to solve global problems. Recognizing that American power is limited, Martel counsels against temptations toward either American overreach or American withdrawal on key global and regional problems.

Martel applies these principles to "current" foreign policy issues to illustrate their utility; the inevitable drawback to such relevance is the danger of "shelf life" interest, i.e., how long will readers care about or even recall foreign policy specifics from 2014? Conversely, some topics that seem important at the time of this writing (e.g., violent Wahhabism, Russian aggressiveness) receive little attention.

A weakness of generalized, historically centered summaries of policy decisions is the tendency to see, in retrospect, clear choices and definite paths, but to underestimate the uncertainty and angst that decision makers suffered. By contrast, specific case studies (e.g., the Cuban missile crisis, Vietnam, the 2003 Iraq war, the 2008 economic crisis) always show the confusion and fear. Martel's sweeping review gives surprisingly little attention to the fact that nearly all grand strategy decisions are made while under risk or amid uncertainty by those who are fraught with anxiety and apprehension, and constitute gambles on guesses rather than calm choices about how best to balance good principles and achieve optimal outcomes. Martel—who certainly understood the policy-making process—might have replied that the purpose of his final book was to advise policy makers and scholars on how such decisions should be made, rather than to describe how they will feel while doing so. But readers might have benefited from at least an acknowledgment of this apprehension, the way Bill Martel used to offer a cheerful but sympathetic smile to friends and students struggling with problems he had posed to us.

The date of this book's release—12 January 2015—was the day its author died at the age of fifty-nine after a yearlong battle with leukemia. Bill Martel was for ten years a professor of international security studies at the Fletcher School of Law and Diplomacy at Tufts University (where he received the James L. Paddock award for teaching excellence) and an adjunct electives professor at the Naval War College. Previously, he had taught in the College's National Security Decision Making Department for half a dozen years, following a similar period as founding director of the Air Force's Center for Strategy and Technology at the Air War College. He also had served as an adviser to the National Security Council and the Romney 2012 presidential campaign. This reviewer was one of his many colleagues and students who counted themselves blessed by his friendship.

THOMAS GRASSEY

The Struggle for Sea Power: A Naval History of the American Revolution, by Sam Willis. New York: W. W. Norton, 2016. 608 pages. $35 (Kindle $16.05).

Sam Willis describes (p. 5) the war for American independence as "the most

intriguing naval story in history." To support this contention, Willis has written a book aimed primarily at a general audience and based on a narrative approach, first chronicling the maritime conflict between Britain and its rebellious American colonies, then addressing the ensuing global maritime war.

Although the book is written as a chronological narrative, Willis identifies five underlying themes that knit the maritime story of the war into a broadly defined seapower thesis.

The first theme involves the author's assertion (p. 5) "that sea power can exist without navies." Although lacking Britain's established naval infrastructure, the colonists, Willis argues, still developed and exploited sea power. This theme dominates the text during the early years of the war, but regrettably becomes but a minor story line after the French entry.

The second theme argues (p. 6) that naval historians generally "make a false distinction between" saltwater and freshwater navies in places such as Lake Champlain. Willis claims that contemporaries made no such distinction. Certainly, Willis is correct to point out similarities between the types, but the differences are more significant than Willis admits, particularly in the instruments used and the obstacles faced. Even more than the first theme, this one is episodic and hardly merits being elevated to a theme.

Willis's third theme focuses on the global nature of the war. Willis clearly demonstrates that much more was at stake than the independence of thirteen of Britain's North American colonies. This theme is addressed quite effectively after 1778 through a traditional narrative of naval operations. The global nature of the war meant that numerous campaigns occurred simultaneously, and events in one region influenced what occurred elsewhere. This is Willis's fourth theme. Willis provides insightful commentary on such interactions when explaining fleet movements and campaigns, but devotes too little attention to the decision making in London and Paris. To understand truly the interaction among theaters, Willis needed to explain more effectively how leaders in Paris, London, and Madrid prioritized among competing options. For example, Willis fails to grasp the nuances of Britain's strategic position, including the calculus used in determining the distribution of fleets between home and foreign waters, and particularly the essential role of Gibraltar in Britain's strategic architecture.

The fifth and final theme is the most far-reaching. It addresses how sea power affected the broader war—whether through diplomacy, campaigns on land, the politics of the states involved, or particularly the decisions of the military and political leadership. "As always," Willis maintains (p. 292), "the impact of sea power must be measured in more ways than one."

Willis aptly argues that sea power was a significant element in the American Revolution that should not be overlooked. It influenced events from the war's origin to its end. Yet although he often supports his arguments with a high degree of skill, the book fails to entirely meet its potential. Willis is not the first to address sea power and its relation to this war, but he does not place his thesis into the context of previous works on the subject. This is particularly glaring with regard to Alfred Thayer Mahan.

