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**Cover**

*A German U-boat searches the North Atlantic for Allied convoys during World War II. In "The Royal Navy and Organizational Learning: The Western Approaches Tactical Unit and the Battle of the Atlantic," Geoffrey Sloan examines the question of improving tactical effectiveness through organizational learning, as applied to the example of the Western Approaches Tactical Unit of the Royal Navy during the Battle of the Atlantic.*

*Credit: ratpack223 / iStock / Getty Images*

# NAVAL WAR COLLEGE REVIEW


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## *Northwest Pacific*



North Korea's military strategy can be difficult to decipher, but it should not be regarded as irrational or insignificant. Over the past decade, the North Korean regime has taken deliberate steps to increase its asymmetric military capabilities, giving credence to the argument that North Korea is engaging in offensive posturing, not simply defensive buildup.

## *The Future Navy*



Many examples of task automation using artificial intelligence exist in private industry. The U.S. military has a great opportunity to exploit these developments and adapt them for use throughout the force, particularly in areas such as logistics and administration, freeing up man-hours and resources for other, more-complex activities.

## *Naval History*

# FROM THE EDITORS

After the Persian Gulf, the East Asian littoral is the most likely arena of maritime conflict and crisis in today's world. In "The Architecture of Japan's Maritime-Security System in the East China Sea," Kentaro Furuya provides an authoritative analysis of the Japanese government's approach to managing China's activities in its territorial waters, especially in the area surrounding the disputed Senkaku/Diaoyu Islands. He lays out the details of the policy and legal frameworks that guide the relationship between the Japan Coast Guard and the Japan Maritime Self-Defense Force in asserting Japanese rights under international law while carefully avoiding actions that could provoke conflict. Kentaro Furuya is a professor at the Japan Coast Guard Academy and a former commander in the Japan Coast Guard.

The Korean Peninsula offers a set of different challenges in the same region. In "Exploring North Korea's Asymmetric Military Strategy," Mirko Tasic argues that the common perception of the North Korean leadership as irrational and unpredictable fails to grasp the extent to which the country has deliberately pursued an "asymmetric" approach to its military strategy with respect to the United States and its regional allies, one that has unfolded over several phases in recent years. He focuses particularly on the too-little-discussed maritime dimension of this approach. Mirko Tasic is a professor at Webster University's Thailand campus.

Artificial intelligence (AI) is perhaps the most hotly debated topic in the defense, technical, and policy communities, mostly in relation to alleged ethical dilemmas stemming from reliance on autonomous weapon systems in scenarios of future warfare. Christian H. Heller's "Near-Term Applications of Artificial Intelligence: Implementation Opportunities from Modern Business Practices" is a wide-ranging and well-informed survey of current uses of AI in the business world that have near-term applications for the U.S. military and the Navy and Marine Corps in particular. Because these uses are nonkinetic, he points out, they are relatively uncontroversial, and offer potentially enormous payoffs in terms of administrative efficiencies and operational capability, notably in areas such as logistics that too often are off the radar in discussions of this subject. Christian H. Heller currently serves as an intelligence officer in the U.S. Marine Corps.

In "Exploring the Options: The Development of USN Tactical Doctrine, 1913–23," Trent Hone analyzes a formative period in the history of the U.S.

Navy, one that saw the creation of a learning culture that enabled the Navy to survive the initial shocks of World War II and eventually to prevail. Contrary to popular belief, Hone argues, the Navy indeed did possess a "doctrine," developed in those years through the interplay of experimentation in the Atlantic Fleet, wargaming exercises at the Naval War College, and the experience of World War I. This doctrine, Hone suggests, had more in common with the command style of Admiral Horatio Nelson than with that of the rule-bound Royal Navy of the Battle of Jutland. Trent Hone writes frequently on the history of the U.S. Navy in the twentieth century.

Geoffrey Sloan's article, "The Royal Navy and Organizational Learning: The Western Approaches Tactical Unit and the Battle of the Atlantic," nicely complements Hone's. It offers a case study of successful wartime innovation by the British in antisubmarine warfare in the most critical naval battle of World War II. Sloan also emphasizes the importance of doctrine (and the effective teaching of doctrine) as well as technology and organization in the creation of a military "learning organization." Geoffrey Sloan is a professor in the Department of Politics and International Relations at the University of Reading.

**IF YOU VISIT US**

Our editorial offices are located in Sims Hall, in the Naval War College Coasters Harbor Island complex, on the third floor, west wing (rooms W309, 330, 333, 334, 335). 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 HATTENDORF PRIZE LECTURE, 2018

## History, Truth Decay, and the Naval Profession

*In 2018, the Naval War College awarded Dr. Geoffrey Till the Hattendorf Prize for Distinguished Original Research in Maritime History. The following piece is derived from a lecture that will be delivered as part of this honor.*

Why in this age of constant technological, economic, social, and political change should navies actively concern themselves with the naval past? Herein I will try to answer this question, one often asked by skeptics anxious to insert into the developing courses of professional military education (PME) material that seems so much more relevant to the contemporary problems they face. The result easily can lead to efforts to cut history out of the syllabus or, more insidiously, to reduce it to the level where it becomes little more than a means of socializing new entrants and developing team spirit, necessary and laudable though those aims might be. After all, it has been said, with some justice, that a navy that does not know its history has no soul.[1]

I will start by reviewing some of the basic problems that today's navies face. Then I will consider the contribution that naval history might make to dealing with those problems, first as a quarry of processed experience and second as an intellectual exercise. Finally, I will seek to show the particular value of history in developing naval professionalism in a challenging social media age. By way of conclusion, I will look at some of the responsibilities that all this lays on historians.

### CONTEXT: SOME CURRENT PROBLEMS FOR NAVIES

The basic point is that navies need to understand their function.[2] This isn't easy, these days. The potential tasks of navies have expanded, have grown more complex, and increasingly are seen as relatively more important, as the burgeoning navies of the Asia-Pacific region so amply demonstrate. For the navies of the twenty-first century, it is no longer enough to understand the war-fighting and deterrent war-prevention roles, analyzed by the likes of Mahan and Corbett at the beginning of the last century, as they are affected by the international, technological, and social realities of this one. That is difficult enough.

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Now we have to add a whole series of nontraditional, "postmodern" tasks associated with Maritime Security (with capital letters). These include the challenges presented by drug runners, trafficking in illegal migrants, international terrorism, humanitarian action, disaster relief, environmental protection, search and rescue, capacity building, security sector reform, and so on. In many cases, early and effective engagement in these so-called Phase 0 activities will head off the need to exercise traditional war-fighting skills later on.[3] But preparing for what the British military currently calls *contingency* is an inherently complicated business.[4]

One problem in the pursuit of guidance for making unavoidably difficult decisions about relative operational priorities is that of having to "see through a glass darkly." It is uniformly and intrinsically difficult for foreign ministries, treasuries, or defense and naval staffs to predict the future or to gauge its requirements. This difficulty is demonstrated by the problems that all navies face these days in getting their kit because the lead times normally required to produce sophisticated naval weapons, sensors, and platforms and their probable service lives are likely to be very long. A great many of the ships of the fleets of the 2030s are already at sea or at an advanced stage of design.[5] This, together with rising costs and reduced budgets, makes the acquisition of naval matériel increasingly difficult. One set of victims of the procurement process (taking a leaf out of Jane Austen's book) have remarked recently, "It is a truth universally acknowledged that defence equipment acquisition is one of the most challenging of human activities . . . a uniquely demanding bureaucratic morass littered with military, technological, economic, and political pitfalls."[6]

Future-oriented procurement strategies tend to suffer badly from the unpredictability of the future economic, budgetary, and strategic environments. All too frequently, this development risk produces cycles of boom and bust that make sustained planning over, say, a thirty-year period almost impossible for manufacturers and their customers. Typically, this will result in constant delays, cost increases, and iterative tinkering with original specifications—and eventually in the failure or chronic delay of the program in ways that mean that the navy tends to acquire new matériel in a piecemeal, opportunistic way rather than as part of an overall strategic plan. This manner of acquisition may undermine a navy's capacity to perform its present roles, not to mention its future ones. No navy has shown itself immune to such pressures and constraints; all navies need to be encouraged to think about how best to get around, if not to overcome, such difficulties.

Another problem is that, to some extent at least, the requirements of these possible contingency tasks conflict with those of the more familiar war-fighting ones. The funds expended on a carrier, for example, could generate any number of capable offshore patrol vessels. Again, the more sailors train for things such

as the detection and apprehension of drug runners, the less they can train for antisubmarine operations. Given that resources, both human and material, are finite, choices have to be made.

Paradoxically, this is partly an unexpected product of success. Because of the fundamental flexibility of sea power, navies can deliver everything from bombs to babies, so they often are called on to do more or less everything at sea and quite often on land as well. Since the world's navies thus have shown themselves to be of such utility across the full spectrum of possible maritime operations, their success has increased the painful matter of operational and strategic choice dramatically in the setting of priorities for which they prepare. This is not an entirely new problem for them, of course, since navies always have had to take on functions other than those of simply obliterating one another, but there is a strong argument for saying that their resulting dilemmas of choice are much greater now than they ever have been before.

Worse still, all these possible roles and requirements are in a state of constant change. A force at sea, even one already engaged in prosecuting its dedicated mission, can find itself also having to confront and respond to a whole host of different high- and low-intensity challenges across the spectrum, especially when, as they usually do, events combine to confound initial expectations about the nature and almost certainly the length of the original mission. As is so often said in such dynamic situations, it is unwise to assume your plan's survival once contact with the problem is made. Thus when a number of Western powers thought they were intervening in the civil war in Libya in 2011 merely to avert a humanitarian crisis in Misrātah and elsewhere, the situation morphed into something much more demanding, which has yet to be resolved.

Mahan and Corbett do not seem to have much guidance to offer on such matters, because the focus of their thought was largely on higher-intensity operations, although they were perfectly well aware of the requirement for, and the potential challenge of, lower-intensity ones. They assumed that once a navy's major high-end tasks were dealt with satisfactorily, the rest could look after itself. But now the "rest" quite often has become the major focus of concern.

This is because today's situation has become more volatile, uncertain, complex, and ambiguous (VUCA, for short!), partly because some of today's leading states want it to be, and so pursue "a multidimensional and multidisciplinary strategy that consciously blurs the classical distinctions between warriors and non-combatants, front and rear, peace and war, state and proxies, and fact and fiction; and which employs a variety of tools—military technology and operations, information and cyber, economic pressure, ethnic bridgeheads and sensitivities—in order to manipulate both rival societies and [the states'] own."[7] Although such techniques are certainly not new, the extra attention they warrant

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today creates an ambiguous, confusing, and, frankly, potentially demoralizing situation. But if understood, they provide opportunities as well as challenges.

So how can the study of past events in naval history, as part of a well-rounded package of PME, possibly help navies prepare for the issues they will face? We will look at this from two different angles: naval history as a quarry of potentially relevant data and—arguably more important, especially these days—naval history as an intellectual process.

## THE POWER OF EXAMPLE FROM THE PROCESSED PAST

History is processed experience. Naval history is a source of innumerable examples of the way things have been done in the past. For all the historians' reluctance to think of the lessons of history, or even their norms, the past is a source of previous experience that might well help present practitioners in comparable but not identical situations to understand their problems better and to think through what they should do to solve them.[8] Although, as frequently has been said, history does not repeat itself—it rhymes.[9] As Michael Howard reminded us back in 1962, there are patterns: "Wars still resemble each other more than they resemble any other human activity."[10] Naval professionals, arguably, should know those patterns, but in their search for what the Russians call the "norms" of military experience, or what they generally should expect, it is vital that they also should spot the differences as well as the similarities between their situation and perhaps only superficially similar ones in the processed past.

Looking at something such as the sinking of the Royal Navy's *Prince of Wales* and *Repulse* off Malaya by Japanese aircraft in December 1941, for example, teaches us all sorts of things about the need for interservice cooperation, sustainable balances between resources and commitments, not underestimating your adversary, and so on. For all its dangers, not least the evident danger of mythmaking, there is much to be said for the simple notion of seeing the past as providing previous examples of the problems of the present and future.[11] Such historical case studies are also ideal means for advancing understanding by way of counterfactual questions: What would have happened, for example, if the British in the autumn of 1941 had sent hundreds of tanks and aircraft to Singapore instead of to Russia? Why didn't they?[12]

The point also can be exemplified by reverting to the problems of naval procurement already discussed. While the past is indeed another country, today's planners in the defense procurement field are facing problems and issues that are not that dissimilar from those faced by their predecessors. Those responsible for the design and procurement of today's *Queen Elizabeth*–class aircraft carriers in the United Kingdom hardly can fail to have been aware of the demoralizing experience of their predecessors in the 1960s. This second time around, at the

broadest level, the needs to be sufficiently clear about the projected roles of the ship, to keep unavoidable interservice competition down to manageable limits, and not to get too far away from what would seem to be financially viable in the circumstances of the time all seem to have been hoisted in.[13] The difficulty of their task, though, clearly provides an incentive for growing the smart customer, and it is hard to avoid the conclusion that study of the way in which such difficulties were handled in the past will provide at least some guidance for the present and the future.

Another area in which history as processed experience—a source of example—can be argued to have something to offer is in leadership. Leadership, of course, varies enormously in its character and its function. On the face of it, the kind of leadership required to command in battle is not necessarily the same as that required to lead a design team in a submarine-acquisition project or to run a shore establishment. But is that true? Again, looking at past examples of these kinds of leadership at the very least should encourage discussion and increase understanding of this otherwise very slippery concept.[14] In short, looking at previous examples of a campaign, problem, or issue enables people at least to ask the right questions and so to develop a broader understanding. It cannot be said too often that the dissimilarities between the past and present cases are likely to be at least as important as the similarities in this process.

One of the reasons for this is the crucial role of the broader context in determining outcomes. For this reason, Michael Howard emphasizes the importance of studying history in context as well as in width and depth.[15] Naval history can be a powerful way of reminding professionals of the importance of context, so it should be designed to encourage them to take a wider view of the impact of the international, technological, social, and financial backgrounds to their operations. "Was the Gallipoli campaign of 1915 lost on the beaches of the peninsula or around the conference table in London?" is the sort of question that, as historians, we should be getting students to think about if they are to understand not only the purpose, planning, and conduct of operations but the management of defense more widely. Getting people to look above the parapet and not to be focused exclusively on the all-too-demanding problems of their part of the ship (to meld a few analogies, in the spirit of jointness) is, or should be, an essential objective of PME.

As an aside, it is also hard to think of an approach better designed to encourage reflection about the three levels of war—tactical, operational, and strategic—and the manner in which they interact. Encouraging students to track the consequences of the strategic decision-making process in London all the way down to the deficiencies in preparation on the landing beaches of the Gallipoli Peninsula (such as the lack of sufficient medical facilities, water supply, and so forth) and

then to follow the tactical consequences back up through the hierarchy of decision to those ultimately responsible for making strategic-level decisions hardly can fail to help develop a more rounded understanding of military operations.

The list of areas like this in which naval history as processed experience can provide helpful examples for constructive reflection by today's warriors of course could go on almost indefinitely, but there's also another aspect to history as a quarry of illustrative, if not explanatory, material to be noted. That aspect is to consider the past as prologue to the present, and maybe to the future, too.

History helps us to understand the context and explains how we have arrived at where we are today, and therefore it also helps us to understand the present rather better, and from that to design sustainable policies for the future.[16] Take, for example, the increasingly contentious issue of the historic freedom of navigation for warships. Naval activity is, and always has been, framed by contemporary interpretations of the law, and vice versa; understanding the background to those changing interpretations is an essential part of the professional sailor's intellectual kit bag. Or at least it should be, if sailors are to hold their own in the expressions of differences of opinion at sea and in the defining of operational priorities. Arguably, the ability to comprehend, to deploy, and to make use of the law of the sea has become an ever-more-crucial component of twenty-first-century sea power. At all levels of command, understanding its development and its importance confers advantage.

At the moment, some aspects of this remain matters of contention as the U.S. Navy and other Western navies try to defend the basic notion of freedom of navigation against what they see as a continentalist tide that is seeking, in effect, to territorialize the sea by insidiously claiming more and more jurisdiction over what once was regarded uniformly as the high seas. This has given rise to a host of regrettable incidents. All concerned in the matter of freedom of navigation, most particularly of warships, really need to understand the issues—what's at stake, in other words—and how this situation has arisen.

Knowing what the United Nations Convention on the Law of the Sea says, for example, about the rights of warships in others' exclusive economic zones is not enough, because the wording of the convention (being a political bargain) has enough ambiguity in it to allow (just about, and at a stretch) different interpretations—and there are strong operational and emotional reasons why some countries seek to exploit, or even ignore, vague or unhelpful provisions of the pact altogether. International law, after all, is nothing more than a set of political agreements that apply to a certain time and place, and is in any case susceptible to change through subsequent state practice. As one of its leading experts has remarked, "The history of the law of the sea has been dominated by a central and

persistent theme—the competition between the exercise of governmental authority over the sea and the idea of the freedom of the seas. The tension between these has waxed and waned through the centuries, and has reflected the political, strategic, and economic circumstances of each particular age."[17]

For this reason, simply knowing and enforcing the law are not enough. What navies ought to be doing as well is not just pontificating about what they think the law says on freedom of navigation for warships but explaining why upholding it is a good thing for everyone. This task cannot be left to lawyers alone. Only naval history can show us exactly why this apparently arcane principle is important enough to risk lives for, and all concerned need to know it, not least those whose lives might in the present or future be in question because of it.

The same kind of developmental approach can be applied, of course, to all other aspects of sea power, in which knowing how we got to where we are provides probable guidance to where we should go next; although sadly, but perhaps inevitably, lessons identified are not necessarily learned. This approach also has been lampooned by skeptics who liken it to trying to drive down a twisting country road while peering through the back window of the car. This overstates the point. The truth is that when driving, while we look through the front windscreen most of the time, it's good to keep an occasional eye on the rearview mirror as well.

Christopher Andrew, the historian of the British Security Service, has drawn attention to the lamentable consequences of such people not knowing their own history and identifies what he calls a "historical attention-span deficit disorder" (HASDD, for short) as the root cause of the problem. Hal Brands and William Inboden recently have done the same for those who would practice statecraft, arguing the unwisdom of neglecting "a fount of information and insight for leaders grappling with the challenges of statecraft in a messy world." But this argument should not be overdone either, for all but the most obsessive of historians would admit that history isn't the *only* thing that matters.[18]

## NAVAL HISTORY AS AN INTELLECTUAL EXERCISE

The second angle on the value of naval history for PME is not as a quarry of data, material, and example, but more as an intellectual discipline that encourages the development of thinking and of analytical, and very possibly behavioral, skills that should help make naval professionals smarter. As a former commandant at the U.K. Joint Service Command and Staff College (JSCSC) used to say, the modern airman, soldier, and sailor have to respond to perhaps unprecedented levels of strategic ambiguity. They have to improvise creatively, as jazz musicians do around a central theme, responding dynamically to changes set by others and to

the effects of contingency, chance, and general chaos. No more can they fall back on the laboriously choreographed musical scores set by the kind of constantly rehearsed operational plans that characterized, for example, the Cold War.[19]

Instead they have to be prepared for surprise; as Mike Tyson once graphically remarked, "Everyone has a plan until they get punched in the mouth."[20] Hence the need for what is described gruesomely as the end state of a student at the JSCSC: "to have developed a mind that is flexible and able to analyse and conceptualise in a military context in order to make timely and logical decisions in all types of subsequent appointments."[21]

To cope with a complex and often bewildering future in which you easily can get punched in the mouth by unexpected events, those students will need the capacity to analyze incomplete and ambiguous data. They need to be able to think through problems and their consequences, and, most importantly, to keep thinking them through, long after their staff course, or indeed their latest operation, has ended. They need to be independent learners. Some at least of what is taught in a one-year staff course certainly will have a limited shelf life, because the world moves on. Accordingly, students have to be encouraged to develop the independent interest and the habits of thought and of continuing inquiry that animate the best historians. This helps produce that very necessary characteristic that some would call insight.[22] This can, and should, include as a "golden thread" a continuing interest in the naval past and its developing relationship with the naval present and the naval future.

Charles Darwin indeed reminds us that it was not necessarily the strongest but the most adaptable that won the evolutionary race. Naval history helps develop an openness of mind to uncomfortable ideas that confound and upset one's own emerging conclusions. This really amounts to an early acceptance of the notion that there is no final and complete answer to anything. To paraphrase Napoléon, we have to tie knots and carry on, always progressing hopefully to what some have called a higher level of ignorance.[23]

In this, naval history can help, or maybe it should help, elevate thinking from the empirical to the conceptual—from the concerns of the tactical, technological nitty-gritty of yesterday's or today's battle to that wider, shaping context that links the levels of war and conflict. All the same, both the empirical and the conceptual are necessary parts of the mix. We should not, however, allow the perpetual fascination with the drums and smoke of battle to obscure the more-abstract realities that in many cases determine outcomes. Naval history, in short, can and should help us understand the critical business of strategy and policy making.[24]

Using history in this way is a much more widely practiced activity than is often realized. By the time strategists and policy makers have reached such elevated

positions, they have engaged with history, absorbing views about the relevance of the past, even if only through a process of osmosis. Either consciously or unconsciously, they use history as a guide for how to think about future policy in a whole variety of ways.[25] The design teams developing the Royal Navy's Type 26 global combat ship or those responsible for shaping a navy's training programs cannot insulate themselves from the past, however hard they may try. They adapt and adopt its conceptual consequences as they both reflect and help create strategic thinking, in a continuous iterative cycle of reflection and action. It is quite likely that in many cases they do not realize they are doing it! Internet bloggers and the young naval enthusiasts who come together to create online think tanks such as the Center for International Maritime Security, on the other hand, do so quite consciously, aiming to study the past as a guide to the future, and their influence undoubtedly will seep out in all directions. History, in short, is unavoidable, and it shapes not just conclusions but also approaches and ways of thinking. The real question is not whether to admit its relevance to today's problems but how to make the best use of it.

For all that, unfortunately, a sizable constituency of thought in the United Kingdom felt bound to react to what they considered to be Britain's frankly embarrassing Strategic Defence and Security Review (SDSR) of 2010 with the fear that the country was no longer capable of "doing" strategy, or even thinking about it constructively—an impression apparently confirmed, in their minds at least, by the experience of the later stage of the second Iraq and Afghanistan wars. This concern was triggered initially by the Royal United Services Institute address of December 2009 by the outgoing Chief of the Defence Staff, Air Chief Marshal Sir Jock Stirrup, in which he claimed that Britain had lost the habit of making strategy.

> But one thing that's struck me in my present role, and that I think requires urgent action over the next year, is the degree to which we seem to have lost an institutionalised capacity for, and culture of, strategic thought. I'm not saying that we don't have people who can think strategically, or that we haven't evolved a proper strategic basis for our actions. But we've seized on ability where we've found it, and as a result our formulation of strategy has been much harder than should have been the case. We've been hunter/gatherers of strategic talent, rather than nurturers and husbandmen.[26]

It was followed up through a series of inquiries by the House of Commons Public Administration Select Committee and highly critical articles from a large number of academics. Their concerns were reinforced by the uncertain consequences of Britain's engagement in the Iraq and Afghanistan wars. The suggestion was that the United Kingdom had not thought through what its involvement in

these wars was supposed to achieve, nor the requirements or likely consequences of this involvement, largely because it had lost the habit of consulting the rear-view mirror and developing the agnostic and questioning ways of thought that develop from that. Did anyone ask for evidence that Britain's intervention in the intense factionalism of Afghanistan would be any more successful this time than it had been the first, second, and third times that Britain had tried it?[27]

While the urgency of the need to cut government expenditure and to require the Ministry of Defence to start filling in the "black hole" in its finances perhaps offers some excuse for the failings of the SDSR, this is less true of Britain's operational failings. These are hard to explain except in terms of the speed of events to which the United Kingdom felt it must respond (allowing insufficient time for consultation and strategic reflection) and, perhaps, the lack of defense experience among the political class. Nor is the quality of the advice that the military offers to ministers exempt from academic and insider criticism.[28]

Nor, sadly, is this inability to do strategy all that uncommon. A good case can be made that it applied to the Germans and especially the Japanese in the Second World War; they managed to combine tactical and operational brilliance with a strategic insouciance in a manner that now appears quite breathtaking. The point is that failing to take full advantage of what the historical approach has to offer means missing a chance to reduce the prospects of strategic failure.

But once again, how, more exactly, can history help? Such help probably lies much less in the delivery of the facts, or answers, and prescriptions for the future than in identifying the questions about strategy that those conducting it, or those trying to understand it, should ask. A brilliant recent review of four very good books about the causes of the First World War (a subject one might think conclusively studied for a century now) found that "they [did] not even come close to agreeing . . . [and that] historical consensus on the causes of the First World War appears no closer than it was 50 or 75 years ago, nor does it appear a shared view will ever be achieved. . . . This means we must be both cautious and humble when generalizing about war and peace and making policy recommendations based on our understanding of the conflict."[29] Much the same, if on a less elevated plane, still could be said about interpretations of the course and consequence of the Battle of Jutland and a host of other such familiar naval subjects. The Dutch historian Pieter Geyl made the essential point that "history is argument without end."[30] But this is not an apology. In the training it provides for the kind of intellectual dialectic of argument and counterargument that deepens understanding, history makes a major contribution to our capacity to analyze.

Lawrence Freedman, in his recent magisterial book on strategy, makes a similar point.[31] The intrinsic diversity and ambiguity of our subject—the conduct of military operations, not least at sea—mean that it is very easy to get things

fundamentally wrong, but it is sadly hard to get them right, and harder still to achieve an overall consensus on what is right and what is wrong. Analyzing past examples to see whether we can work out why some things went well and some did not at least should identify the questions that we, or anyone else trying to do strategy or to make policy in the naval realm, should be asking. In this, the process of naval history—the asking of questions, the analysis of data, and the testing of hypotheses—is more important than the product, the answers. Making the journey, in other words, can be more useful than arriving at the destination. This is what Dwight D. Eisenhower meant when he famously observed regarding preparing for battle, "I have always found that plans are useless, but planning is indispensable."[32]

## TRUTH DECAY

There is now—in the age of all-pervasive social media—one final justification for naval people to have more than a passing familiarity with the disciplines of naval history. That is the contemporary phenomenon of what some have called *truth decay*.[33] By this they mean the impact that easy accessibility to and the potentially overwhelming power of social media is having on people's trust in authority and in traditional forms of expertise. Imperfectly controlled, this platform empowers cranks, bigots, and those who willfully would deceive by according them the same apparent status as experts. "Don't you see," asks one of the characters in George Orwell's novel *1984,* "that the whole aim of Newspeak is to narrow the range of thought?"[34] It is increasingly difficult for people, deluged with showers of contradictory information, deliberate misinformation, fake news, and conspiracy theories, to know what to believe, which encourages them to fall back on that very human trait of believing what they want to believe and forming up into dissonant tribes, unable to relate to, or even understand, the others.

Collectively, this threatens the social order. Some would go further: "We are facing nothing less than a crisis in our democracy based on the systematic manipulation of data to support the relentless targeting of citizens, without their consent, by campaigns of disinformation and messages of hate."[35] In the words of the recently released European Union code on dealing with disinformation, "open and democratic societies depend on public debates that allow well-informed citizens to express their will through free and fair political processes."[36]

As citizens, naval personnel and navies in general are as vulnerable to this as any other social group—perhaps more so given their generally very high level of computer literacy and the stringent time demands of their profession. As ordinary citizens, they too have an interest in the general well-being of the society in which they live and that they try to protect against more-traditional forms of

threat. Moreover, whether they like it or not, they are living in a world of competing narratives than can often be state directed.[37]

Illustrating the point, in 2009 the Kremlin established the "Commission to Prevent the Falsification of History to the Detriment of Russia's Interests" to counter Baltic and central European narratives about Soviet occupation and wartime collaboration.[38] For its part, Singapore has established a "Select Committee on Deliberate Online Falsehoods," thinking it is important to support social cohesion by cultivating an informed public and encouraging a culture of fact-checking.[39] Staying afloat in this whirlpool of conflicting currents requires a continued capacity for independent judgment. Navy people (whose basic job is to defend the states and the societies that pay for those navies) also may be thought to have an even greater incentive than ordinary citizens to be at least aware of, and ideally able to help to defeat, these insidious challenges to domestic stability.

Moreover, navies themselves are vulnerable to such campaigns of targeted disinformation. Their missions and activities can be traduced by adversaries, with deleterious impacts on public esteem and their operational effect.[40] More sinister and dangerous still, sailors—often living a tight shipboard life, even ashore—always have proved vulnerable to the effects of uninformed gossip. In these continuing circumstances it is easy to imagine the possibilities of greater access to social media morphing into a kind of mega-scuttlebutt, with possibly disastrous consequences for a navy's cohesiveness and morale. For the same reason, this could be a significant target of opportunity for imaginative adversaries, both foreign and domestic. Thus, it does not seem unreasonable for navies to regard this possibility as a new battleground for them to take seriously.

Once again, how might a familiarity with naval history, both as processed experience and as an intellectual discipline, offer some modest help against these potentially ominous developments? It will be modest, because in an age when most people get their news from Facebook and Twitter feeds, and in which traditional journalism may well be in terminal decline, this is a fundamental problem way beyond easy solutions.[41] But nonetheless, for naval personnel, history may help a little. First, perhaps history can show that this is an old, almost-familiar problem, now reappearing in a new and potentially more virulent form. This could be done, for example, by looking at the role of misinformation in naval mutinies and other such disasters, as a way of alerting naval personnel to the dangers they confront, and maybe to ways of dealing with them—or even employing them against their adversaries.[42]

More importantly, perhaps, the discipline of history itself encourages open-mindedness, the careful weighing of evidence, and the asking of questions, and it provides other such intellectual defenses when confronted with purported information and what very well could prove to be fake news. Any kind of serious study

could serve this function, of course, but naval history is more accessible and, for other reasons discussed earlier, is especially relevant to the naval profession.

While much of what has been said may be true for all disciplines and subject areas and for all types of history, for national leaders, strategic decision makers, and operational commanders, the obvious salience of specifically naval history for sailors, given the undeniable continuities of operations at sea over the centuries, means naval history is particularly useful in this regard. Moreover, for sailors at all levels, naval history, whether conscious and constructed or not, is unavoidable. Whatever historians might think of it, naval students, strategists, and policy makers will go on using what they at least think is history as a guide to future behavior.

This being the case, it lays considerable responsibility on naval historians. First, as John Hattendorf has reminded us, historians need to recognize that their subject does not end in 1945 or with the closing of the Cold War (assuming that conflict has even ended!).[43] History is yesterday as well. This poses unavoidable evidential problems. Analysis, therefore, has to be preceded by the availability of primary material. In any case, much of what in the past would have produced survivable paper copies (or much less survivable photostats) now appears only as transitory e-mails, exchanges in chat rooms, and so on. Since "recovering the unrecorded past" is at least as important as it was, tomorrow's historians and their naval students will need their twenty-first-century skills as well as the more traditional ones employed by yesterday's historians.[44]

Second, historians need to encourage their navies to be receptive to the past, to preserve and process the records (or what these days passes for records) of what they have done to build a bank of experience for the future. They need to nurture those veterans who actually had that experience and are willing to talk about it, if they only had the encouragement to do so. The results of this testimony need to be preserved in accessible form and made available for appropriate use. Today's practitioners need to know that something similar to their current preoccupations probably has happened before.[45]

Third, historians need to encourage thinking about things in the round: paying due regard to context and avoiding narrow fixations on monocausal explanations. They need to understand the technological and logistical realities of what it is actually like to be at sea—hence the particular value of ex-sailors who are also historians. They also need to avoid unconscious hindsight and to sympathize with their subjects, who clearly could not enjoy its advantages.

Fourth, they need to ensure that what they deliver is accessible, interesting, and even enjoyable. My experience at a variety of service educational establishments is that naval students usually do rather enjoy doing naval history—or at

least freely concede that they found that engaging in a modicum of historical research was worthwhile. In this, historians are likely to be pushing on an open door; at the very least, they should do everything possible to stop it from shutting. One way of doing this is to ask the speculative "What if?" counterfactual questions referred to earlier. The process of isolating and altering one variable in the historic equation invites speculation about the difference it could have made to some past and completed event, and often will stimulate both insight into and enthusiasm for the subject.

Finally, they should make their subject policy relevant, wherever possible. For some this will be difficult. Some historians, knowing how their findings can be distorted to suit a different time, seek—for the best of professional reasons—to insulate their discipline from the contaminating fingers of strategists and policy makers and would have nothing to do with their world. However understandable, this purist approach is unwise for all but a few keepers of the sacred flame.

The pressure of other urgent PME requirements means the default position of those responsible for its implementation is all too likely to reduce the teaching of history as much as possible. The long and generally depressing story of the Royal Navy's neglect or misuse, or both, of its own really rather spectacular history (and its sometimes dire operational consequences) unfortunately illustrates the point.[46] Historians need to counter this modernist tendency to the extent they can.

In sum, history, similar to the poor and taxes, is always with us, whether we like it or know it or not. We cannot avoid it. This being so, it is plainly the duty of naval historians to do their best to ensure that what they deliver is valid as both processed experience and an intellectual discipline. They owe this to the future as much as to the past.

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# PRESIDENT'S FORUM

*A Return to New England*

IT IS A GREAT PROFESSIONAL and personal honor to address you as the newly installed fifty-seventh President of the U.S. Naval War College. No other institution has contributed more to the history and heritage of our great Navy than this remarkable school. Located along the shores of beautiful Narragansett Bay, this College has been the nexus of nautical scholarship, cutting-edge research, and maritime-security cooperation for 135 years. I recognize that I have some large shoes to fill in assuming the post once held by such distinguished naval officers as Stephen Luce, Alfred Mahan, Raymond Spruance, Stansfield Turner, James Stockdale, my friend John Christenson, and more than four dozen others.

As a career helicopter pilot, I have been fortunate to lead America's most skilled and dedicated men and women in times of peace and in times of conflict. As a lifelong learner, I was able to fall in love with the study of leadership and pursue it throughout my undergraduate, master's, and doctoral studies. This is not to imply that I have all the answers. However, I believe that my experience and education will provide unique perspectives as I work with our world-class faculty and staff to ensure that our compelling curriculum continues to provide educational opportunities for the future leaders of our armed forces, our government, and our partner nations.

Our Navy and our Nation will need to become more agile, innovative, and creative in the ways in which we train and educate our future leaders, in how we adapt to the rapidly changing technological environment, and in how we ensure that the contributions of every citizen are included in framing the future we all hope to see evolve. The Naval War College will not merely observe these changes; it will contribute actively to the conversations and to the solutions needed.

On a personal note, I am thrilled to be returning to New England. Some of my most enjoyable days were spent on the campus of Boston University and in the Kennedy School Forum. While my most recent assignment to the tropical island of Guam was incredibly rewarding, I must admit that the prospect of seeing our historic campus on Aquidneck Island blanketed in snow has a certain charm.

My husband, David Scovel, and I look forward to getting to know the entire Naval War College family and working with each of you to build on the College's remarkable legacy. I commit to you that I will seek to knit together our entire team of active-duty personnel, government-service employees, and contractors. I am grateful for our strong supporters from the Naval War College Foundation. The Chief of Naval Operations recently called the College a "strong and vibrant institution." With your help, we will ensure that it remains so in its 135th anniversary year and far beyond.

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

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# THE ARCHITECTURE OF JAPAN'S MARITIME-SECURITY SYSTEM IN THE EAST CHINA SEA

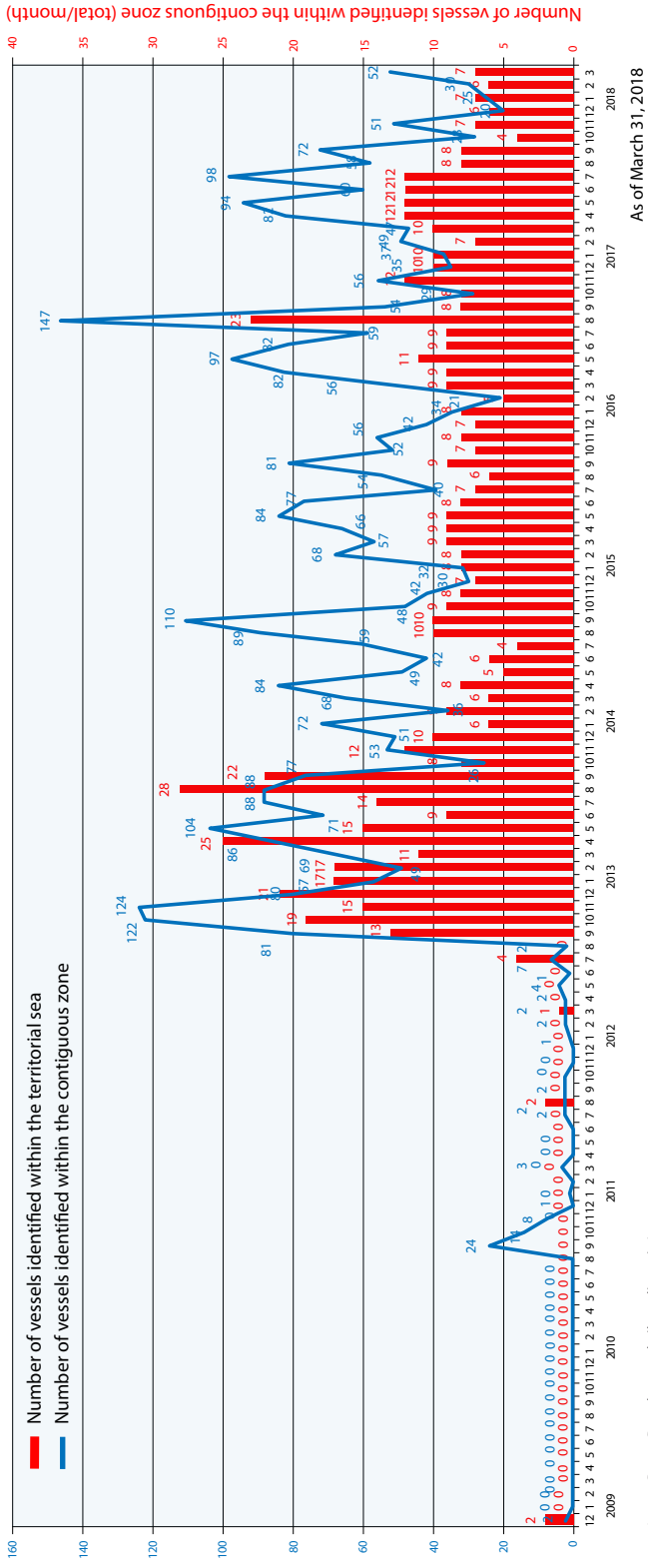
## The Dual-Layer Security System and the Role of the Japan Coast Guard

*Kentaro Furuya*

Security operations in the East China Sea (ECS), particularly around the Senkaku/Diaoyu Islands, have become a very high priority for the Japanese government. Its stance on the Senkakus is that the islands constitute an integral part of Japanese territory, both historically and under international law, and that the Japanese government has administered the islands effectively.[1] In contrast, the Chinese government began to assert ownership over the islands after the United Nations (UN) Economic Commission for Asia and the Far East conducted research in 1968 that indicated the possibility of oil and gas resources beneath the seabed in the area.[2] Additionally, the Chinese government steadily expanded its dispatch of China Coast Guard (CCG) ships to the islands after 2012, when the Japanese government decided to transfer ownership of some of the islands from private parties to the Japanese government (see the figure). Since then, bigger, strengthened, and armed CCG ships frequently have shown their presence by approaching and intruding into territorial seas off the Senkaku/Diaoyu Islands.[3]

How does the Japanese government peacefully secure and guard its maritime border against ships operated by a foreign authority? Since Japan is an island nation, it has no land borders, only maritime ones. Two organizations are responsible for securing and guarding Japanese territorial seas and maintaining order at sea around Japan: the Japan Coast Guard (JCG) and the Japan Maritime Self-Defense Force (JMSDF). The JCG is a nonmilitary, civilian law-enforcement agency, whereas the JMSDF is a military and naval agency. This article includes analysis of the different functions of the two organizations.

**THE NUMBER OF SHIPS INTRUDING INTO JAPAN'S TERRITORIAL SEA AROUND THE SENKAKU/DIAOYU ISLANDS (BARS) AND THE NUMBER INTRUDING INTO THE CONTIGUOUS ZONE (LINE) SINCE DECEMBER 2008**




*Source: Japan Coast Guard,* www.kaiho.mlit.go.jp/.

The Japanese government considers that CCG ships in the Japanese territorial waters under discussion are not exercising the right of innocent passage under international law, and it regularly deploys JCG ships to counter the CCG ships. The JCG patrol ships are the primary actors during peacetime, exercising their police powers at the maritime borders by conducting guard and security operations. In exceptional cases, JMSDF ships are deployed to counter threats; however, such measures still fall within the scope of law-enforcement operations governed by Japanese domestic law. This Japanese policy—of having two layers of protection that normally confine their functions to law enforcement—is unique, including in the way in which it applies in the East China Sea.

In the East China Sea, although JCG and CCG ships face off against each other almost every day, tensions in the vicinity have remained relatively low. Although the ships of the two services often operate close together, even side by side, in the contiguous zone and territorial sea, there has been no collision, shouldering, or bumping between patrol ships. According to JCG statistics, in 2015 the CCG intruded into Japan's territorial sea thirty-five times, involving ninety-five ships, and cruised in the contiguous zone on 240 days, with a count of 709 ships.[4] Overall, this means that CCG ships showed their presence within the contiguous zone on almost every nonstormy day, while they intruded into the territorial sea occasionally. Beyond that, the situation deteriorated further in 2015 as, for the first time, CCG ships fitted with arms aboard were continuously present on the scene.

In August 2016, the JCG found a swarm of Chinese fishing boats—some two to three hundred—escorted by thirteen CCG ships, approaching the Senkaku Islands; subsequently, a record number of CCG ships—eleven—intruded simultaneously into the territorial sea. During this incident, even though JCG and CCG ships operated close together, even side by side, not a single incident or accident occurred of patrol ships colliding with or shouldering each other, nor did the situation escalate into a military confrontation.[5]

The JCG is the primary organization charged with conducting operations to guard and secure the Senkakus. Many consider it to be more than a "mere" law-enforcement organization. Richard J. Samuels describes the JCG as being "quasi-military" and constituting the "fourth branch" of the Japanese military, and points out that Japan altered its security policy to integrate police and military functions at sea.[6] Lyle J. Morris further concludes that the JCG has become capable of using force for defensive purposes. He drew this conclusion after studying the law-enforcement operation that the JCG conducted off Amami-Ō-shima in Japan's Ryukyu Islands in 2001, in which JCG ships exchanged fire with a spy boat from North Korea until its crewmembers apparently blew up their own boat.[7] Regarding the roles of the JCG and JMSDF in the security system, David Leheny describes the JCG as "the canary in the coal mine," using that

metaphor to suggest that the JCG is used to test public opinion on whether an extension of the JMSDF's role would be found acceptable.[8] Céline Pajon further points out that, barring an exceedingly clear and well-established legal framework for separate roles of the JCG and JMSDF in providing maritime security, the two services need to extend and expand their interoperability—which would mean the JCG playing more of a military role.[9] None of these analyses, however, addresses the distinction between the functions and roles of the JCG and JMSDF in guarding and security operations. Furthermore, it appears that no published articles have analyzed the architecture of the Japanese maritime-security system.

This article analyzes the Japanese maritime-security architecture by using operations in the East China Sea as an example. First, it examines the legal framework of maritime-security operations, the duties the JCG and JMSDF perform, and the interrelations between the services. Under Japanese law, the JCG is a civilian law-enforcement agency only, with no military role. Thus, it is prudent for the Japanese government to be ready to mobilize JMSDF assets even for law-enforcement operations. This requires careful study of mechanisms to avoid military confrontations, especially any escalation of the situation in the East China Sea. The Japanese government endeavors to maintain the rule-based order at sea by exercising the police power—regardless of which agent, the JCG or JMSDF, it uses to do so. In furtherance of its policy, the Japanese government clearly separates the roles and functions of the JCG from those of the JMSDF. The two services are the constituent parts of the Japanese dual-layer maritime-security system. The JCG, a civilian law-enforcement agency, goes on scene as the primary actor to take necessary measures, while the JMSDF becomes the primary actor only when the situation goes beyond JCG capabilities. This architecture contributes to the maintenance of order in the East China Sea.

