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NAVAL WAR COLLEGE REVIEW

Summer 2018

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Cover

The Navy's unmanned X-47B flies near the aircraft carrier USS Theodore Roosevelt (CVN 71) in the Atlantic Ocean in August 2014. The aircraft completed a series of tests demonstrating its ability to operate safely and seamlessly with manned aircraft. In "Lifting the Fog of Targeting: 'Autonomous Weapons' and Human Control through the Lens of Military Targeting," Merel A. C. Ekelhof addresses the current context of increasingly autonomous weapons, making the case that military targeting practices should be the core of any analysis that seeks a better understanding of the concept of meaningful human control.

Credit: USN photo by Liz Wolter

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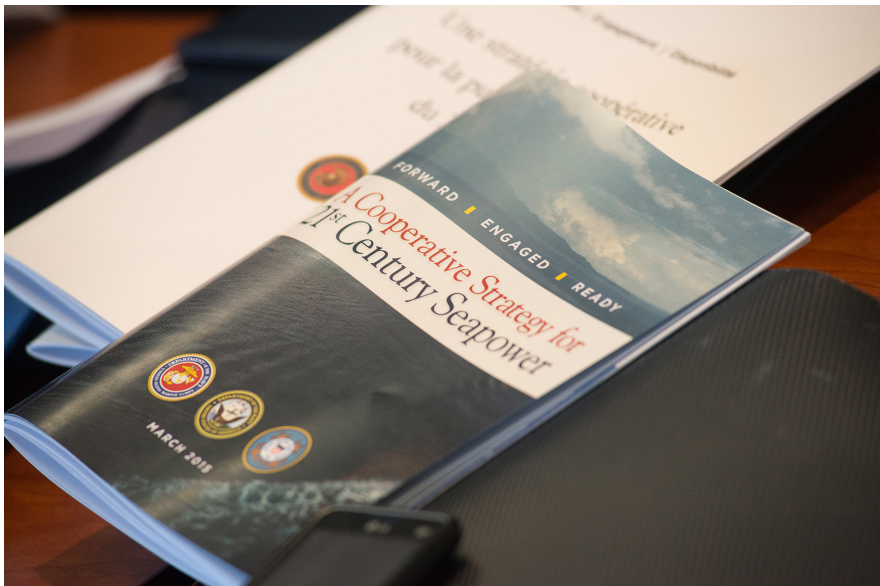
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By attacking the problem of professional military education openly and without deference to higher-ranking personalities or bureaucratic protocols, the Knox-Pye-King Board helped place the U.S. Navy on the course that would educate the personnel who would secure the strategic victories of the Second World War and lead the service into the Cold War era.

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FROM THE EDITORS

The post–Cold War era has been hard on the navies of the United States and its allies. This is so for two reasons: the disappearance of a great-power maritime threat, and the urgent needs of land-centric combat in Iraq, Afghanistan, and beyond. In “Into the Abyss? European Naval Power in the Post–Cold War Era,” Jeremy Stöhs provides a succinct overview of how our NATO allies have coped with this situation. Emphasizing the negative impact of the financial crisis of the last decade and ongoing problems with manning and training, he is cautiously optimistic that a modest recovery is currently under way in the acquisition of modern naval capabilities, as well as a renewed appreciation of their utility, particularly in the face of a reemergent Russian threat. Jeremy Stöhs is an analyst at the Institute for Security Policy at Kiel University.

In “Japan’s Defense Readiness: Prospects and Issues in Operationalizing Air and Maritime Supremacy,” Ryo Hinata-Yamaguchi provides a similarly comprehensive survey of maritime defense–related developments in Japan over the last decade or so. Of particular interest is his focus on recent legislation designed to improve the readiness of the Japan Self-Defense Forces and ensure their ability to react to Chinese “gray-area” provocations. Also important is his discussion of recent improvements in the jointness of the Japanese military and in the development of doctrine for operating in the air and maritime domains. Ryo Hinata-Yamaguchi, a former noncommissioned officer in the Japan Ground Self-Defense Force (Reserve), is currently a visiting professor at Pusan National University.

Questions relating to the autonomous operation of advanced weapon systems continue to attract a great deal of attention, for reasons that are understandable; but the resulting debates too often have generated more heat than light. In “Lifting the Fog of Targeting: ‘Autonomous Weapons’ and Human Control through the Lens of Military Targeting,” Merel A. C. Ekelhof offers a detailed and authoritative discussion of the targeting process as NATO countries currently practice it as a way to better inform these debates. She argues that military targeting often is identified simplistically with putting ordinance on specific targets, as distinguished from the “software” central to contemporary targeting practices. Such software is likely to be of increasing importance, given the inability of human beings to process volumes of data on the scale we will see in the future (and indeed are seeing already). She suggests that human control of the targeting process is a

manageable problem if this more holistic perspective is kept in view. Merel A. C. Ekelhof is currently a visiting researcher at the Harvard Law School Program on International Law and Armed Conflict.

In “The Role of the Human Operator in the Third Offset Strategy,” Adam Biggs and Rees Lee address another facet of the man-machine relationship. They argue that the ongoing efforts within the American military establishment to identify cutting-edge technologies that will enable the United States to preserve (or recover) its strategic advantage in the contemporary security environment (the so-called Third Offset Strategy) need to refocus on the ways in which human performance on the battlefield of the future can be enhanced through technology, as well as new approaches to talent management. Lieutenant Adam Biggs and Captain Rees Lee, USN, currently are serving with the Naval Medical Research Unit Dayton on Wright-Patterson Air Force Base.

It is fair to say that the primary mission of the Naval War College is to enhance the human performance of future military leaders through education. As David Kohnen shows us in “Charting a New Course: The Knox-Pye-King Board and Naval Professional Education, 1919–23,” it never was preordained that the Navy would accept the College’s mission so understood—or, indeed, the existence of the College itself. A small cohort of naval officers—inspired above all by Admiral William Sims—had to fight the civilian and military leadership of the Navy of the day, as well as the weight of Navy culture and tradition, to make that happen. David Kohnen is a retired USN commander and the director of the newly established John B. Hattendorf Center for Maritime Historical Research at the Naval War College.

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 W334, 335, 309, 332). 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).



Rear Admiral Jeff Harley is the fifty-sixth President of the U.S. Naval War College. The College is responsible for educating future leaders, developing their strategic perspective and critical thinking, and enhancing their capability to advise senior leaders and policy makers.

Admiral Harley is a career surface warfare officer whose sea-duty assignments have included command of USS Milius (DDG 69), Destroyer Squadron 9, and Amphibious Force Seventh Fleet / Expeditionary Strike Group 7 / Task Force 76. During his command of Milius, the ship participated in combat operations supporting Operation IRAQI FREEDOM and his crew won the Battle Efficiency Award and the Marjorie Sterrett Battleship Fund Award for overall combat readiness.

Admiral Harley attended the University of Minnesota, graduating with a bachelor of arts in political science, and received master of arts degrees from the Naval War College and the Fletcher School of Law and Diplomacy, Tufts University. Additionally, he served as a military fellow at the Council on Foreign Relations in New York City.

PRESIDENT'S FORUM



Breaking the Mold

THE NATURE OF THE CHALLENGES we foresee for the Navy and the nation in the decades ahead has resulted in a series of organizational changes and realignments at the Naval War College since the summer of 2016. As one approach to understanding better the myriad futures that may arise, we recently conducted the “Breaking the Mold: Strategy and War in the 21st Century” workshop. This event was conceived as a way to bring together a diverse set of critical thinkers, futurists, and seasoned operators to “break the mold” of conventional thinking and develop a series of recommendations for senior leaders within the Navy and the Department of Defense.

The workshop, held in Newport in early March 2018, was sponsored by the Under Secretary of the Navy, the Honorable Thomas B. Modly, who provided the broad outlines of the task and identified his desire to see innovative recommendations put forward to address a host of future challenges. Sixty scholars, researchers, and proven maritime and joint-warfare operators were invited to gather at the College to spend two days engaged in free-flowing and unconstrained thinking and debate.

In this exercise, the “mold breakers” were empowered to consider options that some considered radical, controversial, and revolutionary. Such ideas deserved to compete in the intellectual arena—and could help shape the way ahead for America’s national security forces.

Under Secretary Modly traveled to Newport to kick off the event and to participate in the working-group discussions personally. In his keynote remarks he stated, in part:

Whether on active duty, as a Navy civilian, or even in the private sector, we have all witnessed profound changes together during the past four decades. These changes

will impact the U.S. Navy and our nation for years to come. The changes are coming at us fast—so we need to be prepared to break free of the organizational paradigms, behaviors, and biases that suited us in the last century. They are not well suited for today, and certainly not for the future.

Our National Defense Strategy . . . cannot be executed without a significant commitment of national resources and, perhaps more importantly, a significant application of national resolve and urgency—and an approach to maritime supremacy that “breaks the mold” of conventional thinking. Our maritime advantage is, and will continue to be, almost entirely dependent upon the quality of our people. It follows, therefore, that the agility of our future force will be almost entirely dependent upon the agility of the people we identify now to lead it. Therefore, I encourage you to think about breaking the mold in a way that allows us to recruit, train, equip, and educate the most quick-minded, flexible, collaborative, innovative, and transparent people we can find. If we do this, we will set the Navy on the course for maritime superiority well into this century.

Among the outcomes of this unique workshop was the development of a series of strategic and operational concepts that focused on four broad areas: a “porcupine strategy” of defense in Europe; a mobile maritime barrier in Asia; an increased reliance on special forces, unmanned systems, and cyber; and a possible reorganization of portions of the U.S. government to promote enhanced national security. Each of the ideas generated during this workshop will provide the Naval War College’s superb faculty with topics to research and refine, applying a bottom-up analysis to the group’s top-down formulations. The College is planning to conduct a larger, follow-on conference on these topics in October 2018.

In a related initiative, the College is taking another important step in preparing our national security professionals—at the College and throughout the Navy—for the future. In early April 2018, Chief of Naval Operations Admiral John Richardson, USN, visited the College to announce the establishment of the College of Leadership and Ethics (CLE) under the Naval War College’s academic umbrella. This effort is an expansion of the Leadership and Ethics Department that has been operating under Dean Peg Klein’s direction since late last year. The mission of the new college is to imbue Naval War College students with a desire for continuous learning and development as leaders of character. In addition, the new college will supplement and support each Navy community in its community leader development and maintain a strategy for leader development beyond major command.

In establishing the new CLE, Admiral Richardson noted that “[w]orld-class leadership is our Navy’s decisive advantage over our adversaries. Our operational and war-fighting success depends on developing leaders who learn and adapt to achieve maximum possible performance. Opening a College of Leadership and

Ethics (and providing a fleet-centered development framework) will create opportunities for us to become better leaders, build winning teams, and maintain America's maritime superiority.”

The workshop and the new college are just two examples of the ways in which your Naval War College is having significant impact on the Navy and the larger national security community. Watch this forum for discussion of other significant initiatives as the calendar year progresses.

JEFFREY A. HARLEY

Rear Admiral, U.S. Navy

President, U.S. Naval War College

*Jeremy Stöhs is an Austrian American defense analyst at the Institute for Security Policy at Kiel University and its adjunct Center for Maritime Strategy & Security. He is also a nonresident fellow of the Austrian Center for Intelligence, Propaganda and Security Studies. He has studied in Austria, Germany, and the United States, holds a master's degree in history and English, and has taught in both fields. He has contributed articles and chapters on various defense and security matters, and has authored the book *The Decline of European Naval Forces: Challenges to Sea Power in an Age of Financial Austerity and Political Uncertainty* (Naval Institute Press, 2018). Prior to his studies, he worked in law enforcement with the Austrian Federal Police.*

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INTO THE ABYSS?

European Naval Power in the Post–Cold War Era

Jeremy Stöhs

Since the end of the Cold War, European sea power—particularly its naval element—has undergone drastic change.¹ The dissolution of the Soviet Union not only heralded a period of Western unilateralism but also put an end to previous levels of military investment. In fact, once the perceived threat that Soviet forces posed had disappeared, many Western governments believed that the era of great-power rivalry and major-power wars finally had come to an end.² Rather than necessitating preparation for war, the security environment now ostensibly allowed states to allocate their funds to other areas, such as housing, education, and health care. As a result, for more than two decades, the majority of naval forces across Europe have been subject to declining budgets and far-reaching downscaling measures.

Although the post–Cold War era proved to be anything but peaceful, all military engagements throughout the 1990s involving Western states took place either at the lower end of the intensity spectrum or against enemies that posed a relatively limited threat to the overwhelming superiority of the NATO allies. Combined-arms warfare, effects-based operations, and coercive air strikes against a series of state and nonstate actors underscored the West's ability to apply military force with near impunity.

The terrorist attacks of September 11, 2001, however, effectively put an end to this period of largely unchecked Western military interventions. The attacks not only marked the beginning of an ongoing struggle between the United States and its allies and radical Islamic terrorism; they also drew attention away from traditional concepts of the utility of naval forces, such as providing credible deterrence, buttressing collective defense, and maintaining sea control. Over the following decade, counterinsurgency and counterterrorism, as well as constabulary

operations in Afghanistan, Iraq, and the greater Middle East, took center stage. Concomitantly, the land and air forces involved in these theaters received the lion's share of funding, while naval power (again) was considered a mere supporting element of twenty-first-century warfare. In Europe, these developments heightened the already-existing lack of appreciation for the significance of the maritime environment and the value of naval forces for a state's security and prosperity—a political and cultural myopia often referred to as “sea blindness.”³

As defense spending continued to decline, so did the size of most Western fleets.⁴ By the end of the first decade of the new century, Europe's naval forces were heading into the proverbial abyss. Smaller than at any time in recent history, naval forces across Europe had lost important proficiencies and capabilities. The shortfall in naval platforms had substantial bearing on the ability to deal effectively with the growing range of naval tasks. The modernization of many navies has been hampered not only by shrinking budgets but by cost overruns, lengthy procurement processes, and major technical deficiencies. These problems were compounded by the fact that many armed forces across the continent have found it increasingly difficult to recruit and retain young men and women, while the overhead costs for personnel consume large parts of defense budgets.⁵ Consequently, significant shortfalls in training and readiness—and hence the ability to use naval forces to pursue and achieve political ends—have arisen.

This article will outline the development of Europe's naval forces since the end of the Cold War. It will address the challenges European naval forces have faced in an evolving security environment, and will argue that more than two decades of fiscal austerity measures have jeopardized Europe's ability both to ensure good order at sea and to provide credible deterrence, and have limited its ability to promote common interests and shape events abroad.

This proposition is supported by Europe's most recent efforts to strengthen its defense capabilities. Russia's military actions along Europe's flanks and mass migrations to Europe and the associated threat of terrorism, as well as the uncertainty pertaining to America's foreign policy objectives, have elicited responses from European states to shoulder greater responsibility for their own security. The extent to which these developments can lead to a lasting revitalization of European naval power will be discussed in the final section.

AFTER THE FALL OF THE WALL (1989–2001)

To many observers in the West, the quick and relatively peaceful demise of the Soviet Union and the Warsaw Pact came as a great surprise.⁶ Consequently, until the end, the naval forces of the European NATO partners were considered the fulcrum on which rested the West's ability to deter—and, in the case of war, to defeat—Soviet forces.

From Sea Control to Out-of-Area Operations

With the confrontation between the two superpowers relegated to the pages of history, most of Europe's leaders were quick to interpret these events as nothing less than the end of great-power rivalry. No longer bound to the parochial contingency plans postulated by the United States and NATO, the majority of Europe's navies began shifting toward a peacetime posture.

The United Kingdom: Shifting of Priorities. For the British Royal Navy (RN), the most distinguished and most powerful among Europe's naval forces, the Cold War by and large ended on a high note—followed almost immediately by a shifting of priorities. Apart from the U.S. Navy, only the Russian navy—slowly rusting away in what used to be credible sea bastions—exceeded the fleet carrying the white ensign in size and capabilities. The Falklands War a decade earlier had provided the RN with painful yet invaluable insights, and substantial improvements had been made to existing platforms and operational procedures to address the apparent shortcomings.⁷ Furthermore, a number of large-scale naval-procurement projects were under way. These included replacement of the navy's ballistic-missile submarines (with four of the new *Vanguard* class), introduction of the capable Type 23 antisubmarine warfare (ASW) frigates, and development of a common air-defense destroyer among France, Italy, and the United Kingdom (the Horizon project, later the Type 45 for the RN).

On the other hand, the RN also faced some serious challenges. First and foremost, defense spending plummeted from nearly 4 percent of gross domestic product (GDP) in 1991 to 2.5 percent in 1998. In other words, the military budget was cut by more than 20 percent in real terms.⁸ Second, the new strategic environment no longer required a fleet of nearly fifty surface combatants and twenty-two submarines (both nuclear and conventionally powered). “[Britain's] Cold War mission of hunting Soviet submarines had vanished, and along with it the chief justification for large chunks of the Fleet.”⁹

Throughout the 1990s, the RN had to accept incremental reductions to its force structure, as well as curtailment of acquisition programs. To save money, the number of personnel was decreased from 69,000 to 50,000 within ten years. Still, the RN fared somewhat better than its sister services. One reason was the RN's importance as a key enabler of Britain's effort to “prevent or shape crises further away [from home] and [its ability] to deploy military forces rapidly before they get out of hand,” as the *Strategic Defence Review* published in 1998 emphasized.¹⁰ The procurement of two larger aircraft carriers to replace the three existing smaller ships underscored the continued relevance of the RN as an effective tool of foreign policy.

Like other European navies, the RN increasingly shifted its focus from open-ocean, sea-control operations along the sea lines of communication (SLOCs) in the North Atlantic and homeland defense (in particular, ASW near the approaches to Britain's ports) to power projection over great distances and into the littoral regions of the world. Projecting military force from the sea onto land (e.g., carrier aviation and long-range cruise missiles) had proved expedient during military operations in the Balkans and the Middle East.¹¹

Britain's close relationship with the United States allowed the RN to acquire new systems and technologies, such as Tomahawk cruise missiles, providing the navy with an important capability to fulfill these new roles. Yet while the Anglo-American defense partnership flourished, Britain's collaboration with its European neighbors initially yielded rather mixed results.

France, Italy, and Spain: Consolidation of Forces. France and Britain share a rich history of both competition and cooperation. Over the centuries, the two great powers waged countless wars against each other, culminating in the battle of Trafalgar, the later defeat of Napoleon, and the provisions of the Congress of Vienna in 1815. Strategic competition and deep-seated suspicions persisted between the two countries. Neither fighting side by side in two world wars nor the looming threat of a Soviet invasion could obscure the fact that, during large parts of the twentieth century, Paris and London did not see eye to eye.

What is more, conflicting views on France's status within NATO persuaded President Charles de Gaulle to withdraw from the alliance in 1966.¹² As a direct consequence of that decision, the French military's *raison d'être* to this day is based on providing France with capabilities with which to respond to crises that run the gamut of the intensity spectrum. Moreover, the state's geographic location, as well as its numerous overseas territories (remnants of its former colonial empire), has shaped the French fleet to a considerable degree.