Willis cites only Mahan's book on the American Revolution; he does not cite *The Influence of Sea Power upon History, 1660–1783,* Mahan's most significant work and the one that put the term "sea power" into widespread use. Considering that Willis has written a book about sea power and even uses (p. 6) the phrase "the influence of sea power," the omission is evident. Although Willis defines sea power more broadly than does Mahan, many of *The Influence of Sea Power*'s themes echo powerfully in his work. Like Willis, Mahan considers the global maritime war spawned by the struggle for American independence to be the most intriguing of naval wars.

The second, related weakness involves the quality of the scholarship. Although Willis uses archival and published primary sources, he often relies on other historians. This is particularly true regarding memorable quotations from those who were present. Rather than consistently consulting original sources for both the accuracy and the historical context of the quotes, Willis relies on the legwork of previous historians.

Overall, Willis has written an intriguing appraisal of sea power in the American Revolution. It is a sweeping narrative that benefits greatly from Willis's eloquence as a writer and his superb ability to tell a story. However, the book is not without its weaknesses. Some of the author's themes require development, the source base could be strengthened, and Willis needed to develop stronger links between naval operations and the decision making by those at the highest positions in government. The book is on its surest ground in the early chapters when addressing the development of American sea power, and later in the text when recounting major naval operations.

KEVIN D. MCCRANIE

OUR REVIEWERS

Captain Thomas Grassey, USNR (Ret.), is a graduate of Villanova University and received a doctorate in philosophy from the University of Chicago. He served on the faculty of the Naval War College and is a former editor of the *Naval War College Review*.

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Patrick Hunt is an archaeologist and historian and has taught at Stanford University since 1993. He earned a PhD from the Institute of Archaeology, University of London. National Geographic Society's Expedition Council sponsored his Hannibal expedition in 2007–2008. He was director of the Stanford Alpine Archaeology Project from 1994 to 2012 and is a fellow of the Royal Geographical Society (London).

Kevin D. McCranie received a BA in history and political science from Florida Southern College, and an MA and PhD in history from Florida State University. Before joining the faculty of the Naval War College, he taught history at Brewton-Parker College in Mount Vernon, Georgia. In 2001, he held a fellowship at the West Point Summer Seminar in Military History. Specializing in warfare at sea, navies, sea power, and joint operations during the age of sail, he is the author of *Admiral Lord Keith and the Naval War against Napoleon* (2006), as well as *Utmost Gallantry: The U.S. and Royal Navies at Sea in the War of 1812* (2011). His articles have appeared in *Naval History, Journal of Military History,* and *Northern Mariner*.

IN MY VIEW

WAVE OF THE FUTURE: THE NAVY SHOULD DO MORE NOW TO CONFRONT THREATS JUST OVER THE HORIZON

Sir:

Try to visualize the global innovations that could emerge within the next thirty years to challenge the U.S. Navy's dominance: Stealthier, autonomous ballistic-missile submarines (Bryan Ericsson, "Drone Boomers: How Satellite Detection and the Push for Autonomy May Lead to Unmanned SSBNs," *International Affairs Review* [29 March 2016]). City-sized aircraft carriers capable of deploying swarms of miniature armed drones for precision-strike combat missions (Denise Chow, "US Navy's New Aircraft Carriers Will Be Massive 'Floating Cities,'" *Live Science* [18 October 2013]). Hydrogen-powered, blue-water sloops brandishing directed-energy projectiles (Naval Research Laboratory, "Scale Model WWII Craft Takes Flight with Fuel from the Sea Concept," news release, 7 April 2014). Underwater robots specializing in naval mine removal and undersea warfare ("Future US Navy: Robotic Sub-Hunters, Deepsea Pods," *Daily Mail,* 28 March 2015).

Ostensibly, the Department of Defense (DoD) is on top of it. It has created plans to introduce autonomous vehicles, rail guns, and a host of other advanced systems into the Navy's arsenal to maintain its competitive edge. After all, the Navy is the best funded of all the services. It is forward deployed and constantly under way. For the past several years, its readiness has been unrivaled by that of the navies of other world powers.

Yet the Pentagon has failed to consider another crucial factor when forging its future budget and planning cycles: a more complex geopolitical environment emerging in tandem with these technological advances. During this thirty-year time frame, the international security environment will change dramatically. The U.S. National Intelligence Council (NIC) assessed in 2012 that by 2030 power will have shifted to "networks and coalitions in a multipolar world" (National Intelligence Council, *Global Trends 2030: Alternative Worlds* [December 2012]). Balances of power will shift and expand, much to the detriment of U.S. interests.