## AN OVERVIEW OF THE DUAL-LAYER SECURITY SYSTEM

The JCG is tasked to perform law enforcement and maintain good order at sea. The JCG's duties and functions are laid out in articles 2 and 5 of the Japan Coast Guard Act.[10] The service is the first responder for various incidents at sea. Guarding and security operations in the vicinity of maritime borders and remote islands constitute a major duty of the JCG. But when the Japanese government deems a situation involving maritime security at sea to have exceeded the capabilities of the JCG, it may initiate a maritime security operation (MSO), as provided under article 82 of the Japan Self-Defense Forces Act (JSDF Act).[11] When this second layer is reached, units of the Japan Self-Defense Force (JSDF) are tasked to respond. When an MSO is ordered, the JMSDF, as the naval arm of the JSDF, becomes the primary actor during the operation and takes over from the JCG the function of maintaining good order at sea.

It is noteworthy that MSOs are defined as law-enforcement operations even though Japan's naval organization becomes the actor. Therefore, the general rules for the use of force by police officers apply. However, when an armed attack from outside the country is threatened or it becomes clear that Japan is in imminent danger of suffering an armed attack, the Japanese government may switch from conducting a law-enforcement operation to a defense operation, under article 76 of the JSDF Act.[12] Until that point, it is merely a matter of which service, the JCG or the JMSDF, is designated to take the necessary measures; either way, the operation remains within the paradigm of law enforcement. The Japanese government prefers to use the law-enforcement power to maintain good order at sea and adheres to this policy as strictly as possible.

### *The First Layer: The JCG*

***The Role of the JCG.*** The JCG is a nonmilitary law-enforcement organization. When the service was established in 1948, Japanese ports and ships, having been the primary targets during World War II, were still devastated. In addition, over seventy thousand underwater mines had been left behind after the war's conclusion, which hindered the safety of navigation in coastal areas.[13] Moreover, political confusion and the disestablishment of the Imperial Japanese Navy (IJN) allowed heinous criminal activities at sea, such as the smuggling of people, drugs, and other commodities. Because the prewar maintenance of good order and the conduct of law-enforcement operations at sea had been heavily dependent on the IJN, there was no police force to deploy at sea after the war. The need for a maritime police force to maintain good order at sea was obvious and became a matter of interest to the General Headquarters of the Supreme Commander for the Allied Powers (GHQ) as well. On April 27, 1948, the first version of what is now the JCG Act was promulgated, and on May 1 the agency was inaugurated officially.[14] Thus, under the occupation of Japan, it became the responsibility of the Japan Maritime Safety Agency (JMSA), which was renamed the JCG in 2000—not the navy—to enforce laws and regulations for the maintenance of good order and safety at sea.

The Korean War broke out in 1950. Soon after, the GHQ ordered the Japanese government to establish the National Police Reserve and the Maritime Security Force.[15] Since the Allied force essentially departed for the Korean Peninsula, the need to fill the vacuum back in Japan made the establishment of a new defense organization essential. The Maritime Security Force was organized as a department within the JMSA. In August of that year, the Maritime Security Force was reorganized as one department of the National Safety Agency, an independent organization. In 1954, the National Safety Agency was renamed the JMSDF as a result of establishing the JSDF.[16] Thus, historically the JCG and the JMSDF were created as

parts of the same body, but subsequently were separated and have developed independently into organizations exercising police and military powers, respectively.

***Duties and Functions of the JCG.*** The duty of the JCG to maintain safety and security at sea is set out in article 2 of the JCG Act. The service fulfills various roles and performs various functions, including maintaining good order at sea, patrolling the territorial seas, suppressing and investigating crimes, conducting search and rescue, protecting the marine environment, carrying out hydrographic surveillance, and ensuring the safety of maritime traffic. In this provision, *sea* means not only the Japanese territorial seas and the exclusive economic zones (EEZs) that are under Japanese sovereignty and sovereign rights, respectively, but also seas in general, including the high seas.[17]

It also is salient that JCG officers are authorized to act as judicial police officers—reinforcing the characterization of the JCG as a law-enforcement authority.[18] JCG officers are authorized to exercise such police powers as conducting investigations, performing arrests, executing search-and-seizure warrants, conveying the results to the public prosecutor's office, and contributing to follow-up investigations.

*In August 2016, the JCG found a swarm of Chinese fishing boats . . . approaching the Senkaku/Diaoyu Islands. Escorting them were . . . CCG ships—triple the usual number. . . . CCG ships intruded into Japan's territorial sea. . . . Nevertheless, the Japanese government did not order an MSO to supplement the JCG ships with JMSDF destroyers.*

It also is noteworthy that the JCG Act was amended to clarify that the maintenance of maritime order is a primary duty and function of the JCG. In 2011, the Japanese government initiated a review of the JCG's maritime police power to meet the needs of the modern security environment off the Senkaku Islands. It decided to amend the JCG Act to enable the service to exercise its police power more rapidly and effectively. Previously, establishing a legal basis to warn, say, CCG ships that they were not exercising the right of innocent passage was a shared function among government institutions, not a primary responsibility of the JCG. The Ministry of Foreign Affairs (MFA) determined whether the activity constituted a breach of international law, and if it did so the MFA could ask the JCG to warn the offender and request that the activity stop. This process was often time-consuming and redundant. An amendment passed in 2012 made "the maintenance of good order of ships' navigation" a primary duty and function of the JCG.[19]

This amendment was significant in the context of the possibility of taking measures against Chinese ships operated by Chinese authorities in the ECS.

Japanese domestic law cannot be applied against these Chinese ships owing to exemption clauses, and such vessels enjoy immunity from enforcement jurisdiction under international law. Under such circumstances, the JCG could not take enforcement measures on the basis of domestic law, even though these activities breached rules under international law and disrupted good order at sea. But while activities such as public ships not exercising the right of innocent passage in Japanese territorial seas do not constitute a violation of Japanese domestic laws, because of the exemption clause, when ships do not comply with the rules for exercising the right of innocent passage their activities do, in fact, constitute a disruption of the good order of ships' navigation. Another example is when a foreign ship operated by a foreign authority conducts maritime scientific research within Japan's EEZ without the consent of the government; this is considered a breach of international law.[20] However, it does not constitute a violation of Japanese domestic law, owing to a similar exemption clause in the relevant act. This amendment clarified that the JCG could take administrative measures against these activities, in accordance with relevant provisions in the JCG Act, even though the breach was not of national laws but of international laws.

As stressed in the JCG Act, the salient aspect of the JCG is its nonmilitary nature. Even though the service was modeled after the U.S. Coast Guard, which is one of the armed services of the United States, article 25 of the JCG Act explicitly denies that the JCG is a military institution or that it may function as such, since at the time of the JMSA's establishment the Allies did not want it to be part of any remilitarization of Japan. Today this nature of the service is well established—and it becomes more important when the JCG is put under the control of the Ministry of Defense, as may happen in exceptional circumstances.[21] Even then, the operations of the JCG remain restricted to the duties and functions defined in the JCG Act, and the service is prohibited from engaging in any military operations. In such cases, the JCG is expected to restrict its role to countersmuggling and search-and-rescue operations and the like. Thus, the JCG legally is a civilian law-enforcement agency at all times.

***Relevant Statutory Authority of the JCG and Its Officers.*** For the JCG to pursue its duties and functions, the JCG Act provides its officers with statutory authority.

Among other things, article 17 of the act provides the authority to board and visit a ship, ask questions of its captain and other relevant persons, request documents and certifications for verification, and inspect both vessel and cargoes. When a ship is under way, JCG officers may order it to stop for boarding and inspection. If the ship does not comply, and if deemed necessary, the officers may board the ship coercively.

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However, to be subject to inspection, ships need to be under Japanese jurisdiction. For example, when sailing on the high seas a foreign ship remains under the exclusive jurisdiction of its flag state; JCG officers are allowed to board it only with the authorization of the flag state or in accordance with international law, such as in cases of piracy. Foreign ships may exercise the right of innocent passage through Japan's territorial sea; therefore, the officers need to exercise caution in considering whether the situation allows boarding and inspection under international law as well as domestic law.

Second, when it is determined that a crime is about to be committed at sea or that the public order at sea is likely to be seriously disturbed, JCG officers may take measures immediately, without waiting for warrants or decisions from a court. When officers find—on the basis of "a reasonable judgment, from the appearance of the vessel, manner of navigation, abnormal behavior of the crew members, and other surrounding circumstances"—that no appropriate alternatives exist, article 18(2) allows JCG officers to take measures such as stopping the ship, altering its course, or moving it to a designated area. Thus, this article provides the JCG with some of the powers necessary for maintaining good order at sea.

***Use of Force by JCG Officers.*** Regarding the use of force by JCG officers in law-enforcement operations, the general rule applicable to the use of force by police officials applies. Article 20(1) of the JCG Act prescribes that "Article 7 of the Law Concerning the Execution of Duties of Police Officials (Act No. 136 of 1948) shall apply *mutatis mutandis* to the use of arms by Coast Guard officers." Article 7 of that law reads as follows: "A police officer may use his weapon in case there is reasonable ground to deem it necessary for the apprehension of a criminal or the prevention of his or her escape, self-protection, or protection of others, or suppression of resistance against the execution of his official duty, within limits judged reasonably necessary in the situation."[22]

An additional element is necessary to meet the requirement for any use of force that may injure a person. Such exceptions apply in cases of legal defense (article 36 of the Criminal Act [Law No. 45 of 1907]) and emergency refuge (article 37 of the same law), and when a person who has committed a serious crime—one rendering him eligible for the death penalty or imprisonment for more than three years—resists officers in the execution of their duties, including arrest, and when no alternative measures are deemed to exist.[23] In short, the general rules on the use of force, including the standards on proportionality and necessity, always apply to the use of force by JCG officers, and only when no alternative measures exist may officers use force against a person. Thus, the use of force by police officials, including JCG officers, is strictly controlled under domestic law.

However, there are two situations in which JCG officers may use force beyond the general rules discussed above: when countering spy-boat operations and in the course of counterpiracy operations. In the former case, article 20(2) of the JCG Act applies. This provision allows for an expanded use of force if JCG officers find grounds—applying reasonable judgment to the given situation—to believe that no other means are available to stop a suspicious boat that ignores orders to heave to and resists JCG personnel in the performance of their duties. Under such circumstances, the JCG commandant may find—given the appearance of the boat, its mode of navigation, the behavior of its crewmembers, other surrounding circumstances, or related information—that it is reasonable to apply the provision. Under the provision, the following conditions apply: (1) the vessel in question is a foreign ship not exercising the right of innocent passage, but is not a warship or a ship owned or operated by a foreign government and used only for noncommercial purposes; (2) such navigation is likely to be repeated in the future; (3) it cannot be excluded that the purpose of the navigation is to prepare to carry out heinous criminal activities in Japan; and (4) unless the JCG conducts a boarding and inspection of the boat and takes necessary measures, the criminal activities cannot be avoided in the future.[24] This provision was drafted very carefully, and cannot be applied to any incident other than a spy-boat case. Thus, no matter how serious the current guard and security operations in the ECS become, this provision would not apply, since spy boats are not the issue there.

In the case of counterpiracy operations, article 6 of the Act on Penalization of Acts of Piracy and Measures against Acts of Piracy (Law No. 55 of June 24, 2009, as amended, hereafter the Japanese Counterpiracy Act) applies a general rule for the use of force by police officers, then further provides that JCG and JMSDF officers engaged in counterpiracy operations under the act may use weapons to "the extent judged to be reasonably necessary by the circumstances if there are sufficient grounds to believe that there are no other means to stop the pirate boat."[25] This provision enables the firing of warning and disabling shots against a pirate boat, even if such use of force may cause injury to people on board. The underlying rationale is that once pirates successfully board another ship, measures to secure the lives of the seafarers on the ship being attacked become significantly restricted—pirates likely would use seafarers as human shields.[26] This provision, however, does not apply to guard and security operations against public ships that do not qualify as pirate vessels under international law.

### *The Second Layer: The JMSDF*

***MSOs and the Role of the JMSDF under the JSDF Act.*** The JSDF has two kinds of duties. First, article 3 of the JSDF Act prescribes the primary duties of the JSDF as

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defending Japan's peace, independence, and security. Second, the act prescribes as a secondary duty the maintenance of security and good order, thereby enabling the second layer of the Japanese maritime-security system, in the form of MSOs.

However, until the Japanese government activates the MSO provision, a JMSDF unit has no legal authority to conduct security operations at a scene. The JSDF Act provides a "positive list" of legal bases for mobilizing JMSDF units to counter threats. Unless and until one of the provisions listed in the act is applied, the JSDF has no legal basis to mobilize for particular purposes. The act's article 82, inter alia, is relevant to security operations at sea. "[W]hen especially necessary to protect life or property or maintain public order at sea, the Minister of Defense may, with the approval of the Prime Minister, order Self-Defense Forces units to undertake the necessary operations at sea."[27] Under this article, "especially necessary" is construed as a situation that requires capabilities beyond those of the JCG.[28] Moreover, the mention of "life or property" in this provision is interpreted to refer to those of Japanese citizens.[29] However, the geographical area of the operation is not restricted to Japan's territorial seas but includes the country's EEZ as well as the high seas.[30]

***Examples of MSOs.*** From the establishment of the JSDF in 1954 to the end of 2017, only three MSOs have been ordered. The first case occurred in 1999.[31] On March 23 of that year, the JMSDF discovered two suspicious fishing boats in its territorial sea, in the Sea of Japan. As the first responder, the JCG dispatched patrol ships and airplanes to the vicinity for identification, boarding, inspections, and detention, as necessary. When patrol ships and helicopters spotted these boats, the spy boats started to flee at high speed from the JCG units' pursuit. The patrol ships fired warning shots to stop the boats, but they were ignored, and the JCG could not stop the boats. The Japanese government decided to order the first-ever MSO to pursue and stop the boats. JMSDF destroyers and airplanes pursued the boats and fired repeated warning shots, but the boats left the Japanese air-defense identification zone (ADIZ) and escaped toward North Korea. At this stage, the Japanese government terminated the MSO, since it hesitated to use air assets beyond the ADIZ; it sought to avoid unexpected encounters or incidents with other military airplanes.[32]

The second case occurred in 2004. On November 10, the JMSDF spotted a submerged submarine, later identified as a Han-class Chinese submarine, near Japan's territorial sea off Ishigaki Island in Okinawa Prefecture. Once the submarine entered Japan's territorial sea between Miyako and Ishigaki Islands, the Japanese government initiated an MSO. The intent was to request that the submarine surface or to expel it from the territorial sea and watch its subsequent direction of travel. Later, the Japanese government lodged a diplomatic protest with the Chinese government, which expressed regrets in response.[33]

In the third and most recent use, an MSO was invoked to counter Somali piracy in 2009. Since the Gulf of Aden and the western Indian Ocean constitute vital shipping lanes for Japan and acts of piracy had affected the Japanese shipping industry, the Japanese government determined to take actions to prevent criminal activities targeting both Japanese and other ships. The government ordered the JCG to conduct a feasibility study of the service's capability to deploy patrol ships to the vicinity, in its role as Japan's primary law-enforcement authority at sea. The study determined that the JCG Act contained no geographical limitation, so law-enforcement operations in the Gulf of Aden could fall within the JCG's scope of duties. However, it was not feasible to deploy the JCG's assets to the Gulf of Aden since the JCG had too few patrol ships capable of performing counterpiracy operations on the high seas at that distance from Japan for months at a time. Besides, the design, construction, and subsequent structure of the patrol ships (e.g., the damage-control systems) were not appropriate for use against pirates' possibly heavy weapons, nor were the communication systems of the patrol ships appropriate for interchanges with warships deployed to the vicinity for joint operations. Therefore, the Japanese government ordered that an MSO be conducted until adoption in June 2009 of the Japanese Counterpiracy Act, which made counterpiracy operations a new function of the JSDF.[34]

*If the Japanese government does not provide sufficient explanation and information regarding the justification for and appropriateness of its invocation of an MSO, it will not obtain support from the Diet and the public, which are particularly sensitive to the mobilization of JSDF units.*

In two additional circumstances an MSO may be initiated, through a cabinet order. In the first scenario, a need arises to counter a submerged submarine in the territorial sea or internal waters of Japan. The first such order was promulgated in 1996, prior to the actual case of the Han-class submarine in 2004, at the time of Japan's ratification of the UN Convention on the Law of the Sea (UNCLOS).[35] Article 20 of UNCLOS provides that, in such circumstances, a submarine is required to navigate on the surface and show its flag. The Japanese government decided to set out the procedures through which JMSDF units could be mobilized smoothly should a submerged submarine be found within the territorial sea in the future. After the 2004 Chinese submarine incident, the government reviewed its policies and adopted accelerated procedures for conducting the decision-making process by phone.

The second cabinet order for an MSO applies to scenarios involving noninnocent passage of foreign "warships."[36] This change followed the increase in activity by China's People's Liberation Army Navy ships *around* Japan's remote islands

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(including the Senkaku/Diaoyu Islands)—not necessarily within the territorial sea.[37] When the Japanese government determines that foreign warships in Japan's territorial sea are not exercising the right of innocent passage, it requests that the warships leave the territorial sea immediately, in accordance with international law. The cabinet orders the MSO immediately, pursuant to article 82 of the JSDF Act. This cabinet order aims to ensure that necessary measures are taken against unlawful activities, they are executed in a seamless manner, and the closest cooperation and coordination are facilitated, including the exchange of relevant information among different government agencies. As of the end of 2017, there has been no case in which the Japanese government has needed to initiate an MSO in this manner.

***Conditions for Initiating an MSO: A Preliminary Assessment.*** The foregoing discussion of the instances in which MSOs have been ordered and the two cabinet orders laying out other possible scenarios shows that the Japanese government takes a cautious approach to invoking MSOs. It addresses each possibility objectively and on a case-by-case basis.

For example, the government does not decide whether to initiate an MSO on the basis only of the level of intensity of activity, even though it is an influential factor. Note that it ordered an MSO in the spy-boat incident in the Sea of Japan in 1999, whereas it elected not to order an MSO in the similar spy-boat case in 2004, in which the boat sank in an explosion during a shoot-out with the JCG off Amami-Ō-shima.[38]

Moreover, since the 1999 spy-boat incident, JCG patrol ships' capabilities have been enhanced in terms of speed, maneuverability, and armament. So that JCG ships could stop spy boats in the future, the Japanese government decided to introduce new patrol ships capable of higher speeds and with more-accurate fire-control systems. The availability of these patrol ships, along with the 2001 amendments to the JCG Act that permitted extended use of force against spy boats, enhanced the JCG's ability to respond, which led to a higher bar for the invocation of an MSO. This explains, in part, why no MSO was invoked in the later spy-boat case, even though the intensity of the second case was higher.

Other elements, such as the number of ships and boats subject to law-enforcement measures, would be considered when deciding whether to order an MSO, but would not be decisive factors either. In August 2016, the JCG found a swarm of Chinese fishing boats—on the order of two to three hundred—approaching the Senkaku/Diaoyu Islands. Escorting them were thirteen CCG ships—triple the usual number. A record-high eleven of the CCG ships intruded into Japan's territorial sea simultaneously.[39] Nevertheless, the Japanese government did not order an MSO to supplement the JCG ships with JMSDF destroyers.

The next month, more than two hundred Chinese fishing boats, allegedly engaged in coral poaching, were spotted off the Ogasawara Islands, south of Honshu, the main island of Japan, but no MSO was invoked.[40]

However, should the scenarios anticipated in the cabinet decisions—namely, submarines operating submerged or warships operating in Japanese territorial seas in a manner not in keeping with the exercise of the right of innocent passage—occur, an MSO will be ordered. The decisions establish situations already deemed to be beyond the capability of the JCG to respond. JCG patrol ships cannot detect and issue a warning to a submerged submarine and demand that it surface, so the counteroperation is best conducted by the JMSDF. In a case of noninnocent passage of warships—again considering the weaponry systems and other equipment fitted aboard the respective ships and the signals traditionally used between naval ships—the JMSDF would be the best choice to conduct any counteroperation.

Political sensitivity adds another element to interpreting and applying what is considered to be beyond the capability of the JCG. If the Japanese government does not provide sufficient explanation and information regarding the justification for and appropriateness of its invocation of an MSO, it will not obtain support from the Diet and the public, which are particularly sensitive to the mobilization of JSDF units. In addition, the government needs to consider the signals it might be sending to other states and international society, and related implications.

Therefore, the government will initiate an MSO only when both technical and political conditions are met. Until then, the basic policy of the Japanese government is to take full advantage of the JCG and its police power. As much as possible, to avoid political turbulence, the service works autonomously, in accordance with established laws and regulations, with no need to seek or invoke political decisions in particular cases.

***Statutory Authority of JMSDF Units under an MSO.*** Under the JSDF Act and in an MSO, JMSDF units at sea can take "necessary measures," but those are restricted to law-enforcement measures. First, the JSDF Act clearly distinguishes the MSO from defense operations. Therefore, the law-enforcement principles of proportionality and necessity apply strictly to actions taken pursuant to an MSO. For example, article 93 of the JSDF Act provides that article 7 of the Police Duties Execution Law—the general rule on the use of force by Japanese police officers, incorporating the principles of proportionality and necessity—applies mutatis mutandis to the use of force by JSDF officers in an MSO. In addition, under article 20(2) of the JCG Act, while force may be used by those engaged in countering a spy-boat incident, that latitude does not apply to other cases.

Second, other police powers that JCG officers are authorized to exercise under article 17, such as conducting boardings and inspections and asking questions, and the coercive measures with immediate effect authorized under article 18, apply to units (whether maritime, air, or even ground) conducting an MSO as well. However, since JMSDF officers are not authorized to act as judicial police officers under the Criminal Procedure Act (Law No. 131 of 1948), they cannot investigate, conduct interrogations, or execute judicial warrants; JSDF officers engaged in an MSO must cooperate with JCG officers when an investigation is necessary.

***Interoperability between the JCG and JMSDF.*** It is worth noting that the JCG and JMSDF barely have interoperability. First, the equipment and design of JCG patrol ships and of JMSDF destroyers represent different operational concepts. Article 4(1) of the JCG Act stipulates that patrol ships should have the structure, equipment, and function appropriate to pursue coast guard roles and functions—in other words, not for military purposes. The assets and equipment available to the JCG emphasize the service's identity as a civilian police agency. For example, the operating systems and equipment of JCG patrol ships are similar to those on merchant ships, whereas the JMSDF applies military specifications (specs), which often require more sophistication. The information a commercial system obtains may not satisfy military specs. The weapons systems on JCG patrol ships are for warning and disabling purposes, not for destroying ships. These differences in structure and equipment make it difficult for the two types of ships to operate together even when in the same theater.

Second, the different functions, operations, and cultures of the two organizations influence their potential interoperability.[41] The JCG, as a dedicated maritime law-enforcement organization, must comply with the necessity and proportionality principles whenever it takes coercive measures that include the use of force. Its operations are restricted by human rights law, including the right to life and liberty. The ultimate purpose of police activity is to suppress criminal activities and maintain good order. Doing so at sea typically involves stopping and boarding ships and arresting—alive—those aboard bearing responsibility and delivering them for prosecution by a criminal court. Article 25 of the JCG Act does not allow operations of the JCG to include military functions, and JCG officers do not identify themselves as military personnel. In contrast, the JMSDF is a military organization, and its function is to defend the nation and its political independence and territorial integrity from external threat. Although certain norms must be observed even during armed conflict, including humanitarian law, the JMSDF may be called on to destroy enemy ships when necessary. These differences in functions, operations, and cultures hinder sharing between the command-and-control systems of the two organizations, so interoperation between the two organizations rarely occurs.

However, there are indications that these two organizations are moving toward operating in closer cooperation. First, after the 1999 spy-boat incident that initiated the first MSO, the JCG and JMSDF began drafting what subsequently became a joint-operation manual.[42] This process provided opportunities to understand both the differences between and the similarities in JCG and JMSDF operations. Later, counterpiracy operations in the Gulf of Aden provided increased opportunities to work together. Assignment of JCG officers to law-enforcement detachments (LEDs) embarked in JMSDF destroyers to facilitate judicial procedures continues to improve the relationship between the two organizations.

Accomplishing a seamless and smooth transition from the JCG to the JMSDF when an MSO is ordered is the key to a successful operation. Since the command-and-control mechanisms and the maneuverability of the ships of each organization are so different, and since by definition the threat posed extends beyond the capability of the JCG assets, JCG vessels are likely to withdraw from the theater once JSDF units arrive on the scene. In such cases, on-site information exchange—including possession of a common operational picture and shared understandings of intended strategy—is essential.

## SECURITY OPERATIONS IN THE EAST CHINA SEA

As noted, the Japanese government attempts to contain guard and security operations in the East China Sea within a law-enforcement paradigm. To do so, it first evaluates any entrance of CCG ships into Japan's territorial sea around the Senkaku/Diaoyu Islands under international and national law. Then it analyzes the options it may choose to pursue as law-enforcement measures in accordance with international and national law.[43]

### *Rights and Actions*

The Japanese government acknowledges the right of innocent passage by warships and foreign ships owned and operated by other governments for noncommercial purposes (except those carrying nuclear weapons).[44] So, legally speaking, CCG ships may exercise the right of innocent passage through Japan's territorial sea.[45] However, the stance of the Japanese government is that when CCG ships encroach into Japan's territorial sea around the Senkaku/Diaoyu Islands they are not exercising the right of innocent passage under the provisions of UNCLOS.[46]

For instance, in December 2008, CCG ships entered into the territorial sea around the Senkaku/Diaoyu Islands and cruised, hovered, and drifted for approximately nine hours. The Japanese government did not consider this behavior to comply with the definition of *passage* under article 18 of UNCLOS. Moreover, the Chinese government announced that the CCG ships were conducting "law-enforcement activities."[47] Law-enforcement activity by foreign ships in Japan's territorial sea can be regarded as "any other activity not having a direct

bearing on passage," which is the formula given in article 19(2), item (l) of UNCLOS—if not a violation of Japanese sovereignty—thus rendering the passage not innocent. Therefore, the Japanese government determined that the CCG ships in the territorial sea were not exercising the right of innocent passage.

As of the end of 2017, the Japanese government continued to maintain this interpretation. It considers the frequent encroachments by and continuous presence of CCG ships in Japan's territorial sea to constitute neither an invasion nor a state of hostilities.[48] As far as the Japanese government is concerned, the behaviors of the CCG ships constitute a failure to exercise the right of innocent passage in keeping with international law, making it a law-enforcement matter, to which it is the consistent policy of the government for the JCG—its primary maritime law-enforcement actor—to respond with appropriate measures.

However, what those available measures are is debatable. First, article 25 of UNCLOS provides the coastal state a right of protection, allowing it to "take necessary steps to prevent passage which is not innocent" in its territorial sea. Although this provision of the convention does not define *necessary steps* in detail, the term may be interpreted within a broader context, leading to the conclusion that such steps against a vessel not properly exercising the right of innocent passage include requesting that the ship stop for inspection, arresting persons on board, and detaining the ship; shouldering and bumping the ship to expel it from the territorial sea; and even, as a last resort, using force against it.[49] Such ships would fall under the full jurisdiction of the coastal state.[50] The conditions governing these measures in the article are that they are aimed at preventing noninnocent passage and are to be performed within the territorial sea.

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Second, article 32 of the convention recognizes the immunity of warships and other government ships operated for noncommercial purposes. Since patrol ships are categorized among the latter, they enjoy immunity from the enforcement jurisdiction of the coastal state. Therefore the coastal state cannot exercise its enforcement jurisdiction, including the stopping, boarding, arresting, and seizing functions discussed previously. Significantly, the use of force would not be allowed except for domestic law-enforcement purposes. Article 301 of UNCLOS, which reflects article 2(4) of the UN Charter, prohibits any threat or use of force against the territorial integrity or political independence of any state when a party state exercises its rights and duties under UNCLOS. In

addition, Japanese domestic law substantially restricts the use of force in a law-enforcement operation. As explained in the previous section, a JCG officer may use force only (1) to apprehend criminals or prevent criminals from escaping, (2) for self-protection or the protection of others, or (3) to suppress resistance to the execution of his official duties. Since CCG ships, as patrol ships, are exempted from Japanese domestic laws and regulations and thus fall outside the scope of their application, the conduct of these ships does not constitute a criminal violation; therefore, case (1) above does not apply. Case (3) is construed to apply only when officers must take coercive measures to suppress resistance. Because CCG ships enjoy immunity, the JCG would have little cause to exercise its enforcement jurisdiction and take coercive measures in support thereof, so case (3) hardly applies either. Thus, only case (2) represents a realistic scenario in which JCG officers might use force. And if all the officers on scene carefully observe the rules of national and international law, including the immunity of warships and patrol ships, the likelihood that force would end up being used would be quite low.

Considering these rights under international law and the relevant restrictions, the measures the Japanese government would take may not include the exercise of enforcement jurisdiction. Under UNCLOS, a coastal state has a right of protection, but CCG ships enjoy immunity from enforcement jurisdiction. Therefore, if CCG ships do not exercise innocent passage, JCG ships issue warnings and request that they leave the territorial sea immediately.[51] They may sail side by side with such ships to prevent them from approaching the territorial seas and the islands. However, they do not board, inspect, search, seize, or arrest, since such activities would be construed as exercising enforcement jurisdiction. If CCG ships perform any further malicious activities, such as risking lives on Japanese ships, the stance of the Japanese government is that the JCG ships may take proportional measures against that conduct, as far as is permissible under international law. In such cases, the Japanese government does not consider the use of force to be excluded, but it nonetheless is severely restricted, as discussed above.[52]

### *Evaluation of Past and Ongoing ECS Security Operations*

From the point of view of maritime-security strategy, it sounds reasonable for a coastal state to use its navy—the most robust power at sea—to maximize the power of guard and security operations in its maritime border zones. The Chinese government is procuring more, and more heavily armed, patrol ships. This implies that more-capable CCG ships may be deployed in the East China Sea. It would become more difficult for JCG ships to deal with these CCG ships. However, employing JMSDF assets—Japan's second layer—in the East China Sea likely would lead to deterioration of the situation, since the Chinese side likely would feel the need to counter by deploying its naval assets to restore the balance.

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A regional arms race probably would ensue, involving further deployments of much larger and more-sophisticated warships, and the confrontation would escalate. Thus, this balance-of-power strategy does not work for maintaining the status quo.

Alternatively, if relevant states remain within the paradigm of law enforcement—by exercising self-restraint and restricting their actions—they can maintain the status quo. In the East China Sea, the Japanese government exercises self-restraint by maintaining its law-enforcement approach and by refraining from advertising the presence of the JMSDF, the system's second layer. Remaining within the paradigm of law enforcement means that the measures taken are governed and restricted by international and national law that reflects the basic principles of law enforcement.

As long as China follows a similar policy, with the states merely maintaining order by observing international and national law in the East China Sea, it is reasonable for Japan to remain within the paradigm of law enforcement. Unless a Chinese ship takes further dangerous actions, such as risking life at sea, international law during peacetime barely allows the employment of robust measures, including the use of force, because of the immunity that patrol ships enjoy. Even when exceptional circumstances permit the use of force, such use still must follow strictly the principles of necessity and proportionality. Besides, the weaponry systems fitted on Japanese patrol ships are minimal, intended solely to enable law-enforcement operations, not war fighting and ship sinking. Therefore, the JCG, as a civilian law-enforcement authority, does not represent a threat of hostilities, so it can serve as a buffer, helping to avoid a military confrontation in which a single miscalculation could lead to rapid deterioration of the situation. Adherence to the law-enforcement paradigm—by observing both international and national law and exercising a coast guard police power—can contribute to maintaining the rule-based order in a more suitable way.

The essential intent of the dual-layer system is to keep military elements away from the scene of confrontations whenever possible. There are at least three good reasons to attempt to do so. First, the presence of JCG patrol ships implies that Japan is governing and administering the islands effectively. Since the precondition of *exercising* jurisdiction is that the islands properly *fall under* Japanese jurisdiction, the presence of patrol ships enforcing domestic laws implies that the Japanese government administers and governs the islands. This is in conformity with the Japanese policy position that there is no territorial issue in the East China Sea. In contrast, a continuous presence of JMSDF destroyers would suggest the possible existence of a territorial issue, thereby evidencing a discontinuity with Japanese policy. So the absence of military elements and the presence of

civilian law-enforcement patrol ships represent a constant reinforcement of the government's position.

Second, the dual-layer system allows the allocation of a single function to each layer—a significant advantage. If the system had only a single layer, the navy would have to provide both functions: deterrence and active measures. The navy indeed has the capabilities to do both; however, the presence of excessive power at the scene is not desirable in politically sensitive circumstances. The other side would adjust its capabilities to the same level, escalating the situation to a navy-on-navy confrontation. The advantage to a state of using a dual-layer system is that it can deploy, as the first layer, assets with capabilities appropriate to dealing with situations at the scene, while it uses the second layer as a deterrent while reserving its remaining power farther from the scene. In this manner, the Japanese government keeps on-scene confrontations manageable.

Third, the role of coast guards is to provide protection and maintenance of the rule-based order, and such services are expected to work for safety; they often are likened to a shield. One function of the police power is to enforce national laws to materialize legal interests. When a domestic law is enforced in the maritime arena by a coast guard, the coast guard exercises its power in accordance with international law, including respecting the scope of states' jurisdiction and the immunity of warships and public ships operated by governments for noncommercial purposes. Under international law, proper exercise of the police power does not harm any foreign state. Therefore, a coast guard functions as a defensive shield and is not offensive at all. By using the JCG to maintain the legal order in the East China Sea, the Japanese government shows that it intends to do so in a way that avoids escalation and military confrontation. In contrast, the use of a military organization, which is likened to a pike, may render provocative and offensive implications, including a suspicion that future escalations are possible.

Besides, coast guards cooperate substantially with neighboring states in pursuit of performing their duties better. Coast guards need to cover vast areas of oceans with a relatively small number of assets. Therefore, international cooperation among coast guards is essential, such as when coordinating search-and-rescue operations and suppressing transnational crimes at sea; maintaining dialogue, building confidence, and expanding mutual understandings are significant interests for coast guards. For example, the JCG and CCG have a history of cultivating cooperation and mutual understandings in the performance of their duties. To cultivate international cooperation further, the JCG added to existing bilateral dialogues by initiating multilateral frameworks, such as the North Pacific Coast Guard Forum and the Heads of Asian Coast Guard Agencies Meeting, to both

of which the CCG is a party. Notwithstanding tensions in the East China Sea, communication and dialogue among coast guards are maintained through these meetings, and mutual understandings are fostered through joint exercises and joint fishery-surveillance patrols. The respective services expect these confidence-building structures and activities to assist in avoiding rapid escalation.

This article has analyzed Japan's maritime-security architecture in the East China Sea. It portrayed that Japan's policy is to endeavor to remain within the paradigm of law enforcement and thereby keep the overall level of confrontation in the East China Sea manageable. To do so, it employs a dual-layer system whose constituent parts are the JCG and the JMSDF.

The JCG represents the first layer of the system and the primary actor in confrontations with Chinese counterparts in the East China Sea. The JMSDF, the second layer of the system, displaces the JCG as the main actor only when the Japanese government determines that a situation has extended beyond the capabilities of the JCG, and implements an MSO. Until then, the JMSDF's main role is deterrence; this maximizes the flexibility of Japanese strategy.

The analysis found the current guard and security operations that the JCG performs in the East China Sea to be law-enforcement operations conducted in accordance with existing domestic and international law. The Japanese government deems the current overall confrontational situation to constitute not hostilities but a breach of international law, and in response takes measures that remain within the limits of national and international law. This approach reflects Japan's maritime-security strategy, which respects the rule of law and freedom of navigation.

The article also analyzed the mechanisms that work to maintain tensions at a manageable level. The situation suggests that Tokyo and Beijing do not want any further escalation in the East China Sea, and that they understand that coast guards are more appropriate for supporting the rule-based order than maintaining a balance of power using naval assets would be.

Nonetheless, challenges to the effective working of the system remain. First, the assets of the JCG and its personnel need to be enhanced. Even with the deterrent effect of the second layer, the Japanese government needs to maintain a continuous presence of JCG units around the Senkaku/Diaoyu Islands. Given the Chinese government's "salami-slice tactics," by which it pursues its interests and asserts its claims step by step, the Japanese government must be able to demonstrate that the islands are under continuous Japanese governance.[53] To counter salami slicing, such as the use of drones from patrol ships and the use of maritime militia disguised as fishermen, the JCG needs to review its capabilities; JCG assets

deployed in the vicinity must have sufficient capacity to perform guard and security operations while countering whatever Chinese assets are present.

Second, to maximize the deterrent effect of the second layer, close cooperation between the JCG and JSDF is essential. Until the second layer is activated under an MSO, the JSDF's primary role is deterrence. Added to the capabilities of the JCG, the thick and robust second layer of the JSDF provides collective deterrence. So even when JSDF assets do not participate directly in on-scene confrontations, the deterrence they provide helps with the implementation of Japanese policy and contributes to its flexibility. Yet the JSDF may need to strengthen this deterrent effect further through its close alliance with the U.S. Navy. This alliance has been the linchpin of the security environment in Northeast Asia. Making the link between the two navies even closer would reinforce collective deterrence.

*[T]he JCG, as a civilian law-enforcement authority, does not represent a threat of hostilities, so it can serve as a buffer, helping to avoid a military confrontation in which a single miscalculation could lead to rapid deterioration of the situation.*

Third, the JCG and the JSDF, as well as other governmental institutions, need to develop their collective capability to gather and analyze the information necessary to determine whether an MSO should be activated. Almost any activation of an MSO would lead to the conclusion that the Japanese government had escalated the situation. After that, decision-making becomes much more difficult. Therefore it is essential to support policy makers' determination of whether to initiate an MSO by exchanging information and contributing to analysis within an appropriate time frame. The relevant institutions need a system through which all actors can provide, pool, and draw on information so that the necessary decisions can be made without delay.

Fourth, as the Japanese government endeavors to maintain the rule-based order in the East China Sea, it should maintain its policy of relying on the police power as much as possible. In March 2018, the Chinese government announced a restructuring of various governmental bodies.[54] Although governance of the CCG is not yet fully clarified, the service was placed under the People's Armed Police, a paramilitary organization, and under the direction of the Central Military Commission. With this change, CCG ships might be deemed naval ships, making it more likely in future confrontations that the Japanese government would implement an MSO under the existing cabinet decision. The Japanese government has not revealed its stance on this matter, but it should continue to exert the police power of the JCG as its first response. The government should continue to profit from the dual-layer system in which the JCG and the JMSDF each plays

a single role until the situation escalates beyond the capabilities of the JCG. When the situation reveals that use of the JMSDF has become more appropriate, the government may activate an MSO, in line with the cabinet decision. Until then, the JCG is the more suitable tool for maintaining order in the East China Sea.

## NOTES

1. For an example, see Chief Cabinet Secretary, record of press conference, June 9, 2016, available at japan.kantei.go.jp/.
2. "Trends in Chinese Government and Other Vessels in the Waters Surrounding the Senkaku Islands, and Japan's Response: Records of Intrusions of Chinese Government and Other Vessels into Japan's Territorial Sea," *Ministry of Foreign Affairs of Japan,* www.mofa.go.jp/; Masahiro Miyoshi, "Seabed Petroleum in the East China Sea: Law of the Sea Issues and the Prospects for Joint Development," *Wilson Center,* www.wilsoncenter.org/.
3. "Japan Coast Guard Annual Report 2016," *Japan Coast Guard,* p. 15, www.kaiho.mlit.go.jp/.
4. Ibid., p. 16.
5. "Status of Activities by Chinese Government Vessels and Chinese Fishing Vessels in Waters Surrounding the Senkaku Islands," *Ministry of Foreign Affairs of Japan,* August 26, 2017, www.mofa.go.jp/; "Japan Coast Guard Annual Report 2017," *Japan Coast Guard,* pp. 15–17, www.kaiho.mlit.go.jp/.
6. Richard J. Samuels, "'New Fighting Power!' Japan's Growing Maritime Capabilities and East Asian Security," *International Security* 32, no. 3 (Winter 2007/2008), pp. 84–112.
7. Lyle J. Morris, "Blunt Defenders of Sovereignty: The Rise of Coast Guards in East and Southeast Asia," *Naval War College Review* 70, no. 2 (Spring 2017), pp. 75–112.
8. David Leheny, *Think Global, Fear Local: Sex, Violence, and Anxiety in Contemporary Japan* (Ithaca, NY: Cornell Univ. Press, 2006), p. 165.
9. Céline Pajon, "Japan's Coast Guard and Maritime Self-Defense Force in the East China Sea: Can a Black-and-White System Adapt to a Gray-Zone Reality?," *Asia Policy,* no. 23 (January 2017), pp. 111–30.
10. Originally the Act of the Japan Maritime Safety Agency, Law No. 28 of 1948, as amended, and since renamed the Japan Coast Guard Act.
11. Japan Self-Defense Forces Act, Law No. 165 of 1954, as amended.
12. A 2016 amendment to the JSDF Act added a provision permitting initiation of a defense operation when an armed attack occurs against a foreign country with which Japan shares a close relationship and the threat poses a clear and imminent danger to Japan. This provision allows the exercise of collective self-defense.
13. Takeo Ohkubo, *Uminari no hibi* [Days of sea roar] (Tokyo: Kaiyou Mondai Kenkyukai, 1978), p. 66.
14. In 2000, the Japan Maritime Safety Agency was renamed the Japan Coast Guard.
15. Douglas MacArthur to Prime Minister Shigeru Yoshida, July 8, 1950, available at www.ndl.go.jp/.
16. A 1952 amendment to the JMSA Act (Law No. 97 of 1952) added provisions permitting the establishment of the Maritime Security Force as a department of the JCG (then called the JMSA).
17. Committee on the Cabinet, 113th House of Councillors (October 20, 1988) (testimony of Tsuyosi Kodama, Director, Guard and Security Division, Japan Maritime Safety Agency), No. 7. In this and all subsequent similar citations, "No. x" represents a serial number that refers to the different pieces of legislation each committee considers during a session of the Diet. This number is necessary for finding the identified testimony in the records of the committee.

18. JCG Act, art. 31.
19. Committee on Land, Infrastructure, Transportation, and Tourism, 180th House of Representatives (August 3, 2012) (testimony of Osamu Yoshida, Vice-Minister of Land, Infrastructure, Transportation, and Tourism), No. 10.
20. Article 246(2) of the United Nations Convention on the Law of the Sea prescribes that "[m]arine scientific research in the exclusive economic zone and on the continental shelf shall be conducted with the consent of the coastal State."
21. Article 80 of the JSDF Act provides that when a defense operation under article 76(1) or a public security operation under article 78(1) is ordered and it is deemed necessary, the prime minister may authorize the minister of defense to take command and control of the JCG. Public security operations under article 78(1) may be ordered when police forces cannot maintain public security in cases of aggression and the like. An example would be an "indirect invasion," or what many today would call *hybrid warfare.* In a case where a foreign military force uses informal combatants to lead a large-scale armed rebellion or create a large-scale disturbance in Japan, only the police force would be permitted to respond, because the Japanese constitution prohibits JSDF units from using force except for self-defense against an organized, armed attack by a foreign state or states, and the use of such informal combatants would not constitute such an armed attack. However, if the situation went beyond the capability of the police force, the JSDF could be mobilized to maintain public order.
22. This is known as the Police Duties Execution Act (Law No. 136 of 1948, as amended). An unofficial translation into English can be downloaded at *Police Policy Research Center,* www.npa.go.jp/.
23. Ibid., art. 7.
24. Article 20(2) of the JCG Act.
25. Article 2(5) of the Japanese Counterpiracy Act.
26. Kentaro Furuya, "Japanese Anti-piracy Law: Protection of Flagged-Out Ships," in *Piracy at Sea,* ed. Maximo Q. Mejia Jr., Chie Kojima, and Mark Sawyer (Berlin: Springer, 2013).
27. Article 82 of the JSDF Act.
28. Special Committee concerning the Guidance for Japan-U.S. Defense Cooperation, 145th House of Representatives (March 31, 1999) (testimony of Hiromu Nonaka, Chief Cabinet Secretary), No. 4.
29. National Security Committee, 171st House of Representatives (March 13, 2009) (testimony of Hideshi Tokuchi, Director General, Bureau of Operational Policy, Ministry of Defense), No. 2.
30. National Security Committee, 154th House of Representatives (April 4, 2002) (testimony of Gen Nakatani, Minister of Defense), No. 5.
31. As main references regarding the spy-boat incident off the Noto Peninsula and Amami-Ō-shima, see Euan Graham, *Japan's Sea Lane Security, 1940–2004* (New York: Routledge, 2006); Lindsay Black, *Japan's Maritime Security Strategy: The Japan Coast Guard and Maritime Outlaws* (London: Palgrave Macmillan, 2014); Mark J. Valencia and Ji Guoxing, "The 'North Korean' Ship and U.S. Spy Plane Incidents: Similarities, Differences, and Lessons Learned," *Asian Survey* 42, no. 5 (September/October 2002), pp. 723–32; Morris, "Blunt Defenders of Sovereignty."
32. The ADIZ does not delimit state jurisdiction at all; however, it is often used as a threshold for security operations, since aerial operations are not always available beyond the ADIZ. See Black, *Japan's Maritime Security Strategy,* pp. 99–102.
33. Masahiro Miyoshi, "The Submerged Passage of a Submarine through the Territorial Sea: The Incident of a Chinese Atomic-Powered Submarine," *Singapore Year Book of International Law* 10 (2006), pp. 243–49.
34. *Act on Punishment of and Measures against Acts of Piracy: Deliberations on the Draft in the Committee on the Land, Infrastructure, Transportation, and Tourism,* 171st House of Representatives (March 11, 2009) (testimony of Teiji Iwasaki, Commandant of the Japan Coast Guard), No. 4; Lower House Special Committee Meeting on Anti-piracy Measures, Prevention of International Terrorism, and Japan's Cooperation and Support, 171st Diet Session (April 17, 2009) (statement of Kazuhiro Kaneko).