By the time the Cold War drew to a close, the French and British had fashioned navies of similar size. However, the respective fleets were based on somewhat different strategic and operational concepts. Unlike the RN, which was designed principally for sea control (ASW) and the deployment of carrier strike groups in the North Atlantic, the Marine Nationale (MN), as the French navy officially is called, operated a mix of some "first-rate" warships and a significant number of "second-rate" surface combatants and patrol vessels. The latter are required to conduct constabulary duties, such as fisheries protection in the French exclusive economic zone (EEZ). In fact, France possesses the world's second-largest EEZ (more than 4.2 million square miles) and has naval forces continuously deployed to the Atlantic, Indian, and Pacific Oceans.¹³ Furthermore, while the British submarine-based nuclear deterrent had to rely heavily on U.S. technological

assistance, all critical components of France's *force océanique stratégique* (its sea-based nuclear forces) were of domestic design.¹⁴

To this day, such diverging operational requirements represent a major stumbling block to establishing common European security frameworks and pursuing joint procurement projects. The aforementioned attempt to develop a new air-defense destroyer trilaterally for the British, French, and Italian navies failed largely over differences regarding the specific capabilities each stakeholder deemed necessary.¹⁵ Fortunately, France and Italy continued to pursue the project, ultimately receiving two vessels each. Britain would go on to build six ships of similar design, the Type 45 *Daring*-class destroyers.

In Europe, these developments heightened the already-existing lack of appreciation for the significance of the maritime environment and the value of naval forces for a state's security and prosperity—a political and cultural myopia often referred to as “sea blindness.”

Throughout the 1990s, the MN held a decisive advantage over the RN (and all other navies of the time, save the U.S. Navy), despite its somewhat less capable surface component. In contrast to the British, Italians, and Spanish,

all of whom operated relatively small short-takeoff/vertical-landing (STOVL) carriers, France had two flat-deck carriers fitted with steam catapults. This allowed the French navy to deploy a well-balanced naval air wing more effectively and over greater distances. The naval air arms of the other navies had to content themselves with Harrier jump jets and helicopters, all of which had inherent limitations with regard to range / loiter time and capability.

Not being able to rely on NATO's security guarantees, France remained somewhat more cautious in the early years of the post-Cold War era. Rather than implementing rash defense cuts or canceling construction programs outright, France put its navy's organizational structure through a comprehensive streamlining effort.¹⁶ As part of the Optimar 95 program, large parts of naval command structures were disbanded and the fleet was divided between the naval bases in Toulon (carriers, expeditionary forces) and Brest (ASW, mine warfare, and strategic submarines).¹⁷ In addition, major construction processes of warships were stretched to alleviate strain on the shrinking budget. Most noticeably, only a single carrier remained in service.

Meanwhile, both of France's Mediterranean neighbors, Italy and Spain, found themselves in relatively comfortable situations in the early 1990s.

With the Italian Peninsula occupying a critical geographic position along Europe's southern shores, Italy's sphere of interest largely was confined to two main lines stretching across the Mediterranean Sea: starting from Gibraltar, “one

reaching the Black Sea and the Middle East through the Balkans and the Aegean Sea; the [other] moving southward through the Red Sea down to the Indian Ocean, the Gulf, and including the Horn of Africa.”¹⁸

While the Italian navy (the Marina Militare, or MM) had remained relatively hamstrung throughout the first decades of the Cold War, owing to political and doctrinal limitations, the Soviet naval buildup during the late 1970s and early 1980s required the MM to establish a greater presence along NATO’s southern flank. Many new warships were built during this period, while existing platforms underwent modernization and refit. By the end of the Cold War, Italy was operating a well-balanced fleet of ships and submarines, most of which had been built domestically.

At the same time, the country’s military strategy transitioned from sea control and static defense against Soviet forces to power projection into regions farther from home.¹⁹ Italy’s military engagements in Iraq (1991), Yugoslavia (1993–97), Mozambique (1993), Somalia (1991–95), and Eritrea (1998) and against Serbia (1999) highlight the MM’s set of capabilities, as well as the country’s willingness to take action within its designated sphere of influence. Although the percentage of military expenditure slightly decreased between 1990 and 2000, the defense budget as a whole remained relatively constant, owing to Italy’s economic growth.²⁰

Compared with the strategic ambitions of Italy (which was a founding member of both NATO and the Group of Seven), Spain’s aims were somewhat more limited. In its official statements, the country often refers to itself as a “medium power,” with its sphere of influence stretching from the western Mediterranean to the waters of the Atlantic between the Iberian Peninsula and the Canary Islands.²¹ Even under the regime of General Francisco Franco, Spain received U.S. military assistance (mostly in the form of second-rate ships) to provide sea control vis-à-vis the Soviet navy.

Franco’s death in 1975 sparked a period of increased naval spending that laid the foundation for today’s fleet. While Italy and France were adamant about using their respective shipbuilding capabilities and maintaining their military-industrial prowess, Spain initially relied on American ship designs and combat systems. By the early 1990s, the Armada Española had evolved into a small yet modern multipurpose fleet, designed around a small STOVL aircraft carrier (based on the U.S. vision of a sea-control ship), nineteen other large surface combatants, and a flotilla of eight submarines.²²

As did most other Western states, Spain experienced considerable economic prosperity during the 1990s. At the same time, it reduced defense spending steadily, to 1.2 percent of GDP by early in the first decade of the twenty-first century. Although the booming economy could compensate for the shrinking

defense apportionment, a number of large-scale shipbuilding programs were coming on line, consuming large chunks of the navy's budget. Amphibious forces were at the top of the procurement list. As was the general trend among European defense planners, Spain's considered expeditionary capabilities essential in the post-Cold War security environment. In line with this paradigmatic shift in the country's naval strategy, two *Galicia*-class amphibious assault ships were procured, together with a pair of tank landing ships and a replenishment oiler.²³

The funding for five new escort vessels—the F-100 or *Álvaro de Bazán* class—was granted in 1997. This air-defense frigate benefited from the fact that, unlike some of its foreign counterparts, it incorporated the American-designed Aegis combat system, based on the SPY-1D radar and the Standard Missile 2 (referred to as the SM-2). Combining these powerful yet off-the-shelf capabilities with a relatively attractive price tag would pay dividends nearly ten years later, when Australia chose the Spanish design over the more capable but more expensive American *Arleigh Burke*-class destroyer.²⁴

Germany: From the Littorals to Blue Waters. Nominally the fifth-largest navy in Europe, the German navy has pursued a somewhat different course over the past decades. Over the centuries, Germany has remained a land power, only occasionally showing greater naval aspirations.²⁵ Given the geographic as well as historic realities (access merely to the Baltic and North Seas, and under constant suspicion of militarist tendencies from its own population), the country has found it difficult to take a leading role in European defense and security matters. With the dismantling of large parts of the former East German navy after German reunification in 1989, the nation's underlying strategic aims and needs had to be revisited.

Throughout the Cold War, the Federal Republic of Germany (FRG) Navy had been tasked with defending West Germany's shores from amphibious assault and (together with the Danish navy) preventing Warsaw Pact forces from exiting the Baltic Sea via the Danish straits. Hence, the FRG Navy was designed primarily to conduct ASW and antisurface warfare (ASuW) in the confined and relatively shallow waters of the Baltic Sea, with a secondary escort role along the SLOCs in the North Sea and toward the English Channel.²⁶ But by the end of the Cold War the German navy already had begun transitioning from a brown-water force that operated within its littorals to a blue-water fleet that was capable of sustained deployments on the high seas.²⁷

Like most of its NATO partners, Germany cut defense expenditures over the following decade: the military budget shrank from U.S.\$73 billion to \$50 billion. Meanwhile, the navy decommissioned large parts of its aging fleet. Unlike its neighbors, the German navy refrained from acquiring any vessels specifically

designed for amphibious operations (for both doctrinal and political reasons). Rather, a number of new surface combatants—still largely influenced by Cold War requirements—were accepted into service (the K-130 corvette and F-123 ASW frigate).

In the aftermath of the Cold War, Germany remained reluctant to deploy military force outside NATO's primary area of interest. Notwithstanding the young German state's participation in so-called out-of-area operations in the Persian Gulf (mine clearing, 1990–91) and the Adriatic (embargo against Serbia, 1992–96), a Federal Constitutional Court ruling was necessary to decide whether such deployments were in fact in accordance with German law.²⁸ Still, irrespective of legal questions, the navy's activities throughout the following decades remained limited to peacetime deployments as part of NATO's standing naval groups and focused on relatively small operations in low-threat environments.

The Netherlands and Denmark: The Defense Industry as a Deciding Factor. The dramatic shift within the global security environment affected the remaining, smaller European navies to varying degrees.

The Royal Netherlands Navy, for example, tried to adapt to the new situation by promoting technological and operational defense cooperation with its European partners. Examples of this effort are the Belgian-Dutch Naval Cooperation (BENESAM); the U.K./Dutch amphibious force; the Dutch iteration of the *Galicia*-class amphibious warfare ship (HNLMS *Rotterdam*, which joined the fleet in 1997); and the class of air-defense frigates, based on a trilateral frigate project among the Netherlands, Germany, and Spain.²⁹ Similarly to the Royal Navy, large parts of the Dutch escort fleet had become superfluous in the absence of a traditional naval threat. At the same time, significant investments had become necessary to replace the increasingly obsolescent subsurface fleet.

The Dutch navy also can be commended for investing in local ship designs and combat systems rather than acquiring foreign designs. A case can be made that if all European navies at the time had opted, for political or financial reasons, for American hardware (which in some cases was more advanced technologically, more readily available, or both), many industrial capabilities and proficiencies would have been lost outright. Clearly, the Netherlands was particularly keen on remaining competitive in the international defense market, given its large investments and expertise in the field of naval defense systems. For example, the active phased-array radars fitted on German, Dutch, and Danish frigates and the radars on French, Italian, and British destroyers (designated SMART-L) all are produced by the Dutch company Thales Nederland.

Also located in the North Sea, the Søværnet (Royal Danish Navy) provides a useful example for how smaller navies have dealt with shrinking defense budgets and a widening scope of operational requirements. Faced with the difficult

question of how best to deal with these two diverging trends, Danish shipbuilders came up with an ingenious solution: the Standard Flex (StanFlex) modular mission-payload system. Warships no longer would have to be designed for one specific task, but rather could swap standardized modules in and out, depending on the mission requirement. Considerable costs could be saved simply by fitting a platform with various guns and antiship and anti-air missile-launching systems when operating in a contested environment, then swapping them for mine-warfare systems, sonars, or equipment for pollution control and hydrographic surveys once the threat had passed. Owing to the growing obsolescence of the Danish fleet, policy makers decided that the Danish navy, over time, would replace its seventeen surface combatants with six vessels based on the StanFlex system.³⁰

Significantly larger than previous frigates, the Royal Danish Navy's *Absalon*-class command-and-support vessel (still in an early design stage during the late 1990s) reflected the navy's slow doctrinal shift toward power-projection and expeditionary capabilities. Like many of its European neighbors, Denmark increasingly focused on deploying naval power over greater distances, alongside its NATO allies.

Opposing the General Trend: Navies and Territorial Defense

The majority of Europe's naval forces underwent a strategic shift toward power projection, stability operations, expeditionary capabilities, and out-of-area deployments. But a handful of navies continued to adhere to the principles of territorial defense, control of SLOCs close to home, and sea-denial capabilities within the approaches to their shores.

The Nordic Countries. Finland, Sweden, and, to a somewhat lesser extent, Norway are examples of smaller European navies that placed a premium on defending their territories from invasion throughout the first decade of the post-Cold War period.

Recognizing Scandinavia's inherent geographic vulnerabilities (in particular, a lack of strategic depth), political and military leaders alike stressed the fact that, despite fundamental changes in the international security order, caution was well-advised. "Europe is still resolving many areas of conflict [and] all nations do indeed value military strength. . . . Therefore we cannot, within the foreseeable future, neglect the risks of war and that Sweden could be subject to an armed aggression," Admiral Peter Nordbeck of Sweden reminded others.³¹ Therefore, these navies' principal functions were to deny the aggressor use of SLOCs, gain sea control in territorial waters, and defend ports and naval bases.³²

Aegean Rivals. For much of the past century, Turkish and Greek naval thinking has been based on similar principles. With their territories located on a political, cultural, and religious fault line, these two major antagonists have made

significant investments in their military forces. Many of these investments have been justified by the ostensible threat the two states pose to one another, despite the fact that they are NATO allies. Consequently, Greece and Turkey spent more than 3.5 percent of their GDPs on defense throughout the 1990s.

The bulk of both navies consisted of platforms capable of conducting sea control / sea denial and protecting SLOCs. This included a sizable element of surface combatants (either surplus U.S. ships or vessels of other foreign design), as well as numerous fast-attack craft. Furthermore, both navies commanded a powerful subsurface element, of German origin. While the Turkish fleet enjoyed a numerical advantage over the Hellenic Navy throughout the Cold War, it also faced the threat of a possible Soviet attack aimed at securing the exit to the Mediterranean via the Turkish Straits. Therefore, Turkey had to maintain a credible mine-warfare capability not only to control the straits but also to act as a counterweight to the Soviet (later the Russian) Black Sea Fleet.³³

Unlike many other European states, these two did not consider the ability to project power over great distances to conduct peacekeeping missions and stability operations to be primary concerns. Although both Greece and Turkey participated in naval operations outside their principal spheres of interest alongside their NATO allies, the basic tenets promulgated in both countries' defense strategies remained unchanged.³⁴ Throughout the last years of the twentieth century, both navies were well financed and maintained a high level of readiness.

AFTER THE FALL OF THE TOWERS (2001–14)

Throughout the 1990s, many naval forces in Europe still were able to adapt readily to the evolving security environment. For the most part, a sufficient number of trained personnel (many states retained conscription) and a sufficient amount of matériel allowed the Europeans to address the various security challenges with relative ease. Moreover, the overwhelming superiority of the U.S. armed forces compensated for the shortcomings and capability gaps that slowly emerged among European militaries. What is more, throughout the 1980s many navies had undergone comprehensive modernization efforts, receiving state-of-the-art aircraft, ships, and submarines. Therefore, most navies were in a good condition to fulfill the missions of a so-called postmodern navy, which include sea control, expeditionary operations, stability operations / humanitarian assistance, good order at sea, and cooperative naval diplomacy.³⁵

Land Wars and Economic Woes

The twenty-first century barely had begun when the terrorist attacks of September 11, 2001, sent shock waves rippling across the globe. Although sea power played an important role during the opening phases of both the U.S.-led invasion of Afghanistan in 2001 and that of Iraq two years later, the subsequent

counterterrorism and counterinsurgency campaigns had long-lasting consequences for Europe's sea services. As in previous military campaigns, American carrier strike groups took station in the Indian Ocean, Persian Gulf, and Red Sea, from where they conducted air strikes against enemy forces and provided air support for allied troops on the ground. Other elements of the U.S. Navy and Marine Corps provided sea- and airlift capabilities and contributed elite ground forces to the fight (Marines and USN SEALs).

Although some of the European navies (in particular the British and French) participated effectively in these campaigns, the evolving struggle against glob-

The . . . reemergence of great-power rivalry . . . , one of the largest refugee crises since the end of the Cold War . . . , terrorist attacks by radical jihadists . . . , the U.S. rebalancing toward the Indo-Pacific region, and President Donald Trump's "America First" policy have heightened the sense of uncertainty.

ally networked radical *jihadi* terrorism seemed to vindicate the theory that traditional concepts of high-intensity conflict and maneuver warfare against peer competitors largely had lost their relevance.³⁶ Following the general trend toward peacekeeping

and stability operations in distant theaters, Europe's armed forces progressively calibrated their capabilities accordingly. However, the necessary financial resources were increasingly difficult to secure.

As the security situations in Afghanistan and Iraq deteriorated, many states involved in the conflicts felt compelled to make greater investment in protecting their troops on the ground and toward bringing the wars to a quick and satisfactory conclusion. However, simply increasing the defense budget to buttress national military commitments was in many cases politically unfeasible. The money for these contingencies had to come from either the existing defense budget or supplementary and emergency funding. With army and air force components receiving a larger share of funding, many navies had to make do with even less money.

The global financial crisis of 2007, the subsequent eurozone crisis, and the economic downturn that ensued combined into a perfect storm buffeting armed forces across Europe. After the end of the Cold War, many states had been able to consolidate their militaries, despite fiscal restrictions; but against the backdrop of tanking economies, a failing financial sector, and soaring national debt, even the previous levels of defense spending and the corresponding force structures were considered unsustainable in many cases.

Doing More with Less: Austerity Measures and Growing Capability Gaps

The United Kingdom: Truncating a Fleet. The repercussions for Europe's naval forces were arguably most noticeable in the case of the Royal Navy. Early in the

first decade of the twenty-first century—still a time of relative plenty—the RN introduced two *Albion*-class assault landing ships and three Bay-class dock landing ships, bringing the number of large amphibious-warfare ships up to seven. The *Invincible*-class carriers, although reduced to two ships in 2005, added a substantial power-projection capability and reinforced the concept of expeditionary warfare outside NATO's previous area of operations.³⁷ At the same time, a class of up to twelve new Type 45 air-defense destroyers was under construction and the first unit of the highly capable *Astute*-class nuclear-powered attack submarine was launched in 2007—just months before the economic crisis hit.

With that crisis taking full effect and the British government being pressed to reduce its budget deficit, the military became subject to draconian austerity measures. *The Strategic Defence and Security Review*, hastily published in 2010, called for the RN's Harrier naval air arm to be disbanded and the flagship, *Ark Royal*, to be scrapped. The other ship of this class, *Illustrious*, was retained as a temporary amphibious transport helicopter carrier until the amphibious assault ship HMS *Ocean* was refitted.