Washington's overseas influence will wane and other countries' will fill the vacuum. Power—and with it individual access to technologically advanced naval platforms and conventional weapons—will disperse across the world.

This will compound the Navy's difficulties in achieving its mission. It is not simply a matter of the great advancement in weapons, autonomous systems, and platforms themselves; who has access to which ones and the total to which they have access are also of utmost concern. Pentagon policy makers, congressional leaders, and other decision makers in the U.S. government must recognize how the confluence of these two developments—an increasingly complex geopolitical landscape and the profusion of more-capable weapons dispersed across it—threatens U.S. interests.

Navy and DoD leadership can begin to address the problem in two ways. First, naval planners must concoct longer-term and more-specific plans. Unlike current planning evolutions, defense planners should begin anticipating strategic surprise beyond twenty-year windows. Just after that time window is when the threat might grow out of proportion to the Navy's ability to counter it. Of course, longer-term planning runs the risk of misapplying critical resources. The mid-twenty-first century will be highly variable. However, relying on quick-action planning cycles could leave policy makers bewildered and the Navy trailing far behind its strategic rivals.

Second, the Navy, already hamstrung by budget, should avoid planning on the basis of political considerations. Despite an $848 million deficit on the Navy's current operations and maintenance accounts, Congress is driving investments in larger, more-powerful naval ships (Christopher P. Cavas, "US Navy Faces $848 Million Ops & Maintenance Shortfall," *Defense News,* 26 May 2016). But future naval wars will not be fought on the high seas. They will be fought in the Strait of Hormuz and the South China Sea, where technological mastery, autonomy, willpower, and the ability to counter asymmetric swarm attacks will be pivotal to victory at sea (Caitlin Talmadge, "Closing Time: Assessing the Iranian Threat to the Strait of Hormuz," *International Security* 33, no. 1 [Summer 2008]). These wars will be fought in archipelagoes, choke points, and the most isolated regions on earth, where the enemy can use asymmetric warfare, mosaic defense, and terrain to his advantage.

No doubt, the world is a complex place even today. Terrorism, Russia, China, and Iran pose enduring, direct threats to the Navy. But the increase in complexity will not abate. Planners must account for these evolutions in international security before it is too late.

A QUESTION OF SERVICE

Sir:

As one of my final duties in the Navy, I was honored to be assigned as chairman of the direct commission boards for Naval Reserve Intelligence Area 19, Washington, DC. Along with two other captains, I interviewed five to ten enlisted and civilian candidates per drill weekend for direct commissions in the Naval Reserve Intelligence Program. This privilege allowed me the opportunity to provide direct input into the makeup of the future generation of reserve intelligence officers and my Navy.

But I found this function also gave me the perspective to reflect on my own time in the Navy as it was coming to an end. Twenty-five-plus years in the Navy, comprising active duty, reserve duty, and recall, had compiled a history for myself that I had not appreciated fully.

All this was brought into focus with one question. I concluded each interview by allowing the candidate ten minutes to ask questions of the board members. With about eighty years of diverse Navy experience among the members of the board, there usually was little we could not answer. Sometimes we learned more about candidates from their questions of us than our questions to them. I know I learned still more about the Navy and my time in it from these questions.

Often we would get the usual, expected questions: about benefits; about what the candidate could expect if selected. Some candidates had a list of questions; one candidate's indexed and tabbed three-ring binder even had a separate tab for questions. Believe it or not, once in a while a candidate had no questions for us.

But I must admit that one petty officer asked the most insightful question of any of the hundreds of candidates I interviewed. Simply, "What was your best day in the Navy; and what was your worst day in the Navy?" I found this question very simple in its presentation but very profound in its complexity. It bypassed all the extraneous issues and drilled directly at the nature of one's service.

I, for one, really had to think about my answer; so, being the coward that I am, I passed the question to one of the other captains to answer first. Then I began to reflect on all the good and bad things that had happened during my Navy service. Although there were a few highlights, I could not pick out any one really good day. There also had been some very exhilarating days that I wish I could relive. And there had been some "thrilling" times that I would not trade for the world—but that I also would never want to go through again. Correspondingly, I could not pick out any one really bad day (among more than a few). There had been some disappointing days, and a few for which I would have liked a "do over."

But, alas, the other two members of the board by now had given their answers and it was my turn. So, it occurred to me that my best day was that on which I reported for duty at Officer Candidate School. I remember coming across the bridge into Newport, Rhode Island, and seeing the "Navy" sign on two blue water towers. I had no idea what I was in for, but that day was the first step in a career that constantly presented challenges that brought out the best in me. I felt as if I belonged there, that I was a member of the team—and I never looked back.