35. United Nations Convention on the Law of the Sea, December 10, 1982, 1833 U.N.T.S. 397 available at treaties.un.org/. Entered into force: November 16, 1994; number of parties: 167.

36. Wagakunino ryoukai oyobi naisuide kokusaihoujouno mugaitukouni gaitousinai koukouwo okonau gaikokukansen eno taishonituite [Measures against warships not exercising innocent passage under international law within the Japanese territorial seas and internal waters], cabinet decision, 2015.

37. Gen Nakatani, press conference, *Minister of Defense,* June 17, 2016, www.mod.go.jp/.

38. Graham, *Japan's Sea Lane Security;* Black, *Japan's Maritime Security Strategy;* Valencia and Ji, "The 'North Korean' Ship and U.S. Spy Plane Incidents"; Morris, "Blunt Defenders of Sovereignty."

39. "Status of Activities by Chinese Government Vessels"; "Japan Coast Guard Annual Report 2017."

40. "Japan Coast Guard Annual Report 2003," *Japan Coast Guard,* www.kaiho.mlit.go.jp/; "The Issue of Chinese Coral Vessels in the Seas Close to Japan, Including around the Ogasawara Islands," *Ministry of Foreign Affairs of Japan,* www.mofa.go.jp/.

41. Fumio Ota, "The Relationship between the Japan Coast Guard and the Maritime Self Defense Force," in *Navies, Coast Guards, the Maritime Community and International Stability,* ed. Ian Bowers and Collin Koh (Singapore: S. Rajaratnam School of International Studies, 2017).

42. "Japan Coast Guard White Paper 1999," *Japan Coast Guard,* www.kaiho.mlit.go.jp/; "Defense of Japan 2004 (Annual White Paper)," *Ministry of Defense,* www.mod.go.jp/. Recently the Japanese government recognized that the relationship between the JCG and JMSDF had improved. Special Committee on Peace and Legislation of Our Country and the International Community, 189th House of Councillors (July 28, 2015) (testimony of Shinzo Abe, prime minister), No. 3.

43. Foreign fishing boats fall outside the scope of this section since they are subject to general law-enforcement operations, in accordance with applicable laws and regulations.

44. Atsuko Kanehara, "The Japanese Legal System concerning Innocent Passage of Foreign Vessels (1990–1998)," *Japanese Annual of International Law,* no. 42 (1999), pp. 90–110; Yoshifumi Tanaka, *The International Law of the Sea* (Cambridge, U.K.: Cambridge Univ. Press, 2012).

45. Since 1968, the Japanese government has held the view that warships have the right of innocent passage, resting on the deliberations preceding approval of the Convention on the Territorial Sea and Contiguous Zone of 1958. Committee on Foreign Affairs, 58th House of Representatives (April 17, 1968) (testimony of Takeo Miki, Minister of Foreign Affairs), No. 12. On July 15, 2017, CCG ships entered Japan's territorial sea between Kyushu Island and Tsushima Island. Since no particular behaviors rendered the passage noninnocent, the Japanese government did not protest it to the Chinese government but instead conveyed its "expression of interest" in the case. "Press Conference by Deputy Press Secretary Toshihide Ando on July 19, 2017," *Ministry of Foreign Affairs,* www.mofa.go.jp/.

46. Committee on the Land, Infrastructure, Transportation, and Tourism, 180th House of Representatives (August 3, 2012) (testimony of Kunihiko Muroi, Vice-Minister of Land, Infrastructure, Transportation, and Tourism), No. 13.

47. "Diaoyu Dao, an Inherent Territory of China," *Ministry of Foreign Affairs of the People's Republic of China,* September 26, 2012, www.fmprc.gov.cn/.

48. A coastal state may deem the behavior of a foreign warship to constitute use of force when it maintains its presence in the territorial sea and does not comply with a request to leave. Wolff Heintschel von Heinegg, "The Difficulties of Conflict Classification at Sea: Distinguishing Incidents at Sea from Hostilities," *International Review of the Red Cross,* no. 902 (2016), pp. 449–64.

49. Ivan A. Shearer, "Problems of Jurisdiction and Law Enforcement against Delinquent Vessels," *International and Comparative Law Quarterly* 35, no. 2 (April 1986), pp. 320–43; Donald R. Rothwell, "Coastal State Sovereignty and Innocent Passage: The Voyage of the *Lusitania Expresso,*" *Marine Policy* 16, no. 6 (November 1992), pp. 427–37.

50. Daniel Patrick O'Connell, *The International Law of the Sea,* ed. Ivan Anthony Shearer (Oxford: Clarendon, 1984), vol. 2; Robin Rolf Churchill and Alan Vaughan Lowe, *The International Law of the Sea,* 3rd ed. (Oxford, U.K.: Manchester Univ. Press, 1999).
51. As mentioned, the Japanese government regards activities of CCG ships in the territorial sea around the Senkakus as not constituting exercise of the right of innocent passage. See, for example, Ministry of Foreign Affairs, "Vice-Minister for Foreign Affairs Kenichiro Sasae Made Representations against the Chinese Ambassador to Japan H. E. Cheng Yonghua," press release, July 12, 2012, www.mofa.go.jp/.
52. Special Committee on Peace and Security Legislation in Japan and International Community, 189th House of Representatives (May 28, 2015) (testimony of Yuji Sato, Commandant, Japan Coast Guard), No. 12.
53. Sugio Takahashi, "Challenges to Extended Deterrence in the Japan-U.S. Alliance: From Gray Zone to Nuclear Deterrence," in *American, Australian, and Japanese Perspectives on a Changing Security Environment,* ed. Thomas G. Mahnken (Washington, DC: Johns Hopkins School of Advanced International Studies, 2016).
54. Liu Zhen, "China's Military Police Given Control of Coastguard as Beijing Boosts Maritime Security," *South China Morning Post,* March 21, 2018, available at www.scmp.com/.

# EXPLORING NORTH KOREA'S ASYMMETRIC MILITARY STRATEGY

*Mirko Tasic*

The United States missed two particularly advantageous opportunities to resolve the problem of a nuclear North Korea: prior to the first nuclear test on October 9, 2006, and after the death of Kim Jong-il on December 17, 2011.[1] The window of opportunity for successful resolution of the North Korea problem is shrinking, and it seems that not much can be done that could halt further development of North Korea's military capabilities in support of its asymmetric strategy. Even Kim Jong-un's recent initiatives in 2018 and 2019 to meet and talk with leaders of the United States and South Korea, and ostensibly to explore a resolution to the nuclear issue, have been received with a great dose of skepticism.

Yet do we really have a clear understanding of North Korea's missile and nuclear programs and all their implications? North Korea is pursuing advanced military capabilities, but its intent may be neither offensive nor defensive. Perhaps the aim of its unconventional approach to military strategy is simply for that strategy to *be* asymmetric; that is, different from that of any of its perceived potential opponents. Such a concept can be understood only within the geostrategic balance of power in East Asia.

Questions such as the following help frame our approach to the North Korea crisis: "How will the standoff over North Korea's nuclear weapons end? Will Kim Jong Un buckle under pressure and roll back his nuclear program, or will he press forward in completing an arsenal that can threaten the whole world? Will Donald Trump make good on his threats to take military action against the North, or will he focus on

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deterring Kim from ever using his nukes?"[2] But these questions reflect our fear of nuclear weapons more than they identify the motivations behind North Korea's military development.

The problem is heightened further by a deep-seated perception of the irrationality and unpredictability of North Korean leaders. How quickly we forget that deception is at the heart of every good strategy. Even if there was doubt before, North Korea over the past several years has proved that it is in fact a rational actor. The North Korea crisis illustrates the complexity of one of the most important geostrategic junctions of the world's most powerful militaries, as well as the failure of the Western world to understand Asian strategic thought.

The first part of this article explores developments in North Korea's military capabilities and strategic thought through a review of existing scholarship on military force structure, capabilities, and provocations. It concludes that North Korea's strategic thought regarding asymmetric warfare has developed in five stages and suggests that the country is preparing itself to wage a possible hybrid war. The second part of the article examines the development of North Korea's asymmetric strategies, exploring further the assumption that North Korea has been preparing for a hybrid war. The existing literature alludes to and assesses North Korea's asymmetric approach but really does not engage the subject of its military strategy. The third part of the article is a deeper exploration of asymmetry as practiced on the seas, which could be critical to a hybrid war on the Korean Peninsula. The article concludes with a call to scholars for further exploration into North Korea's strategic thought and the asymmetric strategies it may pursue.

## REASSESSING NORTH KOREA'S MILITARY CAPABILITIES

Scholars have tried to understand the transformation of North Korea's forces, capabilities, and strategies.[3] An *asymmetric strategy* is one that state and nonstate actors engage in to oppose an adversary of greater military power and capabilities and that targets key vulnerabilities or dependencies of that adversary to create a major psychological impact that affects initiatives, actions, or will.[4] However, the scholarly estimates often are constrained by a lack of information and transparency related to North Korea and a vague understanding of the role North Korea plays within the geostrategic balance of power in East Asia.

*Strategic thinking* is about objectives, concepts, and capabilities and their application to the art of war.[5] A future war on the Korean Peninsula most likely would be a hybrid war, employing both conventional and unconventional methods and means. According to Frank G. Hoffman, in *hybrid warfare* different types of forces become blurred into the same force or are applied in the same battle space. He sees hybrid war as combining irregular and conventional force capabilities, integrated operationally and tactically.[6] A traditional approach

defines a *theater of war* as a defined area in which military effort is conducted under one overall military strategy that covers all subareas, with the term *theater of operations* applying to military effort conducted under the umbrella of the overall strategy within a particular subarea. By contrast, in hybrid warfare the term must be *theater of wars,* with warfare spreading across multiple domains and following not one strategic outline but many, though driven by a common political objective and pursued by both conventional and asymmetric means. In that sense, a hybrid war is more a conglomerate of wars than an amalgamation of military operations.[7] The following paragraphs review the literature on the transformation of North Korea's military capabilities and further developments in its strategic thinking.

The transformation of the Korean People's Army (KPA) began at the end of the 1990s, with a focus on the North Korean Special Operation Forces (NKSOFs).[8] According to the available literature, changes that occurred prior to the 1990s—such as restructuring the army, changing the nature of training in general as well as that of the NKSOFs, and replacing regular infantry troops with light infantry troops along the demilitarized zone—highlight North Korea's transition from emphasizing the waging of conventional warfare to the waging of asymmetric warfare and the increasing threat its forces represent in that mode.[9] For some scholars, the NKSOFs are the most critical of the asymmetric threats that North Korea's armed forces pose. In fact, the U.S. military sees special operation forces (SOFs) as being central to any asymmetric strategy that a weak opponent would employ against a superior military power. Bruce E. Bechtol Jr. projects that prior to and during an all-out war NKSOFs might be deployed to carry out asymmetric operations that would include sabotaging lines of communication and taking over command and control centers within South Korea.[10]

The Korean People's Navy (KPN) and its development began to receive increased scholarly attention around 2010. According to Bechtol, North Korea's naval forces now pose an asymmetric threat because of their ability to carry out conventional actions in a provocative and asymmetric way.[11] In his article "Maintaining a Rogue Military: North Korea's Military Capabilities and Strategy at the End of the Kim Jong-il Era," Bechtol briefly discusses how increases in North Korean forces and advancements in their capabilities suggest plans to threaten South Korea via the seas in the future.[12]

It is important here to draw attention to the significance of the leadership transition period and the development of the KPN that followed, as Kim Jong-un is believed to have been behind some provocative incidents at sea between 2010 and 2012. Every past North Korean leader contributed something new in terms of the strategic development of the country's military; Kim Jong-un's contribution probably will be to oversee the final transition of its military forces

to hybrid warfare capabilities and to develop a maritime war strategy. The time frame for the development of naval forces in North Korea also is in line with China's announcement at the Eighteenth Congress of the Chinese Communist Party in 2012 of its intention to continue building up a naval force.[13] Bechtol also highlights the potential for North Korea to use the seas for a wide range of offensive measures, everything from delivering a nuclear weapon to using a reflagged commercial vessel or trawler to conduct a small-scale, preemptive attack prior to the outbreak of all-out war.[14] Use of such a vessel would allow the KPN and NKSOFs to bypass the forces of the United States and South Korea. In such ways has the overall development of the military capabilities of North Korea led to the restructuring of naval forces and the transformation of its armed forces toward asymmetry.

The transformation of North Korea's military is reinforced by an examination of the growing asymmetric threat posed by capabilities such as short- and long-range artillery, missiles (of short, medium, intermediate, and long range), NKSOFs, and strategic weaponry (weapons of mass destruction, weapons for electromagnetic and electronic warfare, and cyberwarfare capabilities).[15] Andrew Scobell and John M. Sanford's review of North Korea's unconventional forces and capabilities—including nuclear, chemical, and biological weaponry; ballistic missiles; and medium- and short-range missiles and their use in offensive and defensive capacities—suggests that North Korea's focus on strategic weaponry and their asymmetric uses is relatively new.[16] Artillery and missile systems and nuclear capabilities were the focus of North Korea's military development before 2012, while electronic-warfare and cyber capabilities were the country's focus between 2012 and 2017. During 2017, a new emphasis on the development of electromagnetic pulse weapons for asymmetric use emerged.[17]

These interim events, occurring between 2012 and 2017, reinforce earlier premises that North Korea by 2012 had completed the transformation of its conventional armed forces and had begun the transformation of its other military capabilities. That transformation of the armed forces now can be considered complete, with the proviso that the United States assumes that most opponents "cannot field air forces adequate to counter U.S. air forces [nor] . . . challenge [the] U.S. air-to-air."[18] Most opponents, therefore, would use missiles and air-defense artillery to provide air defense. Some scholars believe that North Korea would counter enemy air forces by using "Scud missiles to deliver persistent chemical weapons to theater air bases."[19]

Chronologically, these developments correspond to North Korea's many and various military provocations. While such have occurred since the 1950s, Taehee Whang, Michael Lammbrau, and Hyung-min Joo provide a particular focus on incidents from 1999 to 2012, and Bechtol discusses incidents in 2002, 2003, 2008,

and 2010.[20] A possible interpretation is that as North Korea judged its capabilities to have increased to closer to what was necessary to conduct a war involving the United States (and presumably to win it), its behavior became less circumspect, and therefore it began to commit more provocations, or more-serious ones, or both.[21] North Korea may have considered that its improved capabilities enabled it more safely to provoke responses from the United States, thereby exposing and learning from those responses. This would be in line with Sun Tzu's principle of "know your enemy"—especially the U.S. readiness and ability to engage directly in a more serious military conflict in the region. The perception of the danger such provocations represented allowed them to create a deterrence effect of their own. North Korea took advantage of this effect to shift its efforts among the various stages in its nonlinear military development as it deemed most advantageous. The synchrony of military transformations with provocative incidents further strengthens the assumption that North Korea is developing a strategic approach to conducting a hybrid war that would combine conventional and asymmetric forces and capabilities.

Several inferences can be drawn regarding the development of North Korea's strategic thought. First, the reorganization and transition of its military forces occurred over the course of three periods, namely of the KPA between 1997 and the early years of the twenty-first century, of the NKSOFs during those same early-century years, and of naval forces between 2010 and 2012. Each transition followed a change of strategic thought from conventional to asymmetric to guide both lines of thinking within the context of a future hybrid war. Second, the final stages of the transition to forces capable of engaging in an asymmetric war occurred between 2010 and 2012. The changes in North Korea's naval capabilities manifest this evolution. Third, the overall changes in North Korean military capabilities, the emphasis on strategic weapons, and the nature of North Korea's provocations point to an asymmetric strategic approach. Nevertheless, the available evidence should be explored further to assess whether North Korea actually is using such an asymmetric approach to test and wargame possible approaches to conducting a future hybrid war, develop operational plans to execute it, and train its forces accordingly.

## NORTH KOREA'S STRATEGIC THOUGHT

Sun Tzu averred that "all warfare is based on deception. Hence, when we are able to attack, we must seem unable; when using our forces, we must appear inactive; when we are near, we must make the enemy believe we are far away; when far away, we must make him believe we are near."[22] A successful strategy leads an opponent to see yet misperceive, while believing he sees and knows. North Korea's strategy is asymmetric not only because of the way it combines and engages

military forces, but also because it has not developed its unconventional capabilities in the conventional way. Since its first nuclear test in 2006, North Korea has conducted its equivalent of the World War II Allies' Operation FORTITUDE, with rubber nuclear warheads instead of rubber tanks.[23] North Korea's asymmetric approach has followed a nonlinear, back-and-forth progression.[24]

The U.S. *Joint Strategy Review* definition of 1999 (still one of the simplest, most concise, and effective) describes *asymmetric military strategy* as an approach that often employs innovative, nontraditional tactics, weapons, or technologies and can be applied at all levels of warfare—strategic, operational, and tactical—and across the spectrum of military operations.[25] "Asymmetric approaches are attempts to circumvent or undermine U.S. strengths while exploiting U.S. weaknesses using methods that differ significantly from the United States' expected method of operations. Asymmetric approaches generally seek a major psychological impact, such as shock or confusion that affects an opponent's initiative, freedom of action, or will. Asymmetric methods require an appreciation of an opponent's vulnerabilities."[26]

With this definition in mind, it is necessary to overcome the negative aspects of modern strategic reliance on the logic of conventional military engagement and to understand the vulnerabilities—in this case of the United States—that North Korea is exploiting with its asymmetric approach. Because of its twin focus on development and application, North Korea's asymmetric strategy appears as neither offensive nor defensive—exactly as it should be to exploit the opponent's main vulnerability: rigid, nonreflective perception and understanding.

Long ago, Thucydides taught that war between maritime and continental powers would end in stalemate.[27] According to Colin S. Gray, for a maritime power to win such a war it requires a "continental sword"—a continental ally. During the First World War, Britain's continental sword was the French army, and in 1940 it was the Soviet Union.[28] In East Asia, by contrast, America's allies hardly can be classified as continental. Additionally, it is not feasible for the United States to expect that it could conduct a successful military engagement in East Asia today, given that contemporary North Korea (and China) are armed with much more than infantry rifles; thus, any analogy with the Korean War of the 1950s would be either obsolete or futile.

If Western powers are failing to recognize correctly the elements of Asian strategic thinking, they are repeating historical mistakes they made previously owing to the application of Western strategic concepts. During the Vietnam War, in the West the political center of gravity was public opinion influenced by daily media coverage, which the leaders of the North Vietnamese army exploited skillfully. On the other hand, the United States did a poor job of determining the enemy's military center of gravity, in part because the North Vietnamese army was so

widely dispersed. Similarly, North Korea's political-military leadership structure today is so pervasive and solidly entrenched that the leadership transition from Kim Jong-il to Kim Jong-un did not affect the stability of the regime. Perhaps North Korea's strategic center of gravity—the hub of all its power—never has resided in North Korea per se, but in its closest ally, China.[29]

The remainder of this article will explore the asymmetric element in North Korea's strategy, often falsely understood as irrational. If in the future we have occasion to see North Korea's strategy unfold, we likely will discover that the problem was in our patchy understanding of North Korea's leaders, and that their actions indeed will turn out to have been rational.

## THE STAGES OF NORTH KOREA'S MILITARY DEVELOPMENT

The recent transformation of the military capabilities of North Korea and the current political initiatives can be placed into context by identifying five phases of development of the country's military.

### *First Stage*

The first stage of North Korean military development consisted of a steady linear increase in the numbers of armed forces personnel, continuing from the end of the Korean War to the present. According to the International Institute for Strategic Studies, in 1985 North Korea was ranked sixth in the world, with 838,000 total armed forces personnel, and in 2015 fourth, with 1,379,000.[30] This buildup was conceived as being defensive in nature, creating a massive protective shield provided by land forces. Status of this stage: accomplished.

### *Second Stage*

The second stage saw the development of short- and medium-range ballistic missiles, along with nuclear capabilities. It began with the initiation of North Korea's missile program in 1976 and lasted to the first display of North Korea's intermediate-range ballistic missile, the Hwasong-10, at a military parade in 2010.[31] This missile's range is only 2,500 kilometers (km), which covers only the zone of the first island chain. This stage also is interpreted as being defensive, as well as asymmetrical. Status of this stage: accomplished.

### *Third Stage*

The third stage is the development of nuclear capabilities, along with intermediate-range ballistic missiles. It lasted from the intermediate-range ballistic missile Hwasong-10 test in 2016 to the intercontinental ballistic missile Hwasong-14 test in 2017.[32] The characteristics and purpose of this stage were to be offensive and asymmetrical with the increased missile range, which fully covers the first island chain zone and theoretically the second island chain as well. Status of this stage: accomplished.

### *Fourth Stage*

The fourth stage is the expansion of naval capabilities, along with intercontinental ballistic missiles. It began with the upgrade of training facilities, weapons systems, and special-operations capabilities at the Munchon naval base in 2014. In the same year, commercial satellite imagery identified two new North Korean helicopter-carrying frigates, and the buildup continued throughout 2017 with tests of the Hwasong-14 and Hwasong-15 missiles.[33] The characteristics and purpose of this stage are to be offensive and asymmetrical; the missiles' ranges cover both island chain zones fully. Status of this stage: in progress.

### *Fifth Stage*

The fifth stage is the expansion of the capabilities of the Korean People's Army Air Force (KPAAF), along with the further development of naval weapons systems. Status of this stage: initiated. The 2018 summit between President Donald Trump and North Korean leader Kim Jong-un in Singapore, along with South Korean president Moon Jae-in's revival of the Sunshine Policy, marked the beginning of this fifth stage.[34] In this stage, North Korea would have more time and resources and suffer less external political pressure, allowing it to focus on building up conventional military forces, primarily the KPN and the KPAAF.

The sequencing of these stages leads to the conclusion that North Korea's top-down approach to military development has been and is asymmetric, counterintuitive, and somewhat deceptive in its succession from advanced and nonconventional to less advanced and conventional military technologies.

## SOUTH KOREA'S DILEMMA

A dilemma related to South Korea (ROK) has arisen because of the complexity of North Korea's asymmetric strategy, the true intentions of South Korea's military strategy, and the efforts of the entire international community to understand the North Korea crisis. Consider that two of the ROK's three navy fleets are located on that country's west coast; consider the strength of the ROK air force; and consider that the ROK has a large stock of tanks (2,872), some of which are the most advanced in the world. Then consider that most of North Korea's missile-launch facilities are located on the country's east coast, that the KPN's East Sea Fleet is larger than its West Sea Fleet, and that most KPAAF air bases are located in the western part of the country.

If South Korea decides to attack North Korea unilaterally with its First Navy Fleet, it could expose its east coast to a land invasion. Moving the other two fleets would be unacceptable because doing so would expose the west coast to attack and the fleets to easy outflanking by the KPN's West Sea Fleet. Even if the First Navy Fleet engaged in warfare jointly with the U.S. Navy, it would not make any difference. The situation likely would be aggravated further because China could

take part in the conflict, probably sealing the East Sea or even launching a massive naval response across the entire Asia-Pacific region. If the South Korean regime decided to ally with Japan against North Korea, South Korean society most likely would not accept such a step. Moon Jae-in's victory in South Korea's nineteenth presidential elections are seen as the "herald [of] a new dawn for the Sunshine Policy," reflecting the attitude of a South Korean civil society in which "nearly 77 percent of South Koreans believe Seoul should restore dialogue with Pyongyang to help 'resolve' North Korea's nuclear program."[35]

Nuclear deterrence has both psychological and ethical contexts. If North Korea did not use its nuclear weapons first, any nuclear attack on it would be labeled as unethical and condemned by the entire international community. It is quite possible that North Korea will play both the "society" and the "deterrence" cards in the future.[36]

## PREPARING FOR HYBRID WARFARE ON THE KOREAN PENINSULA

Frank G. Hoffman has written that the twenty-first century may be characterized by hybrid wars, but what exactly they are, the types of warfare they employ, and the actors who participate in them are contested.[37] The U.S. military establishment defines *hybrid warfare* as covert or deniable activities (including nonviolent subversion, covert violent actions, cyber warfare, information warfare, proxy warfare, and conventional warfare), which are supported by conventional or irregular forces, to influence the domestic politics of target countries.[38] What makes them hybrid is the combination of operations and tactics used and the combination of regular and irregular forces performing them, with the combinations among them carried out synergistically to attain operational ends.

Within the context of North Korea, the regular armed forces typically engage in conventional warfare activities, whereas the irregular paramilitary forces or subversive groups typically engage in unconventional or irregular activities. As mentioned previously, NKSOFs are part of the armed forces but would be charged with carrying out paramilitary activities such as infiltration, sabotage, and disruption. Other forces that would be factors in a hybrid war include networked actors spread across the globe, including some members of the global communist network that align with and often take part in propaganda and cyber operations in support of North Korea; North Koreans who reside abroad as foreign workers but remain sympathetic to the regime; and some North Korean defectors who feel disenfranchised and discriminated against by their host countries.

Within hybrid operations, *irregular* and *unconventional* operations are conceptually distinct from each other. The target of irregular operations is the opposing state's population, and the strategic aim is to foment unrest, or even to bring

about radical or revolutionary change, within the targeted society. In contrast, in unconventional hybrid operations the target is the existing power structure and the strategic aim is to capitalize on existing unrest to coerce, disrupt, neutralize, or remove that authority from power. North Korea's state targets for such operations would be the United States and its partners in the Asia-Pacific region (South Korea and Japan) and beyond that any state or global nonstate actors who either support these states specifically or directly oppose North Korea.

In hybrid warfare, targeting is intended to obstruct an adversary's ability to further or achieve its political ends (e.g., South Korean and allied ability to conduct war or surgical strike, the positioning of the terminal high-altitude area-defense system within South Korea, the imposition and maintenance of effective economic sanctions) and to mobilize others in support of its position and efforts. Other segments of the adversary's domestic population would be targeted to attempt to strip the regime of its political and economic support base and to create chaos in such a way that the social or economic fabric of society is disrupted. Possibilities include using high-powered microwave devices to shut down communications in key civilian areas and carrying out cyber attacks on critical national infrastructure that would result in loss of power and the shutdown of banking and financial systems. Additional actions might include attempting to make use of key strategic actors who either are hostile to the status quo or who support positions that serve to disrupt it (e.g., actors calling for war or supporting a surgical strike by playing on domestic tensions or political divisions and corruption scandals); using proxy actors (e.g., by establishing links with and providing either direct or indirect support to political opponents); using physical and virtual networks to mobilize support and disseminate information; and employing psychological operations and perception-management techniques at the domestic, regional, and global levels to maintain favorable information-management flows, or even to attain ascendancy over the adversary.[39]

In conventional operations, the targets include opposing forces themselves and their military capabilities, so as to weaken those forces' morale, degree of commitment, and will to continue. A goal is to exploit gaps in alliance relationships and between military strategies and any other weaknesses in the opposing force structure.

North Korea likely would employ both types of hybrid operations, and, as Hoffman pointed out in a quotation cited earlier, they can be blurred together with conventional capabilities into the same force, or they can be combined in strategic ways to offset South Korean and American advantages and overcome North Korea's own military disadvantages. As the existing literature highlights, what makes hybrid warfare such a threat is the unpredictability it introduces in the use of strategies, operations, and tactics by weaker states and nonstate actors,

as well as the inability of larger or militarily superior states to learn and reorganize as quickly on the battlefield. Therefore, understanding the asymmetric dimensions of hybrid military strategy is critical for twenty-first-century warfare planning.

Scholars have alluded to North Korea's pursuit of an asymmetric warfare strategy and have discussed extensively the threat that asymmetric capabilities pose, but they have not made strategy itself a central focus. This, as Bruce Bennett highlights, is because the lack of regime transparency makes it so difficult to know exactly what types of weapons are being developed and what strategy and concept of operations are being put in place.[40] Nonetheless, it is reasonable to assume that any strategy North Korea would employ would be asymmetric, as that would be the only way it could gain a strategic advantage over its more powerful adversaries.

The psychological component noted earlier in this section is what separates hybrid warfare from asymmetric warfare. Asymmetric strategic objectives are primarily psychological, not military or political; the aim is to win and keep the hearts and minds of supporters and sympathizers.[41] Success for an asymmetric approach will be determined not by one strategy but rather by the synergy created from the deployment of an array of strategies, operations, and tactics in a manner that maintains the element of surprise and has the greatest psychological impact. Failure is more likely when the weaker state cannot retain its asymmetric approach employing the variety of tactics that constitute hybrid warfare because it is forced to focus on conventional operations. If its opponent can turn the conflict into a full-scale conventional war, the stronger party gains the upper hand.[42] The next section explores North Korea's asymmetric strategy in relation to its capabilities.

## NORTH KOREA'S ASYMMETRIC STRATEGY

The asymmetric military strategy is not linear but layered; it does not advance along the directional line of action, but rather disperses effort to different theaters of asymmetric military operations (TAMOs). This requires combining the efforts of the different service branches into an effective and operationally autonomous military whole.[43] In addition to adopting its asymmetric *strategy,* North Korea has transformed and developed its forces into an asymmetric *military*. The linear approach to transforming and developing a military normally involves a bottom-up approach. For example, both the Napoleonic corps system and the German panzer division system practiced bottom-up agglomeration of smaller units into bigger and more complex ones. In contrast, North Korea has approached the transformation of its military in a top-down, nonlinear fashion.

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At the time of Kim Jong-un's takeover of the reins of government in December 2011, the country experienced economic hardship and troop morale dropped, but there was little impact on the integrity of the KPA or on its modernization efforts.[44] Bechtol stresses the need for North Korea to adjust its strategy for the sake of North Korean military competitiveness in the future. In doing so, he raises important questions: (1) "Has the very necessary adjustment in strategy been made that will allow the North Korean military to go 'toe to toe' with the ROK-US alliance in combat?" (2) "What comprises the asymmetric threat? It also leads one to ask, if there have been serious constraints on North Korean military acquisition, what advances has it made?"[45]

Bechtol suggests that the answer to these questions is the asymmetric approach. However, his treatment fails to define asymmetric military strategy in general and to explain the North Korean version. According to Lieutenant General Wallace "Chip" Gregson, USA, "North Korea has adapted to the U.S.-ROK alliance's conventional military superiority by developing tactics and weapons systems that equip them with offensive capabilities that avoid confronting the greatest military strengths of the alliance, in an attempt to compete on what it likely perceives as a more favorable playing field."[46] That more favorable playing field is exactly what has changed since 2012. Some South Korean officials consider North Korea's asymmetric forces to represent a serious threat to the South Korean military, as stated in a 2010 government report: "[A]n additional attack by the North using its asymmetric strength is the most serious threat as of now."[47]

Even though some may have recognized the threat, few have attempted to grasp the full context of North Korea's asymmetric strategy. North Korea has conducted a top-down, asymmetric transformation of its military through five stages of military development to prepare itself to conduct an asymmetric, nontraditional offensive founded on disruption, sabotage, and interstate insurgency, with the prospect of conducting a long-term hybrid war in East Asia. Yet, in order to understand this asymmetric military strategy better, it is necessary to clarify it in relation to different political objectives (offensive/defensive), and different types of actors (state/nonstate).

An asymmetric military strategy deployed as a means of achieving a defensive political objective is not offensive. But nor yet is it defensive; while it aims at creating deterrence and security dilemmas, it does not enhance defense in any way. Being deceptive is a double-edged sword: if the deception is exposed, its implementation can be affected and the political objective compromised.

An asymmetric military strategy deployed as a means of achieving an offensive political objective is clearly offensive. The asymmetry is reflected in the nontraditional organization of the military forces and the nontraditional conduct

of military operations. Guerrilla warfare, terrorism, sabotage, and insurgency all can fall under the umbrella of an asymmetric military strategy. If it is nonstate actors who employ the asymmetric military strategy, the political objective, by definition, would be considered offensive. When traditional actors (i.e., states) use an asymmetric strategy, such use can be deceptive, and accordingly a means of achieving a defensive political objective.

North Korea's ballistic-missile program is seen as being driven by the regime's desire to enhance deterrence and defense and to increase the country's ability to conduct limited attacks against South Korea.[48] However, contrary to this view, a military technology that increases speed and agility, such as missiles, favors the offense. There is no rational purpose for a missile attack if it is not part of a larger military operation that aims to eliminate the opponents' offensive and disable their defensive capabilities.[49]

Daniel A. Pinkston emphasizes that "North Korea's ultimate strategic goal is to unify Korea on DPRK terms and maintain one-party rule under the Korean Workers' Party." The regime is a dictatorship that uses coercive diplomacy and asymmetric strategies to achieve its political objectives. Before 2013, these objectives tended to be limited to "survival, sovereignty, and relevance."[50] But the leadership changes in North Korea along with the country's military advancements indicate an expanded scope of objectives.

While there may be uncertainty about North Korea's political objectives, there is no doubt about the nature of its military strategy. Whether it is openly or deceptively offensive, it is certainly asymmetric. North Korea's asymmetric provocations and limited military engagements suggest that it is preparing for a possible hybrid war. The key to any such future hybrid war in East Asia and the Asia-Pacific will be the seas. Therefore, it is important to explore the types of offensive maritime strategies that might be employed.

## ASYMMETRY ON THE SEAS

States tend to focus on the prospects for traditional, symmetric wars and how to fight them, rather than on asymmetric wars. At the time of their creation, some of the military concepts and tactics that are most well-known today were either neglected or misperceived. In the late eighteenth and early nineteenth centuries, Napoleon successfully used the military corps formation and the principle of "march divided, fight united" to wage war against multiple opponents simultaneously. In the mid-to-late nineteenth century, Prussia defeated Austria and France and unified the German states by employing jaeger (rifle-armed infantry) units and new mission-type tactics known as *auftragstaktik*. In the mid-twentieth century, Nazi Germany invaded most of Western Europe and was quite successful in the opening

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stages of Operation BARBAROSSA against the Soviet Union using the panzer division as a new combined-arms formation and blitzkrieg (lightning war) tactics.

There is a small body of literature dedicated to asymmetrical maritime war.[51] It focuses primarily on terrorism and piracy at sea by nonstate actors; the legal classification of incidents at sea and the gaps in international law; historical and contemporary international legal distinctions between, or the status of, belligerency and insurgency; and historical and contemporary use of naval mine warfare and the international legal instruments covering its use by state and nonstate actors.[52] Importantly, none of the existing literature looks at asymmetric maritime war in relation to North Korea. The seas are vital to any future hybrid war, which means they must be central to North Korea's battle plans. Given the limited amount of information and lack of scholarly focus on North Korea's naval capabilities, only an incomplete exploration of the subject is possible, yet performing it is necessary.

Kil-joo Ban has written about the future role of the ROK navy, focusing on the development of its naval strategies. He argues that the ROK navy should emphasize preparing for asymmetric naval warfare and sea insurgency, given that navies increasingly play roles in carrying out operations aimed at combatting nontraditional security threats (e.g., insurgents, terrorists, pirates). He also takes into account the nature of the ROK's alliance with the United States and the opportunities available for the ROK navy to deploy overseas through that alliance.[53] However, his analysis does not contemplate North Korea practicing naval insurgency operations within the context of interstate war.

A *sea insurgency* "refers to the type of violence used to overcome power gaps at sea in an attempt to allow the weak actors to attain their goals from global insurgency."[54] This definition of weak actors and the literature in this area mostly refer to nonstate actors rather than state actors; they do not even contemplate state actors that are known for preparing for and engaging in asymmetric warfare strategies, operations, and tactics, such as North Korea. Yet in the lead-up to and during any future war on the Korean Peninsula, sea insurgency operations would be most advantageous for North Korea.

Drawing on the existing literature that focuses on traditional naval tactics employed by states, plus the literature on the operations conducted and tactics used by nonstate actors such as Al Qaeda and the Sea Tigers, it is possible to gain an understanding of the type of asymmetric maritime objectives North Korea might set and the strategies and tactics it might employ leading up to and during a war. For example, Paul A. Povlock's examination of the Sea Tigers case covers the range of operations in which insurgents can engage and state responses to them.[55]

North Korea has been preparing for asymmetric warfare in general since it reorganized its military; its maritime warfare strategy is not likely to be anything

other than asymmetric. In the discussion that follows, we must consider maritime asymmetric warfare operations in two contexts: during the lead-up to war and during war itself. These different contexts affect the planning of operations and the strategies and tactics to be applied.

Tactics employable as part of sea insurgency operations include the sabotage of vessels and sea cables; mine warfare; use of improvised explosive devices; cyber attacks (to target, disrupt, and take over command and control systems); Global Positioning System jamming (to facilitate deviation from navigation patterns, enable sabotage or hijacking operations, or encourage collisions between both commercial and military vessels); and suicide attacks (to damage vessels, demoralize military personnel, and sap societal morale).[56] A combination of these tactics would be employed to further different strategies.

One strategy for sea insurgency operations consists of mobilizing state units abroad and nonstate actors to carry out media, disinformation, and propaganda campaigns in support of North Korea and its operations. This might include deflecting domestic, regional, and global attention from the development of military programs in general or the transportation of SOFs in particular.

Sea insurgency operations would be conducted both prior to and during war. Those carried out prior to war would seek to further defensive political objectives by weakening opposing forces, including their morale. They also would facilitate the transition into asymmetric military operations in pursuit of offensive political objectives. Oscillating between operations in pursuit of defensive and offensive objectives keeps opponents off balance and makes it harder for counterinsurgency strategists to understand the logic of the sea insurgency operation as it unfolds and harder for them to predict the strategies and tactics they will encounter.

Any assessment of North Korea's asymmetric and maritime military strategy conducted strictly from this traditional perspective would be inadequate owing to the country's unique geostrategic location. Sabotage and sea insurgency in pursuit of defensive political objectives do not require direct engagement within the theaters of asymmetric military operations—but invasion does.

The standard approach to analyzing North Korea's military strategy is insufficient because North Korea intentionally has created a security dilemma. Supposedly, while North Korea's general approach is unpredictable and its actions generally offensive, its policy objectives are limited to achieving survival, sovereignty, and relevance. But too many in the international and scholarly communities see the ongoing modernization of North Korea's military capabilities only in the context of a threat to the ROK-U.S. alliance, rarely reflecting on North Korea's asymmetric approach within a wider geopolitical framework.

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North Korea's asymmetric strategy cannot be labeled simply as nontraditional. It is not linear but layered. It does not enhance the directional line of action; rather, it disperses it. North Korea has followed this asymmetric approach in its expansion of its military capabilities, keyed to its unique geostrategic location and its geopolitical positioning.

The existing literature highlights North Korea's asymmetric approach to conflict but does not explore the development of its strategic thought, the nature of its asymmetric strategy, why such a strategy is necessary, and how it might be used in a future war. There has been no exploration of North Korea's strategic thought, owing to a lack of information, especially access to military documents. Nonetheless, we can derive some inkling of it through contemplation of how the country has developed its military capabilities and force structure. This article has sought to lay a foundation for a new field of inquiry; however, additional studies need to be conducted to tease out potential strategies further. War will become only more complex in the future. In some previous cases, a failure to think outside the box has contributed to the failure of past strategies, yet any strategist will state proudly that the ability to do so is the hallmark of strategic thinking.

## NOTES

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1. All Korean expressions appearing in the text are translated using the Korean Romanization Converter with McCune-Reischauer Romanization, available at roman.cs.pusan.ac.kr/.
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3. Joel S. Wit, "North Korea's Nuclear Futures: Implications for Peace and Security, Project Final Report," Calhoun: NPS Institutional Archive, 2016; Soon Ho Lee, "Military Transformation on the Korean Peninsula: Technology versus Geography" (PhD dissertation, Univ. of Hull, 2011), p. 25, available at hydra.hull.ac.uk/.
4. David E. Long, "Countering Asymmetrical Warfare in the 21st Century: A Grand Strategic Vision," *Center for Contemporary Conflict,* July 1, 2008, calhoun.nps.edu/.
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7. Chairman, Joint Chiefs of Staff, *Joint Operations,* Joint Publication 3-0 (Washington, DC: October 22, 2018), sec. GL-16.
8. Homer T. Hodge, "North Korea's Military Strategy," *Parameters* 33, no. 1 (2003), pp. 68–81; Andrew Scobell and John M. Sanford, *North Korea's Military Threat: Pyongyang's Conventional Forces, Weapons of Mass Destruction, and Ballistic Missiles* (Carlisle, PA: Strategic Studies Institute, U.S. Army War College, 2007); Axel Berkofsky, "North Korea's Military—What Do They Have, What Do They Want?," *ISPI Analysis: Istituto per gli Studi di Politica Internazionale* 161 (March 2013), pp. 1–6; Bruce E. Bechtol Jr., "Understanding the North Korea Military Threat to the Security of the Korean Peninsula and Northeast Asia: Declined or Evolved?," *Korea Observer* 40, no. 1 (Spring 2009),

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9. Taehee Whang, Michael Lammbrau, and Hyung-min Joo, "Detecting Patterns in North Korean Military Provocations: What Machine Learning Tells Us," *International Relations of the Asia-Pacific* (2016), pp. 1-28; Bechtol, "Understanding the North Korea Military Threat"; Bechtol, "Maintaining a Rogue Military."
10. Bechtol, "Developments in the North Korean Asymmetric Threat."
11. Ibid.
12. Bechtol, "Maintaining a Rogue Military," pp. 160–82.
13. Cary Huang, "China's Military Is Mighty, but Diplomacy Is Still a Weak Spot," *South China Morning Post,* October 14, 2017, www.scmp.com/.
14. Bechtol, "Planning for the Unthinkable," pp. 1–7.
15. North Korean missiles provide a defensive strategic buffer as much as, or better to say as little as, tanks, airplanes, and other offensive weapons.
16. Scobell and Sanford, *North Korea's Military Threat*.
17. Rachael M. Rudolph and Nhan Tran, "An Electronic and Cyber Warfare Doctrine to Contain North Korea's Provocations," *International Public Policy Review,* July 3, 2017, ippreview.com/.
18. Bruce W. Bennett, Christopher P. Twomey, and Gregory F. Treverton, *What Are Asymmetric Strategies?* (Santa Monica, CA: RAND, 1999), p. 3.
19. Ibid., p. 4.
20. Bechtol, "Understanding the North Korea Military Threat"; Bechtol, "Maintaining a Rogue Military"; Whang, Lammbrau, and Joo, "Detecting Patterns in North Korean Military Provocations." They conclude that North Korea tends to emphasize its history of military struggle, Japanese occupation and colonization, and U.S. imperialist actions; criticize the present behavior of the United States, Japan, and South Korea prior to an impending conflict or military provocation; boost its people's morale; and show the international community that it will not back down.
21. When it comes to the military development of North Korea, China should also be taken into account. It seems that North Korea and China have a "good cop / bad cop" routine. While North Korea threatened and developed its unconventional military programs in the east, China modernized their navy (aircraft carriers) and air force (Chengdu J-20), and gradually strengthened its position in the South China Sea. Now that China has assumed the role of a bad cop, acting in a more aggressive and decisive manner, North Korea has taken the role of a good cop by initiating peace and stability talks in East Asia, presumably with the intention to restore its economy and to support the further development of its conventional capabilities.
22. Sun Tzu, *The Art of War,* trans. Lionel Giles (London: Luzac, 1910), paras. 18–19.
23. The allusion is to the Allies' military deception efforts in 1944 as part of the preparations for the invasion of Normandy.
24. The adoption of an asymmetric military strategy led to the development of new military capabilities, instead of the development of military capabilities leading to the adoption of a new asymmetric military strategy. More succinctly, it can be described as: land forces pave the way for nuclear weapons, nuclear weapons for missiles, missiles for navy, and navy for air force. This progression is described more completely in the section of the article describing the five stages of North Korea's military development.
25. Chairman, Joint Chiefs of Staff, *Joint Strategy Review 1999* (Washington, DC: U.S. Government Printing Office, 1999), p. 2.
26. Ibid.