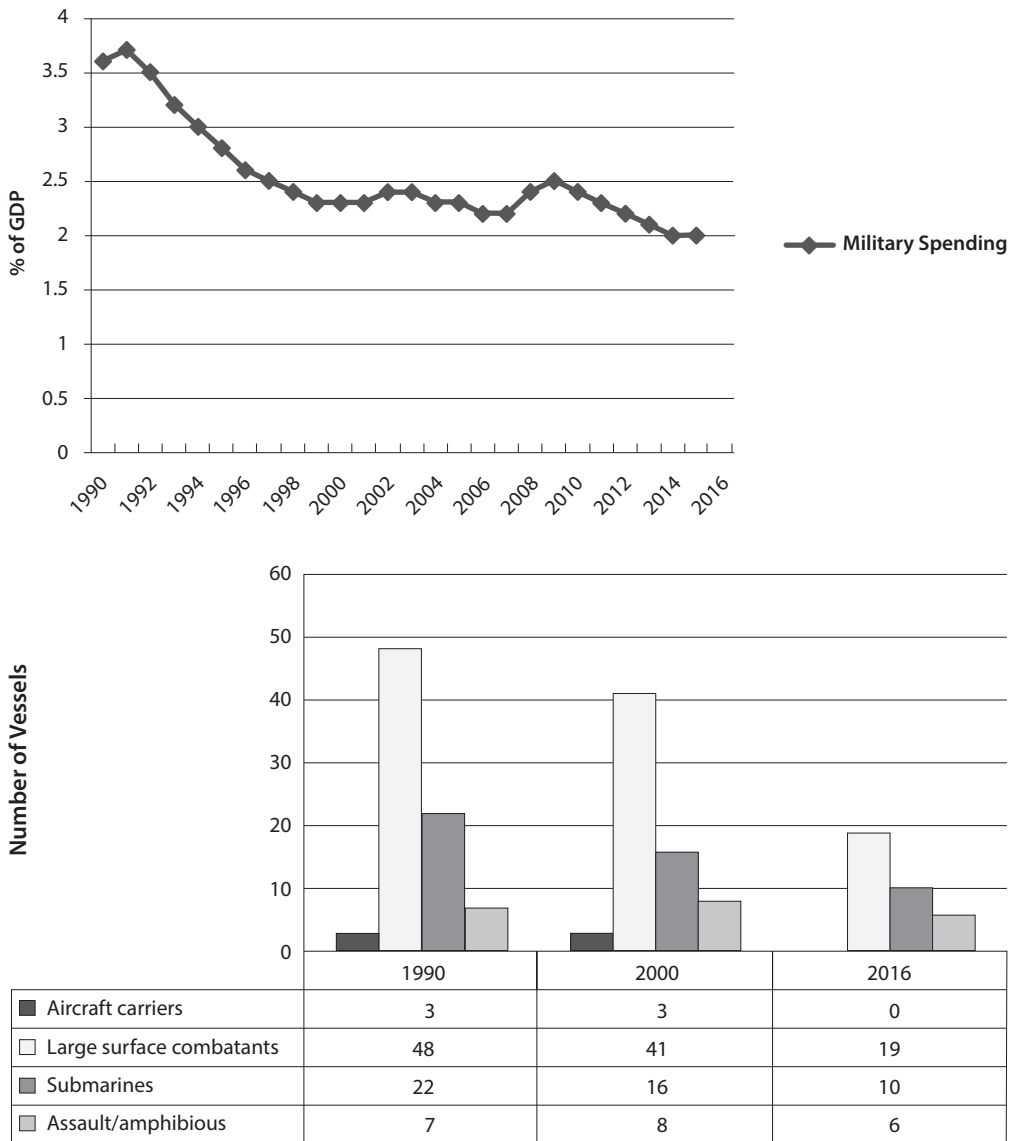
The remaining legacy frigates were decommissioned, and because production of Type 45 destroyers had been cut off after six units and numerous cost overruns, the RN's escort fleet shrank to only nineteen vessels. The replacement program for Britain's maritime patrol aircraft was terminated, leaving a significant capability gap to this day. Finally, only one of the two new *Queen Elizabeth*-class carriers was to become operational; the second would be sold or held in reserve.³⁸

It would not take long for these measures to take their toll on Britain's ability to shape events abroad. During the air campaign against the regime of Mu'ammar Gadhafi in the summer of 2011, French, Italian, and American fixed- and rotary-wing combat aircraft were launched from carriers stationed off the coast of Libya. Britain having axed its carrier capability, its Tornados and Typhoons had to deploy from land bases in England and Italy. Smaller and less capable than at any time in recent memory, the Royal Navy arguably had reached the nadir in its history.

France: Willing but Stretched. Although the Marine Nationale was able to deploy highly capable carrier-based combat aircraft against targets from Afghanistan to Libya, the first decade of the twenty-first century proved to be anything but smooth sailing for the French navy.

Already in the late 1970s the idea for the replacement of France's existing flattops was floated. Consequently, the keel of the MN's first nuclear-powered carrier, *Charles de Gaulle*, was laid down in 1989. However, the program ran into major difficulties. Key components had severe design flaws, and a lack of funding meant the ship became operational only after more than a decade of construction and retrofitting. To this day, Europe's most powerful conventional naval asset has

FIGURE 1
UNITED KINGDOM DEFENSE SPENDING AND MAJOR VESSELS, 1990–2016



Note: GDP = gross domestic product.

Sources: (above) SIPRI Military Expenditure Database; (below) appropriate volumes of *The Naval Institute Guide to Combat Fleets of the World*, *World Defence Almanac*, and *Seaforth World Naval Review*.

been plagued with technical problems. Moreover, the absence of a comparable asset among the other European navies left the ship in high demand, causing substantial wear and tear. In light of the technical hurdles and increasing financial restrictions, a second carrier never was built. Moreover, although some progress was made circa 2005–10, the joint venture between France and Britain to build a class of carriers with similar layout did not materialize.³⁹ Consequently, the MN’s strike capabilities become substantially limited during the recurring maintenance

cycles of *Charles de Gaulle*. At the time of this writing, the ship was undergoing its midlife refit and upgrade and will not return to the fleet much before 2020.⁴⁰

Over the years, military-to-military relations progressively matured between France and NATO, notwithstanding the political fallout with the United States over the invasion of Iraq. More importantly, in 2009 President Nicolas Sarkozy put an end to the “French exemption” and the country officially rejoined NATO. As a RAND study noted, “France today is much more integrated in NATO planning and operation than at any time since the mid-1960s.”⁴¹

In terms of naval capabilities, France’s expeditionary-driven foreign policy during the 1990s resulted in the construction of three *Mistral*-class amphibious assault ships / helicopter carriers, which not only act as a stopgap when the single carrier is unavailable but have provided the MN with credible power-projection capabilities since being introduced in the middle of the first decade of the new century.

Meanwhile, on the basis of their experience on their joint Horizon project, France and Italy set out to build a new multipurpose frigate, known as the FREMM.⁴² Both navies intended the class to replace their existing conglomerations of older surface combatants; the French navy hoped to procure nineteen units. Although the program can be considered a success story, France had to limit its ambitions in the light of economic woes following the economic crisis. Ultimately the MN will receive only eight FREMMs, bringing the escort fleet down to fifteen vessels, five of which (of the *La Fayette* class) already were not intended to be principal surface combatants at the time of their commissioning in the 1990s.⁴³

Italy: Within a Basin of Turmoil. The Italian navy has remained a powerful tool for Italian foreign policy throughout the twenty-first century. In fact, the country’s strategic goals have remained largely unchanged since their articulation in the late 1970s. In accordance with Italy’s strategic interests, the navy continued to enhance its expeditionary capabilities (the goal was to be able to deploy a brigade-level force); strengthen its naval airpower; acquire multirole platforms to counter all forms of threat; and promote national defense, maritime awareness, and maritime security.⁴⁴

Throughout the last decade, the Marina Militare has maintained a very high operational tempo and has conducted a plethora of naval tasks. In doing so it has relied on a capable and well-balanced fleet and highly trained crews. The domestically built aircraft carrier *Cavour* was brought into service in 2008, and will be capable of deploying the Lockheed Martin F-35B STOVL fighter in the future. Its predecessor, *Giuseppe Garibaldi*, meanwhile functions as a helicopter carrier. The demand for an Italian carrier air wing results from the shrinkage of the U.S.

Navy's footprint in the Mediterranean over the last two decades. "[It] seems to be a reasonable assumption [that] the *Cavour* and the Italian fleet are effectively going to be a substitute [for the] American carrier battle group in the larger Mediterranean as the reduced US Navy carrier line-up is increasingly concentrated on the Pacific and Indian Oceans."⁴⁵

The escort fleet comprises two destroyers of the Horizon, or *Andrea Doria*, class, and a growing number of new FREMM frigates. In contrast to France's curtailment policies, the Italian Ministry of Defense has decided to procure all ten frigates it initially planned. Italy's submarine fleet has profited from close co-operation with Germany's ThyssenKrupp Marine Systems and has received four

[W]hile most navies have excelled at conducting operations at the lower end of the intensity spectrum and within largely permissive environments, traditional war-fighting capabilities . . . against near-peer competitors have atrophied severely in the quarter-century since the end of the Cold War. The shortage of platforms, as well as the lack of mission-specific training and exercises, . . . finds its origin in strategic shortsightedness, political myopia, and the attendant fiscal austerity measures.

Type 212A submarines with air-independent propulsion.⁴⁶

Most importantly, both Italy's navy and its coast guard have been burdened heavily with operations on the lower end of the intensity scale. Apart from everyday duties, such as making port calls, conducting search-and-rescue operations, and maintaining good order at sea, additional challenges for Italy's

sea services have resulted from political developments along Europe's southern and eastern shores over the past decade. Faced with thousands of refugees trying to escape poverty and war throughout Africa and the greater Middle East, both services have been engaged actively in countering human trafficking, as well as delivering humanitarian assistance across vast areas of the Mediterranean basin. Accordingly, the MM also has maintained a large contingent of offshore patrol vessels that are better suited for constabulary duties than their heavily armed sisters. As one observer notes, "[t]he *Marina Militare's* activities in this regard make it stand out in terms of its compliance with the duties imposed by treaty—and by humanity—in respect of the safeguarding of lives at sea."⁴⁷

In combination with Italy's numerous other military commitments, these developments have left a smaller number of platforms dealing with a greater number of tasks. With dwindling resources and fewer platforms, the MM hardly can maintain its tempo of deployment across a host of areas without risking fatigue and accident. Perhaps even more importantly, since transitioning to an all-volunteer force, personnel costs have placed a substantial burden on the defense

budget, thereby limiting funding for maintenance and procurement.⁴⁸ Italian naval leaders remain adamant that the MM will be able to “fulfill its national and international commitments.”⁴⁹ But despite these protestations, the country may have to limit its ambitions: “For the navy, the longer-term consequence will likely be some re-orientation towards regional intervention capabilities at the expense of its current enthusiasm for extra-regional expeditionary deployments.”⁵⁰

Spain: Creating a Balanced Fleet. Over the years, most European navies have streamlined their respective naval command structures while trying to modernize their fleets. As new and more-capable platforms were introduced over time, older systems were phased out. Given the complexity and cost of many of these platforms, ships and aircraft rarely were replaced on a one-for-one basis. Rather, since the turn of the century, European naval forces have experienced what is arguably the most drastic decline of platforms in recent history.⁵¹ The eurozone crisis only exacerbated the strained situation in which many armed forces found themselves, which was particularly pronounced in states with relatively weak economies.

Spain's economy, for example, was affected gravely by the crisis, and hence its armed forces were as well. Consequently, the Spanish navy has faced severe financial pressure in recent years. Fortunately, the core of its current fleet was procured prior to Spain's financial woes. This includes the 28,000-ton *Juan Carlos*, a “strategic projection ship”; a class of five *Álvaro de Bazán* Aegis frigates; and the *Cantabria* replenishment tanker. These projects also have had a positive effect on Spain's domestic shipbuilding industry, which is building for foreign customers both the aforementioned frigates and the assault ship. However, while Navantia has made a name for itself as one of the leading shipbuilders of surface vessels on the continent, it did not cover itself in glory in providing Spain's future underwater flotilla. Major technical difficulties led to cost overruns and the postponement of the introduction of the new S-80 *Isaac Peral* class, resulting in bad publicity.⁵²

While from a purely platform-centric view the navy's situation might have seemed quite satisfactory, the lack of funding had a negative impact on training and readiness. The number of military personnel continued to decline throughout the first decade of the twenty-first century, adding to the shortage of trained officers and sailors. “[O]ne of the ways the Spanish . . . ensured continuity of capabilities in the face of spending constraints has been to reduce overall training levels,” a study points out.⁵³ “Manning problems have hurt the Spanish Navy's ability to deploy multiple units at a short notice,” the study adds.⁵⁴

Overall, Spain is likely to find it increasingly painful to support its wide range of capabilities at current spending levels. It therefore remains to be seen whether the navy will be able to retain the well-balanced fleet it currently operates.

Capabilities Lost—Some for Good

Other states that also had shifted toward more-comprehensive expeditionary capabilities during the 1990s, such as the Netherlands and Denmark, largely accepted the loss of specific naval capabilities while retaining smaller, still proficiently skilled forces.⁵⁵

The Netherlands. The Dutch, for example, went from having one of the largest and most capable Cold War fleets to what some observers believe to be a second-rate navy, arguably too small to deal effectively with tasks across a wide portion of the intensity spectrum at the same time.⁵⁶

Although in 2000, Dutch defense white papers had outlined the various functions of the Royal Netherlands Navy, such as deploying a brigade-size element into high-intensity operations, one can concur with the assessment that by the end of the decade the “Dutch military [had] fallen well short of the 2000 white paper’s goals.” This comes as no surprise, given that over the course of ten years seventeen surface combatants were decommissioned, replaced by only four *De Zeven Provinciën*-class frigates. In contrast to these highly capable air-defense frigates, the four *Holland*-class large oceangoing patrol vessels that also were added to the fleet are designed with low-intensity operations in Dutch overseas territories specifically in mind. Despite their sophisticated sensor suite, they lack hitting power for force-on-force engagements. Moreover, by 2005 the remaining Dutch P-3C Orion maritime patrol planes were sold to Germany, leaving a void in the country’s maritime awareness capability.⁵⁷

On a more positive note, the navy’s amphibious forces have benefited from the commissioning of two *Rotterdam*-class LPDs and the 28,000-ton joint support ship *Karel Doorman* over the last decade, and the submarines of the country’s small flotilla have demonstrated their proficiencies, both during exercises with NATO allies and while recently shadowing a Russian carrier group as it deployed to the Mediterranean.⁵⁸

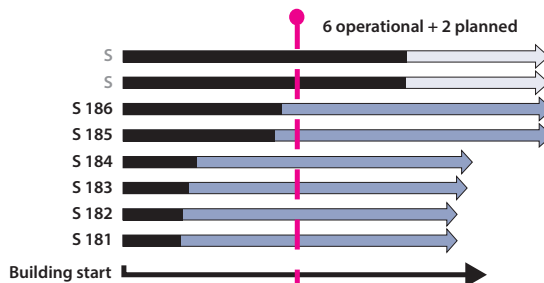
Denmark. Denmark was able to secure funding for two *Absalon*-class flexible support ships and three *Iver Huitfeldt*-class multipurpose frigates. Danish military activities over the last decade ranged from deployments to Afghanistan and contributions to antipiracy operations, such as the European Union’s Operation ATALANTA and NATO’s Operation OCEAN SHIELD, to providing naval elements to NATO’s standing maritime groups and participating recently in NATO’s ballistic missile–defense effort.

However, Denmark’s newly won blue-water capabilities came at the expense of more-traditional elements of sea power; most prominently, all four of the navy’s submarines were phased out by 2004, leaving it without one of the most useful

FIGURE 2
GERMAN SUBMARINE PROCUREMENT, 1960–2040

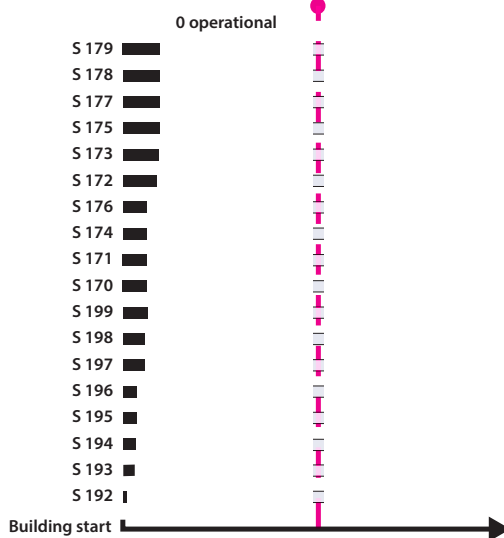
Type 212A

Attack submarine AIP
 Displ.: 1,830t submerged
 Length: 56–57.2m
 Speed subm.: 20kts
 Crew: ca. 27



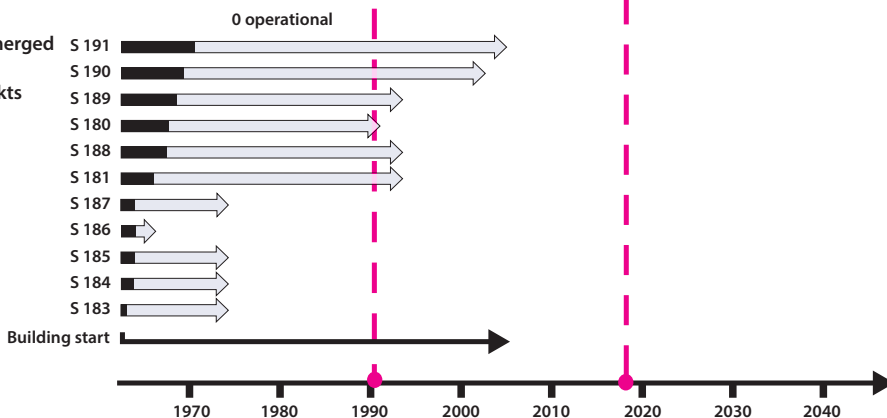
Type 206

Displ.: 500t submerged
 Length: 48.49m
 Speed subm.: 17kts
 Crew: 22



Type 205

Displ.: 455t submerged
 Length: 44.3m
 Speed subm.: 17kts
 Crew: 22



Note: AIP = air-independent propulsion.

Source: Stöhs/Young

naval assets.⁵⁹ “Today the fleet has no submarines, no fast attack craft and no dedicated minelayers.”⁶⁰

Germany. Unsurprisingly, Germany, given its status as a world leader in conventional submarine technology, retained its submarine force throughout the post-Cold War period. Notwithstanding the addition of state-of-the-art platforms, the size of the German navy shrank in lockstep with the reductions to the defense budget. As an example, while twenty-three submarines were in service in 1990, the number had fallen to fourteen by 2000. Another fifteen years later, only six vessels were left. The surface fleet received capable F-124 *Sachsen*-class guided-missile frigates, which could provide fleet air defense for anything up to carrier strike groups; a new class of so-called stabilization frigates also was procured. Despite being larger in size, these F-125 stabilization frigates are less heavily armed than their predecessors. Therefore, a new crewing concept and modular design are intended to allow for longer periods of deployment over greater distances. These ships—as well as the next class of very large surface combatants, the MKS-180s—are the navy’s answer to the requirements postulated in the defense white paper of 2006.⁶¹ The recent decommissioning of its last patrol boats (guided-missile craft) largely concluded the shift from a brown-water force to a blue-water navy. However, growing concerns over Russia’s military activities in the Baltic Sea have called this transition into question, and Germany again is looking to expand its naval capabilities in littoral waters closer to home.⁶²

Over the last decades, Germany also has remained relatively reluctant to commit greater resources to Europe’s common defense. Except for its contribution to the security mission in Afghanistan, Germany often has been unwilling to provide any form of hard power to recent NATO- or U.S.-led military operations, such as in Libya and Syria. Rather, its involvement abroad has been focused on peacekeeping missions and stability operations (such as with the United Nations Interim Force in Lebanon [known as UNIFIL] from 2006 to the present) and deployments as part of NATO’s standing maritime groups, as well as providing good order at sea more generally.⁶³ With fewer vessels; the absence of large, amphibious-capable platforms; and the above-mentioned political caveats, “[Germany’s] cruising navy provides little in the way of power projection,” as one analyst has noted.⁶⁴ Much less can it claim to command sufficient and readily available anti-surface and antisubmarine capabilities for high-threat environments. News of the entire German submarine fleet recently being out of action simultaneously is a case in point.⁶⁵

Smart Solutions in the High North

Norway. Farther north, Norway gained public attention for making some clever choices when it came to modernizing its naval forces. Although the defense budget plummeted from 3 percent of GDP in the early 1990s to 1.4 percent in 2014, the Royal Norwegian Navy has kept its force at a high level of readiness.

As its Cold War-era frigates reached the end of their service lives, a class of larger and more capable surface combatants, based on the Spanish frigate design, took shape. The first ship and namesake of the class, *Fridtjof Nansen*, was introduced into the navy in 2006. It is particularly well suited to perform a range of missions in Arctic conditions along Norway's SLOCs. Noticeably, the frigate is the smallest warship to feature the Aegis combat system, while it can deploy the new NH-90 helicopter for ASW operations. Closer to shore, Norway relies on its *Skjold* class of stealthy, high-speed corvettes to counter symmetric and asymmetric threats from the sea.