And, at that time, my worst day had not come yet. That was the day on which the Navy said I had to go home. I knew I was a part of something I did not want to give up; but I also knew that some day I would have to look at my Navy service in the rearview mirror. I always felt the Navy would make that decision for me. Well, that day did come. The Navy told me it was time to take off the uniform and hang it in the closet, to leave the service to a younger generation. The day came, as it had for countless others who served before me, and as it will for those who came after me. No more "adventures" to look forward to, no more opportunities to serve, no more friends to be made. Plaques on the wall, knickknacks on the shelf, and trinkets in dust-covered boxes all hold cherished meanings that only you can fondly remember. Memories recall history to us in the form of stories that were, at one time, current events, and whose retelling may start with the words "In my Navy . . ."

But I have found something else. In my interaction with friends and associates, I find that the Navy built within those who served a bond of kinship that the general population lacks. I also have found that our service developed within us the ability to recognize the crux of an issue, rapidly assess available information, make an informed decision, and follow through on that decision. The Navy instilled in us an intangible quality that is not always outwardly apparent but is nevertheless present. We carry a pride of service, but have no reason to flaunt it.

My path never again will cross with that petty officer's; but if it did, I would thank him for asking the question that brought into focus for me my time in the Navy.

CAPTAIN JOHN DEMAGGIO, USNR (RET.)

REFLECTIONS ON READING

Professor John E. Jackson of the Naval War College is the Program Manager for the Chief of Naval Operations Professional Reading Program.

In January 2016 Chief of Naval Operations (CNO) Admiral John Richardson, USN, laid out his vision for the Navy when he released "A Design for Maintaining Maritime Superiority." (See *Naval War College Review* 69, no. 2 [Spring 2016].) Months later, he shared some of his thoughts about improving the intellectual skills of all sailors in the June 2016 issue of the U.S. Naval Institute *Proceedings,* in which he and coauthor Lieutenant Ashley O'Keefe, USN, published a succinct but important article ("Now Hear This—Read. Write. Fight") about the importance that sailors participate in an ongoing discussion of topics important to our Navy.

They wrote (in part): "Warfare is a violent, intellectual contest between thinking and adapting adversaries. Usually, the team that can think better and adapt faster will win. Today, as we prepare for operations and war with an increasingly complex set of potential adversaries, we must do more to sharpen our thinking, learn the lessons from history, and expand our minds. The margins of victory will be razor-thin—we cannot be complacent. What we do in peace will be decisive in war."

They go on to address directly those naysayers who believe they have no time to read, write, and prepare to fight, noting: "I realize that it takes dedication to devote time to reading, but it is fundamental to growth as a naval professional. As recently retired Marine General James Mattis, one of our best-read leaders, once wrote, 'The problem with being too busy to read is that you learn by experience (or by your men's experience)—i.e., the hard way.' If, through a lack of research, we relearn the lessons of history each time we go to war, we will needlessly pay the price in sunken ships and greater loss of life. We must all study voraciously to prepare ourselves for the ultimate responsibility of leadership in war."

They continue this theme by noting:

"Reading can teach us the fundamentals of our business. Thucydides, Clausewitz, Mahan, Corbett . . . these masters wrote works of the highest quality that have stood the test of time. . . .

"There is great value in testing conventional wisdom and exploring new ideas. A good idea will get better through this intellectual challenge. Newspapers, periodicals, and blogs can provide us different perspectives on issues of the day—and these contributors can also challenge our thinking. Focused forums such as the U.S. Naval Institute *Proceedings,* the *Naval War College Review,* the *Marine Corps Gazette,* and more recently, online blogs, have hosted professional conversations. Thoughtful, well-researched articles can offer useful insights and, when needed, can help us change our minds. . . .

"Just about everywhere we look, our problems are becoming more complex and challenging. It is imperative that we, individually and as a Navy, are ready—morally, physically, and mentally. The nation will call on us to get under way and, if necessary, fight.

"By reading and writing now, we are improving ourselves and the Navy. We are preparing for when we are called into battle. Read and write professionally with that singular purpose: to confound our enemies and make our Navy more powerful. We must think hard and do better. It is time to break out the books and sharpen our pens."

The program manager at the Naval War College is in the final stages of redesigning the CNO Professional Reading Program website into a CNO Professional Learning site, with increased content and functionality. In addition to recommending and facilitating access to selected e-books, the site will offer study guides to help readers get the most out of each book, videos and articles that amplify key points addressed in each book, and a process by which readers can exchange ideas about the books they have read.

The written word is a powerful tool that both illuminates the lessons of the past and shines a spotlight on issues of the future. All sailors, at all grades, ranks, and levels of seniority, are encouraged to read, write, and fight!

JOHN E. JACKSON