27. Thucydides, *The Landmark Thucydides: A Comprehensive Guide to the Peloponnesian War,* ed. Robert B. Strassler (New York: Free Press, 1996), p. xix.

28. Colin S. Gray, *War and Peace and International Relations: An Introduction to Strategic History* (New York: Routledge, 2007), pp. 87, 132.

29. Carl von Clausewitz, *On War,* eds. and trans. Michael Howard and Peter Perret (New York: Oxford Univ. Press, 2007).

30. World Bank, "Armed Forces Personnel, Total," *International Institute for Strategic Studies,* 2016, data.worldbank.org/.

31. Lorenzo Mariani, "Assessing North Korea's Nuclear and Missile Programmes: Implications for Seoul and Washington," *Istituto Affari Internazionali* 17, no. 11 (March 2017).

32. Ibid.; "The North Korean Missile Threat," *MDAA Country Brief—North Korea,* December 2017, missiledefenseadvocacy.org/.

33. Kim Gamel, "North Korea's Naval Forces Get 'Serious' Upgrades," *Stars and Stripes,* September 2, 2016, www.stripes.com/; Joseph S. Bermudez Jr., "New North Korean Helicopter Frigates Spotted," *38 North,* May 15, 2014, www.38north.org/; "The North Korean Missile Threat."

34. The summit between Russian president Vladimir Putin and Kim Jong-un held on April 25, 2019, suggests that in the coming years North Korea most likely will begin to modernize its MIG-29 fleet and purchase the SU-35. Abraham Ait, "Is North Korea's MiG-29 Fleet Growing?," *The Diplomat,* November 29, 2018, thediplomat.com/.

35. Troy Stangarone, "Does Moon Jae-in's Victory Herald a New Dawn for the Sunshine Policy?," *The Diplomat,* May 10, 2017, thediplomat.com/; Ian Bremmer, "South Korea's Moon Jae-in Is Meeting with Donald Trump. Here Are 5 Things to Know," *Time,* June 30, 2017, time.com/.

36. This, somehow, reminds one of the Ems Dispatch that brought the southern German states into a coalition with the Prussian-led North German Confederation.

37. Hoffman, "Hybrid Warfare and Challenges," p. 38; Andrew Radin, *Hybrid Warfare in the Baltics: Threats and Potential Responses* (Santa Monica, CA: RAND, 2017).

38. Radin, *Hybrid Warfare in the Baltics,* pp. 5–6.

39. Andrew Korybko, *Hybrid Wars: The Indirect Adaptive Approach to Regime Change* (Moscow, Russia: Institute for Strategic Studies and Predictions, 2015).

40. Bennett, *Documented Briefing,* p. 2.

41. Ibid.

42. See the cases of the Liberation Tigers of Tamil Eelam (LTTE) in Sri Lanka and their naval division, the Sea Tigers, who were active particularly during the Sri Lankan civil war.

43. The theater of operations, as a standard military concept, refers to the territory of operations not to military branches involved. The theaters of asymmetric military operations (TAMO) are defined in relation to both the characteristic of the territory and military branches involved.

44. Anthony H. Cordesman and Aaron Linn, "The Changing Military Balance in the Koreas and Northeast Asia," *Center for Strategic and International Studies,* March 25, 2015, www.csis.org/, p. 135; Gamel, "North Korea's Naval Forces Get 'Serious' Upgrades."

45. Bechtol, "Maintaining a Rogue Military," pp. 163–64.

46. Wallace "Chip" Gregson, "Statement for the Record by Wallace 'Chip' Gregson, Assistant Secretary of Defense for Asian & Pacific Security Affairs, Department of Defense," Submitted to the Senate Armed Services Committee, September 16, 2010, as quoted in Bechtol, "Maintaining a Rogue Military."

47. "'N.K. Overwhelmingly Superior to S. Korea in Asymmetrical Forces': Gov't Data," *Yonhap,* December 5, 2010, english.yonhapnews.co.kr/.

48. U.S. Defense Dept., *Annual Report to Congress: Military and Security Developments Involving the Democratic People's Republic of Korea 2012* (Washington, DC: 2012), p. 7; Sico van der Meer, "States' Motivations to Acquire or Forgo Nuclear Weapons: Four Factors of Influence," *Journal of Military and Strategic Studies* 17, no. 1 (2016).

49. Conducting a limited attack can enhance deterrence, but it is not correlated in any way to defense. The concept of *deterrence* does not imply merely enhanced defense but an enhanced perception of security; it simply

connotes that one's opponents are not willing to attack. Thus, if an opponent does launch a retaliatory attack, one's defensive capabilities would be neither lower nor higher than they were before.

50. Daniel A. Pinkston, "The North Korean Ballistic Missile Program," *Strategic Studies Institute,* February 2008, p. 2, ssi.armywarcollege.edu/.

51. Vincent Bernard, ed., "War and Security at Sea," *International Review of the Red Cross* 98, no. 902 (2016), pp. 383–723; Rob McLaughlin, "The Law Applicable to Naval Mine Warfare in a Non-International Armed Conflict," *International Law Studies* 90 (2014), pp. 475–98; Paul A. Povlock, "A Guerilla War at Sea: The Sri Lankan Civil War," *Small Wars Journal,* September 9, 2011, smallwarsjournal.com/; Kil-Joo Ban, "The Clash of David and Goliath at Sea: The USS Cole Bombing as Sea Insurgency and Lessons for the ROK Navy," *Asian Politics & Policy* 2, no. 3 (2010), pp. 463–85.

52. Ban and Povlock were the only two authors within the reviewed literature, however, who focused specifically on the concept of sea insurgency in the contemporary context.

53. Ban, "The Clash of David and Goliath at Sea."

54. Ibid., p. 464.

55. Povlock, "A Guerilla War at Sea," p. 2.

56. The aim of many of these tactics is to disrupt trade; provoke a disproportionate response from the ROK or the United States; create a diversion that facilitates the delivery of both legal and illegal cargos, such as weapons or special operation forces en route to carrying out operations in ROK coastal waterways or seaports; and otherwise to make both military and commercial vessels unavailable.

# NEAR-TERM APPLICATIONS OF ARTIFICIAL INTELLIGENCE

## Implementation Opportunities from Modern Business Practices

*Christian H. Heller*

Secretary of Defense James N. Mattis made headlines in early 2018 after stating that artificial intelligence (AI) may change the "fundamental nature of war," a groundbreaking premise that could alter the principles of warfare and centuries of military thinking.[1] War has been and is meant to be a human endeavor to achieve human ends. AI poses the challenge—or opportunity—of altering that premise. The common picture of AI in warfare raises images of self-directed drones in the sky attacking targets of opportunity at their own discretion; armies of intelligent android warriors in the fashion of *I, Robot;* or an all-powerful supercomputer dominating humankind, reminiscent of the *Terminator* and *Matrix* franchises. While these images from science fiction portray a possible distant future, just as H. G. Wells did with *The War of the Worlds,* the practical applications of AI involve intricate and redundant tasks that augment human involvement and increase humankind's own abilities and productivity. Rather than replace human participation in war and national security activities, AI supports human beings to make us better at defending the country.

This AI-augmented world is no longer a futuristic discussion. Spurred on by private business and the innovations of Silicon Valley, the world outside the Pentagon is developing new and better uses for AI at exponential rates. The Department of the Navy (DoN) needs to harness the progress of private development in the field of AI, not as an optional benefit or high-speed capability, but as an institutional imperative to maintain superiority

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over our nation's enemies. The numerous near-term applications of AI can be implemented today to lay the groundwork for the future of maritime forces and institutions. The first place to implement new technology is in the support functions and noncombat specialties of the Navy and Marine Corps. Current business practices can be implemented within the DoN to reduce costs, increase efficiencies, generate new capabilities, and reduce manpower requirements in noncombat roles, which would increase the number of sailors and Marines available for deployments and operations.

This article begins with a brief review of the status of AI research and development (R&D), existing capabilities, and areas in which private industry is pursuing new opportunities. Second, it will examine the current policy of the Department of Defense (DoD) toward AI implementation. Next, the article will propose nine applications from current business uses of AI wherein the technology could benefit the Navy and Marine Corps. It concludes by demonstrating that integrating AI into the DoN may be a large task, but it is not impossible. By relying on previous examples, the Navy and Marine Corps can institutionalize AI technologies and ensure our ability to respond adequately to the full range of military operations in the future.

Marine Corps lieutenant colonel Earl Hancock "Pete" Ellis's work on amphibious warfare—one of the most important maritime developments of the twentieth century—only led to success in World War II because of the years of preparation, refinement, and experimentation that the Navy and Marine Corps committed to it prior to Pearl Harbor. The same concept holds true today with AI. The groundwork for operations with AI can—and must—be laid today, or the naval forces of the nation will be left unprepared for future missions.

## DEFINITIONS OF ARTIFICIAL INTELLIGENCE

The definition of artificial intelligence has changed many times since the first conference on AI at Dartmouth College in 1956, at which researchers joined together to theorize about the combination of robotics, neural networks, and programming.[2] One current definition describes AI as "an entity (or collective set of cooperative entities), able to receive inputs from the environment, interpret and learn from such inputs, and exhibit related and flexible behaviors and actions that help the entity achieve a particular goal or objective over a period of time."[3] Another states that AI is the ability to "teach computers to parse data in a contextual manner to provide requested information."[4] The many definitions of AI continue to evolve to define more-specialized subcategories of the field, but each is useful for providing guidelines and goals for researchers.

AI is a self-teaching machine. Rather than a program with set inputs and outputs that runs consistently, AI teaches itself and changes as its environment

changes. Cellular phone assistants are examples of simple AI that still require human input. For instance, Apple's Siri application can perform many activities and searches through preprogrammed procedures. However, it requires human input in the form of software updates, patches, and reprogramming as the world changes around it. In contrast, more complex AI learns these changes for itself, similar to how the human brain works. For example, if you were to wake up in a room you have never seen in a country you have never been to, your first instinct would be to ask questions, look around, and explore. AI is designed to learn from unused, unsorted, or new information in the same way. As Army lieutenant colonel Patrick Sullivan states, AI is the "ability of computers to learn from data, as opposed to being explicitly programmed."[5] AI involves far more than simple mathematics and programming, and thus, researchers require knowledge in areas such as logic, philosophy, and physics to create a self-learning device.

***Structures and Types of AI***

An AI system has four layers, which interact with each other to mimic human intelligence. AI itself can be imagined as the topmost layer, which absorbs, stores, and processes information to make decisions. One layer below, the AI relies on machine learning, which allows it to "learn and act without the need for human input." The third level down is deep learning, which contains the AI's ability to process images, speech, and language. Finally, the bedrock of the AI system is the neural network, which processes data. The most opportunities for new research exist in this neural-network layer. While the human brain has over one hundred billion neurons, the most advanced AI available today only has about one billion neuron equivalents.[6]

Artificial intelligence is divided into two major categories. *General AI* attempts to mimic the human brain in completely autonomous thought, while *narrow AI* is the creation of smart computers to solve complex problems.[7] General AI does not exist yet, but substantial and increasing progress in the field of narrow AI provides enormous opportunity for the eventual creation of general AI. AI, as many understand and use it today, is narrow AI. For example, narrow AI is used on most commercial passenger planes. On Boeing 777s, pilots only spend about seven minutes out of every flight manually flying the plane, while Airbus pilots manually fly about three and a half minutes of every flight.[8] IBM's Deep Blue and Watson projects are both advanced versions of narrow AI that have received much attention over the past years. Amazon's Alexa and Apple's Siri are both examples of narrow AI beginning to make regular, continuous changes to people's lives. Importantly, when examining the feasibility of the Navy and Marine Corps using AI, one must remember that an iPhone or Amazon user need not know anything about computer programming, networking, or search logics

to use these functions. The operating system is designed to function with inputs from the average user.

These advances in narrow AI serve as an important bridge to the development of general AI. Advanced progress in narrow AI can be used with human-in-the-loop (HITL) systems for "expanded human potential."[9] Indeed, while AI systems have beaten world-class chess players on numerous occasions, the greatest success is achieved when an AI is paired with a human.[10] In an HITL system, human decisions and operations are advanced through integration with AI, such as in flight-simulation trainers. An HITL system requires a human user working with the AI and making decisions on the basis of AI recommendations. The system empowers human interaction with the AI, and the platform can be designed to defer some or all decision-making to human operators. In fact, many argue that combining humans and AI creates optimal decision-making outcomes.[11] Unmanned aerial vehicles and other intelligence, surveillance, and reconnaissance (ISR) platforms operate with these designs.[12] DoD believes that both HITL and human-on-the-loop systems—in which a human becomes involved to override the system when necessary—will play a role in future military applications of AI.[13]

Important developments in artificial intelligence are taking place within machine learning and deep learning, two different programming processes with different intents. *Machine learning* is the process by which a program can search through large amounts of data, learn from it, and apply it to make and recommend informed decisions. The concept can be applied to any scenario in which the AI is able to carry out a certain function with a given data set, and the AI becomes better at that function over time. Machine learning already is used in programs such as music-streaming services and data security. *Deep learning,* by contrast, is machine learning that can learn new functions and refine its existing functions without human interference. Deep learning is demonstrated best by the following example of a flashlight: "[The flashlight] could be programmed to turn on when it recognizes the audible cue of someone saying the word 'dark.' Eventually, it could pick up any phrase containing that word. Now if the flashlight had a deep learning model, it could maybe figure out that it should turn on with the cues 'I can't see' or 'the light switch won't work.'"[14]

Both deep learning and machine learning require large data sets to be effective. As explained by the layers concept earlier, AI by itself does nothing. The ongoing "big data revolution" creates more information in one day than ever has existed in the history of humankind and creates a situation in which humans are physically unable to parse through it to reach the best conclusions. Large, organized data sets combined with appropriate AI tools have the potential to refine and alter warfare and war-fighting institutions to the benefit of the wager—in this case, the Navy and Marine Corps.

### *Public Use Leads to DoN Application*

The best examples of artificial intelligence that can apply to the DoN are those that members of the public already are using effectively. Simple AI programs are all around us. Google Maps uses AI to program the most-efficient routes for drivers. Chatbots such as Siri, Alexa, and Microsoft's Cortana are AI applications that have advanced considerably over recent years and continue to learn and refine their output to support the personalized needs of their users even better. AI can act as an "intelligent salesman," providing personalized sales recommendations to customers—also known as smart advertising. Organizations such as ride-sharing company Uber Technologies use dynamic pricing—accurately pricing a commodity or service between supply and demand.[15] More advanced AI tools that can benefit the DoN are being created every day. For example, AI engines now are able to create fake video with realistic images and sounds. One example of this was researchers at the University of Washington using AI to create a realistic but fabricated video of former president Barack Obama giving a speech.[16]

A more ambitious example by one of the most well-known AI systems provides insight into the pace of AI development. IBM's Watson has the capability to provide "personality insights" derived from various means of communication. Using linguistic analysis, Watson can determine personality characteristics from media channels such as e-mail, text messaging, and Twitter. Business uses the service to determine an individual's likely attraction to various products or services, but the Navy and Marine Corps could use it to gain insight into an individual's actions and thoughts relevant to warfare. Watson categorizes a person on the basis of what IBM calls the big five personality traits (each of which has six different specific facets), twelve different individual needs, and the values that specific individual might hold.[17] The system is remarkably accurate. During an experiment in which a famous individual's speeches and statements were played for Watson, the AI accurately provided personality profiles. For example, Martin Luther King Jr. was characterized as empathetic, self-controlled, difficult to embarrass, desiring prestige, attracted to helping others, and unconcerned about traditions.[18]

## THE DEPARTMENT OF DEFENSE AND ARTIFICIAL INTELLIGENCE

DoD has made strides in the right direction with AI and other emerging technologies. AI is the topic of many discussions, roundtables, panels, and research proposals. In June 2016, the Defense Science Board (DSB), a technology advisory committee for the Secretary of Defense, published its report on the state of autonomy as a field and its future potential. The report recognized the rapid advancement of the technology and its "high-value capabilities." It recommended that DoD accelerate its adoption of autonomous systems, while also expanding the types of technologies that DoD elements have available for missions. Most

military uses for unmanned systems today involve remote human operation rather than true AI employment. Expanding the role of AI can magnify the benefits of the system. Not only does the integration of greater AI autonomy reduce casualty rates of U.S. personnel, but such systems can adopt riskier tactics; target with greater accuracy; and operate with greater endurance, range, and speed while retaining a greater level of flexibility and mobility. For perspective on how widespread these applications could be, DoD's eleven thousand unmanned aircraft currently make up 40 percent of the total number of U.S. military aircraft.[19]

The DSB's report highlights six different mission parameters to consider when determining the applicability of AI. These parameters are speed of decision-making, heterogeneity and volume of data, quality of data links, complexity of the action, danger of the mission, and required persistence and endurance. AI can be a critical component in missions with high or complex levels of these parameters, such as cyber operations; missile defense; data analysis; ISR data integration; contested communication or operations; unmanned vehicle operations, including unmanned undersea operations; air operations center activities; multimission operations; and chemical, biological, radiological, and nuclear attack cleanup.[20]

DoD's budget gives some impression of where initial inroads into AI research are heading. For 2019, the Air Force allocated $87 million to experiment with AI for wargames and field training, while the Army allocated $6.5 million for training purposes, to include simulations and virtual reality. The Navy set aside $6.5 million for similar training purposes, in addition to experimentation for combat purposes. The Navy, through its rapid prototype development program, is using $49 million to apply AI to combat systems, such as new submarine combat assets. The Marine Corps has allocated $7.1 million for an unmanned warning system to provide commanders with increased situational awareness.[21] The Army plans to field new unmanned combat systems by late 2019. The system, dubbed the next-generation combat vehicle, will be assigned to operational units in 2021. The intent is to replace both the M1 Abrams tank and the M2 Bradley infantry fighting vehicle with the new system eventually.[22]

Regardless of research and new systems, DoD policy mandates strict human oversight of any autonomous or semiautonomous weapons systems. Weapons systems "shall be designed to allow commanders and operators to exercise appropriate levels of human judgment over the use of force."[23] As new hardware is developed and combined with AI, tight restrictions on the use of force are appropriate. However, as development of previous systems, such as the MV-22 Osprey, was plagued with difficulties and setbacks, so too will AI encounter training challenges—and potential fatalities.[24] These weapons systems are still years away from regular use in the DoN. Research should continue, as their impact on future warfare will be vital. But there are numerous examples of AI from industry

that can be implemented today because they are not connected to armaments, and therefore do not face the same complex ethical and policy questions as lethal autonomous assets.

## NEAR-TERM AI APPLICATIONS FOR THE NAVY AND MARINE CORPS

By examining current business uses of AI, we can discern many prospects for implementing it to support the Navy and Marine Corps. Future autonomous weapons systems and combat technologies aside, the near-term applications of AI can make the Navy and Marine Corps more responsive, flexible, and deadly. Since narrow AI—which exists throughout industry, as mentioned in the previous sections—is simply the composition of "machine-learning solutions that target a specific task," the technology can be applied to a range of functions, especially in routine noncombat processes.[25] These near-term AI applications can reduce costs, free up manpower to support new units, and lay the requisite groundwork for the full-scale adoption of complex AI systems in the next decade. Currently functioning AI systems can be used to support administration, personal productivity, planning, logistics, crisis response, training, intelligence, force protection, and force structure. This section will examine each of these possibilities by applying current private industry practices to DoN functions.

### *Administration*

Administration is one of the primary support functions within the Navy and Marine Corps that can be revolutionized through AI. Numerous companies already use AI to assist with information-input management, which involves processing "incoming mail, e-mails, invoices, spreadsheets, presentations, PDFs, and other documents." The system benefits from the digitization of information in the modern age. AI can help with the preprocessing of information (i.e., who needs this information and how does it reach them) as well as the maintenance, categorization, and later use of it. One example is an insurance provider in Germany that uses IBM's Watson to identify topics from e-mails and letters and route them to the correct internal departments within the organization. Global logistics companies are using AI to assist with internal functions such as accounting, human resources, and information technology. AI can work with robotic, rules-based processes, such as filling in forms and accessing data, to be a force multiplier for administrative work. Accounting and professional services firm Ernst & Young estimates that 65 percent of human resources rules-based processes can be automated using a combination of AI and robotics.[26] Because both the Navy and Marine Corps are inundated with documents and correspondence, AI can have a direct impact on their efficiency.

The use of AI to provide customer support and feedback is prevalent in private business. Fast-food restaurant chain Taco Bell has a virtual customer representative usable via online collaboration tool Slack, and HP's Print Bot AI is available through social media platform Facebook Messenger.[27] Even more impressive, Print Bot was developed in only three weeks.[28] Disney released a Miss Piggy chatbot prior to the release of its updated *Muppets* television show to spark interest and garner reviews.[29] Companies such as Cogito combine AI and behavioral science to provide real-time guidance for customer representatives to help foster better interactions and relationships.[30] For the services, such guidance could streamline administrative interactions, especially for deployed forces or among different commands. Digital representatives from Navy or Marine Corps headquarters or a deployed unit's parent command could be seconds away with answers and insight. The technology also has the potential to provide better communication with partners, support bilateral and multilateral operations, and foster more-effective mission outcomes.

The automation of human tasks by AI systems expands beyond user interaction. The development of computer vision technology holds promise for areas such as administration, but also intelligence (discussed later in this article). AI-based computer vision can learn from documents, images, and videos to record patterns and adapt output measures.[31] AI is already capable of generating written reports for news agencies. News outlets such as the Associated Press (AP), Fox, and Yahoo use platforms from Automated Insights to write stories about earnings reports and sports recaps.[32] Its main AI-writing platform, called Wordsmith, is a natural-language-generation platform that turns data into written comprehensive text. The program allowed the AP to publish twelve times more stories in a specific topic area with fewer errors and greater efficiency.[33] The computing and technology company NVIDIA uses Wordsmith to streamline its reporting procedures and turn data into usable forms. The information is used to create instantaneous, comprehensive reports that team leaders can use to drive decision-making.[34] As a final example, social media giant Facebook built DeepText in 2016 to read and understand human communication in text form. The program reached "near-human accuracy" at the pace of thousands of Facebook posts every second and can be used in twenty different languages.[35]

AI data-analysis capabilities can free administrative sections from performing certain work and reduce manning requirements, while still accomplishing the same tasks. Since AI can learn to standardize documents, accomplish repeated tasks, and analyze data much faster than humans can, AI is suited to support perfectly the administration functions of the DoN. The list of possibilities for DoN implementation is almost endless: processing command check-ins and checkouts, facilitating awards write-ups and processing, executing search and

creation of policies and orders, authorizing travel, routing lists, disseminating white papers, and many more. Units teach new administrative clerks to accomplish these relatively routine tasks, but an AI mechanism can learn and perfect them in a shorter period.

One potentially overlooked administrative area of AI influence is energy usage. DoD spent over $15 billion on energy in 2015.[36] Even minimal reductions in facilities' consumption (such as air-conditioning and electricity) can have monumental cost savings. In one example, the Marine Corps Resident Energy Conservation Program implemented a network of centrally tracked energy usage monitors to reduce residential unit energy consumption by 12–15 percent and save $4 million.[37] AI-controlled large-scale heating and cooling systems on DoN installations could save tens of millions of dollars annually. In private residences, the Nest Learning Thermostat program is an example of AI drastically reducing energy costs for consumers by reducing heating bills by up to 12 percent and cooling bills by 15 percent.[38]

***Personal Productivity***

Increases in the daily personal productivity of DoN personnel can reduce man-hour requirements and generate institutional efficiency at the individual level. Existing AI platforms already can organize, write, and disseminate correspondence for their users.[39] Advances in speech recognition also hold enormous promise for personal productivity. Speech-recognition capabilities can be used for authentication, instructions, planning, production, and coordination.[40] Hours spent creating and editing documents, approving forms, passing documents through checklists, and sharing information vertically and horizontally could be reduced each day. These additional free hours could allow for greater productivity at the individual level and greater opportunity for responsibility at the unit level. At the most positive extreme, never again would a Marine or sailor be refused the opportunity to attend a training school or advanced instructional course because his or her presence at work was indispensable. The AI, which had been tracking that individual's work for months, would be able to slide into his or her place for the duration of the absence.

E-mail, the lifeblood of communication in the modern military, could benefit from the implementation of AI. Google's machine-learning capabilities for e-mail already can sort incoming and outgoing message traffic into different categories by subject and importance.[41] Google's Allo technology went a step further by suggesting responses for the user, on the basis of previous conversations and preferences. Allo tied into Google Assistant, which can provide local suggestions, Internet search results, travel directions, and answers to questions that appear naturally in the user's conversation. Google Assistant also can learn

from the user's preferences and needs to assist with tasks such as purchasing airline tickets.[42]

These information-processing AI systems can be tailored for specific industries. AI platforms are used in the health-care industry to process doctors' notes, reports, and patient files and compare those inputs to research studies and clinical databases to diagnose patients and propose treatment paths.[43] If such systems are capable of diagnosing and providing treatment for kidney failure and cancer, the same systems can be used for managing schedules, operations, training plans, and unit development. Digital personal assistants also could be used within and among commands to better exchange information, schedule meetings, plan agendas, and coordinate efforts.

*Planning*

The first unofficial rule of planning in the military is to ask the question: "What did they do last time?" Many leaders at all levels of command express frustration over lack of coordination between departments, inadequate duty turnover, and loss of long-term knowledge when vital personnel retire or redeploy. AI poses a solution in the form of a robust search function. Google has nearly perfected search techniques using a process called RankBrain. The AI remembers what other users asked for before and the eventual end locations of their searches. It then applies that knowledge to the next search having similar inputs.[44] When tasked with a new planning assignment—whether it be for range training, an exercise, or a full operation—it is likely that similar activities have been planned previously. AI presents an opportunity to harness years of institutional knowledge from parts of the Navy or Marine Corps that the searcher never may have known existed, all by saying, "I'm planning something like X-Y-Z involving A-B-C. Has this been done before?" Not only can the AI return useful options for aiding the planners, but it also can compile them automatically into a convenient format for easy mental ingestion. Leadership principles across the services call for the one-third–two-thirds rule of planning: one-third of the time for the leader, two-thirds of the time for the subordinate units. AI could transform this into a one-tenth–nine-tenths rule.

AI systems, in conjunction with humans, can support risk management and financial planning. Data analytics company FICO uses AI to assess individuals' credit scores and determine the level of risk they represent. FICO has used such systems for over twenty-five years for credit decisions, fraud prevention, and cyber security.[45] Wealthfront, an automated financial management and investment service, manages billions of dollars using AI.[46] BlackRock, one of the world's largest investing firms, uses artificial intelligence for "heavy cognitive lifting . . . to tease out patterns that might remain obscure to human eyes and brains."[47] Such

capabilities could save millions of dollars from the DoN budget by determining inefficiencies, identifying discrepancies, managing accounts, and providing more-exact financial estimates for mission planning.

The general area of suppliers and contracts provides opportunities for additional cost savings. Private companies are using AI to assist with conducting negotiations and drawing up contracts. SAP CoPilot, an AI with a chatbot-style interface, supports a business as a digital assistant to interpret documents and act on behalf of the user. The system then can provide the user with information and options in a simple manner. The platform has the potential "to help users make informed decisions based on complex data analysis that's done in real-time."[48] Deloitte, one of the world's largest tax accounting and consulting firms, partnered with Kira Systems to develop an AI that can analyze thousands of tax documents.[49] The software then structures the information in a usable form that identifies the most important clauses and segments.[50]

The most arduous step of military planning—orders development—could be streamlined with AI. Writing hundred-page documents with a nearly limitless number of annexes, appendices, and tabs has plagued staff officers since at least the Byzantine Empire in the tenth century.[51] In only three weeks, Booz Allen Hamilton (BAH) developed its prototype Tabletop Commander program, which can process an entire operations order and convert it into a "visually pleasing, realistic" interface for the recipient to use.[52] The service could be especially helpful for amphibious ready groups (ARGs) and Marine expeditionary units (MEUs) operating in constantly changing environments.

***Logistics***

Transportation, logistics, and supply capabilities stand to benefit most immediately from advances in AI. Google Maps provides the most basic example of the harnessed power of AI by using location and transportation data from thousands of smartphones to plan optimal transport routes. Uber also uses such programs to determine the most-exact arrival times, travel times, and pickup locations. Commercial and logistics aircraft harness AI for use in mechanical processes such as autopilot and route planning, to mitigate disruptions.[53] Tesco, a Britain-based multinational grocery store, uses AI to manage its own logistics chain and help its customers. After the company's creation of a massive "data lake," an AI system now routes drivers, manages stock levels, and controls customer-integration applications. The system can track frequently purchased items and usage of those items and plan restock times, so as to maintain uninterrupted flows of products for both retail stores and their customers.[54] Ocado, the world's largest online-only grocery store, uses similar technology to manage its own stocks as well as the systems for several large online retail businesses.[55]

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In the logistics industry, courier and parcel company DHL Express and IBM collaborated on a project exploring the current and future uses of AI. AI and logistics are natural partners since "the network-based nature of the industry provides a natural framework for implementing and scaling AI," which helps amplify "the human components of highly organized global supply chains." Some companies, such as Leverton, use AI to process and classify thousands of contracts, clauses, policies, and signatures, allowing documents with hundreds of pages to be completed in a fraction of the time necessary for human processes. DHL uses forecasting AI to analyze fifty-eight parameters and assist with proactively mitigating air freight travel delays. DHL has used an intelligent-routing AI called SmartTruck for over a decade to feed real-time travel information to its drivers. Furthermore, the company uses AI to manage its supply chain, ensure continuity, and minimize problems arising from poor labor practices and material shortages.[56]

Managing infrastructure is easier with AI. Engie, a French electrical company, uses AI-driven image processing, along with a drone fleet, to monitor infrastructure throughout its regions.[57] The company uses this technology to focus on high-value assets, such as gas and wind turbines, to monitor their status and predict maintenance cycles, which results in better efficiency and profitability.[58] The DoN could use these capabilities for monitoring vehicles, fleets, buildings, bases, and operational areas.

Maintenance and supply networks can benefit from the implementation of AI regulation systems to support human decision-making. General Electric (GE) uses smart sensors networked with AI throughout its equipment to detect issues and minimize downtime.[59] In the span of fifteen years, GE has progressed from monitoring equipment for failure using gauges and human intuition to using advanced AI that can predict failures in advance. GE harnessed the ability of online training programs to expand data-analytics training to members of its workforce of three hundred thousand.[60] The restaurant facilities management company ServiceChannel uses AI to monitor real-time inputs from its 1,500 facilities and one hundred thousand team members to determine the status of equipment, repairs, and ongoing operator functions.[61] Data points from over seventy million maintenance transactions compose the core inputs into the company's "decision engine," which helps managers make choices regarding pricing and assets.[62] Siemens monitors systems with its MindSphere, which tracks tool and drivetrain status and predicts when preventive maintenance will need to be completed.[63] These systems could reform military supply and maintenance structures monumentally, for both ground and aviation assets, especially at a time when aircraft maintenance issues continue to make monthly headlines.[64] For direct aircraft applicability, GE and Infosys already use AI-powered applications on a platform

called Predix to predict when landing gear on commercial planes will need repair and refitting.[65]

Travel-booking website Expedia incorporates different programs and databases into a single, centralized channel, which provides insight into additional uses of machine learning. Expedia's platform hindrance was an "unbounded computer science problem" because of the constant change in the inputs to its central system from other sites. Expedia uses an algorithm that has been tracked against human actions and purchases to predict optimal outcomes, and has perfected itself over years. One of the main challenges it faced was how to process inputs in different languages for its multinational business. For example, if a user in Spain is searching Expedia in Spanish for flights in Japan, how does the internal AI system search travel platforms in Japanese? The system's ability to overcome these difficulties illuminates potential in the Navy for interfacing with global supply and logistics systems as well as with partners and allies for overseas operations. Just as Expedia handles continuous changes in the inputs to its system, so could DoN logistics-planning and global tracking systems benefit from constant evaluation of hundreds of isolated, changing conditions.[66]

***Crisis Response***

AI systems already are helping organizations respond to humanitarian disasters and emergencies. According to the National Oceanic and Atmospheric Administration, fifteen events caused over $22 billion in damage within the United States alone in 2017.[67] Even nominal increases in disaster response efficiency or accuracy can result in immense economic and human benefits. AI systems are used to collect data in time sequences to track changes in disaster-stricken areas for generating damage claims and publishing images for media outlets and first responders to use.[68] Artificial Intelligence for Digital Response (AIDR) won the 2015 Open Source Software System Challenge for its application of AI to emergencies and humanitarian crises.[69]

The AIDR platform uses AI to sort through and categorize thousands of social media messages per minute into different categories for action, such as medical needs or sheltering.[70] AIDR then can help disaster-relief managers direct their efforts to the areas most desperately in need of aid, as well as to apply the correct types of aid (e.g., food supplies, medical assistance, heavy lift via helicopters) to the areas where they are required. AIDR was used in Nepal during 2015 to categorize requirements on the basis of urgent needs, infrastructure damage, and resource-deployment needs. Similar applications of AI were used in Chile during the 2015 earthquake near the city of Illapel. AI triggered evacuation warnings and disaster alerts to move thousands of citizens away from the affected areas. Other AI-driven systems hold promise for crisis response and military application in

general. 1CONCERN is a mapping tool used to create a "common and comprehensive picture during emergency operations," and to date it has analyzed almost eleven million structures and covered over thirty-nine million people.[71]

Often, in times of disaster when public services and infrastructure fail, social media platforms are the most accurate and most answerable form of information for on-the-ground aid workers. Social media can assist experts in conducting initial damage estimates, determining which populated areas were hardest hit, and helping rescuers locate victims. The ability of AI to sort through thousands of videos, pictures, and posts helps response teams map out disaster sites, provide early warnings of new disasters, and verify reports in real time.[72] In military terms, the combination of AI, social media, and drones could create a "common and complete picture for emergency operations centers," thus aiding and amplifying a commander's command-and-control capabilities.[73]

***Training***

Military training evaluations are notorious for their lack of reality. Existing AI capabilities for the creation of data—photographs, videos, written text, and three-dimensional displays—can magnify the efforts of existing small opposing forces (OPFOR) and simulated enemy forces often called Red Cell sections.[74] Training events involving communication, such as calls for fire, close air support, casualty evacuation requests, and execution checklists, can be made randomized, realistic, and challenging. Realistic and immersive decision-making exercises, information-processing evolutions, and instructional methods can be created and refined whenever needed. An OPFOR AI learns when students begin to exhibit predictable patterns and where continuous mistakes are made, and simultaneously refines the training evolution to address those problems.

WalkMe, a software training platform, uses AI to develop customized learning plans for users to take advantage of their talents and learning styles.[75] The AI system guides the learner through the new software and adapts the speed and depth of instruction to the learner's abilities. WalkMe AI uses predictive analytics, which employs hundreds of different measurements collected in real time, to determine the chances that a user will continue a program or stop.[76] Such programs could be used to enhance professional education and training such as distance and resident professional military education programs and military occupational specialty (MOS) training. The system also could be used for general force readiness to encourage Marines and sailors to focus on fitness training and health programs while away from work.

Video game developers have been leaders in AI research for years as they have made more-realistic, more-exciting challenges. Series such as *Call of Duty* and *Far Cry* contain advanced enemy AIs that can make decisions on how to interact with their environment and employ tactics with the best chance of success.[77]

Consultants from BAH predict that AI and data science will create a new wave of immersive training opportunities for the military. The company's eight hundred data scientists, including some hired from firms such as Nintendo and Disney, are working on different training projects. Two examples of these projects are to turn dense operational and training manuals into easily accessible forms and to create digital C-130 gunship trainers from thousands of real pictures.[78]

At the 2017 conference of the National Training and Simulation Association (NTSA) in Florida, AI industry experts and military officials discussed applications of AI for military training. NTSA president and rear admiral James Robb (USN, Ret.) discussed one potential option: the use of big data and AI to collect data from exercises and process it to "replay, improve performance, and give feedback to trainees." Tony Cerri, a director at U.S. Army Training and Doctrine Command, proposed that the combination of AI and big data for simulation could be "an unbeatable advantage for not only the nation but our DoD and where we're trying to go."[79] Because the battlefields and combat scenarios of the future will be increasingly complex and difficult to navigate, the potential to use AI for crafting "realistic, intelligent entities in immersive simulations" can provide the advantage the Navy and Marine Corps need, especially for operations in the contested littorals where future battles will be fought.[80]

***Intelligence***

Intelligence-collection systems already are overwhelming institutional capacity for sorting and analysis. Future intelligence operations will provide even more data points from which it will be progressively difficult to "discern the truth." The current U.S. Intelligence Community collects more data in one day than its entire workforce ever could analyze. Military deception (i.e., lying) will become easier for both allies and adversaries.[81] Locating an enemy's critical assets and high-payoff targets will become increasingly problematic with each passing year. In the realm of intelligence collection, much research and work already have focused on new "swarm" techniques to eliminate an adversary's ability to hide.[82] In response, Paul Scharre from the Center for a New American Security explains that "ultra-cheap 3D-printed mini-drones could allow the United States to field billions—yes, billions—of tiny, insect-like drones." AI, combined with new collection platforms, can streamline intelligence operations. Bruce Schneier from Harvard University contrasts emerging collection capabilities to those of the "exceptionally paranoid" East German secret police. While one out of every 166 citizens of East Germany was a spy, corporations today can use digital surveillance to track billions of people with minimal staff.[83] Organizations such as Facebook and Google, as well as global marketers and political consultants, already employ such techniques.

AI assistance to intelligence also can be applied to tracking and targeting. Private institutions such as the Zoological Society of London (ZSL) are using

these capabilities. ZSL uses a Google Cloud machine-learning program to track animals using cameras and image analysis. The cameras and AI use the motion of both animals and humans to identify threats from poachers. ZSL analysts previously had to sort and document all information manually, activities now done by AI. The AI exploits approximately 1.5 million different images and also is adapting its system to document conservation details in categories such as geographic regions and environmental impacts.[84]

AI has led to growth in imagery analysis. The consulting firm Accenture awarded online social network Pinterest its 2017 Technology Vision award for its use of AI. Pinterest uses AI to run its image-recommendation system, which discovers items similar to what the user is trying to find. In 2017, Pinterest introduced Pinterest Lens, which uses photos that users take of objects both online and in the real world and then helps them "identify, buy or create" such items. Pinterest Lens is a bold step that attempts to bridge the divide between the digital and physical worlds.[85] Such technology could be applicable in both data collection and analysis for the Navy and Marine Corps. For instance, a collection element could photograph an object from a distance and both the team in the field and the staff in the rear could benefit from an instantaneous match to the hostile platform and its capabilities.

Just as AIs can be programmed to learn from tax documents and contractual agreements to sort out details, the same AIs can be programmed to sort through operations orders, databases, mission briefs, status-of-forces agreements, DoD policies, planning doctrine, and historical records to generate ideas and propose courses of action for commanders. Intelligence preparation of the battlefield can be nearly instantaneous. While military operations never duplicate themselves, they often remain similar. Maritime intelligence, an ever-complex and unbounded realm, still displays patterns. For example, ships move through prescheduled cycles of maintenance, training, and operations. On-site monitoring of how these cycles apply to adversarial nations requires maintaining a high force presence in contested areas, but AI engines with large-scale data sources can guide the application of scarce DoN assets for efficiency and cost while still meeting the ISR needs of the fleet.[86]

### *Force Protection*

AI-centered computer-vision technology could be used for security and base access. Providing base security constitutes a major use of manpower on naval installations. AI could augment gate-security guards by providing approval or denial for both vehicles and individuals. The system could assess the risk applicable to new persons requesting access, determine access approvals, and increase security measures on an installation as needed, depending on internal and external threats. Photo and speech recognition can provide an additional security

layer when deciding on access.[87] One 2015 estimate stated that digital assistants for businesses would be able to know individual customers by both voice and face by the end of 2018.[88] Security applications likely will follow in stride.

The Transportation Security Administration is implementing AI to improve the efficiency and effectiveness of screening methods in U.S. airports significantly. The Dynamic Aviation Risk Management Solution will be used to customize security levels for individuals, as determined by their "risk categorization" and flight patterns. The long-term goal is a "tunnel" that registers and screens individuals as they walk through en route to their gates.[89] A similar system could streamline base and facility security to a level requiring little, if any, human involvement.

Mobile and roaming robotic collection platforms can harness AI for force protection. Roomba, the basic room-cleaning vacuum robot, uses a combination of AI and sensors that are "capable of scanning the room size, identifying obstacles, and remembering the most efficient routes and methods." This AI capability could be used for roaming bases and rear security areas to free up manpower for offensive operations or other needs of the commander. AI security programs could combine roaming AI-instructed sensors with home security–style camera systems such as BuddyGuard and predictive incident-analysis software such as Deep Sentinel to provide comprehensive force-protection measures for naval forces, both in garrison and when deployed in operating environments.[90]

***Force Structure***

AI has numerous applications for force structure and personnel management within the DoN. For recruiting and force preservation, AI could provide early warning to units and commanders about at-risk personnel. Fama is an AI-based company that screens public personas on social media platforms to detect violent or racist tendencies. An estimated 43 percent of private employers already screen potential candidates' and employees' social media accounts for such traits.[91] In the Navy and Marine Corps, this kind of system could be used for force-preservation, recruiting, and transition programs. The system also could be used for intelligence purposes, to identify key nodes and leaders of networks.

Artificial intelligence is reworking human resources and staffing structures in the civilian world; military organizations could see a similar major benefit from this type of AI. IBM is working to create a new AI platform that answers new employees' most important questions and streamlines the onboarding process so that new employees are more productive. Such a tool would provide immense benefits to sailors and Marines who change responsibilities and are assigned new duties as often as every few months. AI also is being used internally to "track, analyze, manage, and protect" top talent within firms.[92] Enhancing the internal experience within an organization can reduce turnover, retain institutional

knowledge, and create a more content workforce. Both the Navy and Marine Corps could benefit from a better employee experience to increase reenlistment rates, especially in critical MOSs and difficult billets.

Military recruiting stands to benefit as well. Personal advertisement targeting, such as that conducted by digital marketing firms, can focus a recruiter's efforts to minimize wasted time.[93] AI recruiters in the business community are being applied to correlate employees with their best-suited positions, providing the right benefits, work locations, and development opportunities.[94] Navy and Marine Corps recruiting is a manpower-intensive affair; Navy Recruiting Command involves more than six thousand personnel who are taken away from forward positions in the fleet to perform these important duties.[95] AI not only could decrease the number of personnel necessary but also could reduce costs and help recruiters to be more efficient by targeting strategically chosen candidates. Dynamic-pricing tools can work for both recruiters and career planners.[96] If one candidate needs a bonus of only five thousand dollars to enlist while another needs twenty thousand dollars, AI can adapt those amounts to save money and target the right recruits. If money is not a factor, AI can help recruiters identify a candidate's motivations and appeal to those incentives.

## IMPLEMENTATION

Successful implementation of AI into the Navy and Marine Corps cannot be outsourced fully. AI systems and the databases they use are inherently specific to the institutions that incorporate them. AI development leaders and the technology community favor collaboration and open-source platforms, but development from within minimizes vulnerabilities that may appear in the systems. This developmental process must pursue two mutually beneficial paths: in information and technology, and regarding personnel. AI only can reach its maximum effectiveness when the right people are paired with the right data. The more data available for the system to learn, the faster and more efficient the system will be. For successful implementation and growth, the DoN needs military specialists with knowledge of AI, human-AI collaboration, AI-database interworking, AI ethics and policy, and specific subcategories of AI, such as machine learning and deep learning.