Sweden. Sweden showed similar technical ingenuity in commissioning five corvettes of its own, of the *Visby* class, showcasing effective signature-reduction measures. Both Norway and Sweden disbanded their network of coastal-defense capacities during the first decade of the twenty-first century as the two countries continued to forge close ties with their Western partners; however, Sweden reactivated its land-based, mobile, antiship missile systems in 2016.⁶⁶

While territorial defense was not forgotten, participation within the framework of multilateral peacekeeping operations under the aegis of NATO and the UN was promoted. "Our security cannot be maintained through a one-sided focus on the conventional defense of Norwegian territory," Norway's defense white paper of 2004 stated.⁶⁷ The close defense cooperation among the Scandinavian states (such as Northern Defense Cooperation [known as NORDEFCO] and Swedish-Finnish naval cooperation), as well as with other NATO members, not only has strengthened European and transatlantic ties; it has enhanced interoperability and proficiencies among the respective navies.⁶⁸

Divergences along the Southern Flank

Greece. Arguably, the Hellenic Navy has seen the fewest doctrinal changes over the past two decades. Even during a period when the majority of Europe's armed forces sought more-comprehensive expeditionary capabilities, the Hellenic Navy remained focused on defending its adjacent waters and fulfilling its NATO obligations. The relatively constant strategic framework in which the navy operated allowed it to strengthen its traditional naval elements (e.g., ASW and ASuW).

Despite the defense budget spiking at 3.3 percent of GDP in 2010, Greece's financial collapse during the eurozone crisis had far-reaching consequences for the country's military. Coinciding with an important period of naval modernization, it caused "existing domestic construction . . . to be paralyzed whilst longstanding plans of new orders [were] stalled."⁶⁹ Although more recently there have been signs of improvement, the Hellenic Navy quite likely will be facing some difficult choices in the future. This is compounded by the fact that the balance of naval power in the region already has shifted, and continues to shift, toward its traditional regional competitor, Turkey.

Turkey. Turkey has been able to create a powerful navy that continues to expand its capabilities—an exception among European naval forces. More importantly, it has built a domestic defense industry proficient in developing and fielding everything from main battle tanks and unmanned aerial vehicles to patrol craft and frigates.⁷⁰

As the country tries to establish itself as a regional power, it also seeks to deploy its military effectively beyond its borders. Its naval forces act as an important tool for gaining greater influence in the region. In the recent past, Turkish naval forces have shown an increasing level of ambition in contributing to international operations both within and beyond the Mediterranean (e.g., Turkish ships have acted as the flagship of the counterpiracy Combined Task Force 151). Yet, in light of the country's recent coup d'état attempt and the subsequent purge within Turkey's military, the navy, while a highly capable mix of foreign and domestic naval platforms, probably will not reach its full potential.

The Turkish navy provides an insightful example of how domestic turmoil can hamstring an expanding naval force. Since the turn of the century, the Turkish ministry of defense has set out on an ambitious procurement plan for the navy. This includes a number of highly sophisticated systems, ranging from domestically built *Milgem*- and *Ada*-class surface combatants to an amphibious assault ship based on the Spanish carrier *Juan Carlos*. Because of the complexity of modern warships, submarines, and aircraft, learning to operate them often involves very steep learning curves. Therefore, such systems require highly professional crews and astute commanders, as well as skilled engineers and other engineering personnel. Low morale, as well as widespread insecurities and suspicions within the armed forces, will leave some considerable doubt regarding Turkey's more assertive naval goals, such as the development of a carrier-based fixed-wing capability.⁷¹

AFTER THE FALL OF CRIMEA (2014 ONWARD)

In 2015, for the first time in more than two decades, Europe as a whole increased its defense spending.⁷² This reversal of trends can be attributed directly to a range of security-related concerns with which the European states see themselves confronted.

The most worrying is the reemergence of great-power rivalry. After a "honeymoon period" of more than twenty years, Russia's military intervention in eastern Ukraine and the annexation of Crimea have reminded Europe that it cannot take its security for granted. What is more, Russia's irredentism and its increasingly assertive behavior along Europe's northern, eastern, and southern borders coincided with one of the largest refugee crises since the end of the Cold War. Meanwhile, terrorist attacks by radical jihadists across the continent have caused a growing sense of insecurity within Europe. As if these challenges were

not daunting enough, the U.S. rebalancing toward the Indo-Pacific region and President Donald Trump's "America First" policy have heightened the sense of uncertainty.

Growing Pains

Against this backdrop of intersecting security challenges, European countries' respective military strategies and defense postures (both national and NATO) are being revisited. It appears that, for the first time since the end of the Cold War, governments across Europe no longer can afford to reduce their own defense spending while readily investing large sums of money in their welfare states, all the while remaining utterly dependent on U.S. security guarantees. Consequently, all twenty-nine NATO member states have pledged to increase their financial contributions toward common security and defense.⁷³ Meanwhile, neutral Sweden and Finland also have made concerted efforts to forge closer ties with their Western partners and strengthen their armed forces, not least in the maritime domain.⁷⁴

Financial considerations notwithstanding, new concepts for closer cooperation between Europe's armed forces have been developed. Establishing bi- and trilateral defense agreements has proved expedient in compensating for and bridging the capability gaps created by years of austerity measures. The 2010 defense agreement between the United Kingdom and France (the "Lancaster House treaties") "provide[s] a road-map to more effective European defence cooperation, based on deeper capability planning and mutual dependency."⁷⁵ For example, after more than half a decade of preparation, the Anglo-French Combined Joint Expeditionary Force (a multiservice, scalable, power-projection force capable of high-intensity warfare) became operational in April 2016, and the force arguably has "set a new 'gold standard' for defence cooperation [in Europe]."⁷⁶ The German-Dutch Integrated Sea Battalion and the Spanish-Italian Amphibious Battlegroup mandated by the European Union are further examples of the efforts currently under way.⁷⁷ It is safe to state that much of the cooperation over the past decades has enhanced operational experience among European naval forces, and many naval officers have gained proficiencies in a broader range of naval operations than their Cold War predecessors.

However, there are caveats that merit close attention. First, while most navies have excelled at conducting operations at the lower end of the intensity spectrum and within largely permissive environments, traditional war-fighting capabilities (e.g., ASW and ASuW) against near-peer competitors have atrophied severely in the quarter century since the end of the Cold War. The shortage of platforms, as well as the lack of mission-specific training and exercises, is the chief cause of this dangerous development, which finds its origin in strategic shortsightedness, political myopia, and the attendant fiscal austerity measures. In many instances,

navies find themselves unable to provide sufficient means to conduct their daily tasks, as “demonstrated by the ‘gapping’ of certain standing commitments to allow warships to be released for increasingly important NATO taskings.” Consequently, oceangoing patrol vessels and auxiliaries fulfill missions traditionally conducted by potent frigates and destroyers.⁷⁸

Second, at the end of the Cold War, European powers were able to field, deploy, and sustain division-size units in operations such as DESERT STORM. In contrast, today such an effort would be largely futile.⁷⁹ Although they constitute the most-credible amphibious forces in Europe, French and British troops are

[D]efense cooperation among the European partners will need to encompass new common strategic guidelines, shared operational and doctrinal procedures, better training for military personnel, and a much-improved maintenance and readiness level of naval platforms, as well as greater industrial and technological collaboration.

“unlikely to be deployed in a high-threat environment without considerable U.S. force protection.”⁸⁰ The militaries have been “hollowed out to such an extent that the deployment of a brigade, let alone a division, at credible readiness would be a major challenge.”⁸¹ Ultimately, the

European states barely manage to conduct basic peacetime (naval) duties at the desired rate, and have little to no surge capacity for emergencies.

Striking a Balance

For the above-mentioned reasons, each state must strike a balance between deploying low-end military capabilities for daily tasks, on the one hand, and high-end war-fighting capabilities for worst-case scenarios, on the other. With regard to naval power, the question remains to what extent “navies [should] invest their resources in high-intensity capabilities aimed at deterring or, if necessary, prosecuting conflict with other navies, rather than in low-intensity capabilities best suited to the maintenance of good order at sea.”⁸²

Arguably, the soundest solution to this problem is for European governments once again to provide sufficient funding for the naval branches to maintain relatively well-balanced fleets and operate them in a joint and combined fashion (i.e., with land, air, and other sea forces). These fleets need to be designed, first and foremost, to fight in contested environments, but, at the same time, must be configured to conduct many years of peacetime duties. If designed with sufficient room to grow, such naval forces would remain flexible enough to react to the ever-evolving security environment. Multipurpose surface combatants (ranging from two to seven thousand tons in displacement), amphibious-capable assets with substantial redundancies, small flotillas of modern submarines, and air-borne maritime-surveillance platforms, in combination with the vital associated

replenishment and sealift capabilities, are best suited to adapt to and conduct the various missions expected in the future. At the same time, defense cooperation among the European partners will need to encompass new common strategic guidelines, shared operational and doctrinal procedures, better training for military personnel, and a much-improved maintenance and readiness level of naval platforms, as well as greater industrial and technological collaboration.

To list the multitude of measures European states are undertaking currently to strengthen their militaries is beyond the scope of this article. However, it is apparent that many have put a tentative end to the truncation of naval power and are reinvesting in capabilities at the upper end of the intensity spectrum. Norway, Poland, the Netherlands, and Germany all are modernizing or enhancing their underwater forces. Great Britain and Greece have decided to revive their intelligence, surveillance, and reconnaissance capabilities by reactivating and procuring maritime patrol aircraft. Italy and France will receive new, capable surface combatants over the coming years. The British government has recommitted itself to operating two carriers, the first of which should be in service by 2020—probably, initially, with a combined U.K./U.S. F-35B air group. And over the next decade, Spain, Italy, and Turkey also probably will acquire this aircraft for their flattops.

If this trend continues over the coming years and the ties within the transatlantic community remain robust, there is a good chance that Europe's naval forces will be better prepared and better equipped to perform the duties and fulfill the many functions with which they are charged. They will have arisen from the abyss.

NOTES

1. In a broad sense, the term *Europe* is understood to signify a relatively unified body of like-minded states with similar domestic interests and common foreign policy goals. In theory, the concept of *European sea power* would have to be understood broadly to encompass all European states and their assets actively invested in the maritime domain. However, this article focuses on the study of naval power among selected European states that have direct access to the sea and make rather sizable investments in operating naval forces. All European states under discussion are members of NATO or the European Union; many are members of both.
2. Charles Krauthammer, "The Unipolar Moment," *Foreign Affairs* 70, no. 1 (1990/91), pp. 22–33.
3. For discussion on sea blindness in Britain, see Nick Childs, *Britain's Future Navy*, rev. ed. (Barnsley, U.K.: Pen & Sword Maritime, 2014), pp. xv, 26. For a definition of *maritime security*, see Geoffrey Till, *Seapower: A Guide for the Twenty-First Century*, 3rd ed. (New York: Routledge, 2013), p. 283ff.
4. The U.S. Navy was no exception to this rule. However, it is important to note that, despite significant reductions, the emergence of near-peer competitors, the proliferation of advanced weapons, and the challenges the United States thus has faced in recent years, it nonetheless maintains the most powerful naval force in the world—by a considerable margin. On the basis of a relatively consistent understanding of naval power as part of its overarching grand strategy, essential elements

- of the U.S. naval strategy have remained unchanged. Enabling access to the global commons, maintaining credible nuclear and conventional deterrence, ensuring sea control, and projecting power globally represent basic tenets of American sea power. Sebastian Bruns, *US Naval Strategy and National Security: The Evolution of American Maritime Power* (New York: Routledge, 2017).
5. A case in point is the overhead costs for personnel of the Italian navy. As a RAND study pointed out, "The Italian defense budget is divided into three major areas: (1) investment (what the U.S. calls research and development, plus procurement), (2) personnel, and (3) training, maintenance, and operations. Since switching to an all-volunteer military in 2006, the Italian goal was to spend roughly 50 percent of their budget on personnel, 25 percent on investment, and 25 percent on training, maintenance, and operations. In reality, personnel costs have consumed roughly 70 percent of Italian military spending." F. Stephen Larrabee et al., *NATO and the Challenges of Austerity* (Santa Monica, CA: RAND, 2012), p. 36.
 6. Many observers in the late 1980s believed that the confrontation between East and West would continue well into the twenty-first century. See Eric Grove, *The Future of Sea Power* (Annapolis, MD: Naval Institute Press, 1990), p. 153ff.
 7. The most obvious feature was the installation of close-in weapons systems on many surface vessels. For more information, see Anthony H. Cordesman and Abraham R. Wagner, *The Lessons of Modern War*, vol. 3, *The Afghan and Falklands Conflicts* (Boulder, CO: Westview, 1991). Also see U.S. Navy Dept., *Lessons of the Falklands: Summary Report* (Washington, DC: Office of Program Appraisal, 1983).
 8. Sixty-five billion dollars in 1991, as opposed to fifty-one billion in 1998 (in constant 2014 U.S. dollars). See SIPRI Military Expenditure Database 1988–2016, SIPRI, www.sipri.org/.
 9. Childs, *Britain's Future Navy*, p. 9. For an interesting discussion on future British security challenges and the "maritime vs. continental" debate, see Geoffrey Till and Martin Robson, *UK Air-Sea Integration in Libya, 2001: A Successful Blueprint for the Future?*, Corbett Paper 12 (London: Corbett Centre for Maritime Policy Studies, July 2013), available at www.kcl.ac.uk/.
 10. Ministry of Defence, *Strategic Defence Review* (London: 1998), chap. 5.
 11. Iain Ballantyne, *Strike from the Sea: The Royal Navy & US Navy at War in the Middle East 1949–2003* (Barnsley, U.K.: Pen & Sword, 2004).
 12. See Norman Friedman, *The Fifty Year War: Conflict and Strategy in the Cold War* (London: Chatham, 2000), pp. 295–98.
 13. Ministère de la Défense, *The French White Paper on Defence and National Security* (Paris: 2008), p. 57ff.
 14. In particular, the RN's strategic submarines have been armed with American-designed ballistic missiles. Currently the *Vanguard*-class submarine carries the Trident D5.
 15. Unlike the French and Italian destroyers, the Royal Navy incorporated the highly capable Sampson radar in its Type 45 class, despite the costs. This decision was founded in the navy's operational requirements for the planned vessel—namely, to provide fleet air defense for its carriers against a sophisticated opponent on the high seas (ergo, without air-defense coverage from land-based assets). The RN's planning envisioned "a much more demanding operational scenario than either the [French or Italian navy]." A comprehensive article on the ship can be found in Conrad Waters, "Significant Ships: HMS *Daring*: The Royal Navy's Type 45 Air-Defence Destroyer," in *Seaforth World Naval Review 2010*, ed. Conrad Waters (Barnsley, U.K.: Seaforth, 2009), p. 133.
 16. Jean-Louis Promé, "The French 1992–94 Military Programme Law: A Case of 'Let's Wait and See' While Adapting," *Military Technology* 16, no. 9 (1992), pp. 42–49.
 17. Jean-Louis Promé, "'Optimar 95' for the French Navy," *Military Technology* 16, no. 9 (1992), p. 52.
 18. Angelo Mariani, "A Strategic View of the Italian Navy," *Naval Forces* 18, special issue 1 (1997), p. 6.
 19. Giampaolo Di Paola, "L'evoluzione della Difesa italiana negli ultimi trent'anni," *Ministero della Difesa*, September 28, 2012, www.difesa.it/.

20. Thirty-seven billion dollars in 1990, thirty-two billion in 1995, forty-two billion in 2000. SIPRI Military Expenditure Database 1988–2016.
21. Ministerio de Defensa, Secretaría General Técnica, *Defense White Paper 2000* (Madrid: Centro de Publicaciones, 2000), p. 193.
22. Bernard Prévelin, *The Naval Institute Guide to Combat Fleets of the World, 1992–93: Their Ships, Aircraft, and Systems* (Annapolis, MD: Naval Institute Press, 1992), p. xv.
23. Ministerio de Defensa, Secretaría General Técnica, *Strategic Defence Review* (Madrid: Imprenta Ministerio de Defensa, 2003), p. 107.
24. Patrick Walters, “Spanish Armada for Warship Contract,” *The Australian*, June 20, 2007, www.theaustralian.com.au/.
25. Colin S. Gray, *The Leverage of Sea Power: The Strategic Advantage of Navies in War* (New York: Free Press, 1992), p. 289.
26. Bundesministerium der Verteidigung, *Weißbuch 1983: Zur Sicherheit der Bundesrepublik Deutschland* (Bonn, F.R.G.: 1983), p. 63ff. A detailed description of Germany’s naval development in the early post–Cold War period can be found in Cdr. Christian Jentzsch’s “Von der Escort-Navy zur Expeditionary-Navy?,” *Deutsches Maritimes Kompetenz Netz*, October 20, 2016, dmkn.de/.
27. Bundesministerium der Verteidigung, *Weißbuch zur Sicherheit der Bundesrepublik Deutschland und zur Lage und Zukunft der Bundeswehr* (Berlin: 1994), p. 120ff.
28. The Oxford dictionary explains the term *out of area* as follows: “(A military operation) conducted away from the place of origin or expected place of action of the force concerned.” In the case of Germany it can be explained as “NATO alliance operations and non-NATO coalition operations in which the United States and other NATO allies participate and that occur outside or on the periphery of Alliance territory.” Myron Hura et al., *Interoperability: A Continuing Challenge in Coalition Air Operations* (Santa Monica, CA: RAND, 2000), chap. 1, p. 1.
29. BENESAM is discussed in Theodore Hughes-Riley, “Fleet Review: The Royal Netherlands Navy,” in *Seaforth World Naval Review 2017*, ed. Conrad Waters (Barnsley, U.K.: Seaforth, 2016), p. 95.
30. Hans Harboe-Hansen, “The Royal Danish Navy’s Modernisation Programme,” *Naval Forces* 18, no. 6 (1997), p. 93. Germany also has been highly successful on the international market with its own interpretation of modular ship design, the Mehrzweck-Kombination (MEKO).
31. Peter Nordbeck [Adm., RSN], “Preparing the Navy for the Next Century,” interview by *Naval Forces*, in “The Royal Swedish Navy—Today and Tomorrow,” special issue 2, *Naval Forces* 17 (1996), p. 5.
32. Ibid.
33. James D. Watkins, “The Maritime Strategy, 1984,” in *U.S. Naval Strategy in the 1980s: Selected Documents*, ed. John B. Hattendorf and Peter M. Swartz, Newport Paper 33 (Newport, RI: Naval War College Press, 2008), p. 78.
34. See Hellenic Ministry of National Defense, *White Paper for the Armed Forces 1996–1997*. It is worth noting that, while the Turkish defense *White Paper 2000* discusses using “forward engagement” and “forward defense” to thwart threats to Turkey, the document does not address how this can be achieved by using naval forces. See Turkish Ministry of Defense, *White Paper 2000*.
35. Till, *Seapower*, p. 35ff.
36. Robert M. Cassidy, *Counterinsurgency and the Global War on Terror: Military Culture and Irregular War* (Stanford, CA: Stanford Univ. Press, 2008).
37. The carrier HMS *Invincible* was decommissioned in 2005.
38. Ministry of Defence, *Securing Britain in an Age of Uncertainty: The Strategic Defence and Security Review* (London: Cabinet Office, 2010), available at www.gov.uk/.
39. “France’s PA2/CVF Carrier Project: Stalled in France, Hedged on Demand from Brazil,” *Defense Industry Daily*, December 4, 2014, www.defenseindustrydaily.com/.
40. Fortunately, close ties with the U.S. Navy allow French pilots to train alongside their American partners, with cross-deck operations taking place since early in the first decade of the twenty-first century.
41. Larrabee et al., *NATO and the Challenges of Austerity*, p. 26.
42. FREMM stands for Frégate européenne multi-mission or Fregata europea multi-missione.