Database compilation is a long-term process that should begin today; however, many tools and processes are available now and can be replicated. Various organizations specialize in providing AI support to new and existing businesses by applying specialized expertise to the customer's needs. For example, Techcode's Global AI+ Accelerator offers consulting services to start-ups and established businesses. The company's general manager explains that advances in AI are disrupting core organizational coordination and control processes such

as scheduling, resource allocation, and reporting.[97] Microsoft offers AI tools for developers and information professionals to harness the power of their data. Microsoft Azure lets businesses such as Geico, Heineken, and Adobe empower their already-existing applications and data services with the benefits of AI. The benefit of a prepackaged system such as Azure is its dependability through Microsoft, on which the DoN already relies for other applications. The platform is designed specifically to support various operating systems, programming languages, and databases, and it helps businesses to build custom applications for their specific needs.[98]

Implementing this change in an organization of the size and complexity of the DoN is not impossible. The utility of Azure and its process have been verified. The global shipping firm Maersk adopted Azure for five of its data centers, which led to performance improvement and risk reduction. Previously, Maersk had stored its massive amounts of data in five locations on three continents, each of which had minimal capacity for growth. Performance lagged and employee productivity was reduced severely. The outdated system also suffered from security concerns. The firm set a twelve-month timeline for relocating its data centers and their 14.4 million files, which amounted to an "impossible mission that nobody had done before."[99] But the actual process took only six months and alleviated the company's dependence on vulnerable, unreliable, failing hardware.

Amazon also rebuilt itself around artificial intelligence beginning in 2014. Amazon already used simple AI in areas such as its shipping schedules and warehouse management, but recent advances in computer vision, speech, and language processing allowed it completely to revamp twenty years of institutional structure in a way that "require[d] skills that [Amazon's] team didn't possess, tools that hadn't been created, and algorithms that no one had thought of yet." To design its flagship AI product, Alexa, Amazon worked backward with few restrictions. Blueprints included features that did not exist at the time but would be created along the way.[100] Similarly, with internal expertise, external guidance, willpower from leadership, and a plan of action, AI systems could become ingrained throughout the DoN within a few years.

IBM's Watson provides a top-tier AI system with targeted personnel support and guidance. IBM helps its customers identify the areas where Watson will be most beneficial, then provides specialist support to guide the process along the way. The primary drawbacks to this approach are the time and scale required. Fortunately, the DoN is not dependent on profit margins for its success, and the Navy and Marine Corps are already natural trailblazers in their industries. While the institution certainly faces unique challenges, the process is feasible and the challenge worth tackling. An article in the *Harvard Business Review* proposes gradually implementing AI with small projects and "low hanging fruit."[101]

Companies pick a specific program in which the value is the greatest. This approach could work for the services by initially applying the system to a specific command that would benefit the most, such as an ARG/MEU team, a supply depot, a maintenance facility, or a logistics center. To avoid complications with classifications and multiple systems, AI's initial targets should avoid intelligence units until the organization overcomes early implementation problems.

Finally, internal expertise from within the DoN for implementation of these programs will be necessary, since commercial applications are not tailored for military needs yet. The Army's science and technology community has discovered this situation in its research. Army researchers found that their needs for AI, such as autonomous convoys in rough environments, manned-unmanned teams for ISR targeting, and intelligence analysis, are not yet "of significant interest" to private companies.[102] Ultimately, these business applications provide not a specific solution but rather inspiration and a roadmap that the DoN can use to implement AI strategically throughout its departments.

## COSTS AND TRADE-OFFS

Research and development within the Pentagon is often a zero-sum game: if one project benefits, another is hindered. Advances for AI will suffer a similar fate, and the DoN will need to make necessary trade-offs to compensate as it advances. Estimating the lifetime cost for a possible capability still in its infancy—almost certainly inaccurately—would lead to the termination of any accountant involved. Regardless, comparing current investments in AI research with DoD budgets, similar defense contracts, and previous platform procurements can serve as a minimal starting point in building a frame of reference.

In 2017, the U.S. government invested over $7 billion in AI, big data, and cloud storage and computing.[103] Roughly $2.4 billion of the sum went to AI and its largest segments: learning and intelligence, advanced computing, and AI systems.[104] For reference, the president requested $3.2 billion for the Marine Corps alone in fiscal year 2019 (FY19) and $194.1 billion for the entire DoN, both increases from the previous fiscal year. The total DoN budget can be narrowed further to examine the $18.6 billion requested for research, development, test, and evaluation fund (RDT&E) allocations, which includes $750 million for advanced technology development, $891 million for applied research, and $4.3 billion for advanced component development and prototypes.[105] If, at a minimum, the Navy procured 25 percent of DoD's total AI investments, it could imply that only 3.2 percent of the DoN's RDT&E funds went toward AI and associated technologies.[106] Without increases in funding, other naval research projects would need to be trimmed (or sacrificed) to allocate money to AI. The tricky balancing act is ensuring that

cuts are made without impacting the actual weapons and assets that AI would enhance.

The fiscal uncertainties of congressional budgets lead to funding challenges for AI and other new R&D technologies. For instance, while the FY19 budget request included large percentage increases for each service, no new major systems received allotments for acquisition. The Pentagon's request focused on the continued production and refinement of existing capabilities because of the fear that budget increases will not remain high and consistent for years to come.[107] Instead of starting new projects that can be defunded at any time, decision makers erred toward consistency and meeting current mission requirements—an understandable and sensible position. Unfortunately, a focus on current systems means a failure to allocate sufficient efforts toward capabilities for conducting future conflict.

Previous and existing defense contracts also provide insight into the costs of new technologies. The Army's Logistics Support Activity signed a thirty-three-month, $135 million contract with IBM in 2017 to support equipment readiness with predictive analytics from its Watson platform.[108] The Army also signed a $62 million deal with IBM to build, manage, and operate a "private Army cloud data" system.[109] Palantir and Raytheon made national headlines with the award of a ten-year, $876 million contract for an Army intelligence platform, DCGS-A Increment 1.[110] In 2018, BAH signed with the Navy a five-year, $92 million contract ($18.4 million per year) for "cybersecurity, technical, and program management."[111] Standing out among these contracts is BAH's enormous ten-year, $17.5 billion ($1.75 billion per year) contract with the Defense Information Systems Agency to provide a "globally accessible enterprise information infrastructure."[112]

If AI technology in its broadest form is applied to military capabilities, perhaps the best estimation of cost is that of the military platforms and the assets with which Washington projects power. Upgrades to the M1A1 battle tank since 2005 have cost U.S. taxpayers over $4 billion ($438 million per year) through 2018.[113] The DoN is paying $4.3 billion for its next aircraft carrier, USS *John F. Kennedy*.[114] The Navy, Air Force, and Marine Corps combined signed a $1.4 billion sustainment contract for the F-35 in 2018.[115] None of these sums includes the initial research, design, testing, and implementation costs of new capabilities, but they still emphasize the sustained, multibillion-dollar investments required to field unsurpassed American military technology.

Finally, the greatest cost of AI development may be measurable not in dollars spent or the other projects DoN cancels, but rather in the way AI could reshape the world in which the Navy and Marine Corps operate. AI experiments have

demonstrated their worst possible results by teaching themselves both racism and sexism in separate cases.[116] AI also could make it easier for governments and organizations to enforce prejudicial and discriminatory policies on a supranational scale.

AI can be a great force for human development, or it can be a medium through which to act out the worst instincts of humankind. The DoN surely will encounter and respond to both possibilities. On a global historical scale, past periods of industrial revolution and technological advance created stark changes to the balance of power and altered international competition. The development of AI likely will lead to a similar international outcome in which winners reap benefits. The Center for a New American Security breaks down the "key elements of national power" for the world of AI: owning large amounts of useful data, having a large AI-capable human talent pool, harnessing computing resources, creating organizations aligned to take advantage of AI, enlisting public-private cooperation, and being willing to act on AI and its potential. The United States, China, and Russia stand ahead of the pack in terms of these elements, but other technology leaders, such as Israel, Singapore, and South Korea, are not far behind.[117] If these nations achieve usable AI integration for economies and militaries, the rest of the world may be left behind for decades.

The economic boom from countries that harness AI will increase the gap further. The mutual relationships between economic and military power will be "the clearest national security consequence" of the development of AI.[118] Economic gaps will grow wider as AI becomes mainstream for private business. PricewaterhouseCoopers estimates that the economic boon from AI will be $3.7 trillion for the United States and $7 trillion for China, while only $0.9 trillion for Southeast Asia, $0.7 trillion for southern Europe, and $0.5 trillion for Latin America.[119] A lack of economic growth in areas where the Navy and Marine Corps already operate, exercise, and work to develop host-nation capacity may mean that Washington should prepare a long-term plan for multidecade partnerships in these unstable regions.

The presence of artificial intelligence in the war zone is close at hand, and the decades of U.S. technological superiority are coming to an end.[120] This shift should be embraced. China aims to have an AI industry worth $150 billion by 2030. A single technology center in Beijing's suburb received $2.1 billion of investment.[121] In comparison, total Pentagon spending on advanced technology in 2017 was $7.4 billion, only a portion of which went to AI.[122] Investments in R&D are important, but implementation should begin sooner rather than later. While Russian spending on AI remains comparatively low, President Vladimir V. Putin has recognized the field's importance for the future of world affairs,

stating: "Whoever becomes the leader in this sphere will become the ruler of the world."[123] The failure of the United States to invest in this technology—specifically within its expeditionary maritime forces—could mean a dramatic shift in world power.

Autonomous war-fighting machines are still years away, as are the operational applications of swarm techniques, autonomous wingmen for pilots, and general AI.[124] However, the adoption of AI in the model of current business practices offers the Navy and Marine Corps three main benefits. First, if the DoN begins collecting and compiling data now, it will have larger databases from which AI can learn, and larger databases usually result in more-effective AI systems. This process will be time-consuming—the sooner we can begin, the better. Second, fewer DoN personnel will be restricted to the noncombat sector if support functions are transferred to AI. This development frees up manpower for use in new specialties, additional combat units, and forward deployments around the world. Finally, the sooner the DoN can expose average Marines and sailors to AI, the more familiar and comfortable they will become with the technologies. In the future, when the full capabilities of AI are harnessed and implemented throughout the services, the fighting force will be ready to embrace them. As noted earlier, the use of Siri does not require any understanding of computer programming or speech-recognition techniques. It does, however, require the use of an iPhone and its associated applications. A flattening of the AI learning curve means maritime forces will suffer fewer disruptions to their operations and can maintain requirements more effectively over the coming years. The business sector's AI applications provide the best starting points from which the Department of the Navy can accomplish this integration.

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# EXPLORING THE OPTIONS

## The Development of USN Tactical Doctrine, 1913–23

*Trent Hone*

In the decade between 1913 and 1923, the U.S. Navy leveraged deliberate experimentation in the Atlantic Fleet, theoretical analysis at the Naval War College, and practical experience in World War I to explore potential options for coordinating a modern fleet in battle. These efforts allowed effective doctrinal concepts to emerge from the bottom up, from the experiences of more-junior officers, and they triggered the development of the U.S. Navy's first coherent tactical doctrine, issued in the Atlantic Fleet's *Destroyer Instructions* of 1921 and the U.S. Navy's *War Instructions* of 1923. These manuals—and the implicit assumptions embedded within them—mark a watershed moment in the U.S. Navy's approach to combat. They provided the foundation for doctrinal development in the interwar period (1919–39) and influenced USN tactical concepts through the end of World War II. The emphasis placed on bottom-up doctrinal development was one reason the U.S. Navy was so effective at identifying and harnessing new techniques during this period.

This article examines the processes that led to those manuals. It explores the work of the Naval War College and explains how it enhanced the effectiveness of the fleet. It also analyzes the Atlantic Fleet's tactical exercises, detailing how they refined the thinking of senior commanders and fostered experimentation by more-junior officers. Furthermore, it discusses the U.S. Navy's experience in World War I, the valuable lessons learned, and how these lessons were documented effectively in the immediate postwar period.

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The development and refinement of the U.S. Navy's tactical doctrine from 1913 to 1923 are a clear example of effective organizational learning. Before the start of World War I, the U.S. Navy possessed a modern battle fleet but had very little experience or knowledge of how to handle it in battle. Through experimentation, analysis, and practical experience, officers developed an integrated set of concepts for coordinating their actions and functioning as a cohesive unit. These ideas became the foundation of the U.S. Navy's tactical doctrine and served the U.S. Navy effectively for decades.[1]

## DOCTRINE DEFINED

Before this article analyzes the Navy's doctrinal development, it is important to define the concept of doctrine explicitly. Generally speaking, *doctrine* is the set of implicit and explicit assumptions that govern the behavior of a military force. Doctrine guides decisions in the absence of precise instructions. In this sense, it is similar to *culture, ethos,* and *mind-set,* but is much more specific. Doctrine is the collection of habits and behaviors that influence decision-making in combat.

The most important goals of doctrine are to ensure coordinated action in battle and to enhance the ability of ships and sailors to act toward the same end, even in circumstances in which the ability to communicate instructions is limited or impossible. Effective doctrine increases fighting power and helps overcome the friction of combat. As a 1938 manual explained, the Navy clearly understood doctrine this way: "The purpose of a written battle doctrine is to promote effective coordinated action in battle through mutual understanding. In the absence of instructions the doctrine should serve as a guide to sound decisions and appropriate actions in battle. The written doctrine should, therefore, set forth those methods and principles of action that have been tested and found to produce the most advantageous results."[2]

Ineffective doctrines, in contrast, inhibit coordinated action. They tend to suffer from one of two extremes: either they stifle initiative by providing guidance that is too rigid and too exhaustive, or they limit coordination by failing to foster aligned decision-making. Effective doctrines are challenging to develop because they must strike a balance; they must create alignment while simultaneously avoiding rigid instructions that inhibit individual initiative.

This was the essence of the Navy's struggle. Was it possible to create a framework that allowed sufficient room for individual initiative while concurrently ensuring alignment of decentralized decision-making? In the years before World War I, American naval officers explored the options for coordinating a large, distributed battle fleet in combat. Their solution was a learning system that led to a sophisticated approach to doctrinal development.

## ANALYSIS AT THE NAVAL WAR COLLEGE

At the dawn of the twentieth century, naval tactics focused on coordinating the movements of a fleet in battle. Coordinated movement was critical; without it, ships fought as individuals and not as a cohesive whole. A formation fighting as individual ships was far less effective than a formation that maneuvered and fought together. However, an inability to experiment effectively at sea with large-scale, coordinated, tactical maneuvers hampered the Navy's development of effective approaches for coordinating the movements of large formations. At that time, the Navy was organized into numerous squadrons and distributed around the globe. The ships of those squadrons often were sent on independent missions, making tactical exercises with more than a handful of ships a near impossibility.[3]

Victory over Spain in 1898 made the United States a world power. As the fleet increased in size and capability, it was expected to be able to project naval power into the Caribbean and across the Pacific to protect American interests. In 1898, the Navy had just four modern battleships in commission; by 1905, there were twelve, with twelve more under construction. These ships had to be prepared to operate as a fleet and to fight and win a naval battle against a sophisticated opponent, such as Germany (the focus of War Plan BLACK) or Japan (the enemy of War Plan ORANGE). Yet without the ability to practice fleet operations, American naval officers had no clear sense of how best to ensure coordinated action in a modern naval battle.[4]

The rapid pace of technological change compounded the problem. Advances in fire control increased the effective range of ships' guns, turbine engines and oil fuel made ships faster, face-hardened armor and new armor schemes made them more survivable, and advances in the design of shells and torpedoes made them more deadly. Radio technology allowed fleets to coordinate their movements over much greater distances in almost real time. New, specialized platforms—scout cruisers, destroyers, submarines, and aircraft—augmented the more traditional battleships and armored cruisers. Modern fleets would move faster, strike harder, and operate over a much greater area than ever before. Naval combat was being revolutionized.

To determine how best to command and coordinate such a fleet in battle, the Navy experimented with a variety of mechanisms. Initially, because there was no large body of ships at sea, simulations at the Naval War College were used to test hypotheses, model new techniques, and provide tactical experience for officers. A crucial step was the introduction of strategic and tactical problems. Captain Henry C. Taylor, USN, who became President of the Naval War College in November 1893, worked with William McCarty Little, a retired lieutenant on

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the College's staff, to develop adversarial problems that encouraged the development of new tactical approaches and improved the Navy's ability to assess them.[5]

Ronald Spector described their approach as follows: "Through these methods the graduates of the Naval War College became accustomed to making quick decisions to cope with rapidly changing situations. The war problems, although somewhat unrealistic in nature, were nonetheless invaluable in giving the officer students the 'feel' of war situations and in teaching them the techniques of command."[6] The primary purpose of the problems was to further the education of officers, but they had a secondary effect. By exposing officers to simulated combat conditions, the problems uncovered new techniques that increased the Navy's ability to coordinate forces in battle. Two specific techniques were essential to future developments.

### *The Conference Method*

The first was the introduction of the *conference method*. Conferences were used first to evaluate potential solutions to strategic and tactical problems. Once the assigned solutions were complete, a conference was called. During the conference, officers openly critiqued each solution and discussed the best approaches. Eventually, the conference method became the standard technique for sharing information and collectively making sense of a complex situation.[7] Conferences then were used to explore options at the start of a problem, before a specific solution had been devised. Prior to committing to a course of action, members of each opposing side would gather together in a conference and use their collective knowledge and experience to identify opportunities, courses of action, and potential solutions. Although a clearly established hierarchy would command the simulated forces during the execution of the problem, a flatter, more collaborative, team-based structure became the norm for developing plans.[8]

The growing use of the conference method was a direct result of the collaborative nature of the Navy's wargaming process. Unlike those in most other services, the Navy's games employed active competition. Teams of opposing officers played different sides and actively tried to outmaneuver and outwit each other. This approach provided valuable practice and revealed the importance of creativity, or what the College's most famous President, Rear Admiral Alfred Thayer Mahan, USN, called the "art of command." For Mahan and his successors, artful execution of naval command required contextual interpretation of the underlying principles of naval warfare.[9] As Rear Admiral Bradley A. Fiske, USN, summarized in his influential work, *The Navy as a Fighting Machine:* "In any human art and science—say medicine, music, or navigation—it is the art and not the science by which one gets results. . . . [T]he science is merely the foundation on which the art reposes, and . . . it is by the practice of the art and not

the knowledge of the science that skill is gained."[10] The collaborative approach introduced by the conference method helped ensure that attendees of the Naval War College became more experienced in that art.

***Estimate of the Situation***

The second critical technique was the *estimate of the situation*. Introduced in 1910, the estimate was a structured approach to problem solving that provided a common frame for conceptualizing and discussing approaches to wartime—or simulated wartime—conditions. It guided the work of officers who came together in a conference to develop plans and solve a problem. In a 1912 lecture on the subject, Commander Frank H. Schofield, USN, defined the estimate this way: "It is a method of applying knowledge and judgment to concrete situations. It is a natural method, one used unconsciously in every day life. A situation arises requiring action. We decide what the situation requires. We think of what difficulties have to be overcome, what ways we have of overcoming them, and finally how we will go about the task."[11]

The estimate had four basic components: *the mission, an assessment of enemy forces, an evaluation of own forces,* and finally *the decision*. The mission was the starting point; it usually was derived from instructions or orders from a superior. At the Naval War College, it was the foundation of the problem. Officers became practiced at reviewing their instructions thoroughly to produce a clear, and common, view of the mission. Schofield continued: "Experience has shown that the statement of a problem to men whose strategic and tactical ideas have not been coordinated by training will result in marked diversity in the statements of the *mission*. . . . We are working for unity of action. If the statement of the same problem to all can provoke the same statement of mission from each, then we have taken a sure and necessary step toward *unity of action*" (emphasis original).[12]

Although Schofield did not use the term *doctrine* in his lecture, he clearly was aiming for the results that an effective doctrine would produce. The process of producing the estimate was intended to create a common conceptual frame, so that all officers would derive similar missions from the same problem statement. This was an important step for fostering alignment and cooperation toward a common goal. Collaboration in conference helped ensure that outcome.

Once the mission was identified, officers explored how the enemy could prevent its accomplishment. In the enemy forces step, they examined the strength of enemy forces, their disposition, and their probable intentions. The most important aspect of this step was assessing the situation from the enemy's perspective to reduce the possibility of surprise. Schofield described the appropriate mindset as follows: "The effort should be . . . to arrive at the enemy's point of view, to think as he would think of us, to consider all the plans that he would consider,

and to estimate which of those plans would be most injurious to us. . . . One must endeavor never to be caught in a situation that has not been foreseen and considered as a possibility. It is only by a thorough and pains taking [*sic*] consideration of the enemy's probable intentions that surprise can be avoided."[13]

Once the enemy's most dangerous course of action had been considered, the next step was to examine the options available to one's own forces. Officers were expected to analyze all avenues that could achieve the mission. One of these would be chosen, and that would become the decision—the foundation of orders for subordinates. Schofield emphasized that it was important to make the decision conclusive and resolute, so that it would inspire concerted action. However, he emphasized also that the decision should not project a plan too far into the future; a balance had to be struck so that the force could adjust and exploit unanticipated opportunities.[14]

### *Creating a Command Framework*

Through the conference method and the estimate of the situation, the Naval War College created an initial conceptual framework for command in war. Although these specific approaches fell short of a doctrine, they did expose naval officers to a common methodology for structuring plans and orders, instill the value of working through strategic and tactical problems collaboratively, and uncover the challenges involved in the art of command. Practice using the conference method and the estimate of the situation also impressed on officers the importance of fostering aligned, decentralized decision-making. This would be essential in actual combat with a large, modern battle fleet. Experimentation in the Atlantic Fleet would build on this foundation and lead to the Navy's first deliberate experiments with creating a doctrine.

## EXPERIMENTATION IN THE ATLANTIC FLEET

The inability of American naval officers to gain experience coordinating a large fleet at sea ended with the establishment of the Atlantic Fleet in April 1907. Formed by President Theodore Roosevelt and commanded initially by Admiral Robley D. Evans, USN, the Atlantic Fleet was employed as a platform for deliberate experimentation in the ten years before the American entry into World War I.

Although many officers had become familiar with strategic and tactical problems at the Naval War College prior to the creation of the Atlantic Fleet, there had been no way to engage in similar exercises at sea. Once the Atlantic Fleet returned from its voyage around the world (often called the cruise of the Great White Fleet) in February 1909, contested exercises at sea began. The initial versions of *Instructions for Battle Plan Exercises* were published in 1910. In 1913, the Atlantic Fleet's commander, Rear Admiral Charles J. Badger, USN, issued the

more sophisticated "Rules for Battle Maneuvers"; this marked the beginning of a new paradigm.

Badger's 1913 "Rules" emphasized that the game board and fleet exercises complemented each other. The board was best at demonstrating tactical concepts; exercises with the fleet provided practical experience. This mirrored the concepts of Bradley Fiske, a rear admiral serving as Secretary of the Navy George von Lengerke Meyer's aide for operations. It is likely that Fiske influenced Badger's "Rules."[15] This specified the following objectives for fleet exercises:

a) To acquire familiarity with the aspect of a modern sea battle ground

b) To give experience in handling squadrons, divisions, and ships

c) To afford practice in quickly recognizing conditions and changes of conditions and in the appreciation of tactical principles

d) To afford experience in noting and appreciating the actual physical features of wind, spray, smoke, sun, etc., and their influence

e) To afford opportunity for gunnery training and particularly for the exercise of range finder, plotting, and fire control parties under battle conditions

f) To exercise signal and radio parties[16]

While simulations and wargames could explore the theory of naval combat, exercises at sea were essential for developing the practical experience required to command the fleet effectively in battle. Accordingly, the exercises focused on coordinating the movements of the entire fleet: "When all ships work together . . . when each knows that his neighbor knows what he is doing, because they have all been given sound practical methods, then much of the difficulty of handling formations will disappear, and a few simple signals, by flags or by radio, or by both will suffice to handle naval forces. This will require the thorough constant practice, which will produce satisfaction and confidence born of efficiency."[17]

To help run the exercises and ensure the rules were applied appropriately, each ship appointed an umpire. Umpires kept track of the action and scored the appropriate damage. Dice were used to assess the impact of gun and torpedo fire. Lights and flag signals designated targets. The accuracy of the exercise and therefore its value as a learning tool depended on the performance of the umpires. Badger's "Rules" noted that "careless or inaccurate scoring may vitiate the results of an otherwise excellently conducted maneuver."[18]

Larger-scale maneuvers were held on an annual basis, in either the Atlantic or the Caribbean. The most sophisticated of these foreshadowed the more-famous fleet problems of the interwar period. Strategic Maneuver 3, conducted August 20–31, 1916, was a good example. It simulated an effort by a European power to

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seize a base on the East Coast of the United States. These kinds of exercises, in which one fleet aggressively challenged the Monroe Doctrine, were commonplace. They helped the Navy improve fleet tactics and provided valuable experience in coordinating the movements of dispersed forces over a large area. One of the most important lessons learned in these exercises was that the Navy lacked effective scouting vessels; destroyers were pressed into the role, but the small ships often had difficulty maintaining speed in the heavy Atlantic seas.

Some exercises investigated specific topics; *fast wing* tactics were some of the most common. The Navy lacked battle cruisers, a new ship type that the Royal Navy (RN) introduced with its *Invincible* class, and the Americans were curious to understand how they could be used. Battle cruisers combined the firepower of a battleship with high speed, but sacrificed protective armor. The Navy explored how these ships might operate—and how best to fight against them—by using substitute vessels; they generally were positioned as a fast wing ahead of the battle fleet. These maneuvers repeatedly illustrated the importance of concentrated firepower; the fast ships often found themselves isolated from the support of their main body. Opponents that remained together and fought as an integrated unit generally overwhelmed them.[19]

However, that was not always the case. Tactical Problem 33-13 of July 25, 1913, pitted the fleet's destroyers, representing a force of high-speed battleships, against the fleet's battleships. The destroyers split into three divisions, and although they did not remain concentrated, they coordinated their maneuvers so as to come into action almost simultaneously. The battleships also split into three divisions, but one of the flank divisions failed to keep the destroyers on the beam and was judged to have been damaged seriously. The commentary on the problem considered it "interesting and instructive as a tactical exercise" because it "presented several features which had not been previously brought out during fleet maneuvers."[20] Much of this may have been because of the new techniques that the commander of the destroyers was employing with his subordinates.

That commander was Captain William S. Sims, USN, who had come to the Atlantic Fleet's Torpedo Flotilla earlier that month. He was responsible for the fleet's destroyers, and prior to assuming command of the flotilla Sims had attended the Naval War College. While there, he met Lieutenant Commander Dudley W. Knox, USN, who had been agitating for the development of a uniform doctrine of command. Knox's March 1913 prizewinning essay on the subject emphasized that the existing approach of issuing lengthy orders was insufficient to "produce the unity of effort—the concert of action—demanded by modern conditions in a large fleet." Instead, it killed initiative and engendered a spirit of "blind obedience."[21]

Sims appreciated this perspective and brought Knox with him to the Atlantic Fleet as his aide. Other talented officers joined them. Commander William V. Pratt, USN, another acquaintance from Sims's time at the Naval War College, served as Sims's chief of staff. Lieutenant John V. Babcock, USN, served as their operations officer. Together, these four officers turned the flotilla into a laboratory for the development of tactical doctrine. Sims explained his concept in a letter: "The torpedo fleet could be made an enormous game board—an exceedingly valuable school for trying out all kinds of maneuvers at small expense. There is a lot to be learned. None of us knows much about it yet. But one thing is sure, and that is that it can only be learned by study combined with actual maneuvers with the Fleet."[22]

Sims recognized that his command had limited practical experience. His young destroyer commanders were knowledgeable, talented, and prepared to be aggressive, but they lacked a uniform approach to tactical situations. Their actions were not cohesive, and they were unable to work together to turn their small ships' powerful torpedoes into potent weapons. Doctrine became the means by which Sims fostered collaboration and brought cohesion to his force, increasing their offensive potential.

> To create a flotilla doctrine, Sims inaugurated the use of the conference method for staff study and work with the destroyermen. . . . [Sims] recognized that the Navy's hierarchical system would not permit his subordinates to disagree with him very vigorously or advance their own ideas unless he changed the ground rules. Thus he called for setting aside rank in conference—ideas would be studied on their merits irrespective of origin. Dissent and argument became the rule of the conference until consensus occurred; then all were expected to give complete loyalty to the operating plan and the guiding doctrine.[23]

Sims leveraged his experience with the conference method and the estimate of the situation at the Naval War College and brought these ideas to the flotilla. They enabled him to draw on the skills and abilities of his subordinates and develop effective plans collaboratively. They discussed upcoming exercises and experimented with options during tabletop wargames aboard Sims's flagship. This led to greater cohesion in maneuvers and exercises; it also increased familiarity and trust within the flotilla. Sims's subordinates learned how to act as a unit. Regular conferences, repeated practice, and constant refinement led to the development of a common doctrine.[24] This foundation helped the destroyer commanders outmaneuver their opponents repeatedly in tactical exercises.

Destroyer torpedoes were powerful weapons, but their range was limited. Destroyers had to close with larger, more-powerful ships to attack effectively, and it was much easier to do so under the cover of darkness. Coordinated night attacks

were very difficult, but with practice, Sims's captains became extremely adept at them.[25] Their well-coordinated night torpedo attacks illustrated that battleship formations were vulnerable, even when screened by other ships.[26] Sims reported on one such attack in March 1915: "During recent exercises, the flotilla attacked the double screened battleship fleet with actual torpedoes. Eighteen torpedoes were fired, and 11 and probably 13 hits were made. Six or seven battleships, including three dreadnaughts [*sic*] were struck from one to three times. . . . [T]he problem . . . was a question of protecting a fleet by having its main body screened against the attack of torpedo destroyers."[27]

This remarkable result—sinking or disabling at least six battleships—was made possible by the Torpedo Flotilla's new doctrine. Sims was making the most of his small ships and the aggressive spirit of his captains. A general plan, framed by the estimate of the situation, provided high-level coordination. The habits and routines developed through repeated exercises aligned decision-making at the tactical level and eliminated the need for detailed orders. This approach allowed Sims to maximize the individual initiative of his captains while focusing them on a common goal.

In his comments on Tactical Problem 35-13, held in July 1913, Sims described one of the methods he used to develop doctrine: "Previous to the maneuver, two forenoons were spent by the Flotilla Commander and all destroyer captains in playing the problem on the maneuver board on the [flagship] *Dixie,* and it is believed that this training was of great benefit to the officers concerned in actually executing the problem on the water."[28] These kinds of exercises helped officers develop a shared sense of how to approach specific situations, but they were not intended to provide rote solutions. Sims's goal was to align decision-making. Repeated exercises on the game board and at sea were coupled with frequent conferences to share lessons and discuss alternatives, leading to constant improvements and refinements.

One of the most important aspects of the flotilla's doctrine was the stress it placed on aggressive action. According to Thomas Hughes, "under Sims, destroyer men adopted an aggressive ethic based on speed, agility, and daring."[29] By emphasizing individual initiative, the officers of the flotilla maximized their potential for aggressive action; it became the essence of their doctrine and was very influential. Many of the Navy's future leaders, including Ernest J. King, Harold Stark, Rufus Zogbaum Jr., Aubrey Fitch, Harris Laning, George Cook, John Newton, William Halsey, Franck T. Evans, and Frank Jack Fletcher, were immersed in Sims's laboratory and influenced by the flotilla's tactics and doctrine; they would take these ideas with them as they moved on to greater responsibilities.

In the summer of 1914, Sims returned to the Naval War College to give a lecture that described how the "principles and methods developed . . . at the college

have been applied in the administration of the Flotilla and in the development of its tactics." Sims emphasized the benefits of the conference method. There was, in his words, "no possible excuse for not utilizing . . . all the knowledge, experience, energy, and brains that the organization contains." The conferences drew out this knowledge, leading to more-effective solutions. They also fostered a "team spirit and a team loyalty" that created greater alignment throughout the organization.[30] In his lecture, Sims highlighted the development of the flotilla's new night search-and-attack doctrine, which was refined and analyzed in a series of exercises and numerous conferences before it was truly effective.

By 1915, enough experience had been gained with the flotilla's doctrine to codify it. The *General Service Instructions* for the flotilla, issued in 1915, described its mission, organization, and doctrine as developed under Sims.[31] The increasing sophistication of the flotilla's approach, and its well-considered doctrine, provided a mechanism for coordinating distributed action in battle and led to an increasing emphasis on the potential for destroyers to contribute to major fleet engagements. This was reflected in the Atlantic Fleet's 1916 "Battle Instructions," in which destroyers were recognized as a core offensive weapon of the fleet—a testament to the effectiveness of the flotilla's doctrine.[32]

The 1916 "Battle Instructions" was issued by Rear Admiral Frank Friday Fletcher, USN (uncle of the destroyer captain Frank Jack Fletcher), in May. It reflected his experience as Atlantic Fleet commander over the previous sixteen months. In the "Instructions," Fletcher emphasized the importance of concentrated firepower. This had been a standard element of the Navy's approach for years, but Fletcher's take on it was different.[33] He emphasized concentrating all the weapons of the entire fleet, not only the gunfire of its battleships. This was a new paradigm, one that would remain at the core of the Navy's tactical approach through the end of World War II.[34] It was the success of the flotilla's doctrine that led to an emphasis on using all arms to destroy the enemy in battle.

Fletcher's "Instructions" also introduced a new, more flexible approach to command. He assumed that the conditions of battle would be fundamentally uncertain. Although detailed plans could be developed, the assumptions embedded in them would not survive for long. Therefore, Fletcher expected to foster collaboration among his subordinates by issuing a high-level battle plan. The plan would not provide detailed instructions; instead, it would give sufficient background to explain his intentions. Commanders were expected to remain flexible and adjust depending on specific circumstances. Fletcher expected them to exploit emerging opportunities.

> A plan of battle will specify the role to be played by each subdivision of the fleet in the situation which the plan is intended to cover; it will fix the direction . . . from

> which the enemy is to be attacked; the speed of the force; . . . the direction in which the enemy is to be turned or the turn that is to be denied; whether the attack is to be pressed home to short range or kept at long range; whether a quick decision is to be sought for or containing tactics adopted; whether destroyers are to attack the enemy, deny him a certain area, or remain in reserve as a means of giving a coup de grace.[35]

Fletcher's approach dovetailed perfectly with that of Sims. Both men relied on the concept of a high-level plan to provide context for their subordinates. But rather than prescribing specific actions, they embraced the more flexible approach fostered by the estimate of the situation, which stressed communicating intentions and general concepts so that subordinates could use their own initiative to further progress toward the desired outcome.

Doctrine complemented this approach. In 1914, Commander Pratt took a break from his work with the flotilla and lectured at the Naval War College.[36] Together with Lieutenant Commander Harry E. Yarnell, USN, Pratt refined the theory behind the flotilla's methods and brought it to a broader pool of officers. Yarnell continued this work, providing a fledgling definition of doctrine to the College's class of 1915: "A doctrine is simply a code of rules upon which we act spontaneously and without order, for the accomplishment of the mission. To be of value the doctrine must be based on correct principles and methods of conducting war. Then it must be instilled by study and actual fleet training into the minds of officers until it becomes almost a reflex action."[37]

Among a small pool of officers, this concept was becoming the preferred mechanism for ensuring coordinated action without the need for precise orders or firm control. Yarnell, Sims, Pratt, Knox, and others believed that doctrine was the key to unity of action in a modern, diverse, and distributed battle fleet. As Yarnell described: "From skill and doctrine flows the initiative of the subordinate. Give the subordinate a proper understanding of the mission and proper training, and he may be relied upon to act correctly in an emergency when orders or instructions from higher authority are not available."[38] Knox's conception was similar; he argued that "doctrine gives birth to harmonized methods, rules, and actions" and that doctrine "is necessary before concerted action . . . is possible; it is an indispensable element of command, and an essential prelude to great success in war."[39]

This emerging concept of doctrine integrated well with Fletcher's new approach to battle plans. Fletcher expected his plans to provide context and explain his objectives; he would leave his subordinate commanders free to act on their own initiative in furtherance of them. This method allowed those officers to adjust to changing circumstances. If a common doctrine was available to guide them, they would have a shared context for decision-making, ensuring greater alignment in the confusion of battle. Like Yarnell, Captain Albert P. Niblack,

USN, argued in favor of such an approach. "Once the action is joined the subordinates are dependent upon their own initiative, because signaling in battle is difficult, and hence arises the necessity for *battle doctrine*. In the rapidly changing phases of battle . . . decisions must be made and must be executed without the loss of the time necessary to signal to higher authority. . . . Thus arises the principle of the initiative of the subordinate, growing out of battle doctrine, the plan of battle, and indoctrination" (emphasis original).[40]

If the work of the Torpedo Flotilla was not convincing enough, there were numerous historical examples—by now a staple of Naval War College analyses—that could be used to justify the development of a common doctrine.

> A tentative doctrine has been established in the Torpedo Flotilla, and a very able officer of high rank has pronounced it the greatest single achievement he has seen in thirty years' service. . . . We cannot recall to mind too often the splendid examples of doctrine supplied by the life of Nelson, or the victories that resulted in 1870 through the doctrine of German commanders to enter eagerly into battle, to support each other, to deny defeat and to grasp victory through concert of action and unity of mission—the destruction of the enemy.[41]

However, this concept was new, and its importance was not recognized widely. Most officers still viewed tactics as a discipline involving precise maneuvering rather than a shared contextual understanding. It would be years before the fledgling doctrine developed by Sims's flotilla became the Navy's dominant approach to coordinated action in combat.[42]

## EXPERIENCE IN WORLD WAR I

Participation in World War I provided the Navy with valuable experience while at the same time invalidating many existing assumptions about naval warfare. Unexpectedly, the most pressing enemy was not the German battle line but the tenacious U-boats; when the United States entered the war, the Navy was ill equipped to deal with this threat. However, the nascent destroyer doctrine developed in the Atlantic Fleet proved a valuable guide. Experience partnering with Great Britain's Royal Navy also provided a unique learning opportunity, exposing American officers to a wealth of wartime lessons.

Battleship Division 9 of Rear Admiral Hugh Rodman, USN—consisting of *New York, Delaware, Florida,* and *Wyoming*—arrived at Scapa Flow, the RN base in the Orkney Islands, north of Scotland, on December 7, 1917.[43] The ships became the 6th Battle Squadron of the Royal Navy's Grand Fleet. Operations with the Grand Fleet provided valuable experience for Rodman and eventually the entire Navy through exposure to "British signals, radio codes, maneuvering orders, fire control methods, and battle instructions."[44]

In battle, the Grand Fleet coordinated its movements through a sophisticated set of instructions and plans. To keep the battleships concentrated, they cruised in a compact formation of parallel columns. In battle they deployed, generally by turning ninety degrees and forming a single line, perpendicular to the bearing of the enemy—a formation similar to those the Navy had been using since the creation of the Atlantic Fleet. The Grand Fleet's light forces—destroyers and cruisers—would arrange themselves on the flanks of the battle line, slightly closer to the enemy. From these positions, they could protect the flanks from enemy attack and also be ready to close the enemy line and attack with torpedoes. These formations were clear and well suited to an action between battle fleets. The Navy adopted similar battle formations after the war, arranging its ships to maximize concentrated firepower against the enemy battle line.[45]

However, the Navy's officers viewed the Grand Fleet's large set of instructions less favorably. This was particularly true when viewed against the outcome of the war's largest naval battle, the Battle of Jutland, fought in May 1916. Almost as soon as the battle was over, American officers began to examine it in the hope of drawing out effective lessons. Lieutenant Holloway H. Frost, USN, was one of them. He entered the Naval War College in 1916 and, in cooperation with Yarnell and Niblack, conducted a wargame to re-create the battle in September 1916. Sims and Knox traveled to Newport to join them and learn from the exercise. In November, Frost produced an official College report on the battle.[46]

Frost's greatest criticism, as it developed in later years, was that the Grand Fleet's guiding orders and principles emphasized the avoidance of risk and the preservation of the fleet. Decisive action would be sought only if a positive outcome could be guaranteed.[47] Captain Harris Laning, USN, who learned about the importance of doctrine under Sims in the Torpedo Flotilla and later taught tactics at the Naval War College, stressed that the Grand Fleet's commander, Admiral John R. Jellicoe, RN, adopted a defensive posture and that he was "unwilling to pay . . . for the victory which . . . lay in his grasp," despite placing his force "in one of the most powerful positions ever obtained."[48]

Frost, Laning, and other American officers who examined Jutland highlighted the fact that RN officers failed to act with the necessary initiative. They missed opportunities to damage the enemy; failed accurately to report sightings to higher authority; and embraced a risk-averse attitude that, with a few notable exceptions, seemed to dominate Jellicoe's fleet.[49] Part of the reason was believed to be the Grand Fleet's detailed instructions, which were blamed for restricting the initiative of subordinates. Laning explained it this way: "The British failed to gain decisive victory . . . because their higher commanders . . . had not prepared themselves and their subordinates to win."[50]

It is important to note, however, that there are alternative explanations for the outcome at Jutland; David G. Morgan-Owen's recent study of British war planning, for example, argues that the Royal Navy became focused on defense of the British Isles, limiting opportunities to use the Grand Fleet offensively.[51] Regardless, the U.S. Navy resolved to take a very different approach and stressed the importance of capitalizing on opportunities by deliberately developing methods that promoted subordinate commanders' aggressive action.

Sims's doctrine provided a sound basis for this. Before the American entry into the war, he commanded battleship *Nevada* and was promoted to rear admiral. He became President of the Naval War College in January 1917 but was ordered to London at the end of March. His mission was to liaise with officers of the Royal Navy and prepare for the American entry into the war. When that occurred in April, Sims was made commander of American naval forces in Europe, and in May he received a temporary promotion to vice admiral. It was an ideal opportunity to spread his approach to doctrine, and he wasted no time.

Sims and his staff—which included Knox, Yarnell, Schofield, and Babcock—issued a doctrine to his European command that stressed two critical components derived from his experiences in the Atlantic Fleet and time at the College. The first was the use of a mission and general plan. These focused the attention of subordinates on critical objectives and promoted mutual understanding, both of which were essential for fostering individual initiative.

> It is manifestly impossible for the Commander of the operation to give detailed instructions in advance that will cover all emergencies; it is equally impossible for the Commander of an operation to give these instructions on the spot to meet adequately a local situation suddenly developed. Hence the importance of having the immediate Mission and General Plan clearly understood in advance, and the necessity for leaving as wide an area of discretion to subordinates as possible.[52]

That discretion was the second critical component. Sims stressed the need for individual initiative to overcome uncertainty in battle: "No officer should fail to exercise his initiative and judgment in support of the General Plan when confronted by unexpected conditions." Sims expected this doctrine to be "a bond of mutual understanding governing the application of principles to circumstances."[53] The creative energies of subordinates would translate the mission and general plan into desired outcomes through coordinated action.

It worked. Sims collaborated with his subordinates and the British to develop effective doctrines for hunting U-boats, combating German raiders, and escorting convoys. These were augmented by an emphasis on the kind of wargames and shipboard exercises he had employed in the Atlantic Fleet.[54] Through these mechanisms, many more officers—particularly destroyer captains—became

familiar with Sims's approach to doctrinal development. The success of these methods in war validated them, and they served as a basis for future development in the early interwar period.