43. Alain Hinden, "La Fayette Ship Profile (I)," interview by *Naval Forces*, *Naval Forces* 19, no. 2 (1998), pp. 45–47.
44. Bruno Branciforte [Adm., IN], "The Commanders Respond: Italian Navy," U.S. Naval Institute *Proceedings* 138/3/1,309 (March 2012), available at www.usni.org/.
45. Enrico Cernuschi and Vincent P. O'Hara, "Fleet Review—Italy: The Marina Militare; A Well-Balanced Force in Time of Crisis," in *Seaforth World Naval Review 2013*, ed. Conrad Waters (Barnsley, U.K.: Seaforth, 2012), p. 86.
46. "Submarines with diesel-electric propulsion generally have to surface every couple of days to run the charging generator and recharge the batteries. However, with a special fuel cell system, subs can remain under water for longer. The official record [in 2015]—set by an HDW Type 212A submarine—is 14 days. If a submarine is unable to surface, the regulations require that the crew is able to survive for at least six days." Stefan Nitschke and Stephen Elliott, "Under Water," *Naval Forces*, www.nafomag.com/.
47. Cernuschi and O'Hara, "Fleet Review—Italy," p. 84.
48. Conrad Waters, "France's Aquitaine: First French FREMM Heralds a Renaissance for Its Surface Fleet," in *Seaforth World Naval Review 2013*, ed. Waters, p. 107.
49. Branciforte, "The Commanders Respond: Italian Navy."
50. Conrad Waters, "Regional Review—Europe and Russia," in *Seaforth World Naval Review 2017*, ed. Waters, p. 67.
51. Jeremy Stöhs, *The Decline of European Naval Forces: Challenges to Sea Power in an Age of Fiscal Austerity and Political Uncertainty* (Annapolis, MD: Naval Institute Press, 2018).
52. "A major ongoing concern is the troubled S-80 submarine programme, which envisages completion of four boats to replace Spain's existing underwater flotilla. Construction work [had] effectively been suspended until major weight and buoyancy problems identified in the first submarine, *Isaac Peral*, in May 2013 [were] resolved. General Dynamics Electric Boat of the US has been brought in to assist a major re-design, which [has involved] lengthening the submarines into a S-80 Plus configuration." Conrad Waters, "Regional Review—Europe and Russia," in *Seaforth World Naval Review 2015*, ed. Conrad Waters (Barnsley, U.K.: Seaforth, 2014), p. 65.
53. Larrabee et al., *NATO and the Challenges of Austerity*, p. 49.
54. *Ibid.*, pp. 49–50.
55. For an excellent overview of both navies, see the fleet reviews by Søren Nørby and Theodore Hughes-Riley in *Seaforth World Naval Review 2017*, ed. Waters.
56. "Once one of the more significant European maritime forces, the Royal Netherlands Navy has been progressively reduced in size and stature since the end of the Cold War until it barely ranks amongst Europe's second-tier fleets." See Conrad Waters, "Regional Review—Europe and Russia," in *Seaforth World Naval Review 2010*, ed. Waters, p. 98.
57. Marcial Hernandez, *Dutch Hard Power: Choosing Decline*, National Security Outlook 3 (Washington, DC: American Enterprise Institute, April 3, 2013), available at www.aei.org/.
58. *LPD* stands for landing platform, dock. Although not an authoritative source, Wikipedia provides a sound definition of *LPD*: "An amphibious transport dock, also called a landing platform/dock (LPD), is an amphibious warfare ship, a warship that embarks, transports, and lands elements of a landing force for expeditionary warfare missions." *Wikipedia*, s.v. "Amphibious transport dock," en.wikipedia.org/. BBC News, "Russian Ships 'Chase Away' Dutch Submarine in Mediterranean," *BBC News*, November 9, 2016, www.bbc.com/.
59. Harboe-Hansen, "The Royal Danish Navy's Modernisation Programme," p. 95.
60. Søren Nørby, "Fleet Review: The Royal Danish Navy," in *Seaforth World Naval Review 2017*, ed. Waters, p. 83.
61. Bundesministerium der Verteidigung, *Weißbuch 2006 zur Sicherheitspolitik Deutschlands und zur Zukunft der Bundeswehr* (Berlin: 2006), p. 122ff.
62. Richard Tomkins, "German Navy Set for Additional Corvettes," *UPI*, January 24, 2017, www.upi.com/.
63. Bernhard Chiari, ed., *Auftrag Auslandseinsatz: Neueste Militärgeschichte an der Schnittstelle von Geschichtswissenschaft, Politik,*

Öffentlichkeit und Streitkräften (Freiburg, Ger.: Rombach Verlag, 2012).

64. Bryan McGrath, *NATO at Sea: Trends in Allied Naval Power*, National Security Outlook 5 (Washington, DC: American Enterprise Institute, September 18, 2013), available at www.aei.org/.
65. Sebastian Sprenger, "All of Germany's Submarines Are Currently Down," *Defense News*, October 20, 2017, www.defensenews.com/.
66. See Robin Hughes, "Sweden Reactivates RBS15-Based Mobile Coastal Defence System," *Jane's 360*, December 30, 2016, www.janes.com/.
67. Norwegian Ministry of Defense, *Strategic Defence Concept 2004* (Oslo: 2004), p. 7.
68. "The Basics about NORDEF-FCO," *NORDEF-FCO*, www.nordefco.org/.
69. Conrad Waters, "Regional Review—Europe and Russia," in *Seaforth World Naval Review 2014*, ed. Conrad Waters (Barnsley, U.K.: Seaforth, 2013), p. 69. However, in the most recent past, things seem somewhat more positive for the Hellenic Navy. New Type 214 submarines have been introduced, the Orion patrol planes have been reactivated, and the construction of *Roussen*-class fast-attack craft has commenced.
70. Heiko Borchert and Cyril Widdershoven, *The Dawn of a New Arab Defense Industrial Network*, Arab Defense Industry Paper 1 (Lucerne, Switz.: Borchert Consulting & Research, July 2016), p. 13ff.
71. Aaron Stein, quoted in Humeyra Pamuk and Gareth Jones, "Turkish Military a Fractured Force after Attempted Coup," *Reuters*, July 26, 2016, www.reuters.com/.
72. Alessandro Marrone, Olivier de France, and Daniele Fattibene, eds., *Defense Budgets and Cooperation in Europe: Developments, Trends and Drivers* (Rome: Istituto Affari Internazionali, January 2016), available at www.iai.it/.
73. All NATO members have agreed to meet the guideline of spending a minimum of 2 percent of GDP on defense.
74. Stefan Lundqvist, *Continuity and Change in Post-Cold War Maritime Security: A Study of the Strategies Pursued by the US, Sweden and Finland 1991–2016* (Åbo, Fin.: Åbo Akademi Univ. Press, 2017).
75. Ben Jones, *Franco-British Military Cooperation: A New Engine for European Defence?*, Occasional Paper 88 (Paris: European Union Institute for Security Studies, February 2011), p. 5.
76. United Kingdom Ministry of Defence and Republic of France Joint Staff, *Combined Joint Expeditionary Force (CJEF) User Guide* (Swindon, U.K.: Development, Concepts and Doctrine Centre; Paris: Centre interarmées de concepts, de doctrine et d'expérimentations, 2012); Jones, *Franco-British Military Cooperation*.
77. Lars Hoffmann, "German Armed Forces to Integrate Sea Battalion into Dutch Navy," *Defense News*, February 4, 2016, www.defensenews.com/.
78. Waters, "Regional Review—Europe and Russia," in *Seaforth World Naval Review 2017*, ed. Waters, p. 73.
79. Jorge Benitez, ed., *Alliance at Risk: Strengthening European Defense in an Age of Turbulence and Competition* (Washington, DC: Atlantic Council, February 26, 2016), available at www.atlanticcouncil.org/.
80. Larrabee et al., *NATO and the Challenges of Austerity*, p. 86.
81. Richard Shirreff, "United Kingdom," in *Alliance at Risk*, ed. Benitez.
82. Till, *Seapower*, p. 43.



JAPAN'S DEFENSE READINESS

Prospects and Issues in Operationalizing Air and Maritime Supremacy

Ryo Hinata-Yamaguchi

Facing a fluid regional security environment and the need to strengthen its alliance role, Japan has worked to increase the capabilities of the Japan Self-Defense Forces (JSDF). It has adjusted the relevant bureaucratic, political, and operational frameworks and has made key investments in new force structures.

In December 2017, the Ministry of Defense (MOD) announced a budget bill for fiscal year (FY) 2018 of 5.19 trillion Japanese yen (JPY) (U.S.\$45.76 billion), marking an increase for the sixth straight year. The new budget includes requests to make some key acquisitions and upgrades to the JSDF while also improving the management of the defense industry. The developments are taking place under the auspices of National Defense Program Guidelines (NDPGs), which identify air-sea supremacy, defense of remote islands, ballistic-missile defense, outer space and cyberspace, and large-scale disasters as the focal areas in which to strengthen the JSDF's "effective deterrence and response to various situations."¹

Furthermore, the Legislation for Peace and Security that came into effect in

March 2016, combined with updated "Guidelines for Japan-U.S. Defense Cooperation," has made Japan more like a "normal" ally and the JSDF more like a "normal" defense organization.

From Japan's national security standpoint, the improvements in the JSDF's capabilities are essential. The current Medium Term Defense Program (MTDP) states that air and maritime supremacy is a "prerequisite for effective deterrence and response to various situations, including defense

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posture buildup in Japan's southwestern region."² Yet those developments also raise many questions concerning the actual readiness of the JSDF. This article assesses the state of Japan's defense planning and JSDF readiness, focusing on air and maritime capabilities. Specifically, it will highlight the many gaps among policy, force structure, and operational readiness. It also argues that the JSDF lacks the operational and tactical doctrines essential to enhancing its readiness in the air and maritime domains.

DEVELOPMENTS IN JAPAN'S DEFENSE PLANNING

Since its inauguration in 1954, the JSDF—a special institution, constitutionally and politically—has served to defend Japan. Initially, despite the Cold War threats looming in the region, actual developments in the JSDF were incremental. The defense white paper (now issued annually) and the NDPGs that outlined the concept of *basic defense capability* did not make their debuts until 1970 and 1976, respectively. Improvements in indigenous defense capabilities and strategies came slowly, largely owing to the low-profile treatment of defense matters under Japan's post–World War II Yoshida Doctrine, which emphasized economic development while relying on the U.S. security umbrella.³ Even with the demise of the post–Cold War order in the 1990s, developments in Japan's defense planning remained minimal; the second NDPG, issued in 1995, barely changed the JSDF's focus on homeland defense under the basic defense capability concept.

However, beginning in the late 1990s security challenges became more pressing for Japan, particularly with regard to North Korea's weapons-of-mass-destruction adventurism; growing concerns about China's military buildup; and transnational terrorism, as epitomized by the September 11, 2001, attacks. The new threats served as catalysts for Tokyo to reconfigure its defense posture, leading to the establishment of the Defense Posture Review Board in September 2001 and the Council on Security and Defense Capabilities in April 2004. Discussions led to the formulation of the new NDPG unveiled in December 2004, which focused on “defending Japan” and “preventing threats by improving the international security environment” through “i) Japan's own efforts, ii) cooperation with the allies, and iii) cooperation with the international community.”⁴ The new focus called for a shift from the basic defense capability concept to response-oriented, “multifunctional, flexible, and effective defense forces.”⁵ The 2004 NDPG essentially has served as the fundamental template for Japan's defense planning since that time, not only by providing the basis for building the nation's indigenous defense capabilities, but also by promoting its role with regard to alliance commitments and international security.

The reconfiguration of the JSDF further accelerated in the 2010s. Cumulative developments in the regional security environment, combined with a landslide

victory by the Democratic Party in September 2009, led to the issuance of the 2010 NDPG, which promised enhancement of “readiness, mobility, flexibility, sustainability, and versatility” to create a “dynamic defense force.”⁶ A notable element of the 2010 NDPG was its focus on acquiring amphibious capabilities that were deemed pivotal to defending the Southwest Island Chain.⁷

The return of the Liberal Democratic Party (LDP) to power in December 2012 led to further upgrades to Japan’s defense planning, particularly the establishment of the National Security Council and issuance of the National Security Strategy (NSS). Under this new framework, the Japanese government issued the 2013 NDPG and the MTDP in December 2013; they called for a “dynamic joint defense force” that would emphasize air and maritime supremacy, as well as joint readiness, as the key imperatives for the JSDF. In essence, the NDPG issued in 2013 is an upgraded version of its predecessor, yet its greater significance lies in the fact that thenceforward Japan’s defense planning took place under the auspices of the NSS.⁸ Then, in September 2015, the Diet passed the Legislation for Peace and Security. Its provisions included a statement of Japan’s right to exercise collective self-defense and a legal basis for the JSDF to respond more effectively to so-called gray-zone situations.⁹

While the JSDF certainly has undergone significant changes since the 2004 NDPG, it is important to note that these developments did not represent a series of overhauls or 180-degree turns. Rather, they constituted a long-term, step-by-step embodiment of key agendas and desired capabilities in Japan’s defense planning.

INCREASING JSDF READINESS

Japan remains in the midst of enhancing its force structure and capabilities and its operations readiness. While the JSDF’s force structure enjoys many comparative advantages owing to its advanced technologies, important operational readiness weaknesses and shortfalls remain, creating a classic example of the force structure-versus-operations readiness dilemma that Richard Betts outlined in a 1995 book.¹⁰ Japan will need to remedy these weaknesses by ensuring the cost-effective use of current assets and the development of future capabilities to ensure both optimal force structure and operational readiness.

Force Structure Shortfalls

Enabled by Japan’s robust industrial capacity and advanced technology, the JSDF force structure incorporates a high concentration of cutting-edge platforms and equipment. This has enabled Japan to improve the JSDF’s capabilities in the areas prioritized in recent NDPGs by reducing significantly the country’s land warfare-based firepower, instead strengthening its capabilities in the air and

maritime domains, as well as in joint operations; command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR); and ballistic-missile defense (BMD).

Notably, implementing the NDPGs over the past two decades has not required significant increases in personnel. Rather, improvements are taking place via efficiencies, such as streamlining the order of battle, making upgrades to enhance the longevity of existing platforms, and creating a networked system of assets.

The Maritime Domain. The Japan Maritime Self-Defense Force (JMSDF) possesses powerful blue-water capabilities, including sea-based missile defense. The new provisional budget set reflects the 2013 NDPG's proposal to increase the number of destroyers and submarines as part of the effort to form fourteen escort divisions and six submarine divisions. The JMSDF already has six Aegis-equipped destroyers (of the *Atago* and *Kongo* classes) and is expected to introduce a new class in coming years. The existing *Abukuma*, *Akizuki*, *Asagiri*, *Hatakaze*, *Hatsuyuki*, *Murasame*, *Shirane*, and *Takanami* classes, with the new *Asahi*-class destroyers, will provide the core of JMSDF surface-warfare capabilities, while the *Hayabusa*-class patrol boats complement Japan Coast Guard assets in dealing with spy vessels. The JMSDF submarine force comprises the *Oyashio* class and the air-independent-propulsion *Soryu* class (with the newer boats of the *Soryu* class being powered by improved lithium-ion-propulsion batteries), as well as investments in a new class of three-thousand-ton submarines for intelligence, surveillance, and reconnaissance (ISR) operations.¹¹

Antisubmarine warfare (ASW) is another major JMSDF strength, centered on the employment of SH-60K, P-3C, and P-1 aircraft. Japan's ASW capabilities have been enhanced significantly in recent years with the commissioning of the *Hyuga*-class and *Izumo*-class helicopter destroyers.¹² Furthermore, the MOD is pushing for the construction of 3,900-ton "compact-type hull" destroyers with characteristics close to the modularity concept of the U.S. Navy's Littoral Combat Ship, but with greater firepower and installable equipment for minesweeping and ASW capabilities.¹³

These various platforms and future acquisitions certainly will strengthen the JMSDF's capabilities. However, while Japan's maritime platforms have technological superiority, it remains debatable whether they are sufficient to deal with the changes the regional military balance is experiencing, both quantitatively and qualitatively. Such questions are likely to become increasingly pressing as the JMSDF expands its operational range beyond territorial waters to defend the country's critical sea lines of communication.

The Air Domain. Key developments are anticipated in the Japan Air Self-Defense Force (JASDF). In recent years, the F-15J's warning-and-surveillance equipment

and the air-to-air combat capabilities of the F-2 have been upgraded to enhance further the JASDF's airpower. The acquisition of additional aerial-refueling aircraft—such as the KC-767J equipped with the flying-boom system and potential investments in KC-46As to increase the endurance of combat air patrol operations and expand fighter-coverage areas—is a key development. In September 2016, Lockheed Martin rolled out the first of the JASDF's F-35A Lightning IIs. The first domestically assembled version, by Mitsubishi Heavy Industries, was unveiled in June 2017; it will replace the F-4J and the older fleet of F-15Js.¹⁴ The Acquisition, Technology, and Logistics Agency (ATLA) and Mitsubishi Heavy Industries also currently are testing Japan's first indigenous stealth jet technology demonstrator, known as the X-2. While many find the project exciting, it remains unclear whether the X-2 actually will become a successful fifth-generation JASDF fighter, given the high costs for research and development (R&D), as well as uncertainties over the potential for exports to attract revenue.¹⁵ Moreover, the X-2 project is reported to be delayed owing to defense-planning issues, raising further questions about the development and deployment of the aircraft.¹⁶ Despite the challenges, the acquisition of next-generation platforms is an essential step forward in enhancing the JASDF's air-superiority capabilities, particularly given that existing units are overburdened by operational demands.

The JASDF also has made substantive organizational improvements. In January 2016, the MOD established in Naha, Okinawa, the 9th Air Wing, which includes two F-15 fighter squadrons. The establishment of the new wing was driven by the exponential increase in scrambles (fighter intercepts) since 2010, peaking at 1,168 interceptions in 2016, 74 percent against Chinese aircraft and 26 percent against Russian aircraft.¹⁷ While the staging of the forward-deployed air units certainly enhances Japan's air capabilities, the rapidly increasing quality of adversary aircraft raises important questions about whether the transition into higher levels of readiness can be sustained against the growing burdens.

The JASDF's ISR capabilities have improved significantly. Previously, this area was viewed as a major vulnerability in light of the numerous ballistic-missile provocations and territorial waters incursions occurring since the late 1990s. In maritime reconnaissance, the P-1 and the SH-60J/K continue to serve as the main maritime patrol aircraft, while some P-3Cs will be upgraded to extend their operational life spans. For airborne early warning capability, the JASDF currently operates the airborne warning and control system E-767 and the E-2C, and soon will introduce the E-2D. With respect to unmanned aerial systems (UASs), under the current MTDP Japan is due to acquire three RQ-4 Global Hawks to enhance the JASDF's ISR capabilities. Important upgrades of ISR equipment installed in aircraft, destroyers, submarines, and radar systems, such as the FPS-7 fixed

warning-and-control radar system, also are being accomplished. These developments are essential to enhancing not only the JSDF's communications and precision navigation but also its ability to detect, track, and target enemy assets. Further improvements are being enabled by strong investments in the enhancement of outer space technologies for C4ISR and X-band communication.¹⁸

However, the issue with advancements in C4ISR capabilities is vulnerability to attacks from within the same domain, such as cyber and electromagnetic pulse (EMP) attacks. Moreover, there is uncertainty over whether the acquisition of and upgrades to ISR assets will be sufficient to keep pace with regional developments. In particular, Chinese and Russian modernization programs that incorporate stealth capabilities, as well as North Korea's diversification of its military capabilities (including a new class of submarines capable of launching ballistic missiles), pose new challenges for the JSDF. These diversifying challenges and the increased operational tempo will make it ever more vital for the JSDF to collect, process, and deliver decision-quality information in minimal time to enable it to take the right action.

The JSDF's BMD capabilities also are improving steadily. North Korea's launch of a Taepodong missile over Japan in August 1998 served as the primary catalyst for installing a joint Japan-U.S. BMD system in Japan. The JSDF has Aegis-equipped destroyers and Patriot missile batteries. However, North Korea's continuous developments and test launches of ballistic missiles have provoked anxieties over whether the current BMD systems are effective and sufficient. The FY2018 budget will make significant investments in further development of the JSDF's BMD capabilities, including joint Japan-U.S. development of the SM-3 Block IIA, to be carried by the Aegis-equipped destroyers, thereby expanding their coverage from three hundred to one thousand kilometers, and upgrades to the Patriot batteries by installing the PAC-3 missile segment engagement that boasts a range of over thirty kilometers. Japan also is moving forward with installation of the Aegis Ashore system to add another layer to its BMD capabilities and coverage.¹⁹

The Air and Maritime Domains. An important element of Japan's air and maritime defense is the JSDF's area-denial capabilities in the Southwest Island Chain. Currently, the JSDF is armed with Type 03 and Type 11 surface-to-air and Type 88 and Type 12 surface-to-surface missiles. More importantly, recent realignments have deployed antiship and anti-aircraft missile batteries along the Southwest Island Chain to provide coverage for Japanese airspace and maritime territories in the East China Sea. The anti-aircraft and antiship missiles are important not only to protect the offshore islands; they also should support and supplement JASDF and JMSDF units by easing their burden in dealing with intruders into Japanese territorial waters or onto Japanese islands, including the Senkakus. Certainly, the shore-based anti-air and antiship missile batteries will be instrumental to

improving Japan's area-denial capabilities.²⁰ Realistically, however, the real effectiveness of the shore-based area-denial arrangements will depend heavily on how well they are able to integrate with the JSDF's air and maritime capabilities.

With regard to amphibious operations, steady improvements are being achieved in joint-operations capabilities for rapid deployment. In particular, the *Osumi*-class amphibious transport docks that accommodate air-cushion landing craft, as well as the *Hyuga*- and *Izumo*-class helicopter destroyers, with their ability to operate CH-47J transport helicopters and tilt-rotor V-22 aircraft, constitute a key component of the JSDF's amphibious capability. In fixed-wing airborne operations, the new C-2 transport aircraft boasts greater size, speed, and range than the current C-1. Taking advantage of such air and maritime transport assets, the Japan Ground Self-Defense Force (JGSDF) increasingly is focusing on mobile platforms such as the maneuver combat vehicle, the assault amphibious vehicle, and the light armored vehicle, as well as the upgraded Type 96 armored personnel carrier. Moreover, the MOD in March 2016 signed ten-year contracts with civilian charter vessels such as *Hakuou* and the high-speed catamaran *Nacchan World* to enhance the JSDF's logistical capabilities.²¹

While the modernization of the JSDF is making steady progress, questions remain regarding how far it will go. The next MTDP, for FY2019–23, is due in 2018, and the next NDPG is on the horizon. On December 15, 2017, Prime Minister Abe stated that the next NDPG will feature major changes while continuing to conform exclusively to defense-oriented principles; however, he provided no specific details.²² Naturally, there are strong demands for further capability improvements to meet the diversifying and increasing mission requirements and to offset the existing burdens. Future considerations could include whether to acquire not only next-generation models of existing assets but also land-attack cruise missiles (LACMs) and light aircraft carriers, and to revamp the *Izumo* class to accommodate vertical/short-takeoff-and-landing (i.e., V/STOL) aircraft.

However, careful consideration needs to go into pursuit of force structure investments; they should not be made merely for the sake of building a larger force armed with superior power-projection capabilities and firepower, particularly given the capital-intensive nature of air and maritime platforms. Poorly planned hardware acquisitions not only would have massive fiscal implications, but would create imbalances and potential negative path dependencies in the JSDF's overall force posture.

Instead, a significant part of the JSDF's force structure developments consists of the installation and upgrading of C4ISR equipment; command, control, communications, and intelligence (C3I) equipment; navigation equipment; automated systems; propulsion systems and engines; and precision armaments to strengthen the performance of existing platforms. The *Medium- to Long-Term*

Technology Outlook issued in August 2016 focuses on “unmanned technology,” “smart network technology,” “high-power energy technology,” and “improvement of functional performance of existing equipment.”²³ The FY2017 budget devotes JPY 24.5 billion (U.S.\$230 million) for R&D of “autonomous surveillance technology and sensor systems for unmanned underwater surveillance vehicles,” “cyber resilience technology,” and “future amphibious technology,” as well as new antiair and antiship missiles.²⁴ Much of the R&D focus is on missiles and munitions. The third supplementary budget of FY2016 also included one billion yen for research on rail guns.²⁵ The FY2018 budget includes JPY 8.7 billion (U.S.\$81.5 million) for next-generation warning-and-control radars, JPY 4.6 billion (U.S.\$43.1 million) for high-speed glide bombs, JPY 5.4 billion (U.S.\$50.6 million) for antiship guided missiles with longer range and stealth capabilities, JPY 8.7 billion (U.S.\$81.6 million) for research on high-power laser systems to be used against mortar rounds, JPY 6.9 billion (U.S.\$64.7 million) for next-generation medium-range air-to-air missiles, and JPY 700 million (U.S.\$6.6 million) for research on EMP weapons.²⁶ Advancements in these technologies could be significant game changers in the JSDF’s capabilities over the long term, particularly if they are enhanced further with the capacity to deal with heavier targets in the air and maritime domains.

More-sensitive questions arise regarding whether Japan will require offensive platforms to ensure effective defense and deterrence in the air and maritime domains. To date, the JSDF has focused on deterrence by denial rather than by punishment. Yet the absence of the ability to inflict strategic damage on aggressors raises questions regarding the effectiveness of Japan’s deterrence capabilities. In particular, North Korea’s continuous launching of ballistic missiles and its nuclear weapons tests have triggered debates over whether Japan needs to acquire capabilities for deterrence by punishment as well as denial. In March 2017, the ruling LDP recommended using assets such as cruise missiles to provide counterattack capabilities.²⁷ Discussions over acquiring LACMs have surfaced on occasion since the early years of the twenty-first century, particularly with the Tomahawk land-attack missile available as a means of attacking ballistic-missile launch sites (and vehicles). While the acquisition of LACMs still is being debated, in December 2017 Japan announced its decision to acquire the Joint Air-to-Surface Standoff Missile (JASSM-ER), the Long Range Anti-Ship Missile (LRASM) for the F-15J, and the Joint Strike Missile (JSM) for the F-35A.²⁸

Yet while the acquisition of LACMs may make sense from a deterrence point of view, the possibility poses dilemmas. On the one hand, whether counterstrike capabilities provide a sufficient deterrent is open to question. On the other hand, under the current legal framework, the whole concept of employing preemptive and preventive measures would spark intense debates regarding whether such

measures are too strategically offensive in nature and go beyond a “minimum self-defense capability.”²⁹

Mobilization and Operational Constraints

While the JSDF boasts many cutting-edge platforms, capabilities count only if they are truly operational. And there have been significant improvements to the JSDF's operational readiness in recent years, not only because of better logistics, exercises, and training, but also owing to the increasing number of Chinese and Russian incursions into Japan's airspace and territorial waters and North Korean missile launches. Still, the JSDF's operational readiness remains constrained, largely by legal and institutional factors rather than technical issues.

First, mobilization of the JSDF is constrained significantly by the positive-list bureaucratic and legal framework derived from the post-World War II constitution.³⁰ Under this framework, rules of engagement have been very tight, limiting the JSDF's ability to respond to contingencies in a timely manner. These constraints have been raised as a major issue over the years, but developments have been piecemeal. The enactment of the Armed Attack Situation Response Act in June 2003 focused on “invasions,” “ballistic missile attacks,” “guerrilla/special forces,” and “air attacks.” The legislation exempted the JSDF from civilian laws during contingencies to permit smoother mobilization. Measures issued in June 2004, based on the Armed Attack Situation Response Act, addressed factors ranging from civil protection to amending the Self-Defense Forces Act.³¹ The 2015 umbrella Legislation for Peace and Security introduced new measures as follows:³²

- Self-Defense Forces Act
- International Peace Cooperation Act
- Act Concerning Measures to Ensure Peace and Security of Japan in Situations That Will Have an Important Influence on Japan's Peace and Security
- Ship Inspection Operations Act
- Legislation for Responses to Armed Attack Situations
- U.S. and Others' Military Actions Related Measures Act
- Act Regarding the Use of Specific Public Facilities
- Maritime Transportation Restriction Act
- Prisoners of War Act
- Act for Establishment of the National Security Council
- International Peace Support Act

Yet many of the revisions largely embodied versions of the 2003 Armed Attack Situation Response Act, which Jeffrey Hornung and Mike Mochizuki correctly describe as an “expansion of the existing defense-oriented mandate rather than a mandate to exercise the right of collective self-defense.”³³

There were further adjustments to the MOD’s decision-making, intended to smooth bureaucratic pathways within the MOD by allowing the JSDF chiefs of staff to work on an equal footing with the directors general of the MOD bureaus and the secretariat in serving the minister of defense. Overall, significant improvements are evident. Yet, given the short-notice nature of contingencies that Japan faces, whether the current legal and structural framework can manage adequately the JSDF’s ability to respond effectively remains in question.

Indeed, the JSDF faces a central dilemma: How can it act effectively when deterrence fails? The “newly determined three conditions for the ‘use of force’” state that force may be used (1) “[w]hen an armed attack against Japan has occurred, or when an armed attack against a foreign country that is in a close relationship with Japan occurs and as a result threatens Japan’s survival and poses a clear danger to fundamentally overturn people’s right to life, liberty and pursuit of happiness”; (2) “when there is no appropriate means available to repel the attack and ensure Japan’s survival and protect its people”; and (3) the “use of force [is limited] to the minimum extent necessary.”³⁴ Dealing with aggression effectively yet with the minimum force necessary would be challenging, not only because of Japan’s highly constrained rules of engagement but also given its geographic proximity to other states in the region. For example, the JSDF must calculate whether the aggressor’s actions are hostile (or not), as well as the appropriate response measures against the aggressor, all within a tight time frame. Granted, the increasing number of incursions and other gray-zone situations has given the JSDF substantial experience with “hot” situations; however, to date these encounters have fallen short of actual combat situations. Hence, although Japan now is authorized to take a more proactive part in collective self-defense and other international security operations, the JSDF’s combat effectiveness after the first shot is fired remains untested—raising concerns about how well the JSDF would perform in actual armed conflict.

Second, further enhancing interbranch coordination and integration is essential.³⁵ While joint operations have been discussed since the formative years of the JSDF, actual developments did not take place until the 2004 NDPG.³⁶ The JSDF long has suffered from chronic stovepiping, to a level that obstructed coordination among the three branches. A key bureaucratic development took place in March 2006 with the reorganization of the Joint Staff Council into the Joint Staff, which now integrates and facilitates greater coordination among the chiefs of staff of the three JSDF services. But major readiness and experience deficits

within the JSDF remain. The lagging operational developments, combined with the nature of the security challenges, have resulted in imbalances in levels of combat readiness. For instance, the JASDF and JMSDF have conducted far more actual contingency operations than the JGSDF.³⁷

To address such issues and promote greater effectiveness and efficiency through coordination, the three branches of the JSDF have been working on upgrading their doctrines, to sharpen their roles in joint maneuvers, and on improving C3I systems, such as introducing cloud technology and tactical data-link capabilities.³⁸ Furthermore, under the current NDPG, some improvements are being seen in personnel aspects, such as the stationing of liaison officers in the headquarters of each branch.³⁹ Yet the development of true joint capabilities is still nascent, and requires not only the integration of key capabilities but improvements in the quality and frequency of joint training and exercises to operationalize genuine coordinated readiness.

Formulation of Operational and Tactical Doctrines

The series of legal and strategic documents in recent years, such as the NDPG, MTDP, “Guidelines for Japan-U.S. Defense Cooperation,” and Legislation for Peace and Security, all have served as key ingredients to improve the JSDF’s effectiveness and efficiency. Still, much practical work remains to be done to operationalize these developments so as to improve the JSDF’s actual readiness.

Essentially, the recent changes have taken Japan’s defense planning to a higher level, forcing the JSDF to develop further its operational and tactical doctrines to operationalize the capabilities enabled to date. The fluid security environment, the developments in Japan’s defense policies, and the improvements in the JSDF’s capabilities inevitably lead to diversification of scenarios and operations. For the JSDF to execute its tasks effectively and efficiently, it is critical to formulate its concept of operations and tactical doctrines, particularly given the relevant specific legal conditions and constraints relating to the rules of engagement, use of force, and actions permitted when using force. Hence the development of operational and tactical doctrines is essential to adding sharpness to and functional authority within the JSDF’s defense planning, so as to improve operational readiness.

However, this task is easier said than done, as operationalizing capabilities is seldom a short-term challenge, nor is any given situation a static one. Rather, the process is a long-term, sophisticated one, replete with recurring adjustments that produce, operationalize, update, and maintain the myriad developments in the armed forces. The U.S. Joint Operational Access Concept (JOAC) is a classic example of how an operational concept involves three components: institutional commitment, conceptual alignment, and managerial initiatives.⁴⁰ While the

Japanese defense organization faces far fewer complexities than its U.S. counterpart, there is little doubt that Japan also will face long-haul, complex realities in systemizing doctrines to enhance the JSDF's readiness and capabilities. As Japan moves further toward ensuring air and maritime supremacy, new questions are bound to arise concerning the force generation, development, and employment necessary to improve JSDF readiness further.

Given the nature of recent JSDF doctrines as well as the major reconfigurations in Japan's defense planning, much remains to be done in improving the JSDF's operational and tactical doctrines. Apart from ballistic-missile defense and cybersecurity, the defense of Japan relies heavily on ensuring air and maritime supremacy. Granted, amphibious capabilities are a crucial deterrent in the defense of remote islands; however, one should not become overcaptivated by the JSDF's amphibious capabilities, as they essentially are emergency measures. As one defense official noted to the author, "A goalkeeper cannot be the only defense component."⁴¹ A scenario in which an aggressor already has encroached on Japan's shores, leading to mobilization of the JGSDF, would indicate the failure not only of Japan's deterrence but also of the first line of defense in the air and maritime domains. Given the nation's archipelagic nature and its other circumstances, supremacy in the air and maritime domains, through persistent denial and resilient response vis-à-vis threats, is essential to dealing with aggressors *before* they penetrate Japanese territory.

The air and maritime domains are intimately related. However, detailed discussions on an indigenous air-sea battle concept in Japan have not been conducted until recently.⁴² For instance, the basic JASDF doctrine was not issued until 2001. Considering the new emphasis on air and maritime supremacy, devising an air-sea battle concept would be pivotal to enhancing not only the operational readiness of the JASDF and the JMSDF but also the efficiency and effectiveness of maneuvers during major contingencies.

The doctrinal culture in the JSDF also needs further development, with particular emphasis on interoperability, both technically and procedurally. To sharpen further the JSDF's readiness to establish air and naval supremacy, the JSDF will need to work on shaping and maturing its air-sea battle culture and concept of operations.⁴³ Promotion of an indigenous air-sea battle mind-set would sharpen the JSDF's operational proficiency and readiness to meet various contingencies in the air and maritime domains. However, doctrines need tactical context, and building such aspects would be no easy task. While the JSDF is characterized by a high level of professionalism and expertise, those qualities are limited to the scope of existing assets and procedures. Thus, developing and applying new doctrines within the JSDF inevitably would take time.

The task of systemizing doctrines also faces challenges owing to the array of new technologies expected to join the JASDF and JMSDF inventories.⁴⁴ Formulating the concept of operations for the new technologies will require not only further studies but also the nurturing of expertise. The JMSDF Command and Staff College Strategic Study Group and the recently established JASDF Air Power Studies Center of Excellence in the Air Staff College play pivotal roles in conducting studies on developing and applying concepts such as *sea basing*, *combat clouding*, *space situational awareness*, and *reconnaissance strike complex* to enhance further the JSDF's air and maritime superiority. Furthermore, recruitment is experiencing innovative developments; the JSDF has begun employing direct-commission and noncommissioned officers with specialist backgrounds. The next step would be to bridge among the three branches by developing an integrated doctrine that emphasizes interoperability, connecting the capabilities of the three branches to maintain optimal joint readiness.

Admittedly, efforts to enable establishment of air and naval supremacy face their share of challenges, given that Japan is within China's antiaccess range—which could expand farther, considering developments in Chinese power-projection capabilities. While expansions to China's area-denial coverage would press Japan to adopt sharper policies, here too there are dilemmas. Several experts have noted that an area-denial approach could lead to “trench warfare in the sea”—a disadvantageous situation for Japan, which has limited quantitative and logistical capacity to withstand attrition, especially considering the high-tech nature of the JSDF.⁴⁵

Such problems have fueled discussions on the JSDF's tactical options, in pursuit of more-responsive, resilient ways to deal with threats. In particular, gray-zone situations create challenges to crisis management.⁴⁶ Given that Japan has treated crisis management as a domestic law-and-order problem rather than one of national defense, how can the JSDF respond to gray-zone situations? Moreover, the rules of engagement for armed action remain an open question.⁴⁷ While the Legislation for Peace and Security does grant the JSDF authority to mobilize against gray-zone challenges, Aihito Yamashita correctly argues that the occurrence of such scenarios is a clear indication that deterrence has failed—the aggressor has defied the status quo.⁴⁸ Owing not only to laws and capabilities but also to general regional discomfort from neighboring states, the JSDF remains self-limited to exercising deterrence by denial, as opposed to deterrence by punishment. The challenges indicate that the key agenda for Japan must be to work on more proactive deterrence and crisis-management measures, consistent with current laws and capabilities. Such a task, however, would involve not only

conducting debates within the government but also addressing the dilemmas inherent in the formulation of JSDF doctrines.

Political and Bureaucratic Facilitators

While further strategic and operational alignments are expected to improve JSDF readiness, these developments will face the sorts of strategic, political, economic, and bureaucratic questions that create defense-planning dilemmas for the Japanese government.