## DOCTRINE DELIBERATELY CREATED

In 1919, after the war ended, Sims returned to the Naval War College. It had been closed during the war, and his first task was to reestablish it. He wanted it to become a more influential institution and to allow a broader pool of officers to benefit from its methods. He asked Secretary of the Navy Josephus Daniels to increase class sizes, augment the staff, and assign higher-ranking officers to head the major departments. Daniels was a firm believer in education, and he readily agreed to make the necessary changes.[55]

By the end of 1921, about half the admirals within the fleet and their chiefs of staff were graduates of the College, a testament to Sims's efforts and a reflection of the growing influence of the institution.[56] Sims made sure that these officers were exposed to the doctrinal approaches that the Atlantic Fleet had pioneered before the war by selecting now-captain Dudley Knox as his chief of staff. During their tenure, Sims and Knox continued to emphasize the use of wargames and the conference method that had been a staple of the College for years: "The applicatory system of Captain [William McCarty] Little, built upon the use of the game board to illustrate problems of strategy and tactics, continued as the basic method of instruction."[57] Collaborative learning and problem solving continued, as John M. Lillard explains: "War College leadership, faculty, and students all contributed toward creating a climate that encouraged experimentation and learning in a group setting."[58]

The efforts of Sims and Knox were aided by some very specific recommendations made by a board that Knox chaired in 1919. The Knox-Pye-King Board—staffed by Knox, Captain Ernest J. King, USN, and Commander William S. Pye, USN—examined the current state of officer instruction and argued for a junior Naval War College course that would ensure "the whole body of commanding officers and of unit commanders and their staffs have common conceptions of . . . practical methods which are requisite for thorough cooperation and coordination" to make "unity of command" a reality in battle.[59] The board felt that officers needed greater familiarity with "the advanced elements of the profession, including training in the application of the doctrine and principles of naval warfare" before they would be ready to command at sea.[60]

Two different commands explored how best to accomplish this goal. The first was that of Rear Admiral Charles Plunkett, USN. He was a graduate of the Naval War College and familiar with its methods. He assumed command of the Atlantic Fleet's destroyers in 1919 and, like Sims before him, emphasized tactical

experimentation. Plunkett helped foster the creation of a learning system with the help of his chief of staff, Captain Laning. Laning understood well the importance of doctrine from his time in the Torpedo Flotilla. Together they promoted a new, more formal approach to doctrinal development that harnessed the lessons of war and enhanced cooperation.

Plunkett and Laning created a "school of doctrine" at Charleston, South Carolina, to investigate how best to coordinate their ships in battle. Captain Yarnell led many of the efforts of this school and continued to promote the concept of doctrine actively. For instance, he often gave lectures and led committees responsible for the development of standing orders and attack procedures.[61] In addition, Yarnell maintained an ongoing correspondence with Sims, allowing him to incorporate the latest thinking from the Naval War College into his work.

The second command that explored how best to develop doctrine was in the Pacific Fleet. Captain Pratt, another veteran of Sims's Torpedo Flotilla, assumed command of the Pacific Fleet's Destroyer Force in November 1920 and introduced an approach that paralleled the one in the Atlantic Fleet. Pratt and his subordinates—including other former members of the Torpedo Flotilla such as William Halsey—continued to promote an aggressive doctrine well suited to destroyers. Pratt established a "destroyer staff college" at San Diego to allow for regular experimentation and indoctrination.[62]

The Atlantic Fleet's school and Pratt's college regularly exchanged lessons and collaborated.[63] The name "staff college" more aptly described their work, so the school at Charleston changed its name and became the Atlantic Fleet's Destroyer Staff College. Commander William Victor Tomb, USN, commented on its work in 1921. "My first impression . . . upon observing the work done at the Staff College was one of amazement that such excellent tactical maneuvers could be carried on by the Officers of the Destroyer Force of whom only the Force Commander and the Director of the maneuvers were War College graduates."[64] The three colleges—at Charleston, San Diego, and Newport—deliberately worked on improving and refining the Navy's destroyer doctrine.

The destroyer staff colleges also familiarized a broader pool of officers with the latest techniques and improved their skills. It was part of a conscious effort to ease the transition back to a peacetime footing. Laning and others were worried that the lessons of war would be lost if tactical thinking stagnated: "The more we can fight off this effect [stagnation] by work and study along the lines of our profession, and by an endeavor to embody in our 'War Instructions' the best ideas as developed in past wars, in study, and research, that much easier will be our task when the next war comes. The work at this Staff College is one effort towards that end."[65]

Soon, enough experience had been gained to issue a new tactical manual. It would blend lessons learned during the war with experimentation in tabletop problems, fleet exercises, and the latest thinking in both colleges. Captain C. R. Train, USN, was responsible for the committee that produced the manual, and by September it had completed its work, as noted in the "History of the Destroyer Staff College":

> The final result of the year's work as planned by Captain Laning was to be a manual of Destroyer Doctrine covering all phases of destroyer activities in war. Although considerable work was done this mission was not finally accomplished until September of this year [1921] when a committee of officers headed by Captain C. R. Train completed the compilation of "Destroyer War Instructions" embodying the work of the Staff College at Charleston, the Destroyer Staff College at San Diego, and other available destroyer practice as developed in the World War. . . . This manual . . . will be . . . tested out on the game board and by actual squadron maneuvers at sea.[66]

Under Plunkett and Pratt—with encouragement by Sims—the Navy's destroyer forces were a hotbed of doctrinal experimentation and development. The resulting manual, the Atlantic Fleet's 1921 "Destroyer Instructions," represented a new paradigm. It was the first fleet manual developed through a deliberately created system of learning. The system seamlessly blended problem solving and experimentation ashore—in the destroyer staff colleges and the Naval War College—with exercises at sea. The introduction to the manual reinforced this point, noting that the "Instructions" was "based upon the best obtainable experience of our Service preceding and during the recent war, supplemented by considerable subsequent game board and practical experience and trial."[67] It was a comprehensive manual designed to provide guidance to the fleet's destroyers while still preserving scope for independent action by individual ship and squadron commanders. Future doctrinal publications would follow a similar paradigm, as the work of the fleet became more closely integrated with that of the Naval War College.

Plunkett and Pratt developed a more sophisticated approach than other commands, but their basic concept became the Navy's standard model for doctrinal development in the early interwar period. The *War Instructions* of 1923 codified this model; with its publication, doctrine became a core aspect of the Navy's tactical development. The *War Instructions* stressed that indoctrination was essential but also emphasized that doctrinal development would be driven by individual commands and not handed down from the fleet level. Doctrine would emerge from the bottom up; it would not be imposed top down. Individual commands were responsible for developing their own doctrines to reflect the specific strengths and limitations of their forces. This flexible approach allowed

the Navy to remain open to new ideas and encouraged the creativity of low-level commanders.

However, the flexible approach also meant that a coherent doctrine for the entire fleet was lacking. Some officers urged the development of a more common and centralized approach. Captain Knox was particularly critical in a lecture he gave at the Naval War College in 1924. Knox called doctrine a "basis for harmonious decisions" and stressed that it was the only effective way to coordinate the actions of distributed forces in battle. "No plan, however well it may be expressed, can possibly be co-ordinately executed by a large force of vessels of several types operating against a strong and efficient enemy, unless the squadron, division, and ship commanders have the same conceptions of war as their commander-in-chief and are well indoctrinated."[68]

The *War Instructions* sought to achieve this end but deliberately avoided a comprehensive approach. In part, this was a reaction to the Navy's experience in World War I and the negative impression created by the Grand Fleet's extensive and detailed orders. The comprehensive instructions were believed to have inhibited the initiative of subordinate commanders. As James J. Tritten explains: "These fighting instructions [the Grand Fleet Battle Orders] attempted to provide guidance for all eventualities and offered the unit commander very little opportunity for his own initiative. They were issued several times during the war by [Admiral John R.] Jellicoe and by his successor, Admiral Sir David Beatty."[69] John Brooks also has commented on the influence of these orders and the "limited scope" they provided subordinates.[70]

To encourage individual initiative and foster contextually driven decision-making, the Navy deliberately refrained from publishing a fleet-wide tactical doctrine. Instead, specific manuals, such as the Atlantic Fleet's "Destroyer Instructions," provided detailed guidance while preserving the initiative of individual commanders. This did not mean that doctrine was unimportant. On the contrary, the *War Instructions* stressed its value, emphasizing that victory in battle would be aided by "[i]ndoctrination of the forces, so that there may be mutual understanding of the intentions and plans of the commander in chief and so that there may be coordination in the means and methods employed in carrying out the tasks assigned and of the necessary procedure when without orders."[71]

This is what Knox wanted to see. However, the *War Instructions* left the details of that doctrine unspecified. This omission allowed it to be flexible and change depending on circumstances. By leaving doctrinal development in the hands of individual commanders, the Navy could experiment more effectively (and more rapidly) with different techniques. The approach also ensured that those doctrines that were developed remained contextually sensitive.

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There were two important ramifications of the Navy's approach. First, it meant that in an era of rapid technological change, the Navy avoided prematurely converging on any specific doctrine. It left its options open, so that as new concepts and approaches emerged, doctrines could be modified rapidly to account for them.[72] The interwar fleet problems and other tactical exercises provided a framework for these changes; they were part of a feedback cycle that refined the Navy's doctrinal concepts in light of experience. Second, the Navy encouraged flexibility and individual initiative within its officer corps. Because doctrinal development was in their hands, lower-level commanders were encouraged to take responsibility and not wait for higher authorities to make the decisions. This fostered the commanders' creativity and problem-solving skills, encouraging them to derive solutions for their own specific circumstances. It proved to be an extremely effective approach.

In the decade between 1913 and 1923, the Navy addressed the challenge of coordinating a modern, distributed battle fleet by introducing a new, more flexible paradigm for commanding forces in battle. That approach combined flexible battle plans that framed the mission with tactical doctrines that enabled coordinated action without the need for detailed instructions. In this way, the Navy solved the problem of ensuring alignment while also fostering creativity and individual initiative.

That outcome was the result of an effective process of organizational learning. It started with new paradigms introduced at the Naval War College: wargames, the conference method, and the estimate of the situation. Sims and his colleagues harnessed these effectively in the Atlantic Fleet. They leveraged tabletop wargames to explore different approaches to combat, they used the conference method to make sense of the results and identify lessons, and they employed the disciplined methodology of the estimate of the situation to understand their mission and formulate plans. Together, the officers of the Torpedo Flotilla discovered that repeated practice created familiarity—with their equipment, their ships, and each other—and that certain practices were more effective than others.

The officers developed specific routines that leveraged their strengths. These strengths included an emphasis on aggressive action, the use of a general plan (to describe desired outcomes and frame opportunities), and a reliance on individual initiative. These concepts appeared to be validated in World War I and therefore became core elements of the Navy's doctrine, providing a foundation at the start of the interwar period that was refined and enhanced in the decades before World War II. By the time of that conflict, these core elements of the Navy's doctrine had channeled and focused the Navy's approach to combat, leading to an emphasis on

the use of surface gunfire and aerial attack so as to, in the words of modern naval tactician Wayne Hughes, "attack effectively first."[73]

More important than those fundamental elements, however, was the habitual routine of exploring, developing, and refining tactical practices to create doctrine. The approach was developed initially by Sims, then expanded by Plunkett, Pratt, and Laning after World War I; it emphasized developing doctrine from the bottom up. This was a deliberate choice, and it was codified in the *War Instructions* of 1923. It allowed the Navy to explore new doctrinal approaches and concepts routinely. As this process was refined during the interwar period, lower-level commanders continued to experiment with new doctrines for their forces. Rapid experimentation proved critical in the early years of World War II, when Japanese capabilities proved to be greater than anticipated. Lessons from the fighting in 1942 aided victory in the battles of 1943 and 1944, when American officers explored new approaches in an effort to secure a potential advantage. That process had its roots in the work the Navy did to develop its initial doctrine in the decade between 1913 and 1923.[74]

## NOTES

1. More details can be found in Trent Hone, *Learning War: The Evolution of Fighting Doctrine in the U.S. Navy, 1898–1945* (Annapolis, MD: Naval Institute Press, 2018).
2. "Tentative War Instructions and Battle Doctrine, Light Cruisers," 1938, p. 1, Entry 337—USN and Related Operational, Tactical and Instructional Publications [hereafter E337], box 109, Record Group [RG] 38, National Archives, Washington, DC [hereafter NA].
3. The associated challenges presented by the Navy's organizational structure and the effective work that was done in spite of it is described in James C. Rentfrow, *Home Squadron: The U.S. Navy on the North Atlantic Station* (Annapolis, MD: Naval Institute Press, 2014).
4. Norman Friedman, *U.S. Battleships: An Illustrated Design History* (Annapolis, MD: Naval Institute Press, 1985), app. C, pp. 418–19.
5. "Rules for the Conduct of the War Games," 1903, Naval Historical Collection, Naval War College, Newport, RI; "Rules for the Conduct of the War Games," 1905, Naval Historical Collection, Naval War College, Newport, RI.
6. Ronald Spector, *Professors of War: The Naval War College and the Development of the Naval Profession,* Historical Monograph 3 (Newport, RI: Naval War College Press, 1977), p. 73.
7. See, for example, "Conference on Naval Tactics, 12 August 1901," box 106, RG 8, Intelligence and Technical Archives, Naval War College, Newport, RI [hereafter Intelligence].
8. "A Basis for Discussion for a Conference on Battle Instructions (December 1916)," box 107, Intelligence.
9. This point is made extremely well by Jon Tetsuro Sumida, *Inventing Grand Strategy and Teaching Command: The Classic Works of Alfred Thayer Mahan Reconsidered* (Washington, DC: Woodrow Wilson Center, 1997).
10. Bradley A. Fiske [Rear Adm., USN], *The Navy as a Fighting Machine* (repr. Annapolis, MD: Naval Institute Press, 1988), p. 200.
11. "Estimate of the Situation, Lecture Delivered by Commander Frank H. Schofield," June 1912, Naval History and Heritage Command Library, Washington, DC.
12. Ibid.

13. Ibid.
14. Ibid.
15. See, for example, Fiske, *The Navy as a Fighting Machine,* pp. 136–37, 180–81.
16. "Addendum to 'Rules for Battle Maneuvers, 1913,' Fleet Order 29-14," September 12, 1914, box 93, Intelligence.
17. "Admiral Fletcher's Tactics of the Battle Line, 1916," box 93, Intelligence.
18. "Rules for Battle Maneuvers, 1913, United States Atlantic Fleet," May 12, 1913, box 93, Intelligence.
19. "Result of Battle Maneuvers, July 1913, U.S. Atlantic Fleet," box 93, Intelligence; "Results of Battle Maneuvers, June 1913, U.S. Atlantic Fleet," box 93, Intelligence.
20. "Result of Battle Maneuvers, July 1913."
21. Dudley W. Knox [Lt. Cdr., USN], "Trained Initiative and Unity of Action: The True Bases of Military Efficiency," U.S. Naval Institute *Proceedings* 39/1/145 (March 1913). This essay won second honorable mention in the U.S. Naval Institute's General Prize Essay Contest in 1913.
22. Quoted in Elting E. Morison, *Admiral Sims and the Modern American Navy* (Boston: Houghton Mifflin, 1942), p. 292.
23. Gerald E. Wheeler, *Admiral William Veazie Pratt, U.S. Navy: A Sailor's Life* (Washington, DC: Naval History Division, 1974), p. 74.
24. Morison, *Admiral Sims,* p. 295.
25. "Tentative Doctrine for Night Search and Attack, November 1913," box 103, Intelligence.
26. "Results of Battle Maneuvers, June 1913."
27. "Letters from Flotilla Commander, Torpedo Flotilla, Atlantic Fleet on Attacks by Flotilla against the Battleship Fleet Protected by Double Screen, March 1915," p. 1, box 42, Intelligence.
28. "Result of Battle Maneuvers, July 1913."
29. Thomas Hughes, "Learning to Fight: Bill Halsey and the Early American Destroyer Force," *Journal of Military History* 77, no. 1 (January 2013), pp. 71–90.
30. William S. Sims [Capt., USN], "Naval War College Principles and Methods Applied Afloat," U.S. Naval Institute *Proceedings* 41/2/156 (March 1915).
31. Morison, *Admiral Sims,* p. 295 note 4.
32. "Battle Instructions, United States Atlantic Fleet," May 27, 1916, box 48, General Board Records [hereafter GB], RG 80, NA.
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34. For details on how this concept evolved, see Trent Hone, "The Evolution of Fleet Tactical Doctrine in the U.S. Navy, 1922–1941," *Journal of Military History* 67, no. 4 (October 2003), pp. 1107–48.
35. "Discussion on Tactical Principles, U.S. Naval War College, 12–17 June 1916," p. 4, box 107, Intelligence.
36. Wheeler, *Admiral William Veazie Pratt,* p. 83.
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38. Ibid.
39. Dudley W. Knox [Lt. Cmdr., USN], "The Role of Doctrine in Naval Warfare," U.S. Naval Institute *Proceedings* 41/2/156 (March 1915).
40. "A Study in Fleet Tactics: A Proposed Battle Doctrine, 25 June 1917," box 107, Intelligence.
41. "Naval Tactics."
42. Ibid.
43. Jerry W. Jones, *U.S. Battleship Operations in World War I* (Annapolis, MD: Naval Institute Press, 1998), p. 25.
44. Ibid., p. 29.
45. Hone, "The Evolution of Fleet Tactical Doctrine."
46. David Kohnen, "The U.S. Navy Won the Battle of Jutland," *Naval War College Review* 69, no. 4 (Autumn 2016), pp. 123–45.
47. Holloway H. Frost [Cdr., USN], *The Battle of Jutland* (Annapolis, MD: Naval Institute Press, 1936), p. 114.
48. Harris Laning [Capt., USN], "Major Tactics at Jutland," March 1923, p. 17, box 17, RG 4, Naval Historical Collection, Naval War College, Newport, RI.

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# THE ROYAL NAVY AND ORGANIZATIONAL LEARNING

## The Western Approaches Tactical Unit and the Battle of the Atlantic

*Geoffrey Sloan*

> *Our Atlantic trade is suffering very severe losses from U-boat and air attacks in the Western Approaches. Our merchant shipping is causing grave and increasing anxiety. Anti-invasion trade protection requirements in the North Sea and narrow waters and our many commitments overseas at the present time do not allow us to increase the numbers of naval escorts allocated to Atlantic trade. Increased protection can only be given by operating our naval and air forces from bases in Eire nearer to the area of enemy attack.*
>
> CHIEFS OF STAFF, MEMORANDUM, "NECESSITY FOR BASE FACILITIES IN EIRE," MARCH 8, 1941

> *The highest type of naval officer is that wherein great professional knowledge is added to force of character. The danger within the Navy itself is lest insufficient importance should be attached to the results of study, and lest the value of what is called the practical character should be placed higher than it deserves. It is true that no student will ever become a victorious leader unless he is also a practical seaman and has the power of influencing men; but it is also true that no seaman, however practical, will be fit to rise beyond a certain rank unless he has thought out the problems of his calling as a student and has omitted no opportunity of acquiring the knowledge that makes up the science of his profession.*
>
> MEMORANDUM DEALING WITH THE ENTRY, TRAINING, AND EMPLOYMENT OF OFFICERS AND MEN OF THE ROYAL NAVY AND OF THE ROYAL MARINES, 1902

These epigraphs illustrate two things: first, the geostrategic challenge the Royal Navy faced between the fall of France in June 1940 and the D-day landings of June 1944; second, the importance of fusing professional education, leadership skills, and the practical ability of the seaman.[1] The factors in the latter point can be attributed to Admiral John A. "Jacky" Fisher, RN, the reforming First Sea Lord of the early twentieth century.[2] Why was this synthesis important? Fisher believed it would increase the operational effectiveness of naval officers, and in

that early part of World War II, the Battle of the Atlantic might have been lost if naval officers did not become sufficiently effective.

This article will explore two related questions. First, can a theory of organizational learning be applied to explain the improved effectiveness of one tactical organization during the Second World War? That improvement can be characterized specifically as the development of an antisubmarine tactical doctrine between 1942 and 1945 and the acquisition of new knowledge in the operational context of the Battle of the Atlantic. Second, was a new organization, the Western Approaches Tactical Unit (WATU)—despite being a product of a bureaucratic, centrally controlled, hierarchical Admiralty—able to collect, transfer, and integrate knowledge to achieve three objectives: challenge existing norms, objectives, and policies that pertained to trade defense; facilitate doctrinal innovation to counter the tactics of German U-boats used to attack convoys; and teach and disseminate doctrine to naval officers appointed to escorts in the North Atlantic and officers from the Coastal Command of the Royal Air Force (RAF)?

The article will render a judgment regarding the extent to which WATU's activities enhanced the effectiveness of trade defense. Did it resolve what Max Visser has called "the 'learning paradox' and . . . combine conditions of hierarchy and discipline with adaptability and flexibility"?[3] Finally, does this analysis represent a historically specific case, or are there lessons for other navies to learn in the twenty-first century?

In addressing these questions, it is important to acknowledge that a body of research into these topics exists already. How do military organizations fail, innovate, and learn? The literature covers all three categories.[4] With respect to the first category, Eliot Cohen and John Gooch developed what they have called a "taxonomy of misfortune." They claim that "there are three kinds of failure: a failure to learn, a failure to anticipate, and a failure to adapt. Each has its own characteristics and consequences."[5] In terms of the second category, Williamson Murray and Allan Millett have argued that there are three patterns of innovation: technology, organizational politics, and civil-military collaboration. How they combine to facilitate innovation is more complex; it is "a combination of astute political support and guidance usually exercised by a few politicians, attention of civilian and military technologists to the most promising innovations, and creation of staffs and organizations that can turn ideas into experimental exercises."[6]

Fighting organizations can produce distinct attitudes to learning that can persist over long periods. Robert Foley and Sergio Catignani have examined the British army's approach to learning in both the First World War and the recent campaign in Afghanistan.[7] Aimée Fox-Godden has summarized their conclusions in the following way: "Both highlight the army's reliance on informal learning methods owing to an organizational culture that centres on pragmatism and

dislike of formal doctrine. Although they acknowledge the army's utilization of formal learning systems, both argue that learning and knowledge sharing take place through predominantly informal, individualized methods."[8]

These areas of research can be applied to the WATU case to help analyze the organizational learning that took place and its effectiveness. WATU has received scant treatment in the literature on the Battle of the Atlantic. Cohen and Gooch do not mention it by name, but they recognized it as being of coequal importance with operational intelligence. "The British anti-submarine effort, clearly the most successful of any of the participants in World War II, succeeded in large part because of their ability to master these two requirements of ASW [antisubmarine warfare]: efficient collection, collation, and communication of intelligence and development of appropriate doctrine."[9]

## THEORIES OF INSTITUTIONAL LEARNING

A theory of learning can be useful for understanding how the process takes place within an organization, but scholars and experts disagree regarding these theories. Some claim that knowledge capable of changing the performance of an organization can be formulated, captured, and translated into a set of codified instructions, which then can be disseminated within the organization.[10] In contrast to this claim is the idea of knowledge as a "multifaceted, dynamic, provisional and socially situated activity where context and interpretative frames are essential."[11] This second theory has much to recommend it, as it acknowledges that a changing social context can affect attempts to interpret and learn about a new, challenging situation.[12] There is also a theory that lies between these two poles: the theory of absorptive capacity. This states that the "ability to evaluate and utilize outside knowledge is largely a function of the level of prior related knowledge[,] . . . [which] confers an ability to recognize the value of new information, assimilate it, and apply it."[13]

Chris Argyris and Donald Schon call into question all three of these interpretations of learning: as a set of codified instructions, a socially situated activity, or a theory of absorptive capacity. They object that each of these theories claims to understand and account for a complex reality, yet "no single perspective gives a workable basis either for diagnosing the impediments to organizational learning or for designing interventions which would increase the organizational capacity for learning."[14]

Argyris and Schon developed two theories on how organizations learn. The first is called single-loop learning. The analogy is to a thermostat; it "learns when it is too hot or too cold and turns the heat on or off. The thermostat can perform this task because it can receive information (the temperature of the room) and take corrective action." The second theory is called double-loop learning. This

occurs when an individual or organization receives information and takes action, but the outcome is not the desired result. Developing remedial action requires assessing the core features of the organization, which leads to errors being "detected and corrected in ways that involve the modification of an organization's underlying norms, policies, and objectives."[15]

A crucial difference between these two types of learning is the ease with which organizations can perform them. Single-loop learning is an achievable task for most organizations; double-loop learning, by contrast, presents a complex challenge. With respect to the former, as long as the objectives and the context remain the same, the process of detection and correction will continue successfully. However, a context that changes or objectives that no longer are achievable can lead to questioning of the organization's underpinning norms or assumptions. At this point, problems can arise inside an organization; barriers to organizational learning can emerge. "Individuals and organizations tend to deal with threat in ways that will increase defensiveness and reduce the probability of learning to learn."[16] Argyris and Schon contend that not all change has a positive effect on an organization. It can result in regression, stagnation, deception, and manipulation.

Institutional learning depends in part on the culture of an organization and the extent to which it facilitates an openness to both inquiry and new ideas.[17] Fighting organizations often have a unique culture that persists over a long period—and that can both impair learning and enhance it. The German army provides a good example of both impaired and enhanced learning. "[T]he military culture that supported the Prusso-German approach to war had taken over a century to evolve. . . . German commanders had had to *learn* to devolve creative freedom and authority upon their juniors—an unprecedented and largely counterintuitive step."[18]

Argysis and Schon made a number of claims that differentiate double-loop learning from single-loop learning. First, it is relatively hard for an organization to create this kind of learning system; second, it cannot be evolved from single-loop learning; finally, it is best suited to a complex environment in which there are many interacting variables. But when implemented successfully, it can have long-term benefits. "Double-loop actions—the master programs—control the long-range effectiveness, and hence, the ultimate destiny of the system."[19] The challenge that WATU faced certainly qualified as just such a complex environment.

## THE QUADRANTS OF FIGHTING POWER: A MEANS OF ANALYSIS

Traditionally, fighting power has been interpreted using three elements: the moral, the physical, and the conceptual. A traditional instrument for facilitating navigation is the quadrant, which has a graduated ninety-degree arc. Fusing the

quadrant's arc with the elements of fighting power provides a new, hybrid way to assess the effectiveness of WATU's role in the improvement of ASW tactics. The quadrants used here with respect to the Battle of the Atlantic are four variables: new assumptions about tactics, changes in weapons technology and their subsequent application, developments in doctrine, and the adoption of an appropriate command philosophy. When all, or at least a majority of, these elements were present, WATU was facilitating a process of institutional learning.

The quadrants help illuminate two other issues. First, to what extent did senior officers, in a hierarchical organization, pursue their own agenda and succeed in shaping the manner in which the rest of their command interpreted experiential evidence? Second, to what degree do these quadrants help us understand the relationship between the tactical battle and operational effectiveness in the North Atlantic and the fulfillment of Britain's strategic objectives?

## THE CONTEXT: GEOSTRATEGIC DEFICITS AND DISRUPTIVE TECHNOLOGY

The Royal Navy's campaign in the North Atlantic was one of the most important it fought during the Second World War. This section is not intended to give a narrative account of this campaign but to focus on particular aspects of the Battle of the Atlantic.[20] What defined the campaign was the need to parry and defeat the disruptive technology of Germany's U-boats.[21] Three geostrategic deficits had emerged by July 1940, which compounded this challenge.

### *Sea Control and Sea Denial*

The first deficit was the Royal Navy's inability by July 1940 to enforce sea control and sea denial in the Western Approaches. This was a consequence of a decision made in the late 1930s. In April 1938, an agreement between the British and Irish governments brought to an end a long-standing trade and financial dispute that had been instigated by Eamon de Valera, the Irish prime minister. Part of that agreement, at the insistence of the British prime minster, Neville Chamberlain, was the relinquishment of what were called *defended reserved ports*. These had remained under British control even after the secession of the south of Ireland from the United Kingdom in 1922.[22] These naval ports were located in Lough Swilly in Donegal, Berehaven in Bantry Bay, and Haulbowline Island near Cork.[23] Despite strategic arguments by Winston Churchill in the House of Commons against this decision, the handover date was set for December 31, 1938—eight months before the outbreak of the Second World War.[24]

With those ports unavailable, a set of geopolitical assumptions emerged that were not validated by subsequent events. Admiral Ernle Chatfield, RN, the First Sea Lord in 1938, stated in his autobiography that the loss of these ports in Eire

had no geostrategic consequences, an assertion that would be proved wrong by later events.[25] The ability to enforce sea control and sea denial in the Western Approaches was contingent on the following: "With a French ally with an efficient navy, and a neutral, but friendly Norway, the Admiralty believed they could hold the position. Actually, their judgement in the envisaged circumstances proved right; the situation was held satisfactorily until the fall of Norway and the collapse of France."[26] But those losses did occur, and by June 1940 Britain found itself—for the first time since the Williamite wars of 1689–97—without access to naval bases along the southwest coast of Ireland. Captain Stephen W. Roskill, RN, gave an incisive judgment about the consequences of this handover. "Had we enjoyed the use of the Eire bases, many Allied ships and seamen's lives would have been saved, and perhaps the Atlantic battle won earlier."[27]

During the First World War it was the introduction of convoys in 1917 that had defeated Germany's antiaccess/area-denial strategy.[28] These convoys were organized by a joint British and American command from Admiralty House in Queenstown near Cork—one of the ports that was no longer available in the Second World War.[29]

***Convoy Routes***

The second geostrategic deficit was another consequence of Chamberlain's 1938 decision. The Admiralty was forced to abandon—after the fall of France in June 1940—the Western Approaches as a convoy route. Instead, all convoys for the rest of the war would go "north about Ireland." The difficulty in sustaining this new convoy route was compounded by a lack of naval escorts and radar equipment (both air and seaborne) to cover this area.[30]

The German U-boat command appreciated what was happening and made its dispositions accordingly.[31] The result was that between July and October 1940, a total of 282 ships were sunk off the northwest approaches of Ireland. This represented a total of 1,489,795 tons of merchant shipping. A German navy report described the effects of these vulnerabilities. "There were at times surprisingly high sinking figures in successive short operations near the North Channel. The U-boats pursued homeward-bound ships close in to the coast and attacked convoys whose escorts could not deal even with single U-boat attacks."[32]

The operational issue was the absence of a basing structure to support the convoy route Britain had been forced to adopt. Londonderry came into use as a base starting in October 1940, but only for refueling. This operational deficit remained unchanged until March 1941, when the Chief of Naval Operations of the U.S. Navy approved the construction, in secret, of two naval bases in Northern Ireland, one in Londonderry and a flying boat base on Lough Erne.[33] Construction began in June 1941—six months before the U.S. entry into the war. These

two bases became operational in February 1942. They created a new geostrategic context that increased both the accessibility and the mobility of the Allied navies.

An additional problem was the scarcity of naval escorts available for convoy duties and the operational range of those in service. In the critical months between July and October 1940, only one or two escorts accompanied each convoy. Furthermore, their range was limited to 200–50 miles west of Ireland, owing to the absence of naval facilities in neutral Eire. U-boats could operate to the west of the escorts' operational range in the Atlantic. It was not until June 1941 that the Royal Navy initiated the use of end-to-end naval escorts for transatlantic convoys. By that date U-boats had sunk a total of 812 merchant ships.

***U-boat Bases in Western France***

The third geostrategic deficit was a consequence of the surrender of the French government in June 1940. Germany began to construct a string of new U-boat bases down the western seaboard of France, from Brest to Bordeaux. Out of the small force of fifty-seven German U-boats, forty-nine were operational, and the new bases provided a critical advantage, increasing the geographical scope of the boats' operations.

The geostrategic significance of the absence of Allied bases in Eire became acute. As early as 1909 Sir Halford Mackinder had commented that Britain never "had to face enemies simultaneously eastward and southward," except during the Napoleonic Wars.[34] Now the relative accessibility of the Western Approaches from the western seaboard of France resulted in the reoccurrence of this scenario.

***Other Challenges***

In countering the disruptive technology of the submarine, the Royal Navy failed to remember a lesson of the First World War. "The British basically forgot that convoys alone had played the crucial role in blunting the U-boat offensive in 1917."[35] It was access to southern Irish ports and bases that made the formation and routing of convoys effective. Second, the Royal Navy made a series of assumptions in the 1930s about the nature of the threat it would face and how it would counter that threat. Heavy reliance was placed on asdic (a submarine location device named after its progenitor, the Anti-Submarine Detection Investigation Committee), a primitive form of sonar that was believed widely to be a technological solution for any future threat.[36]

These assumptions were expressed by a representative of the First Lord of the Admiralty at the first meeting of the Shipping Defence Advisory Committee in March 1937, two and a half years before Britain entered the Second World War.[37] He stated that the United Kingdom faced three forms of attack: the airplane, the surface warship, and the submarine. Some claimed that the threat that the

submarine represented could be countered by technology alone. "[T]he submarine menace . . . will never be, in my opinion and in the opinion of the navy, what it was before. We have means of countering a submarine which are very effective and which will normally reduce our losses from that weapon. It will never to my mind be a fatal menace that it was in the last war. We have taken effective steps to prevent that."[38]

However, the combination of the operational limitations of asdic and the geostrategic deficits noted above presented the Admiralty with a toxic problem.[39] The Allies could contemplate projecting power onto the European continent and defeating the Third Reich only if there could be a buildup in Britain of men and matériel. This could be done only once the U-boat threat had been defeated so that convoys could carry the men and matériel safely to the United Kingdom. In addition, Britain needed to import a critical tonnage of food and materials if it were to continue to feed its population and sustain itself in the war. The North Atlantic was the vital theater for this movement of goods. The operational challenge was to ensure the safe and timely arrival of the convoys at British ports, especially prior to the entry of the United States into the war.

By the end of 1940, both sides recognized that the war could be won and lost in the North Atlantic. German admiral Karl Dönitz, head of the submarine arm of the Kriegsmarine, had calculated in 1942 that if Germany could inflict a monthly loss of seven hundred thousand tons of Allied shipping, Germany would win the war in Europe. This was an overestimate; more likely, six hundred thousand tons would have done the trick. The latter figure constitutes the Admiralty's calculation of the minimum that had to be sustained if the Allied cause were to continue.[40]

In addition to the inadequacy of asdic and the loss of southern Irish naval bases, there were some additional institutional impediments. One of the most debilitating was the persistence, and indeed the resilience, of an inappropriate command philosophy, as described by Captain Donald Macintyre, RN. "The first few months were disappointing. Contact with the enemy was rare, mainly because of mistaken tactics employed by our command ashore. We were sent on one wild goose-chase after another to the positions of the latest sinkings, only to find—as expected—that the guilty U-boat had fled the scene and was hidden in the deepfield."[41] Pitted against them was a U-boat service whose ability to innovate was impressive. "Innovative tactics from August 1940 onward produced impressive results. Attacking on the surface and at night and in packs struck terror into the hearts of mariners and sank shipping as fast as the torpedo tubes could be reloaded."[42] The ability of the U-boats to apply this new doctrine and the Admiralty's unwillingness to allow the on-scene RN commander to use his judgment produced a real handicap, as this excess of control was contrary to

a devolved command philosophy that went back to the Elizabethan navy. The development of shore-to-ship wireless communication at the beginning of the twentieth century eroded this command philosophy, and the reluctance of commands ashore to devolve responsibility to commanders at sea persisted into 1941. Macintyre referred to a trip in February of that year: "Throughout the trip the escorts were subjected to all those interferences by the staff ashore about which we sea-captains had for so long felt bitter. The senior officer was unable to use his own judgement; the ships under his command were sent off on vain chases by orders from ashore."[43]

## CHALLENGING ASSUMPTIONS AND NEW ORGANIZATIONAL LEARNING

The fall of France and the heavy losses off the northwest coast of Ireland prompted some institutional changes in the Royal Navy. In February 1941, Western Approaches Command was moved from Plymouth to Liverpool, where a combined area headquarters was set up. It was to remain there for the rest of the war.

The change of location did not resolve the problems the Royal Navy faced with respect to ASW. This was reflected in Admiralty personnel appointments. The biographer of Captain Frederick Walker, RN, provides insight into this:

> It seemed that by design or accident all the misfits of the navy had congregated at Liverpool. Among his brother officers were many of his own kind—"passed overs"—who at some stage or other had become red-tape rebels. But the vast majority were officers of the Royal Naval Volunteer Reserve, week-end sailors churned out by the recruiting machine often with inadequate training. The Royal Naval Reserve, those independent merchant men who would become sore boils in big ship wardrooms, somehow fitted in here by providing their expert seamanship to balance the ignorance of the willing, but the lamentably "green," RNVR.[44]

Given these disparate levels of experience, the need to disseminate and apply tactical doctrine consistently was vital. On the plus side, Western Approaches Command made a decision to form escort groups in February 1941, which would "work-up and train together and remain as self contained groups. The object was to protect convoys with efficient teams rather than with groups thrown haphazardly together."[45]

The irony was that when the war started the Royal Navy had in place an authorized doctrine for convoying.[46] However, the doctrine assumed the main threat would come from German surface ships, and the use of the disruptive U-boat technology threw the Admiralty off balance.

> [S]ixty-one percent of the ships sunk in convoy were the victims of night U-boat attack which came as a complete surprise to the British. But had the lessons of

> World War One been studied, when the Germans had employed the same tactics, and indeed, had we read a book Donitz himself wrote between the wars in which he recounted his experiences of night attack on Allied convoys and advocated the use of these tactics in any future conflict, we might have been better prepared. He also publicly advocated the operation of U-Boats in wolf-packs and for which we were also unprepared.[47]

It also has been argued that Wilhelm Marschall pioneered this tactic and the German navy developed it using torpedo boats during the 1920s, when the service was forbidden to have submarines under the Versailles settlement.[48]

These challenges were compounded by the fact that the Royal Navy had yet to address successfully the premier Clausewitzian question. What kind of conflict, at a tactical level, did it face in the Atlantic? "Professor Patrick Blackett, Director of Naval Operational Research, highlighted the problem when he calculated some 60 percent of shipping losses could have been avoided, at least in part, if the less efficient groups had been raised to the standard of the more effective ones."[49]

The creation of WATU in January 1942 meant that there now existed an institution that could collect, transfer, and integrate knowledge that would lead to three things: challenging existing norms, objectives, and policies that pertained to trade defense; facilitating adaptation and countering the tactics German U-boats used to attack convoys; and teaching doctrine efficiently and disseminating it. The unit, which represented the Admiralty's response to the shortcomings of trade defense in the North Atlantic, was located on the top floor of Derby House in Liverpool. It was set up in response to one of the recommendations of the Battle of the Atlantic Committee that Winston Churchill (British prime minister since May 1940) had set up to coordinate issues and address the problems that convoys and naval escorts faced. The officer appointed to command this new unit was Captain Gilbert Roberts, RN; the commander in chief of Western Approaches Command at this time was Admiral Sir Percy Noble. WATU's initial aims were twofold: first, to end the incoherent tactics that had permeated trade defense since the start of the war; and second, to enable improvements in organizational practices and norms to be devised and disseminated.

The importance of a systematic approach was articulated in 1915 by one of the most original thinkers in the U.S. Navy, Captain Dudley Knox. "The big questions of policy should first be settled as well as those of command, strategy, tactics, logistics, and matériel. Then from such basic decisions minor doctrines may be reasoned to flow logically and consistently."[50] WATU was pivotal to the learning process that would take place. It also attracted curiosity at the highest level: "Churchill was extremely anxious about the Atlantic situation. Many questions worried him: 'Was the Asdic any good? Is the depth charge inefficient? What do the escorts *do* when their convoy is attacked?'"[51]

Signals intelligence—or the lack of it—had an important impact on merchant shipping losses. "February 1942 saw a new variation of the Enigma system initiated by the German navy for its U-boats that Bletchley Park was unable to decipher for nearly eighteen months.[52] The Allies were suddenly blinded to U-boat movements at the worst possible time. With the United States in the war, there were fresh targets for greatly reinforced U-boat wolf packs in the North Atlantic and off the coasts of South America and Africa. British and Allied losses in 1942 were 56 percent higher than in 1941."[53] It is important to remember that U-boat control also was reading Allied signal traffic.

## CHALLENGING NORMS, OBJECTIVES, AND POLICIES

The initial operational question that WATU addressed was as follows: How did the German U-boats operate tactically when attacking the convoys? The challenge for the British was to formulate, disseminate, and apply a tactical doctrine with an appropriate command philosophy that would lessen the losses of merchant shipping and enable the defenders to destroy more U-boats.

### *Roberts's First Attempt*

Captain Roberts initially focused on collecting an experiential source of knowledge. He made it his practice to talk to escort commanders as they came into Liverpool, Greenock, and Londonderry. There was one pivotal question: "When you are with a convoy at night and a ship is torpedoed, what do you do? They all talked about 'going to action stations,' 'increasing speed,' and so on but really the answer was nothing."[54]

In addressing this problem, Roberts was aided by an important precedent that already existed within the Royal Navy: the prerogative of naval officers, from the rank of captain upward, to formulate and disseminate their own tactical doctrine—a practice Nelson had used successfully when preparing for the Battle of Trafalgar. Naval historians refer to his tactical doctrine as the Trafalgar Memorandum. Its historical antecedents go back to the seventeenth century. "In the Royal Navy, the existence of a formal doctrine can be traced back to the original Fighting Instructions, first issued to the fleet over three hundred years ago in 1672, and to a Code of Tactical Signals promulgated during the Commonwealth in 1653. Admirals Howe, Kempenfelt, and Popham subsequently improved tactical doctrine with the issue of the Signal Book in 1799 and Popham's Marine Vocabulary in 1800."[55]

In the early years of the Battle of the Atlantic, escort group commanders put this tactical doctrine into practice. However, the quality of the doctrines and the extent of their dissemination were not consistent; there was a spectrum from the incomprehensible to the innovative.[56] One of the best examples of the latter, prior to the inception of WATU, was that of Captain Frederick Walker, RN. While in

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command of the 36th Escort Group beginning in October 1941, he disseminated the 36th Escort Group Operational Instructions to a total of nine ships in his group. These instructions demonstrated fluency among the operational objectives, a tactical antisubmarine doctrine, and a command philosophy of devolved control.

1. The object of the Group while on escort duty is to ensure the safe and timely arrival of the convoy concerned. It is not possible, with the ships available, to dispose of the Group in such a way as to protect the convoy completely from enemy attacks—these must be accepted and doubtless some losses. The only practicable course of action is to ensure that any enemy craft, either surface or air, which attack are destroyed.
2. The particular aim of the Group therefore is to be taken as the destruction of any enemy which attacks the convoy. U-boats are the chief menace to our convoys. I cannot emphasise too strongly that a U-boat sighted or otherwise detected is immediately to be attacked continuously without further orders, with guns, depth charges, and/or ram until she has been destroyed or until further orders are received.
3. I wish to impress on all officers that although I shall naturally take charge of the majority of operations, I consider it essential for themselves to act instantly without waiting for orders in situations of which I may be unaware or imperfectly informed.
4. It should seldom, if ever, be necessary to conclude a signalled report with the words: "Request instructions." Action should be "proposed" or "intended" by the men on the spot—and the senior officer can always say if he doesn't like it.
5. No officer will ever be blamed by me for getting on with the job in hand.[57]

Walker's rendition of mission command orders and a statement of the commander's intent, while a classic, was not enough on its own to solve the problem of countering the tactical doctrine the U-boats were applying, in particular their proclivity to attack at night and on the surface. However, the process of institutional learning was helped by the willingness of escort group commanders, such as Walker, to share operational experience with Roberts's new organization. In addition Walker devised a tactical response that coordinated the reaction of escorts to a U-boat contact: "On the order 'Buttercup' by radio, all escorts would turn outward, increase to full speed, fire star shell for twenty minutes, and then return to station. Walker had in fact sunk two U-Boats by this tactic whilst escorting convoy HG 76 [home from Gibraltar]."[58]

### *Changing Course*

These contributions, while valuable, were still insufficient. The initial problem of the U-boats' tactical operation was broken into two subquestions: From what range did the U-boats fire their torpedoes, and how did they approach a convoy?

Roberts challenged a key assumption escort commanders had been making: that the U-boats fired their torpedoes from outside the ring of naval escorts. In making this challenge, he relied on two pieces of empirical data. First, the range of a German torpedo was 5,400 yards (3.6 miles). Second, naval escorts operated up to five thousand yards (3.3 miles) out from a convoy.

Roberts made a new assumption that, to ensure a successful hit, the firing distance would be half the maximum range. This led to the second subquestion: If U-boats were attacking targets from within the convoy columns, how did they approach the convoy? There were four possibilities. (1) The U-boat dropped in from ahead on the surface, (2) it dived and surfaced in the middle of the convoy, (3) it pushed in from the convoy's flanks, (4) it infiltrated a convoy from astern.

The last option was, as far as U-boat commanders were concerned, the safest approach, and Roberts concluded that it was the most likely. Submerged, a U-boat could attain a speed of twelve knots, compared with a convoy speed of seven knots; thus the speed of infiltration from astern was five knots. Having successfully infiltrated from astern, the U-boat could fire its torpedoes on the surface from inside the convoy. This dovetailed with the operational experience of commanders such as Captain Walker. "The U-Boat was astern of the convoy, steering the same course, and the time was after midnight. Walker's 'stock' turning outward after a torpedoing and firing star shell out had caught and killed *another* U-Boat, not the culprit of the attack but an infiltrator coming to join the fray."[59] Walker's "'turn out' doctrine" provided the departure point for new assumptions on the basis of which tactical doctrine would be constructed.

The process that yielded the correct answer to the question of the position from which the U-boats attacked represented a critical questioning of established norms; WATU had identified the fallacious nature of the existing assumptions. This demonstrated a willingness to question the beliefs of even experienced escort commanders such as Walker. "This [was] against all our ideas[;] Walker's escorts imagined that the U-boat must be a mile or so *outside* the perimeter of the convoy ships."[60]

Roberts's staff consisted mostly of WRNS officers and ratings, who demonstrated these new ideas on the recently constructed tactical floor to Admiral Noble.[61] To his credit, Noble did not hesitate in communicating to the prime minister when doctrinal errors had been identified. "When Admiral Sir Percy Noble was briefed by Roberts on his analysis he frankly admitted the error of the existing anti-U-boat doctrine. He had a message sent to Churchill saying, 'the first investigations showed a cardinal error in anti-U-boat tactics, and that a new, immediate and corrected counter-attack would be signalled to the Fleet in 24 hours.'"[62]

### *WATU: Putting Doctrine into Practice*

The next challenge was to facilitate adoption of the doctrine and counter the tactics German U-boats used to attack convoys—infiltrating convoys from astern. The new knowledge was integrated into a doctrinal solution. "On a torpedoing within the convoy, on one word of command, the escorts, all except the one leading the convoy, would turn at full speed and line up abreast at the rear of the convoy, a couple of miles astern, and begin an Asdic sweep. The escorts' speed would be reduced to that of the convoy and, like a giant 'trawl' behind a fishing vessel, 'sweep' everything in front into the 'trawl' and they would have the U-boat."[63] This tactical doctrine was called a "raspberry" and was the first of multiple "fruit" doctrines that WATU eventually formulated and disseminated.[64]

The new doctrine can be understood best through the prism of double-loop learning because it led to questioning the Royal Navy's assumptions about how best to protect convoys from the disruptive technology of German submarines. Another way to understand the new doctrine is to see it as a manifestation of the quadrants of fighting power (new assumptions about tactics, changes in weapons technology and applications, developments in doctrine, and new command philosophy), which were being integrated owing to WATU's actions.

The Admiralty—a hierarchical and centrally controlled bureaucratic organization—now had, in WATU, an institution that could start to resolve the learning paradox and collect and integrate knowledge from diverse sources to formulate and disseminate a tactical doctrine that would be operationally effective. "The doctrine in the 'Atlantic Convoy Instructions' was synthesized by Roberts from reports of proceedings, direct feedback from escort group commanders, tactical games at WATU, and investigations by unit staff. The advantage over the ad hoc individualistic training provided by some group commanders was that WATU could both analyse and fuse the experiences and lessons of many convoy operations."[65]

Atlantic Convoy Instructions, issued under the authority of the Admiralty, had two variants: North and South Atlantic. The resultant instructions formed the doctrinal riposte to the U-boat threat, and they brought operational direction together with tactical instruction. They began with general reminders. "The safe and timely arrival of the convoy at its destination is the primary object of the escort. Evasion attains the primary object and should therefore be the first course of action considered. At the same time, it must be borne in mind that if enemy forces are reported or encountered, the escort shares with all other fighting units the duty of destroying enemy ships."[66]

This was fused with a devolved command philosophy. "The senior officer of the escort group is in the best position to judge the most suitable disposition for the escorts and the correct action to take in various circumstances."[67] The

application of the new doctrine was left to the discretion of senior commanders at sea. "Senior Officers of Escort Groups have complete freedom to exercise their initiative under all circumstances, and it is not desired that they should be rigidly bound to comply with any of the diagrams of operations orders laid down in ACIs [Atlantic Convoy Instructions]."[68]

The doctrines that WATU formulated and disseminated were first applied in engagements against U-boats in 1942. Convoy SC104 provides a good illustration of the doctrines' tactical impact. It sailed from New York on October 3, 1942, and was under attack from October 11 onward. Between 10:15 PM on October 13 and 2:30 AM on October 14, six ships in this convoy were torpedoed. The response was in keeping with the tactical doctrine WATU had disseminated and was guided by the new, correct understanding of the direction of U-boat attack: "As all the escorts had now returned, operation 'Raspberry' was carried out, and at 0318 HMS *Fame* obtained an asdic contact four miles astern of the Convoy. After an attack with a five charge pattern the U-boat surfaced and escaped downwind; *Fame* was unable to catch up due to the rough weather."[69]

The naval escorts of SC104 continued to be successful in applying this tactical doctrine in subsequent attacks. "At 1407/16 *Fame,* about two miles ahead of the fourth column, scored a notable asdic success, her first pattern, fired on a contact obtained at 2,000 yds, brought the U-Boat to the surface. *Fame* opened fire and went into ram. U353 was struck a glancing blow and a further pattern was dropped when it was abreast the stern. The crew hastily abandoned ship and the U-Boat then sank."[70] This report needs to be seen in the context of 120 merchant ship sinkings during that month, and a total of 1,322 for the year. However, this month saw the beginning of a downward trend: by December, losses had fallen to seventy-six; by October 1943, thirty-one.[71]

WATU also disseminated a tactical doctrine detailing how a naval escort should respond on sighting a torpedo track.

1. RUN UP TRACK, sweeping by ASDIC.
2. Hoist warning signal. At night if "Snowflake" illumination by the convoy will assist the sighting ship to locate the U-Boat without endangering the convoy, fire two white rockets.
3. REPORT BY R/T [radio transmitter] to escorts and aircraft.
4. Allow adjacent ships to catch up so as to increase the efficiency of the asdic sweep.[72]

These doctrines constituted part of what was referred to as Western Approaches Tactical Policy. They encapsulated correct assumptions about U-boat tactics, the application of weapons technology, new doctrines, and the adoption of an appropriate command philosophy—the four quadrants of fighting power. It

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had taken the Admiralty two years and four months since the start of the war to establish WATU, but now the unit was an integral part of the command structure, and yet was showing itself to be decentralized enough to respond quickly to the changing characteristics of the campaign in the North Atlantic.

> The Instructions provided a common doctrine, so that escorts could be told what to do in a given situation quickly and concisely. Roberts did not try to impose a doctrinaire approach on tactics. On the contrary, captains and escort group commanders were encouraged to experiment with their own tactical schemes. Hence while there were standard instructions, their application remained elastic. Roberts insisted that group commanders show initiative and, at all times, display tactical aggression.[73]

WATU endeavored to ensure that the Atlantic Convoy Instructions never became a rigid template applied irrespective of changes in the character of the campaign. The instructions were improved and updated continually. There also was a recognition that maintaining operational tempo meant managing information efficiently, including disseminating new tactics quickly. As a practical matter, in a predigital age, this meant that "Howard-Johnston [ASW staff officer in Derby House] was dispatched to the printers so that there would be no delay in applying the new tactics to the Western Approaches Convoy Instructions!"[74]

***Teaching the Doctrine***

As seen through the prism of double-loop learning, one of the most important functions WATU performed was applying its decentralized structure to the teaching of these new norms, policies, and objectives, once Roberts's staff had developed them. Systematic dissemination of doctrine was best ensured by teaching it. Between 1942 and 1945, WATU took doctrine back to its etymological roots.[75] The course was not intended to ensure that a number of tasks could be performed on a repetitive basis; instead, the teaching was nuanced, and doctrine was interpreted as being authoritative but requiring judgment in its application. The integrated knowledge that WATU had accumulated enhanced operational effectiveness. The instruction also was interservice, in terms of its cohort: personnel from not only the Royal Navy but the Coastal Command of the Royal Air Force attended courses run at WATU.[76] The aim was to ensure that this tactical doctrine facilitated application of one of the most important principles of war: unity of effort.

This raises three questions that need to be addressed to understand and appreciate the effectiveness of this institutional learning: What was the content of these courses? How were they managed? And who attended them? The content of the courses consisted of four distinct modules.[77] Its four modules covered a diverse set of topics in a short period, while ensuring that a singular objective was met and each course lasted one week. Roberts's annual report of December

1944 provides an insight to the number of courses that had been conducted up to that date and how his staff managed the teaching challenge at WATU. "A total of 132 courses have passed through W.A.T.U. in line ahead at one day interval between each. If, during three years work, standard game and lecture routine had been adopted, the Staff would long ago have become tired and stale. . . . [I]t is of paramount importance to show the course officers that the Staff is always enthusiastic, in order to transmit enthusiasm and zest."[78]

The numbers and ranks of the officers who attended the course reflected both hierarchical structure and operational need. RN attendees' ranks ranged from admiral (one student) to warrant officer (six students); the most numerous rank was lieutenant (479 students). Roberts ensured that WATU's ASW tactical doctrine was disseminated widely throughout the officer corps of the Royal Navy, writ large. "No Admiralty appointment has ever been denied to even an R.N.V.R. Sub-Lieutenant from doing the full U-boat course."[79] Apart from officers from the naval reserves and Commonwealth navies, there also were officers from six foreign navies.[80] As noted, WATU was part of a joint command, and 118 RAF personnel attended the one-week course. These attendees' ranks ranged from air commodore (two students) to flight sergeant (five students). Four civilian professors also attended.[81] In all, between early 1942 and late 1944, 3,585 officers attended courses run by WATU. "The peak of this period was reached in early 1944 when each weekly course contained an average of 40 officers. The average at the end of 1944 had dropped to just 30, which average is maintained by requirements, space, and staff available. This averages 1,500 officers per annum."[82]

***Doctrinal Integration***

By early 1943, WATU again had proved responsive and adaptive by integrating the new technology of the escort carrier into ASW doctrine. Although each carrier could operate only six or seven aircraft, it could maintain a continuous combat air patrol over a convoy and directly addressed what had become known as the "air gap." This was an area in the middle of the Atlantic that could not be covered by shore-based Allied patrol aircraft. The escort carrier did much to complement the very-long-range B-24 Liberators based in Northern Ireland, Iceland, and Halifax. On February 11, 1943, Commander in Chief, Western Approaches sent a memorandum classified "Most Secret" to the secretary of the Admiralty. It confirmed that the process of integration had been completed successfully. "After experience had been gained in the operation of Escort Carriers, a new Article 145 will be incorporated in A.C.I.s."[83] The new Instructions for the Operation of Escort Carriers, issued on February 7, 1943, took care to settle the issue of command within the existing command philosophy framework. "Command at sea is to be exercised in accordance with A.C.I. Article 16. With reference to paragraph

3 of Article 16, an Escort Carrier is NOT to be considered as forming part of the A/S Escort."[84] Thus, a new weapon was integrated doctrinally without compromising the existing command arrangements, as the commanding officer of an escort carrier could not command other escort ships.

WATU replicated its activities within the North Atlantic theater and beyond it. By the end of 1942, a second tactical unit was operating in Londonderry. When Roberts submitted his annual report for the end of 1944, three more tactical units had been established in Belfast, Northern Ireland, and in Irwell and Osprey in Scotland. Tactical units also had been established in Bombay, Sierra Leone, and Halifax. Roberts summed up the relationship between WATU and these outstations as follows: "Tactical Units have been installed in the Empire which are not under my charge, but are 'in touch.'"[85] This further illustrates that WATU enabled the Royal Navy to replicate a learning organization that successfully could challenge existing norms, objectives, and policies pertaining to trade defense even when applied to geographically diverse theaters of operation.

The preparation for the D-day landings in Normandy provides another good example of WATU undertaking new doctrinal tasks. From mid-March to mid-May 1944, a number of special courses were held concurrently with the existing courses; the Admiralty appointed extra staff members to cope with the situation. "These special courses were in anti-E-boat (and anti-W-boat) warfare, and a total of 372 officers took part in the preparations for OVERLORD. During this period there was close liaison between W.A.T.U. and the port operational authorities concerned."[86] The value of this adaptive flexibility was recognized in a memo from the Commander in Chief, Western Approaches to the secretary of the Admiralty dated December 20, 1944. "The special tactical training given for Operation OVERLORD is deserving of the highest praise."[87]

As emphasized previously, the operational objective of the naval escorts was to ensure the safe and timely arrival of the convoys. Tactically, the most effective way to achieve this was to avoid the U-boat wolf packs completely. This could be achieved by rerouting convoys past the enemy's patrol lines. By August 1942, WATU had formulated and disseminated an additional tactical doctrine. This underlines the point that enemy practice often leads to the formulation of new doctrine. In this case, the objective was to enable naval escorts to react effectively to a shadowing U-boat, yet still enable a convoy to execute an alteration of course and thereby avoid an attack.

> U-boats will sometimes remain shadowing for several days[,] reporting from time to time on H/F. If other U-boats are ordered to close the convoy to make a "Pack" attack the shadowing U-boat will, in the later stages, before attack, make signals on M/F. On receipt of a bearing of an M/F homing signal it should always be assumed that the convoy is concerned and an immediate search should be along the bearing obtained.

> Should a U-boat be sighted, an escort should be left in the area to keep it down until dark, even if asdic contact is not gained, so as to cover a large alteration of course by the convoy.[88]

By early 1943, rerouting tactics had reached their limits. "Dönitz's strategy, driven by the amount of tonnage sunk per U-boat day at sea, had forced him to concentrate his effort in the mid-ocean air gap so that by early 1943 it was literally filling up with submarines."[89] This area presented the increasingly large and numerous wolf packs with many opportunities. Again, such a change on the enemy's part required that the defenders adjust; in this case, they needed to engage and sink U-boats in and around the convoy, as stated in the ACIs: "[T]he close escort of a convoy was the *last* line of defence, and it fought if all else failed."[90]

Yet by May 1943, Germany's wolf-pack doctrine was facing severe challenge. During this month there were a series of battles around convoys. Naval escorts inflicted losses that were not sustainable. By late 1943, German staff records reveal the multifaceted challenges that new weapons technology and doctrine were presenting. "The U-boats had been seriously impeded by air and sea escorts of unprecedented strength and, in the nocturnal melee, had failed to gain bearing through having to take avoiding action against air and surface radar, diving because of the approach of aircraft or destroyers, fighting off aircraft."[91] The teaching at WATU had enabled the dissemination and application of an effective ASW tactical doctrine that included the use of weapons technology that forced a suboptimal German response.

WATU had no equal in the German navy. After the German surrender in May 1945, Captain Roberts had the opportunity to interrogate Rear Admiral Godt, operational commander of the U-boat arm. Roberts recounted,

> I could not resist asking Godt if there was any form of Tactical Table [the exercise floor at Western Approaches Command, located in Derby House, Liverpool], similar to W.A.T.U. in his service. He replied that there was not, but in 1944 he had seen the "Illustrated" and had caused the article and the photographs of W.A.T.U. to be commented upon by his Staff. He admitted the value of such an Establishment, but he did not consider adapting it to his needs as it was firstly "too late in the war" and secondly he relied more on the sea training with the Tactical Flotilla.[92]

The article set out to discover the impact of organizational learning and the entity that implemented it during World War II. First, can a theory of organizational learning explain the improved effectiveness of one tactical organization during the Second World War—specifically, the development of antisubmarine tactical doctrine between 1942 and 1945—and illustrate the importance of acquiring new knowledge in an operational context like the Battle of the Atlantic? Second, to

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what extent was WATU the product of a bureaucratic, centrally controlled, hierarchical Admiralty and how was it able to collect, transfer, and integrate knowledge to achieve three things: first, challenge existing norms, objectives, and policies that pertained to trade defense; second, facilitate adaptation of tactics and counter the tactics German U-boats used to attack convoys; and third, teach and disseminate doctrine to naval officers appointed to escorts in the North Atlantic and officers from the RAF's Coastal Command? Finally, was the learning paradox—the ability to imbue a naval hierarchy with adaptability and flexibility—resolved, and does WATU represent only a concrete, historically specific case, or are there lessons worth learning for other navies in the twenty-first century?

Double-loop learning provides a framework to understand how WATU created a learning climate that successfully challenged the assumptions about how naval escorts should react when a convoy was attacked. New norms, objectives, and policies were developed. Most importantly, it spurred pursuit of an answer to the critical tactical problem: How and from what range did the U-boats attack a convoy? Learning the correct answer to this problem brought about a complete rewriting of the Royal Navy's ASW tactical doctrine—in particular, what the escorts should do when a U-boat attack began. By late 1942 and early 1943, new weapons systems embedded in a tactical doctrine framework meant that the Admiralty could both protect convoys from U-boat attacks and at the same time turn the area around the convoys into a killing ground. The learning paradox was resolved.

In this process, the four quadrants of fighting power can be discerned: the correction of assumptions about how the conflict was being fought, changes in weapons technology, development of new doctrine, and adoption of an appropriate command philosophy. All four helped WATU to enhance its tactical and operational effectiveness. The Royal Navy, thanks in part to the inception of WATU, overcame one of the most important challenges that any organization faces in a crisis: the proclivity to produce a dysfunctional response to sustained threats and problems. "Individuals and organizations tend to deal with threat in ways that will increase defensiveness and reduce the probability of learning to learn."[93] The German report previously cited reveals the Royal Navy's initial approach to the ASW challenge near the North Channel in late 1940 to have been just such a dysfunctional response.

Pivotal to the Allied victory in the Battle of the Atlantic was the neutralization of the disruptive U-boat technology. This was achieved in part through the embedding of new and improved weapons systems, ranging from 10 cm radar to escort carriers, into a doctrinal framework. The effectiveness of these new "hard" weapons technologies was enhanced by a synthesis of the "soft" weapons of signals intelligence and doctrine. The integration of these diverse elements produced a force-multiplier effect that from late 1942 increased the tempo and

effectiveness of ASW tactical operations and enabled defeat of the U-boats at the operational level in the North Atlantic theater.

Finally, what lessons can twenty-first-century navies learn from the case study presented here? First, this historically specific case shows that a well-formulated, disseminated, and consistently applied doctrine can be a force multiplier.

Second, the strategic importance of certain geographical locations are not permanently discounted by changes in transport or weapons technology. Furthermore, human agency has its limitations. The disruptive technology of the submarine meant that the Irish naval bases that covered the Western Approaches were just as important for the formation and routing of convoys in the Second World War as they had been in the First World War—the caveat being that in the former war the Royal Navy did not have access to them because of the geostrategic blindness of British policy makers in the late 1930s.

Finally, poor geostrategic decision-making can be redeemed by alternative choices that offset the loss of operational efficiency and effect. In March 1941, although their country was still technically neutral and referring to itself as an associated power, U.S. military planners with presidential endorsement made the decision, in secret, to begin the construction of two naval bases in Northern Ireland. This was done on the basis of the recognition that the threat to sea communications of the United Kingdom was a key risk that had to be addressed by the United States and the geostrategic center of gravity was the northwest approaches.

Navies of the twenty-first century can take away a number of other pertinent lessons. For a navy to learn there has to be an institutional appreciation that a discrepancy exists between an action taken and the result—in short, there are often unexpected consequences. Inquiry and reflection should result in corrective action, which then should become "embedded in organizational memory . . . and in organizational routines and procedures."[94] A doctrine that simply encapsulates required routines and procedures is not enough; the command philosophy has to meet the circumstances as well. General Sir Rupert Smith has identified the dynamic relationship between doctrine and command philosophy. "If doctrine is the epoxy the commander's way of command in the circumstances is the hardener."[95] The success of this combination will depend on a receptive attitude within an officer corps and how such receptiveness can be engendered. Furthermore, there is still a need for navies to teach doctrine. The learning outcome can be a force multiplier that can give a competitive edge when forces are evenly matched or outnumbered.

This learning outcome is illustrated by one of the critical stages of the Battle of the Atlantic: "Through January and February [1943] Ultra provided the information, but the Germans were reading the Allies' daily estimates of U-boat positions and anticipated their movements. The battle for ONS 166 in late February, in

which 14 ships were lost in a six-day battle with 18 U-boats, was fought with both shore staffs reading the other side's signal traffic."[96] A theory of organizational learning helps to explain how the Royal Navy, through the teaching of doctrine, improved tactical effectiveness of its naval escorts. The institution created to formulate and disseminate doctrine, WATU, proved adept at challenging existing norms, objectives, and policies. This example underscores the claim made about doctrine by Julian Corbett; it is "the soul of warfare."[97]

## NOTES

1. Chiefs of Staff, memorandum, "Necessity for Base Facilities in Eire," March 8, 1941, Prime Minister's Office files [PREM] 3/127/2, The National Archives, Kew, U.K. [hereafter TNA]; Memorandum Dealing with the Entry, Training, and Employment of Officers and Men of the Royal Navy and of the Royal Marines, 1902, Cd. 1385, p. 3.
2. See Memorandum Dealing with the Entry, Training, and Employment of Officers and Men of the Royal Navy and of the Royal Marines.
3. Max Visser, "Learning under Conditions of Hierarchy and Discipline: The Case of the German Army, 1939–1940," *Learning Inquiry* 2, no. 2 (August 2008), pp. 127–37.
4. Examples of this extensive literature are Andrew J. Bacevich, *The New American Militarism: How Americans Are Seduced by War* (New York: Oxford Univ. Press, 2005); Williamson Murray and Allan R. Millett, eds., *Military Innovation in the Interwar Period* (Cambridge, U.K.: Cambridge Univ. Press, 1996); James S. Corum, *The Luftwaffe: Creating the Operational Air War, 1918–1940* (Lawrence: Univ. Press of Kansas, 1997); James S. Corum, *The Roots of Blitzkrieg: Hans von Seeckt and German Military Reform* (Lawrence: Univ. Press of Kansas, 1992); MacGregor Knox and Williamson Murray, eds., *The Dynamics of Military Revolution 1300–2050* (Cambridge, U.K.: Cambridge Univ. Press, 2001); Daniel Ford, *A Vision So Noble: John Boyd, the OODA Loop and America's War on Terror* (Durham, NH: Warbird Books, 2013); Barry R. Posen, *The Sources of Military Doctrine: France, Britain, and Germany between the World Wars* (Ithaca, NY: Cornell Univ. Press, 1984); Chad C. Serena, *A Revolution in Military Adaptation: The US Army in the Iraq War* (Washington, DC: Georgetown Univ. Press, 2011); and Adam Grissom, "The Future of Military Innovation Studies," *Journal of Strategic Studies* 29, no. 5 (2006), pp. 905–34.
5. Eliot A. Cohen and John Gooch, *Military Misfortunes: The Anatomy of Failure in War* (New York: Free Press, 1990), p. 26.
6. Murray and Millett, *Military Innovation in the Interwar Period,* pp. 367–68.
7. See Robert Foley, "Dumb Donkeys or Cunning Foxes? Learning in the British Armies and German Armies during the Great War," *International Affairs* 40 (2014), pp. 279–98, and Sergio Catignani, "'Getting COIN' at the Tactical Level in Afghanistan: Reassessing Counter-insurgency Adaptation in the British Army," *Journal of Strategic Studies* 35, no. 4 (2012), pp. 513–39.
8. Aimée Fox-Godden's book, *Learning to Fight Military: Innovation and Change in the British Army, 1914–1918* (Cambridge, U.K.: Cambridge Univ. Press, 2018), represents a significant contribution to organizational learning. See also Aimée Fox-Godden, "Beyond the Western Front: The Practice of Inter-theatre Learning in the British Army during the First World War," *War in History* 23, no. 2 (March 2016), p. 193.
9. Cohen and Gooch, *Military Misfortunes,* p. 76.
10. See Carla O'Dell and C. Jackson Grayson, "If Only We Knew What We Know: Identification and Transfer of Internal Best Practices," *California Management Review* 40, no. 3 (Spring 1998), pp. 154–74.

11. Matthew Ford, "Learning the Right Lessons: Military Transformation in Crisis and the Future of Britain's Armed Forces," epilogue to *A Military Transformed? Adaptation and Innovation in the British Military, 1792–1945,* ed. Michael LoCicero, Ross Mahoney, and Stuart Mitchell (Solihull, U.K.: Helion, 2014), p. 250.
12. Silvia Gherardi, "Learning as Problem-Driven or Learning in the Face of Mystery?," *Organization Studies* 20, no. 1 (1999), p. 99.
13. Ibid., p. 128; Wesley M. Cohen and Daniel A. Levinthal, "Absorptive Capacity: A New Perspective on Learning and Innovation," *Administrative Science Quarterly* 35, no. 1 (March 1990), pp. 128–52.
14. Chris Argyris and Donald A. Schon, *Organizational Learning: A Theory of Action Perspective* (Boston, MA: Addison-Wesley, 1978).
15. Ibid., p. 3.
16. Chris Argyris, *On Organizational Learning* (Malden, MA: Blackwell, 1992), p. 159.
17. See, for example, Murray and Millett, *Military Innovation in the Interwar Period;* Corum, *The Luftwaffe;* and Knox and Murray, *The Dynamics of Military Revolution 1300–2050*.
18. Knox and Murray, *The Dynamics of Military Revolution 1300–2050,* p. 158.
19. Argyris, *On Organizational Learning,* p. 9.
20. For accounts of the campaign as a whole see Peter Padfield, *War beneath the Sea: Submarine Conflict during World War II* (New York: Wiley, 1998); David Syrett, *The Defeat of the German U-boats: The Battle of the Atlantic* (Columbia: Univ. of South Carolina Press, 1994); Clay Blair, *Hitler's U-boat War,* vol. 1, *The Hunters, 1939–1942* (New York: Random House, 1996); and Dan van der Vat, *The Atlantic Campaign: The Great Struggle at Sea 1939–45* (Edinburgh: Birlinn, 2001).
21. They also had represented a disruptive technology in the First World War, but the lessons had been ignored in the interwar period. See Steve R. Dunn, *Bayly's War: The Battle for the Western Approaches in the First World War* (Barnsley, U.K.: Seaforth Publishing, 2018).
22. Admiral Beatty and Churchill had negotiated this agreement with Michael Collins and Erskine Childers in October 1921. Beatty had argued that "naval requirements were demonstrated in the last war. We could not fight a naval war unless we controlled the Irish coast. Numerous vessels could recoup in its numerous inlets." Even Michael Collins appreciated the fact that the ability of the Royal Navy to enforce sea control and sea denial was critical to protecting Irish neutrality: "When the British Navy is beaten, the neutrality of Ireland does not matter a damn." Conference on Ireland, Naval Defence, October 13, 1921, F/25/2/32, Lloyd George Papers, House of Lords Library, London.
23. This last base was by far the most important and was protected by three forts at the entrance to Cork Harbour.
24. See 335 Parl. Deb. H.C. (5th ser.) (1938) cols. 1100–101.
25. From its secession in 1922 to 1937, the south of Ireland was known as the Irish Free State. With a new constitution in 1937, its name was changed to Eire.
26. Lord Chatfield, *It Might Happen Again,* vol. 2, *The Navy and Defence* (London: Heinemann, 1947), p. 127.
27. Capt. S. W. Roskill, letter to the editor, *The Times* (London), January 7, 1970.
28. John H. Maurer, "The Struggle for Sea Power: Lessons from the Great War," *Orbis* 62, no. 2 (2018), p. 189.
29. This was the headquarters of the Royal Navy's Western Approaches Command.
30. For a detailed analysis of Ireland's geopolitical and geostrategic importance during the Second World War, see Geoffrey R. Sloan, *The Geopolitics of Anglo-Irish Relations in the Twentieth Century* (London: Leicester Univ. Press, 1997), pp. 196–238.
31. See Karl Dönitz [Grand Adm., Imperial German Navy], *Memoirs: Ten Years and Twenty Days,* trans. R. H. Stevens (London: Weidenfeld and Nicolson, 1959), p. 102.
32. Bob Carruthers, *The U-boat War in the Atlantic,* vol. 1, *1939–1941* (Barnsley, U.K.: Pen & Sword Maritime, 2013), p. 113.
33. Commander-in-Chief, Atlantic Fleet, U.S. Naval Administration in World War II, vols. 2 and 3, 1946, pp. 12–13, U.S. Navy Operational Archives, Navy Yard, Washington, DC.
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70. Ibid., p. 3.
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72. South Atlantic Convoy Instructions, p. 301—On Sighting a Torpedo Track, 1942, ADM 1/12137, TNA.
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78. Western Approaches Tactical Unit, Annual Report—December 1944, ADM 1/17557, TNA.
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80. These navies were as follows: Royal Netherlands Navy, Royal Norwegian Navy, Royal Hellenic Navy, Polish Navy, Free French Navy, and the United States Navy.
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93. Argyris, *On Organizational Learning,* p. 159.
94. Ibid., p. 129.
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# RESEARCH & DEBATE

## **THE MEDIUM IS THE MESSAGE** WEAVING WARGAMING MORE TIGHTLY INTO THE FABRIC OF THE NAVY

*Robert C. Rubel*

By now, the challenge and threat of a rising and contentious China and an increasingly hostile Russia have penetrated the Navy's corporate consciousness, and current leaders are taking steps to shift the service from a purely power-projection posture to one that focuses again on defending American command of the sea. The Navy is initiating adjustments to fleet design and architecture as well as a rebirth of fleet experimentation. While perhaps late in coming, these responses to the emergent challenges of our time are encouraging.

However, more is needed. In the years since the fall of the Soviet Union, the professional culture of the Navy has migrated from one that was founded on the dynamics of war at sea to one shaped by global policing and constrained budgets. The service is tasked heavily with presence duties, including support for conflicts ashore, and increasingly is constrained by having fewer ships and personnel. In light of this, the Navy has focused on efficiency and execution while creating a culture whose character is in stark contrast to the one that emerged in the years between 1890 and the start of World War II.[1] That earlier culture has been characterized as a learning culture, one that prepared the service for successfully fighting against the Imperial Japanese Navy and overcoming the threat of German U-boats.[2] Perhaps the most difficult task Navy leadership will face in the coming years is shifting the current culture to one that shares certain key characteristics with the culture that produced the officers and sailors who

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led the Navy to victory in World War II. There will be many elements involved in that effort, including major adjustments to personnel policies, training schedules, and education requirements. Wargaming will be one powerful instrument for transforming the Navy's culture. It was so from 1887 to 1942, and can be again. But to achieve the necessary power and influence for wargaming, the Navy's approach to it must change; the practice must be woven more tightly into the fabric of the Navy's professional culture.

To many, the idea that the Navy would need to improve its wargaming posture might seem strange, if not downright ludicrous. After all, the Navy's reputation for wargaming is almost legendary, and the history of wargaming at the Naval War College is a key element of one of the standard written works on wargaming. The author of that work contends that "the Naval War College, of all U.S. professional gaming organizations, has most consistently and successfully espoused the use of wargaming as both an educational and analytical tool."[3]

Indeed, the Navy has used, and still does use, wargaming, at times very effectively. However, wargaming's relationship to the fabric of professional development and culture has changed over the years, a consequence of the changes in the Navy's culture brought about by the factors previously mentioned. In the earlier era, wargames fused education and research, and Naval War College students used them as a central component of the curriculum. In contrast, during the post–World War II era, gaming for research gradually became divorced from gaming for education. A research and analysis department was established at the College in 1951, concurrently with the introduction of a new advanced course on strategy. The department was designed to support other academic areas by developing tools for more-effective solutions to operational problems and conducting specific research projects.[4] Wargaming, always an important part of the teaching curriculum, became a tool for illustrating and synthesizing concepts taught in seminar, a policy Vice Admiral Stansfield Turner reinforced when he assumed the presidency of the College in 1972.[5] Turner established an advanced research department to support a few students who wished to conduct more-specific research and to support outside scholars.[6] This later became the Center for Advanced Research and, in 1981, the Center for Naval Warfare Studies.

The separation of game-based research from education at the College, except for a few, specially selected students, had important Navy-wide consequences over time. In the first four decades of the twentieth century, Naval War College games were "sandboxes" in which students could try things out in an environment of "psychological safety" and new ideas could be advanced and differences of opinion could be aired without fear of embarrassment or punishment.[7] Ideas emanating from the games found their way into fleet experimentation, either by

direct translation or through the actions of emergent leaders who were educated via the games.[8]

Once gaming for education became focused on skill building and research gaming became the province of specialized faculty and outside agencies, the sandbox nature of student gaming disappeared. This both reflected and facilitated the shift in the locus of innovation from a professional consortium consisting of the Naval War College, the General Board of the Navy, and the fleet, to the laboratories. Innovation became almost entirely technological and the province of technical specialists. In this environment, the authoritative voice behind fleet design and fleet architecture was computer-based analysis to justify budgets, rather than informed experimentation. The result has been that in the ends-ways-means syllogism of strategy, ways have become divorced—institutionally—from means. In a permissive geopolitical environment, this disconnect did not have grave consequences; in today's world of emerging naval threat, it could prove disastrous. In the late 1930s, Congress authorized the construction of a fleet, the design of which was derived from lessons learned through wargaming and fleet experimentation. Soon, the nature of the threats from China and Russia likely will spur Congress to take action, but it will do so without the template created by a tapestry woven from education, gaming, and fleet experimentation. The fleet that emerges from this potential congressional action is at risk of being ill suited to the challenges it will face.

The separation of research and education in the arena of wargaming is evident in a 1960 manual on the subject written by Francis McHugh, an experienced wargamer who served at the Naval War College from the 1930s to the 1970s. He asserted that a game should be directed toward one of two purposes: to provide military commanders with decision-making experience or to provide military commanders with decision-making information.[9] While he does go on to admit that the very nature of gaming includes both elements to some degree, the idea that a game should, for purposes of effectiveness, be oriented toward one or the other reflects a kind of fragmentation of gaming institutionally. McHugh's breakdown of purposes reflects the content of gaming, whereas his comment on the fusion of education and research has to do, as he said, with the very nature of gaming. Distinguishing these two elements, content and nature, is key to understanding how wargaming can be integrated better into the professional fabric of the Navy and how it can contribute to a rebirth of effective innovation.

## THE MEDIUM IS THE MESSAGE

The 1960s Canadian communications guru Marshall McLuhan defined a medium as *an extension of some human faculty*.[10] So, for example, a hammer is an

extension of the human hand, the wheel is an extension of the human foot, and so on. In his view, virtually any human invention is in some way a medium. He went on to say—in his well-known phrase—that "the medium is the message"; that is, irrespective of any content the medium may carry, the medium itself has a profound effect on humans. His most famous research focused on mass media such as radio and television, but he critically analyzed a wide range of media, including print, photography, automobiles, telephones, and many other human inventions. More relevantly, art and science, including their component disciplines and techniques, can be considered media.

Following this logic, we can regard wargaming as a medium. But what kind of medium? McLuhan distinguishes between hot and cold media. A hot medium leaves very little to the imagination of the listener, while a cold one elicits participation or completion by the audience. From this it is clear that wargaming is a cold medium, requiring participation and completion by players and others associated with it. McLuhan regards hot media as fragmenting and exclusive, while cold media are inclusive and promote synthesis.[11] This may be fairly self-evident, but probing deeper into the way wargames are used by the Navy (and, to be sure, the other services as well) reveals that wargaming's nominal identity as a cold medium is distorted by its separation into education and research types, with the consequence that the medium's potential value and influence are not achieved. In essence, wargaming as a medium is a thinking tool, and that perspective can have important implications for wargaming policy. In framing the discussion we will distinguish, as McLuhan would do, between the content of gaming and the nature of the medium itself. Game content, for our purposes, includes not only the scenario, orders of battle, and rules but the wider process of design, execution, analysis, and reporting. The nature of the medium is thus less concrete and material; it consists of the idea of competition in the context of simulation and, perhaps more importantly, the fact that it is something people do—it is a verb as well as a noun.

We have asserted already that the nature of wargaming is defined by two elements, competition and simulation. However, there is another aspect of gaming's inherent nature: its character as a weakly structured tool. By "weakly structured" we mean that because of their dependency on human decisions in the context of competition, games do not produce the same output from the same inputs when they are played repeatedly. This aspect of gaming was brought out by Dr. John T. Hanley Jr. in his Yale University dissertation *On Wargaming*. Hanley relates the inherent nature and structure of wargaming to the kind of indeterminacy attending a problem. Indeterminacy encompasses those things we do not know about either the initial state of the relevant elements of the problem or the effects of our

potential actions to solve it. Hanley establishes a spectrum of indeterminacy that contains the following categories:

- None: The elements of the problem are known and are amenable to engineering solutions.
- Statistical indeterminacy: The initial state is a random variable whose statistics we know and the effects of our actions on it can be determined.
- Stochastic indeterminacy: The initial state may be known, but the process by which it transitions to a new state via our actions is subject to statistical variation.
- Strategic indeterminacy: The initial state is known but there are two or more competing "players" whose independent choices govern the end state.
- Structural indeterminacy: There are significant elements of the problem that are not known, to the point that we cannot define the problem in terms of the other forms of indeterminacy. "This covers indeterminacy in current state, the kinematics of the process, the acts of nature, the available response time and the perceptions, beliefs and values of the decision makers."[12]

Hanley describes wargaming as a weakly structured tool that is appropriate for application to weakly structured problems.[13] To be more specific, wargames are inherently exploratory mechanisms that reveal rather than prove. They provide indications of what is possible, although they cannot be regarded as predictive. The primary mechanism through which wargames produce such knowledge is visualization in one form or another. The games allow players and observers to see relationships that otherwise would be difficult or impossible to discern—geographic, temporal, functional, political, and other types. Seeing and understanding these relationships prepare the mind for making decisions in a complex environment. Moreover, such exploration occurs in an environment of uncertainty and competition, particularly in two-sided games, enhancing the mental benefits derived from participation. This holds true whether the purposes of the game are educational or research.[14]

This last observation leads us back to McLuhan's argument that a medium has an effect on its beholder or participant, quite apart from any content the medium contains. It is one thing to say that gaming prepares the mind for making decisions—a rather straightforward effect of practice—but there is more depth to the matter than that, salutary as it is. If we look back again at the period from the onset of gaming at the Naval War College to the outbreak of World War II, we see that games, regardless of their content or purpose, shaped the culture of the officer corps. The games did this in part by constituting a constraint—something that imposes limits in the context of a complex-adaptive system—on the

evolving Navy officer corps of the time. That is, as a medium, gaming offered an alternative to other avenues of research and education that could have been pursued. "Constraints are essential to complex-adaptive systems. They channel the behavior of individuals in the system and focus their efforts. This activity can often foster the development of new approaches."[15] Gaming in the curriculum of the Naval War College fostered and facilitated an environment of exploration and open-minded critique, which led to and helped ensure the success of the subsequent series of fleet battle experiments. The net effect, as Hone points out, was the evolution of the Navy from a traditional, lore-based organization to a modern, learning one.

## IMPLICATIONS FOR POLICY

The Navy has long used wargames as useful research and educational tools, but current policy is formed on the basis of their content, not their nature. While the content of games is the bread and butter of their utility, it is their nature as a medium that holds the potential for transforming the nature of the Navy's professional culture. There have been calls for strengthening gaming in the Department of Defense generally, but the gist of these recommendations for improvement focuses on content.[16] How would such recommendations look if they were focused on gaming as a medium?

The first recommendation would target those who sponsor games. The normal process is that a high-level leader determines that a game of some sort is needed and requests one from a gaming organization—for instance, the Naval War College Wargaming Department. The wargamers work with those in the sponsor's organization to determine game objectives and design—content. The game then is executed using players, perhaps from the sponsor's organization or ones from elsewhere who have the requisite knowledge. At the end of the game it is common for the sponsor to show up to take part in the "hot wash," a discussion and critique session that focuses on lessons learned. Sometimes the sponsor does not even participate in the hot wash but simply reads the game report. This converts the medium of a game to the medium of a conference or simply the printed word—thus losing the effect of the game as a medium.

Therefore, to leverage the game as a medium, the sponsor should participate in it as a player, or at least an observer. Notable examples of sponsors gaining important value from direct participation in games include Admiral Scott H. Swift, whose experience in a series of global wargames led him to establish the Pacific Fleet experiment program; Vice Admiral Thomas S. Rowden, whose participation in a game focused on the littoral combat ship prompted him to develop the distributed lethality concept; and Rear Admiral Thomas E. Zelibor, who used his participation in a global wargame to leverage a networked situational awareness

tool designed for the game to command the naval aviation element in the initial phases of Operation ENDURING FREEDOM.[17] Lack of sponsor participation can be attributed to the pace of operations in the fleet and the intensity of administrative work inside the Pentagon; it is difficult for senior officers and civilian officials to block out time for gaming, which is time-consuming. However, the examples of Admirals Swift, Rowden, and Zelibor indicate that the missing element is true understanding of the value of personal game participation and the concomitant commitment to just do it.

Second, true two-sided gaming should be a widespread and essential part of the professional education process, from precommissioning through senior service colleges and even flag-level courses. Although it constitutes an example that some might question, the German army in the 1920s and 1930s made gaming a central part of its rebuilding process. "In the training schedule of the officer candidate schools and the War College a large part of the time was set aside for war games."[18] The efficiency of the Wehrmacht, especially in the early campaigns of World War II, has become legendary. The currently trending concept of mission command comes from the German *Auftragstaktik* (order tactics), which requires independent thinking throughout the chain of command. "Mission command is built on subordinate leaders at all echelons who exercise disciplined initiative and act aggressively and independently to accomplish the mission."[19] Endemic wargaming can help build a culture in which the mission command philosophy can flourish.

There are several reasons that wargaming facilitates such a productive environment. First, a routine diet of two-sided gaming can generate and hone the ability to reason competitively. In the first several decades of the twentieth century the Navy used competitive gaming effectively. Through the games, officers "tested their techniques on each other; unlike games in most other services, the Navy's problems employed opposing teams of officers. This provided valuable practice and helped emphasize the importance of creativity—essential to the art of command—rather than canned solutions. . . . The system of war games at the [Naval War] college . . . promoted continual learning and ever-increasing complexity."[20] It is all too common in today's professional military education (PME) system for students to be taught only principles and "school solutions." Former Secretary of Defense James Mattis leveled a rather devastating criticism of the current system: "PME has stagnated, focused more on the accomplishment of mandatory credit at the expense of lethality and ingenuity."[21] Wargames as generally practiced today in PME tend to be one-sided affairs in which the faculty maintains control to ensure course objectives are achieved. In this environment, how can "genius," in the sense that Carl von Clausewitz uses it, be cultivated and recognized?

Making two-sided gaming the default PME vehicle will help to re-create a sandbox in which innovative reflexes can be developed. The constraint of two-sided gaming produces a particular kind of problem solving that is unique to the competitive environment. As players assess a situation and look for avenues of advantage, they engage in what can be termed *divergent thinking;* that is, they search for options. This process can lead to novel solutions. However, the players understand that they then must engage in *convergent thinking*—analyzing and selecting one option they think will work.

Repeated struggling in competitive situations is more likely to produce new ideas and insights, especially if such experience is widespread in the officer corps. The author has encountered this phenomenon repeatedly in two-sided games he has designed and directed. Beyond the potential for out-of-the-box thinking and "black swans," cultivating competitive problem solving would help to inculcate the kind of ingenuity for which the former Secretary of Defense called.

But there are challenges. Two-sided gaming is not easy. Design of such games must take care to channel competitive instincts properly. Moreover, in two-sided games featuring free play moves, control becomes more difficult, making the achievement of preplanned objectives problematic and demanding greater confidence and ability to ad-lib on the part of faculty. It is in no small part for these reasons that PME institutions generally have abandoned two-sided gaming. But such gaming is entirely feasible, given command commitment. The Naval War College possesses a highly capable wargaming organization that can design and direct such games.

## TOWARD A FIGHTING CULTURE

Each of the Navy's principal warfare communities possesses a robust training infrastructure that focuses on tactical proficiency. The personal competitive element is essential, especially in fighter aviation and special operations. However, technical and tactical excellence does not translate automatically into an overall professional culture predicated on high-end naval combat. For at least the past quarter century—a similar span of time to that from 1865 to 1890—the Navy, like its post–Civil War forebear, has been engaged in policing. Alfred Thayer Mahan made a statement then that can be applied directly to today's conditions:

> How changed present conditions, how entirely concentration—which is military—has taken the place of dispersion, it is needless to insist. This is an effect of Naval Strategy, adapted to changes in conditions; but it is fair, in drawing attention to the change, to repeat that the principles of Naval Strategy have not altered. They have merely received elucidation by experience and by reflection. Men's minds have turned—it will be more accurate to say, have returned—to ideas and practices which

were familiar enough to our predecessors, who had been to school to War itself; but which, in the absence of that most excellent instructor, had lapsed out of mind.[22]

The shift in culture from a dispersed, presence-oriented service to one focused on concentration for war at sea required insurgency in the officer corps back then, and likely will require it again in some form.[23] The earlier insurgents, such as Admirals William S. Sims and Joseph M. Reeves, leveraged wargaming as part of their campaign to transform the Navy. It is not simply the number, kind, and quality of games that matter; it is the recognition that the wargame, as a medium, has an intrinsic effect on the corporate culture of the Navy, one that can be enhanced through determined policy and support.