First, despite the growing awareness of mounting national security concerns, Japan's defense planning often becomes embroiled in domestic political intrigues. While it was Japan's recognition of increasing threats that instigated recent changes, it was the growing recognition by Japanese citizens of national security issues and the importance of the Japan-U.S. alliance that provided the government with sufficient political cover to implement the developments. Still, the tense political debates over the Legislation for Peace and Security passed in 2015 were yet another example of how defense developments in Japan often are hamstrung by overpoliticization, poor conceptualization, and poor "marketing" of security matters. The contents of the security bills are logical and essential to improving Japan's defense capabilities, yet arguably they were a significantly watered-down alternative to amending article 9 of the constitution.⁴⁹ The heated political conflicts over the passing of the security bills not only highlighted the political fault lines affecting defense matters but also depleted Prime Minister Abe's political capital.⁵⁰ Such problems often exhaust the Japanese government's political-bureaucratic capital and its bandwidth for coming up with innovative and pragmatic solutions to pressing national security developments. The political environment in Japan needs to move beyond yes-or-no partisan debates to proper discussions of the means needed to achieve and sustain national security.⁵¹ Abe's latest proposal regarding constitutional amendment—keeping article 9 but adding a paragraph identifying the JSDF as the nation's defense organization—is quite moderate, yet debates over national security remain controversial.⁵²

Second, there are budgetary constraints on the financing of future major force and capability enhancements. Even though Japan has increased its defense outlays steadily to meet its readiness needs, issues remain. The current budget devotes 43.5 percent to "personnel and provisions expenses," while 41.1 percent is allocated to "base measures, etc.," which includes items such as community grants and host-nation support, as well as rent and compensation costs.⁵³ While high operational and maintenance costs are no surprise, Japan's defense budget remains highly constrained, the legacy of a previous, self-imposed 1-percent-of-GDP limit for defense expenditures. As Yuki Tatsumi argues, the recent budget increases mostly constitute an effort by the Japanese government to make up

for the impact of defense budget cuts imposed between FY2003 and FY2012.⁵⁴ Prime Minister Abe has stated that (at least under the current administration) the 1-percent-of-GDP cap no longer applies, owing to the imperative to strengthen the JSDF, and that capability demands will call for increases beyond that threshold.⁵⁵ Yet even so, realistically it will be challenging for the defense budget to experience major increases, particularly given Japan's current political-economic climate, with its other crucial agendas, such as "Abenomics" and social security programs. As long as Japan's defense budget maintains these current constraints, and particularly given the high costs of currently programmed equipment and munitions and domestic investments in R&D, future developments will need to take place through adoption of the most cost-efficient measures. Otherwise, it would be necessary to refine and, in some cases, to divest current assets to make budgetary space for high-priority investments.

Third, there are questions about future developments in Japan's military-industrial complex. The recently established ATLA will oversee key organs, such as the Technical Research and Development Institute and the Equipment Procurement and Construction Office, to ensure centralized management and processing of defense-related investments.⁵⁶ As part of the ATLA's Japan Defense Technology Strategy to "promote strategic initiatives to ensure technological superiority," the budget has highlighted projects such as a funding program named the Innovative Science & Technology Initiative for Security, as well as improvements in project-management programs and cooperation regarding defense equipment and technology.⁵⁷ The new measures purport to streamline and enhance the management of procurements and defense-related R&D. Yet, despite the progress, questions remain regarding whether actual production from the domestic defense industry will keep pace with the JSDF's growing capability demands, and whether the goods produced will be affordable within the tight budget constraints.⁵⁸ The easing of statutory arms-export restrictions will provide greater rationales for developing Japan's defense industry as a means of earning foreign revenue; however, while Japan's technologically advanced platforms may attract interest, its arms exports are hampered by their high price tags and the country's relatively recent entry into the defense market.⁵⁹

The Regional Dimensions

The impact of JSDF developments will depend on the nature of those developments and the various responses thereto of countries in the region. China and North Korea will tend to view any improvement in JSDF capabilities as a threat, leading to various response measures, which in turn will raise new questions for Japan's defense planning. Yet the largest question concerns Japan's role in the alliance with the United States and Japanese participation in other international

security initiatives. JSDF developments certainly will allow the Japan-U.S. partnership to operationalize better the contents of the 2015 “Guidelines for Japan-U.S. Defense Cooperation.” For example, the alliance continues to conduct complex missile-defense and ASW operations. Going forward, improvements in JSDF readiness would enhance significantly the alliance’s combined and coordinated capabilities and operations in the air and maritime domains.⁶⁰

Still, there is much to do, particularly in further enhancing ISR capabilities, interoperability, and the planning and conducting of combined maneuvers.⁶¹ Moreover, developments also are needed in the formation of “Japan+U.S.+X” trilateral (or larger) partnerships, with each arrangement having specific value in its own context; trilateral cooperation with the Republic of Korea is the most important and urgent to be considered. While political sensitivities long have undermined the prospects for partnership between Seoul and Tokyo, capability-based trilateral cooperation is essential for regional security and stability.⁶² Cooperation with select Southeast Asian states in the form of maritime security and capacity-building efforts also has shown signs of promise in recent years and should be enhanced. Japan owes its success in enhancing cooperation with its Southeast Asian partners to its contributions to the region through noncombat military operations.⁶³ Such efforts constitute evidence of the significant development of Japan’s international security role and reflect major progress in Tokyo’s relations in the Asia-Pacific.

Of course, as in other areas, there are dilemmas here. While growing challenges in regional security press Tokyo to adopt more-proactive defense postures and roles, developments toward an overtly offensive posture may trigger hesitation among Asia-Pacific states to work with Japan, particularly given the historical animosities that persist. And the larger issue is that developments in Japan’s defense posture could be perceived as changing the status quo—a factor that would impact the partner governments’ relations with China, including by weakening their claims of participating in strictly defensive-oriented cooperation for the sake of regional stability.

The issues at stake warrant that Japan should engage in additional constructive initiatives with regional stakeholders to provide assurances and ensure sustainable reconciliation. For much of its history, the “Asia component” has been a weakness in Japan’s diplomacy.⁶⁴ One important prerequisite for improving this area would be for Japan to minimize the profile of politicized and nationalistic historical issues to prevent critics from associating them with the essential present-day developments in the JSDF. Furthermore, Japan must continue to strengthen and promote the role it plays in regional dialogues (e.g., on arms control, export controls, codes of conduct, nontraditional security) and multilateral efforts to institutionalize cooperation and practice preventive diplomacy. Thus,

to prevent further deterioration in regional security, Japan's developments in defense readiness must be combined with continued efforts to expand opportunities for regional cooperation.

Regardless of whether the Japanese constitution is revised, the JSDF's essentially defensive orientation toward ensuring Japan's security will remain unchanged. Developments to date have not altered Japan's defense-oriented posture, and certainly have not revived the militaristic policies of the imperial years. Rather, recent improvements have focused on smoothing the operation of the mechanism that allows Japan to exercise the necessary capabilities for self-defense within the nation's strategic, political, and legal frameworks. Moreover, the developments further confirm that the JSDF is strong when measured within a context of close coordination with the United States and other like-minded states.

Still, Japan's defense planning is at a crossroads. While significant progress has been made in improving JSDF combat power and readiness, as reflected in the series of policy developments and upgrades of JSDF capabilities and force structure, it will be some time before these can be translated into actual ability to achieve air and maritime supremacy, particularly given the nascent nature of many operational and tactical doctrines, as well as continuing readiness challenges. And even if air and maritime supremacy is achieved, this is only part of the solution to the full range of Japan's defense challenges. Importantly, while Japan will need to refine further its operational and tactical doctrines to enhance the JSDF's future readiness, it also will need to harmonize its defense developments with constructive political processes and diplomatic measures if it is truly to ensure the country's national security.

NOTES

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LIFTING THE FOG OF TARGETING

“Autonomous Weapons” and Human Control through the Lens of Military Targeting

Merel A. C. Ekelhof

Autonomous weapon systems (AWSs) have generated one of the most heated recent debates about the laws of war and military ethics. The issue of autonomous weapons flows from the concern that human beings will lose control over the weapons they use, and hence no longer will be deciding matters of life and death. Consequently, most states, participants (e.g., elements of civil society), and commentators agree that autonomous weapons require some level of human control. Different terms are introduced to reflect the premise that humans should control or interact with the autonomous system; *meaningful human control*, *appropriate levels of human judgment*, and *intelligent partnership* are examples of this general concept. But there is no agreement on what these concepts mean, or what exactly should be subject to this control: the weapon itself, its critical functions, or each individual attack.¹

This article argues that, to gain a better understanding of what the concept of meaningful human control (by whatever name) means in a context of

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increasingly autonomous weapons, we should focus our attention first and foremost on what should be considered *targeting*. Military targeting practices within which this human control is, or ought to be, exercised should be the core of any analysis. The context within which these systems are used and human control is exercised is essential to determining what human-machine relationship we require, now and potentially in the future. Therefore, the article discusses

autonomous weapons through the lens of military targeting—more specifically, the targeting process.

There seems to be a considerable lack of knowledge and understanding about targeting among individual members of the public, as well as many groups that represent the public in some way, such as lawyers, nongovernmental organizations, political leaders, industry, scientists, and the press. This lack of knowledge about targeting is reflected in the discourse on autonomous weapons—which is where it becomes particularly precarious, because of repeated calls to regulate and limit military practices.² Although not all individuals engaging in the discourse on autonomous weapons need to understand targeting to the degree that military professionals should, the discourse would benefit profoundly from a more informed discussion regarding targeting practices, as this would provide insight into how the implementation of autonomous technologies will impact targeting decisions and human control.

This article will demonstrate that negotiating and exercising control occurs throughout the entire targeting process, and that introducing autonomous technologies into the process could lead to a loss of human control but does not inevitably do so. The manner in which a concept such as *meaningful human control* is interpreted depends on the context within which it is or ought to be applied; thus, how does the targeting process inform our discussion about control?

Answering that question requires first gaining a better understanding of what targeting is and what it is not. The first section of the article discusses the six-phase decision-making cycle that has developed over the course of history and has become embedded in the training for and execution of NATO (i.e., mostly Western) military operations; Western militaries refer to this as the *targeting process*.³

The second section of the article discusses one phase of the targeting process—phase 2: target development—in more detail. This detailed analysis serves two purposes: (1) It demonstrates the complexity of the targeting process, including the different layers of decision-making involved; while target selection may seem to be a straightforward task, it requires much more deliberate planning than a game of Whac-A-Mole, in which one simply attacks anything one considers a target. (2) It reconsiders what qualifies as a *critical function* of targeting. In the discourse on AWSs, critical functions are related to the weapon itself, and mostly are described as those that require human control in their execution, owing to their importance for targeting (i.e., their causal relationship to kinetic effects, and thus to potential death and destruction). Yet I argue that a critical function such as target selection is considered during multiple phases of the targeting process and need not have any direct connection to weapons use or kinetic action.⁴ Therefore, instead of focusing discussions on autonomous *weapons*—the

dominant approach of the past decade or so—we ought to be focusing on autonomous *targeting*.

Thus, the third section of the article addresses the development of autonomous technologies—not weapons (although practically any technology can be weaponized)—in the targeting process. There already are many ongoing military projects in the field of artificial intelligence (AI), machine learning, autonomy, and automation that can provide case studies on how these technologies affect the processes in which they operate and how that relates to human control.⁵ These developments appear to arise, first and foremost, within the intelligence branches of militaries, because of the massive increase in (and demand for) intelligence, in both quantity and quality, and because rapidly changing battle spaces demand accelerated decision-making. Although intelligence often is considered *targeting support*, it arguably can be said that intelligence personnel perform approximately 85 to 90 percent of targeting.⁶ Thus, the role of intelligence and the development and use of autonomous technologies for targeting will be discussed together in the third part of the article to determine how these technologies affect human control in the process and what challenges we can identify already.

The article's final section draws some tentative conclusions about how my approach informs the debate on human control. Autonomous technologies should not be conceived as replacements for humans; rather, their introduction to the targeting process changes the tasks and activities of human actors. On the one hand, humans might be able to increase their control, instead of losing it, owing to improved situational awareness and a better understanding of the operational environment. On the other hand, introducing autonomous technologies into the targeting process presents fundamental challenges, not only to military structures and the military mind-set, but most importantly to decision-making processes and the relationships between human actors and technologies in the targeting process. If these challenges are not considered carefully, the use of autonomous technologies for targeting could result in an unacceptable loss of control.

The article provides an in-depth analysis of military practices, procedures, and experiences that goes beyond that available from general, publicly accessible sources. It can be difficult for a civilian to gain access to materials concerning military targeting, owing to the obvious sensitivities concerning the subject and the resultant restrictions placed on related information. Nevertheless, I was able not only to access those documents but also to conduct field research by participating in conferences, targeting courses, and wargames; observing simulations and exercises; and conducting formal interviews and informal conversations with over fifty military practitioners. These practitioners came from different backgrounds, nationalities, command centers, and offices and represented a broad variety of experience in targeting; they included targeteers, operators,

military planners, intelligence officers, weaponeers, commanders, and legal advisers.⁷ This methodology was necessary to address the matter at hand, since to comprehend targeting one must go beyond doctrine and include the experience of military specialists. It is through the prism of their experiences that we can begin to understand the complexity of targeting, current targeting practices, and contemporary targeting dilemmas—such as the control issue that autonomous technologies raise.

The article thus provides an insider's perspective, yet is suitable for public release and relevant to both civilians and military practitioners. Its purposes are, first, to contribute to contemporary debates—primarily the discourse on autonomous weapons—through a critical and honest analysis of military targeting practices in light of the demand for and development of increasingly autonomous technologies for targeting; and, second, to provide a more holistic assessment of the effect of increasingly autonomous technologies on the human role within the targeting process, and the challenge of safely implementing these technologies while preserving human control.

TARGETING AS A PROCESS, NOT AN ACTION

Historically, *targeting* could be described essentially as the practice of destroying enemy forces and equipment. Classic targeting mainly focused on achieving victory through military kinetic lethal actions that were related directly to an enemy's military wherewithal. Targeting was primarily a tactical exercise, a process that was executed predominantly on the battlefield.

Examples of this interpretation of targeting still appear in daily news reports. Popular news sources such as Al Jazeera, CNN, the BBC, and Reuters regularly publish headlines such as "Netanyahu: Strikes in Syria Targeted Hezbollah Arms," "Air Strike on Mosque near Aleppo in Syria Kills 42: Monitor," and "U.S.: 'Jihadi John' Targeted in Drone Strike."⁸ For many, when confronted with awful images of bloodshed, the urge to point the finger too frequently triumphs over the need for a more measured, considered analysis of what actually occurred.⁹ Although it is difficult to generalize about the international media, such publications seem to adopt the historical approach to targeting, which focuses primarily on the effect of an attack. This tells us very little about contemporary targeting.

Arguably, targeting—in the contemporary meaning of the concept—did not evolve until the introduction of airpower in World War I.¹⁰ Today, targeting—after a long evolutionary process and enabled by technological developments—has developed into a practice that aims to achieve specified effects on and beyond the battlefield by means of not only classic kinetic lethal actions (e.g., employing bombs, guns, torpedoes) but also nonmilitary, nonkinetic, and nonlethal activities (e.g., financial effects, electronic warfare, psychological warfare, and

information operations; the Russian interference in the American election arguably could fall within this definition).¹¹ No longer did targeting aim to achieve effects on the battlefield only; it became increasingly important to achieve effects in all domains and on all levels—the strategic, operational, and tactical. Nowadays, it would be more appropriate to describe targeting as a decision-making cycle that is deliberate, not ad hoc; iterative; and methodical in planning actions against adversary targets to achieve the effects needed to meet strategic and operational campaign objectives.¹² This effects-based approach, with a particular focus on linking strategic-, operational-, and tactical-level effects, also is reflected in military doctrine, some of which is publicly accessible.¹³

In the following paragraphs this doctrine will be explored further, for two main reasons. First, if we continue to consider targeting according to the historical interpretation—as an isolated tactical act—rather than as a deliberate process, we will not be able to address effectively the control issue that technological innovation raises. Second, this “helicopter view” of the process is necessary to contextualize the next part of this article, which zooms in on phase 2 of the targeting process to give a detailed analysis of the different considerations, tasks, and decisions that are made within this phase. It should provide well-grounded knowledge on how Western militaries currently exercise human control in the process within which, ultimately, increasingly autonomous technologies already are or will be employed.

One of the most significant documents on targeting—a cornerstone in NATO targeting operations—is the NATO publication *Allied Joint Doctrine for Joint Targeting*, AJP-3.9. It provides a framework of principles, practices, and procedures, the clear understanding and acceptance of which are a prerequisite for NATO targeting operations.¹⁴ The publication aims to guide NATO military forces in their actions by explaining how targeting is planned, conducted, and assessed through six phases.¹⁵ Although aimed at guiding NATO military forces, this document also could and should be used to educate laymen, providing them with the (unclassified) information necessary to grasp sufficiently the practice of targeting.

While AJP-3.9 is the authoritative conceptual basis for joint targeting, it clearly states that “it requires judgment in application.”¹⁶ Targeting is contextual, and hence any document, doctrine, or rule book requires translation into the specific context. Much like the laws of armed conflict, this doctrine is to be interpreted by professionals to ensure careful application of its principles and procedures in the practical world. Hence, reciting the doctrine as part of this article would be of little use. To understand targeting practices, difficulties, and challenges, one must include the experience of military specialists. It is through the prism of their experiences that we can begin to understand current targeting practices—the complexity of targeting, as well as contemporary targeting dilemmas. I

will incorporate their voices as well as my own experiences gained in targeting courses, exercises, and conferences into the analysis of the targeting process in subsequent parts of this article.

AJP-3.9 defines *joint targeting* as the process that “links strategic-level direction and guidance with tactical targeting activities through the operational-level targeting cycle in a focused and systemic manner to create specific physical and psychological effects to reach military objectives and the desired end state.”¹⁷ More specifically, joint targeting can be described by the six phases involved (the number of phases can vary depending on the doctrine, but the steps are essentially the same). Together, these six phases form a cycle that may seem sequential but is, in reality, iterative and bidirectional; sometimes phases are achieved simultaneously, and they also can overlap.

Before this targeting process commences with the first phase and formal military planning is initiated, the North Atlantic Council (NAC), comprising permanent representatives of the member states, must decide that military intervention is required by issuing a NAC initiating directive.¹⁸ Once strategic-level assessments have been made, the NAC will provide the Military Committee (the senior military authority in NATO) with political guidance, overarching military objectives, and the desired end state for a campaign, including any constraints and restraints it wishes to impose. This guidance is the framework within which military operations can take place. The political guidance from NAC incorporates diplomatic, economic, and military considerations and is often very broad and vague.¹⁹ These political and strategic objectives and guidance include approved target sets, as well as possible priority targets called time-sensitive targets (TSTs).²⁰ This guidance is passed down to the joint force commander (JFC), who is responsible for the execution of the campaign.²¹ Then the targeting process commences.