Similar to the officers and sailors of the early twentieth century, we do not have a clear picture of the nature of future naval combat; for instance, few officers in the earlier era had an inkling of how aircraft and radar would transform war at sea in the 1940s. But the culture that had been built through wargaming and fleet exercises produced an organization and leaders that could learn quickly and adapt to the circumstances of war. That kind of culture must be built again today.

## NOTES

1. See, for example, Dmitry Filipoff, "How the Fleet Forgot to Fight: Pt. 1 Combat Training," *Center for International Maritime Security (CIMSEC),* September 17, 2018, cimsec.org/.
2. Trent Hone, *Learning War: The Evolution of Fighting Doctrine in the U.S. Navy, 1898–1945* (Annapolis, MD: Naval Institute Press, 2018), pp. xiv–xvi.
3. Peter P. Perla, *The Art of Wargaming: A Guide for Professionals and Hobbyists* (Annapolis, MD: Naval Institute Press, 1990), p. 8.
4. John B. Hattendorf, B. Mitchell Simpson III, and John R. Wadleigh, *Sailors and Scholars: The Centennial History of the U.S. Naval War College* (Newport, RI: Naval War College Press, 1984), pp. 205–206.
5. Perla, *The Art of Wargaming,* p. 89.
6. Hattendorf, Simpson, and Wadleigh, *Sailors and Scholars,* p. 293.
7. Hone, *Learning War,* p. 329.
8. Albert A. Nofi, *To Train the Fleet for War: The U.S. Navy Fleet Problems, 1923–1940,* Historical Monograph 18 (Newport, RI: Naval War College Press, 2010), p. 20.
9. Francis J. McHugh, *Fundamentals of War Gaming* (1966; repr. Newport, RI: Naval War College, 2011), p. 8.
10. Marshall McLuhan, *Understanding Media* (New York: McGraw-Hill, 1964; repr. Corte Madera, CA: Gingko Press, 2003), pp. 19–20.
11. Ibid., chaps. 1–3, pp. 17–60. McLuhan's argument is challenging to follow, because it is composed intensely of many novel elements. Perhaps like other dense but sophisticated arguments, such as those of Carl von Clausewitz in his book *On War,* multiple readings and considerable thought are required to understand fully the author's argument and its implications.
12. John T. Hanley Jr., *On Wargaming: A Critique of Strategic Operational Gaming* (Ann Arbor, MI: Univ. Microfilms International, 1991).
13. Ibid., pp. 19–25.
14. Robert C. Rubel, "The Epistemology of Wargaming," *Naval War College Review* 59, no. 2 (Spring 2006), p. 112.
15. Hone, *Learning War,* p. 4.

16. See, for example, Deputy Secretary of Defense to Secretaries of the Military Departments et al., memorandum, "*Wargaming and Innovation,*" February 9, 2015.
17. John Gartska et al., *Task Force 50 during Operation ENDURING FREEDOM* (Washington, DC: Office of Force Transformation, March 2006), available at ctnsp.dodlive.mil/.
18. General der Infanterie Rudolf M. Hofmann, *War Games,* trans. P. Luetzken, MS P-094 (U.S. Army Historical Division, 1952), p. 3.
19. U.S. Defense Dept., *Joint Operations,* JP 3-0 (Washington, DC: Joint Staff, January 17, 2017), p. II-2.
20. Hone, *Learning War,* pp. 99–100.
21. U.S. Defense Dept., *Summary of the 2018 National Defense Strategy* (Washington, DC: 2018), p. 8.
22. Alfred Thayer Mahan, *Naval Strategy* (1911; repr. Westport, CT: Greenwood, 1975), p. 5.
23. Hone, *Learning War,* pp. 17–21.

# REVIEW ESSAYS

## FULL-BODIED CYBER WITHOUT THE HYPE

*Sam J. Tangredi*

*Cyberspace in Peace and War,* by Martin C. Libicki. Annapolis, MD: Naval Institute Press, 2016. 478 pages. $55.

As a fellow at the Institute for National Strategic Studies at National Defense University in the early 1990s, Martin Libicki was one of the first defense analysts to write on the security implications of information warfare and the Internet. His monographs *The Mesh and the Net: Speculations on Armed Conflict in a Time of Free Silicon* (1994) and *What Is Information Warfare?* (1995) were considered cutting-edge treatments, containing such recommendations as making heavy investments in smart sensors and establishing a corps of information warriors.

Many of his recommendations were met with varying degrees of skepticism at the time. In a review of *The Mesh and the Net* in the July–August 1994 edition of the prestigious policy journal *Foreign Affairs,* Professor Eliot Cohen displayed a retrospectively humorous lack of prescience by stating that Libicki's "proposed courses of action—the creation of a corps of information warriors, among others—make less sense than the author thinks. It would have made as much sense to create a corps of combustion engine warriors early in the twentieth century." What a difference a couple of decades can bring.

Yet, throughout his early studies, Libicki himself remained skeptical that American civil infrastructure would face a major cyberwarfare threat. As he states in the introduction to *Cyberspace in Peace and War,* "Then, as now, it was hard to conclude that cyberwar was going to trump every

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other form of warfare. I was confident that the threat from cyberspace could be contained, in part because I believed that people, aware of the threat, would not willy-nilly connect critical systems (such as those that supply electric power) to the Internet. In this, I was wrong" (p. 1). Once Libicki recognized how wrong his assumption was and how vulnerable American companies would make themselves for the sake of cost cutting, profit, and expediency, he built an influential career analyzing the topic of information warfare and cyber war, primarily as a senior policy analyst with the RAND Corporation. At RAND he has written or contributed to over a half-dozen studies sponsored by the Department of Defense. At the time of this book's publication, he also was a distinguished visiting professor in cybersecurity studies at the U.S. Naval Academy.

Drawing on his studies, previous work, articles, and reports, Libicki built *Cyberspace in Peace and War* into his masterwork, one of the most extensive yet clearly written compendiums on cybered threats, attacks, strategies, and vulnerabilities. At 478 pages, it looks like an encyclopedic manual—albeit with a well-written narrative—and in a sense it is. It may not have the conceptual depth of Chris C. Demchak's *Wars of Disruption and Resilience: Cybered Conflict, Power, and National Security* (2011) or the breezy, popular approach of P. W. Singer and Allan Friedman's *Cybersecurity and Cyberwar: What Everyone Needs to Know* (2014). Rather, it has thoroughness; there seems to be not a single cybered conflict topic that Libicki does not address in some detail, from "How to Compromise a Computer" (chapter 3) to "Sino-American Relations and Norms in Cyberspace" (chapter 33).

Libicki refers to his book as a "text" intended to "make readers more intelligent consumers of the news, more intelligent users of technical advice, and more intelligent critics of the decisions that countries make with respect to the threat from cyberspace" (p. 3). As is apparent, it is not a book for cyber specialists, who presumably know more than the basics of the author's long list of cybered topics. But it is a book for all others, particularly national security professionals who want an extremely comprehensive initial immersion into the subject. Libicki indeed scores a "hat trick" on his three goals.

The book's format is eminently logical, with thirty-four chapters divided into five sections. In the first section, "Foundations," Libicki discusses types of cybered attacks, methods of providing security, and what governments can and cannot do in terms of defense. The second section, "Policies," begins with an examination of cyber espionage, system vulnerabilities, and how an operational cyber war might begin—Libicki sees surprise attack as a likely scenario. Section 3, "Operations," views the conduct of cybered war in terms of an organized campaign that may or may not include kinetic effects.

It will be most surprising to die-hard proponents of the belief that "cyber is its own warfighting domain equal to land, sea, air, and space" that Libicki—with his long study of information warfare—disagrees with this approach, declaring that there is "no domain, no cyber equivalent of Billy Mitchell" (p. 165). Libicki instead states, "The desire to see cyberspace as a warfighting domain is deeply ingrained in doctrine and the minds of those who carry out such doctrine. This chapter argues that this concept is misleading, perhaps pernicious[;] . . . if cyberspace is not a 'domain,' what is it? [O]ne answer may be that 'it' is a set of tools that have a related set of objectives in common" (p. 167). In answering the argument that the military needs to assess cyber as if it were a domain if it is to properly man, train, and equip to fight in it, Libicki replies simply, "Militaries do this for electronic warfare without its having been elevated into a separate domain" (p. 167).

Section 4, "Strategies," expounds on both symmetric and asymmetric responses to cyber attack and the potential for escalation into kinetic warfare, and then focuses on the deterrence of such attacks, examining deterrence topics such as attribution, the will to retaliate, and punishment or denial. In the concluding chapter of this section, the author examines the outcome of cyber attacks against an opponent's nuclear command-and-control systems. Those who think that there should be an arms-control regime to prohibit this may be disappointed by Libicki's conclusion that the "low odds of making cyberwar work" against a hardened (and isolated) nuclear command-and-control system makes such a diplomatic effort essentially irrelevant.

Section 5 concludes the book by examining norms in cyberspace—with particular attention given to the *Tallinn Manual,* a document that the Naval War College Stockton Center for International Law played a major role in creating—and Sino-American discussions. During People's Republic of China president Xi Jinping's visit to the White House in September 2015, he and President Barack H. Obama announced, "The United States and China agree that neither country's government will conduct or knowingly support cyber-enabled theft of intellectual property . . . with the intent of providing competitive advantages to companies or commercial sectors" (pp. 344–45). But notably there was no agreement on an enforcement mechanism or the use of cyber espionage for military purposes. Libicki seems agnostic about the effectiveness of norms.

One of the questions this worthy book poses but deliberately leaves unanswered for readers to debate as a "fundamental question for U.S. policy" is whether "it is more important [for the United States] to pursue advantage in cyberspace (for both espionage and attack) or to make cyberspace more secure for everyone" (p. 350). That is indeed a question for extensive debate, although it does raise a

second question: Can cyberspace really be made "secure"? On this question, the conclusion of *Cyberspace in Peace and War* seems to be "not really." As Libicki implies, the choice to make cyberspace an insecure tool for infrastructure control was a matter of choosing a bad bed in which we now must lie, while constantly straining to prevent somebody (hackers, opposing governments, and others) from yanking off the covers. That dire scenario makes one want to pull the plug.

# **FROM VICTORY TO FAILURE** THE ARMY STUDY OF THE IRAQ WAR, 2003–2006

*Dov S. Zakheim*

*The U.S. Army in the Iraq War,* ed. Joel D. Rayburn [Col., USA] and Frank K. Sobchak [Col., USA]. Vol. 1, *Invasion, Insurgency, Civil War: 2003–2006.* Carlisle, PA: U.S. Army War College Press, 2019. 742 pages. Free (e-book).

Sixteen years after the United States launched Operation IRAQI FREEDOM (OIF), the war remains highly controversial, and American troops continue to operate in Iraq, albeit at reduced force levels and with far more-limited operational and tactical objectives. Recognizing that it was time to take stock of the Army's performance in a decade of operations, former Army Chief of Staff General Raymond T. Odierno initiated what the Army calls an "in-stride study" of the service's performance, and the lessons it should derive therefrom. The result was a massive two-volume Army War College study edited by two Army colonels, Joel D. Rayburn and Frank K. Sobchak, and supported by a large staff that conducted hundreds of hours of interviews and reviewed thousands of pages of studies, memos, transcripts, and other materials, many of which were declassified specifically for the purposes of the study. The first of these two volumes addresses the run-up to the war and ends as the strategy of force reduction and handover to Iraqi units proved to be a complete failure. The study is dry and at times repetitive, but it offers an unvarnished assessment of both the Army's performance and the leadership decisions that drove strategy and operations before, during, and after the conduct of major hostilities.

Following what has become standard Pentagon procedure, both Odierno's foreword to the study and a second foreword by General Mark A. Milley, the current Army Chief of Staff and the designated successor to General Joseph F. Dunford, USMC, current chairman of the Joint Chiefs, offer the reader their respective "bottom lines up front." Odierno, who had served as a division, corps, and force commander in Iraq, and therefore was able to observe the war from tactical, operational, and strategic perspectives, draws several major conclusions relating to all three levels of warfare. He bluntly observes that "those who rejected the idea that there is an operational level of war in counterinsurgency were wrong" (p. xxix). Indeed, as the report demonstrates, the

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Army continually committed a series of operational errors, primarily through deployment decisions that left major sectors, notably Baghdad itself, vulnerable to insurgent and sectarian attacks. These decisions stemmed from a chronic shortage of Army personnel. That shortage, as the study points out at some length, resulted both from Secretary of Defense Donald H. Rumsfeld's desire to reduce force levels in Iraq as quickly as possible and from Army Chief of Staff General Peter J. Schoomaker's determination to "transform" Army force structure in the midst of the conflict.

Odierno also notes that the Army failed to understand the nature of the operating environment "and the local political and social consequences of our actions, especially when facing an enemy who understands the environment better than we do" (p. xxix). He adds that "when conditions on the ground change, we must be willing to reexamine the assumptions that underpin our strategy and plans and change course if necessary, no matter how painful it may be" (p. xxix). To do so, however, Odierno, as well as General George W. Casey, USA, who headed the multinational force in Iraq, and other senior Army commanders, would have had to challenge the notion that prevailed in the Pentagon well into 2005: that the opposition to the allied coalition's operations stemmed from "former regime elements" loyal to Saddam Hussein. In fact, by 2004 the coalition was facing two parallel insurgencies: one Sunni and the other Shia. The Sunnis resented what they perceived as allied favoritism toward the Shias. For their part, an element of the Shias, the Jaysh al-Mahdi (JAM) militia, led by the firebrand cleric Muqtada al-Sadr, pressed for the expulsion of American forces and sought to be the dominant Shia political and military entity.

Nevertheless, the study offers little evidence that the Army—or, for that matter, the Marines or the Joint Chiefs of Staff—actively sought to redefine the coalition's real enemy. Their reticence may not have amounted to a "dereliction of duty," as H. R. McMaster, himself a senior general serving in Iraq, would have defined the term, in no small part because the senior Army leadership at least initially shared the Pentagon's view. Nevertheless, as Odierno implicitly admits, once the generals on the ground recognized that they were confronting an insurgency, they should not have waited as long as they did to push for a change in Pentagon strategy.

Yet another of Odierno's takeaways is that "[w]e must also employ better ways of generating and partnering with effective and legitimate host nation forces and of accounting for the political pressures that constrain those forces" (p. xxix). He implies ever so politely that the Army leadership focused too heavily on quantitative measures, such as number of units trained, to reach optimistic conclusions regarding the speed with which coalition forces could hand over tactical leadership to the Iraqi military. As the report notes, quantitative measures obscured the political-military realities that were the true determinants of Iraqi military

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capability, which could be evaluated only subjectively. These realities included the corruption endemic at all levels of the military, as well as the ethnic hatreds that fueled what became a civil war and that the Iraqi Shia political leadership, including Ibrahim al-Ja'fari and his successor as prime minister, Nuri al-Maliki, fostered both actively and passively.

General Milley's foreword outlines some additional lessons learned from Operation IRAQI FREEDOM and the Army War College study. Milley rightly notes that "the promise of short wars is often elusive" (p. xxvii). He might have dropped the word "often"; to paraphrase Clausewitz, it is difficult to predict any conflict's outcome during "the fog of war."

Echoing Odierno, Milley also asserts that "our Army must understand the type of war we are engaged with in order to adapt as necessary" (p. xxvii). What neither he nor Odierno states explicitly is that accurate intelligence—at the tactical, operational, and strategic levels—is critical to understanding the changing nature of a conflict. As the report demonstrates, time and again such intelligence, and the analysis of its findings, simply was not available to senior commanders. In particular, General Casey and his superior, U.S. Central Command (CENTCOM) commander General John P. Abizaid, USA, appear not to have been made aware before the February 2006 bombing of the al-Askari mosque, a Shia shrine in Samarra', that the conflict was evolving from an insurgency into a civil war. The availability of that intelligence might have led them both to argue against the ongoing drawdown of American forces and to maintain a major force presence in Baghdad, which quickly became the epicenter of the civil war.

Echoing the land forces' side of the long-standing debate with air forces, Milley writes that "OIF is a sober reminder that technological advantages and standoff weapons alone cannot render a decision" (p. xxvii). Milley clearly is referring to the notion that technologically induced "shock and awe" would produce a quick victory on the battlefield. Yet to a certain extent that is exactly what happened; America's technological superiority was a key factor in its decisive victory.

On the other hand, as the report makes clear, it was the failure of the military in general and of CENTCOM commander General Tommy R. Franks, USA, in particular to plan for the aftermath of conflict that led to its extending well beyond the defeat of Hussein's Iraqi forces. The lack of a viable "phase four" plan was compounded by the appointment of Ambassador L. Paul "Jerry" Bremer—a man with no experience in the Middle East—to lead the Coalition Provisional Authority and of freshly minted Lieutenant General Ricardo Sanchez, USA, to lead the coalition forces.

Indeed, Bremer's decision to disband the Iraqi army and purge Iraq's administrative bureaucracy of all Baathists, when to keep their jobs virtually all bureaucrats had to belong to the party, led to a breakdown of governance that fostered

civil unrest. Moreover, because he reported to both President George W. Bush and Secretary of Defense Rumsfeld, Bremer came to see himself as an American proconsul—the ultimate source of authority in Iraq. He not only clashed with Sanchez, whom he considered his subordinate, but also resisted suggestions from anyone other than the president. I discovered this personally when—with the support of the State Department, the Office of Management and Budget, and the National Security Council staff—he rejected my proposal to add funds to the highly successful Commanders' Emergency Response Program.

The Army War College study offers numerous other lessons that can be learned from the many missteps that took place from the war's inception through its first phase, which ended in 2006 and is the subject of the report's first volume. Beginning with the run-up to the war, the report notes that

> within the DoD [Department of Defense] itself, structural stovepipes inhibited information sharing . . . and, when combined with Rumsfeld's managerial style and the personality conflicts among key leaders, resulted in a tightly compartmentalized planning process that focused too heavily on major combat operations and was not coordinated across DoD or the broader U.S. Government. The quick tactical victory over the Taliban and al-Qaeda in Afghanistan . . . convinced [Rumsfeld] and others that a small U.S. force aided by indigenous fighters and air power could replicate the feat in Iraq. (p. 49)

Having served in the Pentagon during the period covered in this report, I can confirm both that planning indeed was restricted tightly to a very small group of officials—not necessarily including me—and that there was a tremendous degree of friction between the Pentagon and the State Department—virtually an intra-governmental civil war. Both factors contributed to the absence of a viable Phase IV stability operations plan, which in turn fueled the insurrection and civil war that coalition forces confronted from 2004 to 2006.

The Army War College study also outlines the degree to which Iran intervened in Iraq virtually from the immediate aftermath of the fall of the Saddam regime. Tehran supported the activities of the Badr Corps, the military arm of the Shia Supreme Council for the Islamic Revolution in Iraq, which initially targeted Sunni Baath loyalists, and even Shias whom it identified as "collaborationists." To a lesser extent Tehran also supported Sadr's JAM militia. With the passage of time, the Badr Corps's death squads and the JAM—though mutually hostile, at times to the point of open warfare—attacked Sunnis of all stripes, in part as a response to Tawhid al-Jihad leader Abu Musab al-Zarqawi's decision to prioritize attacks on Shias so as to foment a civil war.

Indeed, Iran was not unhappy with the expansion of civil strife in Iraq. As the study points out, Tehran was concerned that the new Iraq would become too close to the United States and was determined to expel the Americans from

the region. To that end, Iran's strategy involved creating instability inside Iraq—ironically mimicking al-Zarqawi's strategy—"placing the responsibility for the chaos on the United States and its Iraqi partners, and ensuring pro-Iranian politicians dominated the new Iraqi Government" (p. 187). The study adds that "[i]n contrast to the insurgents' and Zarqawi's nihilistic but consistent strategies, and Iran's calculated actions, the coalition in early 2004 had trouble formulating a coherent, countrywide strategy" (p. 272). Indeed, it is arguable that—certainly until the arrival of General David H. Petraeus, USA, whose role as commander in Iraq is dealt with in the study's second volume—the coalition had no coherent, viable, and consistent strategy. Moreover, with hindsight it is fair to say that the Iranian strategy worked.

Despite evidence of Iranian activities, the American political and military leadership chose not to confront Tehran directly. As a result, the Iranians penetrated successive Iraqi governments almost without opposition, entrenching themselves in key ministries, notably the Interior Ministry. Neither al-Ja'fari nor al-Maliki did much to prevent Iran's growing influence, and what motivated both leaders was a desire to suppress the Sunni population to the greatest extent possible. To that end, they continually tolerated war crimes committed by the various Shia militias. Al-Maliki in particular was adept at fobbing off General Casey's protests with the dubious argument that he feared a revival of the Baathists.

There is no denying that the Army and Marine Corps, supported to some extent by Iraqi and coalition forces, did achieve some notable tactical victories, such as the battles of Fallujah in 2004 and Tall 'Afar in 2005. On the whole, however, these victories were short-lived, again because there were insufficient numbers of American troops to remain in place to preserve these and other hard-fought victories. Casey's working assumption (which reflected Rumsfeld's preferences)—that the conduct of operations, including control of liberated cities and towns, could be handed over to the Iraqis—simply was not borne out. Iraqi forces were undermanned and, with the exception of some special forces units, were more loyal to their ethnic confreres than to the Iraqi government. Shia troops, and especially police, had no problem hunting down Sunnis who may or may not have been insurgents; they did not go after fellow Shias, however—all of which suited the Shia-led government.

The Army War College study also highlights the degree to which Washington suffered from the delusion that the holding of elections was a sign of progress toward a democratic Iraq. In January 2005, Iraq held an election for a provisional government, and al-Ja'fari became prime minister. Iraq held a second set of elections in December 2005, and al-Ja'fari retained his post. The elections, especially those of December, buoyed both Washington and the U.S. leadership in Iraq; they took them as evidence of the country's evolution into a real democracy.

Washington overvalued the importance of elections in a country riven by far deeper divisions, however. The Sunnis boycotted the January election, with the result that those elected did not fully represent the Iraqi population. Recognizing that they had erred in not participating in the vote, Sunni leaders believed that overwhelming participation by the Sunnis in the December election would result in their dominance of the new government. That did not happen, because, as the study makes clear, the Sunni leadership deluded themselves that Sunnis, not Shias, were the majority population of Iraq. Instead of fostering greater participation by the Sunnis in a new government, the elections solidified Sunni hostility toward both the Shias and the coalition, and the insurgency and the civil war continued apace.

By the summer of 2006, it was clear that the American strategy had failed. President Bush lost confidence in his military and civilian leadership and began the search for a new strategy that ultimately would be labeled the "surge." It is at this point that the first volume of the Army War College study ends. Bush would replace Rumsfeld in the aftermath of the 2006 congressional elections and bring Casey back in January 2007 as Army Chief of Staff. The surge under the leadership of General Petraeus would prove a success—only to be undermined by President Barack H. Obama's 2009 decision to withdraw forces from Iraq. The departure of the remaining American troops in December 2011 removed any brake that might have existed on al-Maliki's determination to ensure Shia dominance in Iraq at the expense of the Sunni community. The ensuing situation in Iraq was the proximate cause of the emergence of ISIS and ultimately worked to the benefit of Iran, whose influence over the fortunes of Iraq continues to grow to this day.

# BOOK REVIEWS

## WARS, HISTORICAL AND AMBIGUOUS

*Seapower States: Maritime Culture, Continental Empires and the Conflict That Made the Modern World,* by Andrew Lambert. New Haven, CT: Yale Univ. Press, 2018. 424 pages. $30.

The idea of *seapower* serves as the foundational argument for Andrew Lambert's *Seapower States.* Lambert does employ the more traditional phrase *sea power*—but chiefly as a foil to his ideas of seapower. Although some might claim that the difference between seapower and sea power is merely an academic abstraction, or an unnecessarily confusing construct, the author crafts a convincing argument.

Lambert asserts that sea power is a Mahanian formulation of hard power. Any state can have the attributes of sea power—it only requires a powerful navy. This list of sea powers includes Rome, the United States, and contemporary China. What separates a state pursuing sea power from one demonstrating seapower is the relationship of the sea to the state's existence. Sea powers do not need the sea to survive as great powers. The military and economic advantages of sea power are nice to have, but the state does not live and die by the sea. Such states often are continental land powers first, and their wealth, size, and influence leads to naval—sea power—ambitions.

Conversely, seapower reflects weakness. Without international commerce and the moneys it generates, the seapower state would cease to be a great power. Various geographic, economic, political, and cultural attributes allow seapowers to punch well above their weight. Lambert categorizes Athens, Carthage, Venice, the Dutch Republic, and Great Britain as seapowers. This list is more restrictive than some; the author deliberately excludes Portugal and Spain, labeling them overseas empires, since their colonial possessions were a "useful adjunct to their core concerns," while Lambert labels others, including Rhodes and Genoa, "sea states," because they are "too small to aspire to great power status" (p. 204).

To understand the nature of seapower states, Lambert asks readers to look beyond hard power and strategy to the very nature of society. Seapowers tend toward more-inclusive political systems, usually oligarchic republics; absolute rule is an anathema. Economically, they depend on maritime commerce not only for wealth but for the very resources needed to survive—often these states are not agriculturally self-sufficient.

Commerce brings cultural exchange. Art and architecture reflect the sea and its significance to society. Yet although Lambert tries hard to focus on the cultural aspects of seapower, he has trouble defining culture. Too often, his cultural arguments drift into economic and hard-power factors, for these allowed seapowers to exert disproportionate influence on the international system. Seapowers have sought great-power status, but Lambert claims they have been limited in the courses of action available to them. They must play to their naval and economic strengths while avoiding land campaigns that are beyond their ability to sustain. They have neither the population to field large armies nor economies capable of sustaining large armies and navies simultaneously. Instead, seapower states prove most effective at fighting protracted naval wars for limited objectives, building wealth, and avoiding overextension.

Although they possess great wealth and powerful navies, seapowers are fragile—continental entanglements can spell disaster. In the case of the Dutch, landward threats proved inescapable, and Venice was weakened by terrestrial distractions. Britain's continental commitment in World War I "shattered the British seapower state" (p. 302). Lambert claims that Britain was both the greatest and the last of these states. Because of the twentieth-century world wars, Britain passed the mantle of global maritime dominance not to a seapower but to a sea power—the United States.

It is important to grasp what this book is—and more particularly what it is not. We should not consider this definitive history, for there is much with which to quibble. Lambert's evidence and interpretations are deliberately selective. Although some may consider this a weakness, understanding this mitigates the issue and allows the reader to focus on Lambert's compelling interpretations. The book's primary value becomes its argument about what the sea means to different states, by highlighting competing worldviews. Lambert claims that seapower states are inclusive and dynamic, while the great powers that have destroyed them often were "terrified" by what seapowers stood for.

Although Lambert writes from his own (British) perspective and reflects particularly on what he considers to have been the last and greatest of the seapower states, his argument has noteworthy contemporary application. He forces the reader to ponder the sea's significance to contemporary China and the United States. Lambert claims both are continental powers. The sea is not integral for either in the manner that it was for seapower states; rather, the ocean becomes a frontier to be defended and exploited. The argument has substantial implications when understanding national objectives, strategy, and long-term sustainability. Lambert's argument certainly should spur controversy, for the author builds, through a series of carefully constructed arguments and case studies, a thesis that questions the nature of the international maritime environment of the future.

KEVIN D. MCCRANIE

*War in 140 Characters: How Social Media Is Reshaping Conflict in the Twenty-First Century,* by David Patrikarakos. New York: Basic Books, 2017. 320 pages. $17.99.

Social media has deployed far-reaching global communication abilities,

pervading nearly every aspect of our lives, and there is a growing awareness of foreign adversarial attempts to interfere with our democratic processes through this evolving technology. Yet we never consider how a cell-phone-embedded camera and an application could affect the conduct of war. David Patrikarakos's *War in 140 Characters* deftly demonstrates this new relationship with the eyes of a professional correspondent who is observing a revolution not only in journalism but also in military affairs. He contends that we may be witnessing the near fulfillment of Clausewitz's notion of total war, enabled by a new virtual *levée en masse,* through "the extraordinary ability of social media to endow ordinary individuals, frequently noncombatants, with the power to change the course of both the physical battlefield and the discourse around it" (p. 4).

Through the author's travels and interviews, the book details the rise of *Homo digitalis.* Patrikarakos offers profiles of individuals who, decades ago, would have had perhaps a minimal impact in the war zone. But such actors in contemporary battle spaces can be surprisingly effective. For example, a sixteen-year-old Palestinian girl who used Twitter to influence an Israeli military campaign in Gaza and a Ukrainian mother of two spearheading a Facebook logistics support effort against pro-Russian forces highlight the contrast between civilians and the traditional state hierarchies with which they contend. Patrikarakos's other profiles offer a picture of struggling social media responses by teams of individuals working for organizations such as the Israel Defense Forces and the U.S. State Department. He rounds out his analysis by exploring the effectiveness of social media usage by postmodern authoritarian leaders such as Vladimir Putin and militant groups such as ISIS.

Patrikarakos contends that social media enables vast participation in a realm once controlled almost exclusively by state organizations. Social media is suited perfectly to enable interference by mobilizing mass popular support to pressure extraregional governments to act on belligerent forces embroiled in regional conflicts. The traditional barriers to entry into conflict, including military training and geographical proximity, among others, are disappearing. "Content that once would have required a team of cameramen, trained journalists, editors, and news anchors to reach a national or international audience can now be produced and disseminated in seconds" (p. 20). This results in a lower cost for participation in conflicts, particularly as the narratives of war are more important than the physical acts that typically govern it. Ubiquitous capabilities for coercive messaging allow for the exploitation of vital communication space once controlled exclusively by the state. A recurrent theme throughout this work on twenty-first-century conflict is that "the military dimension, events on the physical battlefield, no longer stands *alone* as the most important arena of conflict" (p. 245). This notion is particularly salient in the realm of war termination, as the global population influences when and whether a conflict truly has concluded. As an essential component of warfare, the concept of *defeat* historically involved a political concession communicated to and accepted by the losing side. In cyberspace, a consensus of defeat may be unattainable, given the sheer number of actors involved.

Beyond influencing a conflict's narrative, social media actions can influence physical military operations. Patrikarakos's

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example includes a grassroots logistics effort that supported a national army by coordinating donations of money and supplies from across the globe. It proved so effective that Ukrainian military commanders sent in supply orders; in true e-commerce fashion, civilians fulfilled the requests and even delivered items—including uniforms and flak jackets—to units in the field. Contrast this effort to the U.S. Liberty Bond and war bond drives of the two world wars as an indirect mechanism for noncombatant support. The Ukrainian Facebook-driven campaign, although conducted outside sanctioned government control, had more impact on the individual donor, because the donors could see the direct effects of their efforts. The nature of much civilian support for a belligerent on one side of a conflict has not changed—consider care packages and letters in the mail in wars past. Yet the characteristics have transformed through individual empowerment, displaying a magnitude and immediacy unseen in military history. It exemplifies a transfer of real impact on combat effectiveness from traditional institutions and hierarchies to networks of individuals.

For centuries the United States enjoyed a geopolitical position that protected our shores from direct interventions. Arguably, cyberspace, with its instant accessibility from afar, could counterbalance that advantage. As we begin to understand cyberborne capabilities enabling conflicts, works such as *War in 140 Characters* should shape the way we think about our vulnerabilities. The book constitutes an author's plea to understand better twenty-first-century war, and it leaves the reader compelled to ponder the strategic implications of the way ahead. Do information revolutions of the past, such as the advents of the printing press, radio, and television, illuminate a path forward for society to follow? It is clear from Patrikarakos's work that increasingly effective individuals promulgating disparate realities on social media will mandate entirely new approaches from traditional Western institutions if they are going to survive.

MARC D. BEAUDREAU

*Secret Wars: Covert Conflict in International Politics,* by Austin Carson. Princeton, NJ: Princeton Univ. Press, 2018. 344 pages. $35.

Professor Carson takes up two intriguing and related questions: Why do nations often choose to intervene covertly rather than overtly in military conflicts, and why do their adversaries, after detecting the intervention, often choose to stay silent about it (or, as he calls it, "collude")? Using four case studies (the Spanish Civil War, the Korean War, the Vietnam War, and the Soviet war in Afghanistan), he develops his own theory of why nations act these ways.

His theory applies to "limited wars"—conflicts in which some of the adversaries (the outside great-power intervenors) are not employing the full range of their capabilities. Carson argues that maintaining a war's limited character provides the motivation for this collusion of covertness. Demonstrating how this works is the core of his argument, and the case studies provide persuasive examples.

First, by intervening covertly—or by not publicizing an adversary's covert intervention—a party avoids stirring up hawkish public opinion, both domestically and on the part of the adversary. By avoiding public demands

to "win the war" by whatever means necessary and risk a face-losing, disadvantageous settlement, both leaderships preserve maneuver room.

Second, by thus reducing the political consequences, both parties can signal their desire to keep the conflict limited. In essence, both sides bargain—while pursuing their respective interests—and cooperate in escalation avoidance. Since this point is the book's key contribution to the literature on this subject, let us see how it works.

An intervenor proceeding covertly instead of overtly pays a price: he may be constrained in the size of the force he sends and the weaponry employed, his logistics may be more complicated and less efficient, and he forgoes whatever reputational advantage he might gain by being seen as having supported his allies and stood up for his principles. By paying this price, the intervenor signals to his adversary that his desire to win is constrained by his interest in keeping the conflict limited; he shows respect for the adversary's reputation by not confronting him openly.

When the adversary detects the intervention yet does not use his knowledge to diplomatic or propaganda advantage, he likewise signals his interest in avoiding escalation. He shows that he is avoiding a self-imposed requirement to confront the intervenor openly and defeat his intervention.

While Carson argues for the importance of this dynamic, he fully recognizes that many other reasons for covertness and collusion exist beyond the two he discusses: "[I]t bears repeating that my limited-war theory does not claim to be a 'master cause' of all secrecy in war. Alternative logics are compatible with my own logic even within the same conflict" (p. 63). Thus, a government may intervene covertly if it hopes to hide its involvement from dovish domestic opinion, or if it seeks to gain an operational advantage from secrecy. Indeed, it is possible that keeping an (initial) intervention covert is a means of putting one's adversary off his guard and thus achieving surprise when one subsequently intervenes in a more substantial way.

However, there are additional reasons for covertness/collusion that the book ignores or underemphasizes. If a government wants, for whatever reason, to follow a moderate course in a conflict, it has more than hawkish domestic opinion to worry about; it also must make sure that its adversaries or third parties do not interpret its moderation as weakness. Hence, it may employ covertness as a way of reducing the reputational stakes involved.

The same logic operates for the detector. While Carson notes that the detector might gain diplomatic advantages from going public, he underemphasizes the other side of the coin: complaining about an adversary's intervention in a conflict and underreacting merely may advertise one's weakness. A government also may collude if it fears that public knowledge of the adversary's military action will fan fears of a wider conflict, scaring its own (dovish) public or third parties, and thereby increasing opposition to its own involvement in the conflict.

Additionally, a government may keep its intervention covert—or at least unacknowledged—for propaganda reasons; open intervention might contradict its own self-portrayal in its propaganda as pacific and anti-interventionist.

The book is at its strongest in showing how covertness and collusion can serve

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the purpose of avoiding escalation. But ultimately, no government intervenes for the sake of keeping a conflict limited; regardless of that goal, its actions will be determined most by the political objective it seeks to achieve. The author's theory sheds light on one aspect of the actors' motives in cases in which the desire to avoid escalation is relatively strong. But, as in the case of any such theory, understanding such situations requires a full assessment of the goals and circumstances of each of the actors.

ABRAM N. SHULSKY

*China's Maritime Gray Zone Operations,* ed. Andrew S. Erickson and Ryan D. Martinson. Annapolis, MD: Naval Institute Press, 2019. 352 pages. $50.

In its long history, China has deployed substantial naval power, but only episodically. It never faced sustained naval threats, so the country's maritime frontier was not a perennial strategic concern. But in more modern times, seaborne pressures from the Western powers and Japan became unremitting. Foreign navies even sailed deep into the country's interior, establishing "treaty ports" hundreds of miles from the coast. This ended with the establishment of the People's Republic of China in 1949. Still, even though Western naval power was pushed offshore, seaborne forces nearby could attack China with impunity.

This rankled, but what to do? In 1965, Marshal Lin Biao (perhaps Chairman Mao's closest comrade in arms) looked to the earlier defeat of Japan by the once-tiny People's Liberation Army (PLA) to ask, "How was it possible for a weak country finally to defeat a strong country?" His answer was found in Mao Zedong's idea of "People's War." Although land based, the concept held promise for menacing forward naval positions of the United States, perceived as the foremost opponent. Having backed an insurgency in the Philippines, a coup attempt in Indonesia, and guerilla wars in Malaya and Vietnam, Beijing could imagine pushing the United States out of great anchorages such as Subic, Cam Rahn, and Singapore. As for Yokosuka, Japan—the U.S. Navy's most important base in the western Pacific—a successful political campaign might chase the United States four thousand miles east, back to Honolulu.

This was naval warfare de facto, but it did not succeed. In the end, China learned that American sea power could not be neutralized on the cheap. However, China began to rise economically through its seaborne connections, and in the 1980s Admiral Liu Huaqing—sometimes called "China's Mahan"—made a case for a strong navy. This vision was realized more fully in 2012 when Communist Party leader Hu Jintao announced a new national goal: "to enhance our capacity for exploiting marine resources, develop the marine economy, protect the marine maritime rights and interests, and build China into a strong maritime power."

During this same period of an economically rising China, the Naval War College's China Maritime Studies Institute became a leading center for analyzing China's naval power. Two of the Institute's mainstays, Andrew Erickson and Ryan Martinson, again have contributed to our understanding by assembling and editing twenty papers prepared for a 2017 conference on what could turn out to be the most significant component of China's modus operandi at sea: exploitation of the so-called gray zone.

This anthology reminds us that the naval battle with China already is underway, and that it is about more than big ships, aircraft, and submarines. The PLA Navy, which certainly likes to show off its new fleet, also relies on a coast guard, fishing boats, and maritime militia, which are perfectly suited for a gray-zone space of neither war nor peace. As a result, China has succeeded in enclosing and then militarizing areas once thought of as high seas. China, in best Leninist fashion, continues to probe and push, encountering "mush" instead of the steel of real resistance.

This is certainly not "decisive naval battle–ism," nor is it quite "people's war at sea." Still, Mao's dicta echo: a struggle is 10 percent military / 90 percent political; avoid the decisive encounter until the very last moment; and, above all, protract, to enable one to build from weakness to strength. Soon after becoming a Communist Party leader in 2013, Xi Jinping told his comrades in a private speech that China would remain weaker than the West for some time. China's naval operations in the maritime gray zone—patient, purposeful, relentless—embody Maoist patience, buying time to maneuver from a position of relative weakness to one of strength.

The papers collected in this new work, *China's Maritime Gray Zone Operations,* can help us better understand this maneuvering and meet the challenges the West already faces—challenges that only will grow as China's naval strength and presence grow.

CHARLES HORNER

## OUR REVIEWERS

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# 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.*

*Soldiers, Sailors, and Airmen of the Allied Expeditionary Force: You are about to embark upon the Great Crusade, toward which we have striven these many months. The eyes of the world are upon you. The hope and prayers of liberty-loving people everywhere march with you.*

GENERAL DWIGHT D. EISENHOWER, USA

In June 2019, people around the globe paused to reflect on and commemorate what is believed widely to be one of the most significant historical events of the twentieth century: the Allied invasion of Normandy that began on June 6, 1944. On what is referred to universally as "D-day," the largest amphibious assault in history brought over 160,000 troops ashore in the Normandy region of France to begin the process of wresting control of Europe from the forces of Nazi Germany. Readers seeking to dive more deeply into the details of D-day and the battles that followed may find the following books of particular value.

*Crusade in Europe: A Personal Account of World War II,* by General Dwight D. Eisenhower, USA. New York: Doubleday, 1948.

> Five-star general Dwight D. Eisenhower was arguably the single most important military figure of World War II. For many historians, his memoirs of this eventful period of U.S. history have become the most important record of the war. *Crusade in Europe* tells the complete story of the war as Eisenhower planned and lived it. Through his eyes, the enormous scope and drama of the war—strategy, battles, moments of fateful decision—become fully illuminated in all their fateful glory. Yet this is also a warm and richly human account. Ike recalls the long months of waiting, planning, and working toward victory in Europe. His personal record of the tense first hours after he had issued the order to attack—and there was no turning back—leaves no doubt of Eisenhower's travail and reveals this great man in ways that no biographer has ever surpassed. (*CNO Professional Reading Program,* www.navy.mil/)

*D-Day: The Battle for Normandy,* 75th anniversary edition, by Antony Beevor. New York: Penguin, 2019.

> This is the closest you will ever get to war—the taste, the smell, the noise and the fear. The Normandy landings that took place on D-Day involved by far the largest invasion fleet ever known. The scale of the undertaking was awesome and what followed was some of the most cunning and ferocious fighting of the war. As casualties mounted, so too did the tensions between the principal commanders on both sides. Meanwhile, French civilians caught in the middle of these battlefields or under Allied bombing endured terrible suffering. Even the joys of Liberation had their darker side. Antony Beevor's inimitably gripping narrative conveys the true experience of war. He lands the reader on the beach alongside the heroes whose stories he so masterfully renders in their full terrifying glory. (*Penguin Books,* www.penguin.co.uk/)

*The Dead and Those about to Die: The Big Red One at Omaha Beach,* by John C. McManus. New York: Penguin, 2014.

> A focused tale of the hellish ascendancy of the U.S. Army's famed 1st Infantry Division on June 6, 1944, underscoring how the Normandy invasion nearly went terribly awry. . . . [M]ilitary historian McManus elicits moving details of courage and hardship from personal as well as historical sources, spotlighting the feats of this heroic division that took the brunt of the first-wave assault on Omaha Beach. Hardened by heavy fighting only months before in Tunisia and Sicily, considered somewhat arrogant and full of themselves, many of the 1st expected to go home. Instead, General Omar Bradley, commander of U.S. ground forces in the coming invasion, discarded "the niceties of justice" and needed to rely on those troops. . . . The troops, disgorged from landing craft in huge, unmanageable swells, were overladen with gear and unable to move quickly, offering sitting-duck targets for the German gunners, while the beaches became clotted with machinery and armament launched on an unsustainable schedule. McManus does not spare us the slaughter of those first hours. . . . Getting the men off the beach became Col. George Taylor's rallying cry (he is credited with the title's quote), while the offshore destroyers helped dismantle the pillboxes to allow the intrepid leaders of the Big Red One to breach German defenses and push inland. An exciting account from the personable point of view of the soldier. (*Kirkus,* www.kirkusreviews.com/)

*Every Man a Hero: A Memoir of D-Day, the First Wave at Omaha Beach, and a World at War,* by Ray Lambert and Jim DeFelice. New York: HarperCollins, 2019.

> Seventy-five years ago, he hit Omaha Beach with the first wave. Now Ray Lambert, ninety-eight years old, delivers one of the most remarkable memoirs of our time, a tour-de-force of remembrance evoking his role as a decorated World War II medic who risked his life to save the heroes of D-Day. . . . *Every Man a Hero* is the unforgettable story not only of what happened in the incredible and desperate hours on Omaha Beach, but of the bravery and courage that preceded them, throughout the

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> Second World War—from the sands of Africa, through the treacherous mountain passes of Sicily, and beyond to the greatest military victory the world has ever known. (*HarperCollins,* www.harpercollins.com/)

The Chief of Naval Operations Professional Reading Program encourages sailors and Navy civilians at all levels to engage in self-study to better inform themselves of the incredible legacy created by those brave men and women who have preceded us. There is no better "case study" of leadership and valor under fire than the events of D-day. It is fitting and altogether proper that we recall the debt owed to those who served with such distinction.

JOHN E. JACKSON