Phase 1: Commander's Intent, Objectives, and Guidance

The impact of the political and strategic objectives and guidance will be experienced first in phase 1. The JFC must identify clearly, at the operational level, what is to be accomplished, under what circumstances, and within what parameters, while following the political and strategic objectives and taking into consideration any constraints and restraints imposed by the NAC and, if provided, the mandate. Because the JFC derives his or her military campaign objectives from the mandate of a particular operation, the political objectives should be unambiguously clear and well-defined to facilitate the development of feasible military objectives.²²

Once the military campaign objectives are defined, the first activity of the joint targeting process is to take these objectives, guidance (including restrictions with regard to collateral damage), and intent and further translate them into a number

of discrete operational tasks.²³ This is an iterative process conducted between the JFC and component commanders, one that allows objectives, tasks, and supporting target nominations to be developed on every level (i.e., both joint and component).²⁴ It ensures that each target can be traced back to clearly defined and attainable goals for military operations and, perhaps even more important, that everyone in the targeting process is aware of the objectives and guidance. But that is not always an easy task. As stated realistically in U.S. Air Force targeting doctrine, “It is easy for those caught up in the daily battle rhythm to become too focused on tactical-level details, losing sight of objectives, desired effects, or other aspects of commander’s intent. When this happens, execution can devolve into blind target servicing, unguided by strategy, with little or no anticipation of enemy actions.”²⁵

Hence, objectives and guidance are the cornerstone of the targeting process at each level. They should be clear, concise, measurable, and attainable, driving the targeting process effectively; but they may turn out to be vague and uninformed, presenting challenges throughout the targeting process.

Phase 2: Target Development, Validation, Nomination, and Prioritization

Phase 2 covers a range of separate but related activities that go into selecting and characterizing targets, as well as building the database of knowledge about those targets. Target development can be described most accurately as having roughly five functions: target analysis, target vetting, target validation, target nomination, and target prioritization.

As mentioned previously, the NAC passes down political-strategic guidance and approved target sets to the JFC. Even though these target sets are relatively broad, it is clear that the selection of targets is controlled top down and begins even prior to the commencement of the targeting process.²⁶ The essence and functions of target development will be explained in more detail in the next part of this article; for now, suffice it to say that the second phase identifies eligible targets that can be influenced to achieve the JFC’s objectives, and that the principal output is a joint prioritized target list.²⁷

Phase 3: Capabilities Analysis

Once the actual list of targets that can be engaged has been developed, the next step is to determine the right asset with which to engage each target.²⁸ *Capabilities analysis* is the process of analyzing the prioritized targets and matching to them the most appropriate capabilities, lethal and nonlethal, to generate the desired physical or psychological effects.²⁹

This phase has two elements that deserve further deliberation. First, capabilities analyses are sometimes referred to as *weapon engineering*. Weapon engineering is the process of determining the quantity of a specific type of lethal or nonlethal

means required to generate the desired effect on a given target.³⁰ What is the right asset (e.g., manned asset, remotely piloted asset, or standoff attack munitions) or weapon (e.g., Hellfire missiles, two-thousand-pound bombs, or nonlethal means) for engaging this target? Do we have enough of that capability? If not, is there perhaps another capability that can be substituted for it that still generates the desired effects?³¹ The output of weaponeering is a recommendation of the quantity, type, and mix of lethal and nonlethal weapons needed to achieve the desired effects while avoiding unacceptable collateral damage.³² It also can include precautions that must be taken to avoid, or at least minimize, incidental loss of civilian life, injury to civilians, and damage to civilian objects. This is the second element of phase 3, called a collateral damage estimation (CDE).

Issues related to collateral damage already may become apparent during target development, but they are considered more prominently during the capabilities analysis. CDE often is confused with weaponeering (and weaponeering with CDE). *Collateral damage* is the unintentional or incidental physical damage to noncombatants, nonmilitary objects, or the environment resulting from an attack.³³ It is estimated as part of the planning process so as to provide the commander with an estimation—not a certainty—of collateral damage to inform his or her decision prior to target engagement.³⁴ CDE plays a role in the proportionality assessment, as the commander will analyze whether the expected incidental civilian harm is excessive in relation to the concrete and direct military advantage anticipated.³⁵

Phase 4: Commander's Decision, Force Planning, and Assignment

During this phase, targeting instructions are communicated from the operational level to the tactical level. The JFC issues a final approval of the prioritized targets and decides on matching capabilities against these targets. Consequently, the JFC assigns these targets to the different components for further planning and execution.³⁶

Any relevant constraints and restraints, whether strict or lenient, that emerged during these four phases are passed on to the assigned unit.³⁷ Although execution is assigned to different components (referred to as “decentralized execution”), the desired objective of the campaign remains centrally controlled.

Phase 5: Mission Planning and Execution

This phase deals directly with the planning and execution of tactical activities. Now that the prioritized targets have been assigned to the various components, the detailed mission planning will be performed for the execution of operations. Tactical-level planners will take similar steps to those described for phases 1–4, but on a more detailed level. Assessments in this phase take into account operational and legal standards, including the obligation to take feasible precautions

in attack.³⁸ The component commander receives the prioritized targets on which he or she will be conducting further mission planning and, eventually, execution. Once the mission planning has been completed, execution can commence.

Mission execution follows a number of logical steps. This process is referred to most commonly as the F2T2EA cycle, which stands for “find, fix, track, target, engage, and assess.”³⁹ It is during this phase that the selected lethal or nonlethal means will be used. Hence, when debating autonomous weapon systems and the critical functions of these weapons, this is the phase focused on most. Before the mission-execution phase, weapons use has been contemplated, but no weapon yet has been launched, fired, released, or used in any manner.

In the historical approach—which perceives targeting as the achievement of kinetic effects on the battlefield—focusing on this part of the process would make perfect sense. However, in contemporary targeting procedures, weapons use is far from the only critical function of targeting. Other decisions and tasks within the targeting process are particularly relevant to the discourse on autonomous weapons, and therefore warrant even more attention. Hence, after brief consideration of the final phase of the process, the next part of this article illustrates this by providing a detailed analysis of phase 2, during which target development takes place—arguably the actual critical function of target selection.

Phase 6: Combat Assessment

The assessment seeks to evaluate the effectiveness and lawfulness of executed operations and aims to guide future operations. If targeting was no more than dropping munitions on targets, then a battle damage assessment would entail little more than taking a closer look at the target to see whether the munitions exploded on the correct coordinates.

However, most of the time effects are not easy to observe; for example, the destruction of a plane as a direct effect of an attack on an airfield—as part of simultaneous attacks on all the assets of an adversary’s air-defense system, aiming to, over time, degrade the legitimacy of the regime by portraying it as incapable of protecting the populace—would offer no easy assessment.⁴⁰ Although the munitions’ effect can be assessed relatively easily, the change of popular attitude is unlikely to be measurable until it is reflected in the target’s behavior, and even then it is extremely difficult to conduct measurements of effectiveness.⁴¹

For similar reasons, it also may be difficult to assess the lawfulness of the operation. Collateral damage may not always be apparent, particularly in air campaigns; it might require ground-based assessments to acquire the necessary information about the weapon’s effects on the target and its surroundings.⁴²

Either way, the results of these assessments feed back into phase 1 so that goals and tasks can be adjusted accordingly.

A DETAILED ANALYSIS OF PHASE 2 OF THE TARGETING PROCESS: TARGET DEVELOPMENT

Considering all six phases of the targeting cycle, phase 2 (target development, validation, nomination, and prioritization) is one of the more extensive phases, particularly in terms of time and resources and the involvement of different command levels. Target selection is controlled top down as the NAC passes down (from the political-strategic level to the operational level) approved target sets; targets might include ground forces and facilities, air defenses, ballistic missiles, military supplies and storage facilities, and military or political leadership.⁴³ Target sets even can include civilian installations, but these may be targeted only if they qualify as legitimate military targets in accordance with the law of armed conflict and relevant international law.⁴⁴

Clearly, these target sets are still very broad; hence they require further development in phase 2 of the targeting process. As mentioned previously, phase 2 covers a range of separate but related activities that go into selecting and characterizing targets, as well as building the database of knowledge about those targets. The five functions of this phase listed earlier—target analysis, vetting, validation, nomination, and prioritization—will be discussed individually in the paragraphs below. However, the reader should keep in mind that they are closely related and in practice not easily separable.

Target Analysis

During target analysis, the most relevant targets linked to strategic and operational objectives are identified together.⁴⁵ Once the commander's guidance is received, the target system analysis (TSA) process begins.⁴⁶ The TSA is a foundational part of the target-development process, as it enables additional, more detailed stages of target development; potential targets are derived from the TSA process.⁴⁷

TSA products are intended to provide a comprehensive and holistic assessment of an entire target system so that, ultimately, they enable planners to comprehend a target system's functions, capabilities, requirements, and vulnerabilities so they can provide recommended targeting strategies.⁴⁸ The TSA thus yields understanding of how components of the enemy system interact and how the system functions as a whole. This includes physical, logical, and complex social systems, as well as the interactions among them. The TSA approaches targets and target sets as systems (in keeping with what is known as a system-of-systems approach) to look at interdependencies and determine vulnerabilities between systems and exploitable weaknesses that, if disrupted or affected in a specific manner, will create effects that achieve the commander's objectives.⁴⁹ It, thus, looks beyond the characteristics of a single target; a target's real importance may lie in its relationship to other targets within a particular operational system.⁵⁰

This is an incredibly challenging task that can take up many months and may require expertise that goes beyond that normally available.

Consider the task of conducting a TSA for an oil refinery. If you strike the wrong point, the effects may be devastating. For instance, kinetically attacking an oil refinery might ignite a large fire, causing additional risks to the population and damaging the refinery beyond repair. Even aside from the high risk of collateral damage, the costs of striking the refinery itself may be extensive since, essentially, “you buy what you break.”⁵¹ An alternative approach might be to strike the oil refinery using nonlethal means. Now you need not only experienced targeteers plus someone with extensive knowledge of the oil refinery you intend to strike, but also experts on nonlethal targeting (an expertise that is still relatively rare in NATO).

In short, certain targets require more time and expertise to plan for than others. But in any case, TSA is a lengthy process that can take many months, and hence should begin well in advance of operations—preferably in peacetime.⁵² Therefore, strictly speaking, TSA might not be considered part of the targeting process, since the targeting process (within NATO, at least) does not commence until the NAC determines that military intervention is required and issues its guidance and objectives. According to a senior defense analyst at the Pentagon, this is far too late for a true NATO emergency such as a surprise invasion of the Baltics or Poland; as a result, NATO always will be behind the power curve unless planning can be done earlier, with approved, clear draft objectives already developed well in advance for particular scenarios.⁵³

However, it is politically sensitive to conduct target system analysis on nations with which you are not currently in conflict.⁵⁴ This restricts the ability to conduct TSAs on a national—but mostly a NATO—level, impairing the preparation process from an intelligence perspective. This could mean that at the start of an operation there would be no, or very few, prepared targets to strike. As a result, forces might run out of prepared targets within the first few days or weeks after the initiation of hostilities and be forced into a mode of primarily reacting to unanticipated events. At that point, targeting could turn into a game of Whac-A-Mole. Fortunately, there are ways to conduct TSAs on an individual national level so that, once a NATO operation begins and the coalition commences the planning process, nations can contribute their information to an integrated database, although often with strict limitations. Other opportunities to enhance the planning process lie in the technological domain, which will be addressed later.

Target Vetting

Target vetting assesses whether the intelligence used to develop the target is correct and ensures that the target performs the specified function for adversaries

or other actors.⁵⁵ Consequently, intelligence for target development needs to be updated and refined continually, making target development an ongoing process rather than a discrete task.⁵⁶ Although this may seem a relatively easy task—a mere “checking” of the target intelligence—the importance of this task must not be underestimated. As previously explained, target analysis can take a long time. It is therefore important to vet all the targets before they can be nominated for engagement. Not doing so could lead to inadvertent engagements and violations of the laws of armed conflict.

Target Validation

Target validation ensures that the vetted targets are in line with the JFC’s objectives and desired effects, that they are in compliance with relevant international law and policy, and that the all-source analysis used to develop the targets is accurate and credible.⁵⁷ During the process of target validation, certain questions are asked. Does the target meet the JFC’s objectives, guidance, and intent? Is the target consistent with the laws of armed conflict and the rules of engagement? Is the desired effect on the target consistent with the desired end state? Is the target politically or culturally sensitive? What are the risks and likely consequences of collateral damage? What are the consequences of *not* attacking the target?⁵⁸

Finally, during target validation targets also are coordinated and deconflicted with other operations. Coordination with many other agencies and activities may be necessary to prevent friendly-fire accidents, collateral damage, or propaganda leverage for the enemy.⁵⁹ Coordinating operations, integrating joint fires, and ensuring deconfliction are all parts of a complex process, especially in a coalition in which national caveats, rules of engagement, a low tolerance for collateral damage, political constraints, and various legal issues must be taken into consideration on a multinational level. This is not even to mention the challenges that arise out of the collaboration among and organization of numerous actors from different military branches and services, and in joint operations from different nations, resulting in a conglomeration of cultural, organizational, educational, and linguistic differences.

Target Nomination

Once potential targets are validated, they are nominated by components (air, land, maritime, and special ops) for approval via the joint coordination process and identified to be included and prioritized within the joint target list (JTL).⁶⁰ The JTL is the master list from which all other lists are produced; the joint prioritized target list (JPTL), restricted target list, and no-strike list are all subsets of the JTL. The JTL provides all known targets within the NAC-approved target sets considered for engagement. That does not mean, however, that all targets on

the JTL are already selected for engagement; they still need to be cleared against the rules of engagement, NATO caveats, and relevant international law.⁶¹ For example, the principle of distinction plays a vital role in this phase, to ensure that offensive action is directed only against military objectives and combatants, making a clear distinction between them and civilian objects and civilians.⁶²

Target Prioritization

The final clearances discussed above take place during target prioritization, of which the principal output is the JPTL. Targets on this list have been legally scrutinized, risk assessed, and validated and prioritized in line with the JFC's desired effects and guidance. Before targets are placed on the JPTL, they are presented and discussed in target working groups and boards.

The short version of this process is as follows: Targets are developed and reviewed multiple times by many different staff and different commands in the Joint Targeting Working Group. Once fully developed, these targets are presented to the Joint Targeting Coordination Board, which typically consists of functional advisers (e.g., legal, political, information-operations, and electronic-warfare advisers, as required), representatives of the different components (land, maritime, air, and special operations), national representatives, and the commander.⁶³ Different military representatives (e.g., the chief targeteer, legal adviser, director of operations) will provide the commander with the relevant information. In the end, the commander will decide whether to approve the presented targets and place them on the JPTL, or disapprove or suspend them (e.g., owing to a lack of intelligence). The JPTL includes the proposed means of prosecution (lethal or nonlethal) and the components responsible for engaging the targets (including recommendations covering intelligence collection and additional weapons restrictions relating to collateral damage estimation analysis).⁶⁴

Because targets and the environment within which they are located change continually and because military planners never will know everything there is to know about a target or a target solution, target development is an ongoing process. The process takes time: to enable proper planning and to perform course checks, legal reviews, proper target vetting, and more.⁶⁵ An experienced targeting professional comments, "More time has not always equated to greater success, but nearly any U.S. or NATO targeting planner would see it as a significant plus."⁶⁶

As important as time, or perhaps even more important, is the intelligence that supports target planning; the indispensable role of intelligence and the importance of time deserve separate attention. As part of that discussion, the paragraphs below elaborate on autonomous technologies for targeting, with a specific focus on the intelligence branch and its role in target development.

AUTONOMOUS TECHNOLOGIES FOR TARGETING

Although autonomous *weapons* have sparked serious debates about human control over the past five to ten years, autonomous *technologies*—some of which are even weaponized—have been part of military processes for much longer. They range from simple algorithms that support calculations to complex autonomous technology that is used in modern unmanned combat aircraft (not to be confused with “regular” remotely piloted aircraft systems, commonly known as *drones*).

An illustration of the former is the Capability Analysis Tool, an automated weaponeering system that provides the standard automated methodology for estimating the employment effectiveness of most nonnuclear, kinetic weapons.⁶⁷ Another example is the software program called DCiDE, which is used for estimating collateral damage.⁶⁸ Examples of an application of complex autonomous technology in military systems are the American X47-B and the comparable British system called Taranis, the Russian MiG Skat, the European nEUROn, and the Chinese Anjian. These are unmanned combat air systems that can autonomously perform complex tasks, such as taking off from and landing on an aircraft carrier, conducting midflight refueling, and taking evasive maneuvers. Some of these systems are said to be capable of automatically identifying and targeting a threat as well, after which the system will send the data back to a human operator to be verified and to (dis)approve the engagement.⁶⁹ Autonomous behavior is inherent in many defensive responses, such as defensive cyber autonomy and defensive countermeasures in airplanes. Examples include aviation electronic systems that respond immediately to jamming indications, up to and including the deployment of defensive countermeasures, such as releasing chaff and flares, with the aircrew only flicking a “consent” switch at the beginning of the mission.⁷⁰ Additionally, defensive systems that can operate in a fully automated mode to engage preprogrammed threats such as incoming missiles already have existed for decades. Examples include the American Phalanx close-in weapon system and well-known defensive ground systems, such as the surface-to-air Patriot missile battery and the Israeli Iron Dome; all can autonomously perform their own search, detect, evaluation, track, engage, and kill assessment functions to defend ships or ground areas against fast-moving and highly maneuverable threats.⁷¹

However, in circumstances of self-defense, no elaborate targeting process is used to engage the target. There is reduced planning time and fewer policy constraints. Therefore, situations of self-defense are not an adequate reflection of targeting, and hence autonomous systems that are used for self-defense are not included in this analysis. The scope of this article is limited to the tasks and decisions that are made within the targeting process and are or could be considered critical functions of targeting. Consequently, the previously mentioned unmanned combat air vehicles that can autonomously perform tasks that generally

are considered less critical (e.g., those that relate to flight or navigation) also will not feature in the analysis that follows.⁷²

Examples exist of both complex and relatively simple technologies that play a role in the targeting process. Sometimes these technologies are called *automated* or *autonomous*; sometimes they are described as *learning*, or as representing some other form of *artificial intelligence*. Interpretational issues are at the heart of this debate. The meanings of these technological and sometimes even philosophical terms are far from settled; they can have diverging meanings within different disciplines and in different contexts, and most of them are just inherently complex.⁷³ I am under no impression that this semantic dispute can and should be solved here and now. Therefore, I will refer to all these technologies (irrespective of whether they are considered automated, learning, autonomous, or some other form of AI) as *autonomous technologies*. Regardless of what type of technologies are already existent or under development, the principal concern should be to consider these technologies within the decision-making processes within which they will be used; how we as humans decide to deal with these technologies is more important than debates about the technologies themselves. In the paragraphs that follow, for each technological development discussed, the relevant context of targeting will be clarified so the impact of the technology can be assessed within an analysis of the process by which it will be used.

The Indispensable Role of Intelligence

Intelligence plays a role in each phase of the targeting process. In some, intelligence takes the lead (e.g., target development); some phases involve a mix of intelligence and operations (e.g., weaponeering); and in others the intelligence role is one of true support (e.g., force planning and assignment or monitoring tasks).⁷⁴

Most often, intelligence is described as providing targeting support. This is a correct statement; however, it does not do justice to the real value that intelligence provides to the targeting process. Generally, the most important role of intelligence in targeting is to provide commanders and their staffs with analysis of key aspects of the operational environment to assist them in their decision-making process.⁷⁵ As mentioned above, although this role may seem merely “supportive,” some estimate that targeting is 85 to 90 percent an intelligence job.⁷⁶ Irrespective of whether these percentages accurately reflect the actual role of the intelligence branch, it is clear that intelligence plays a vital, continuous, and often decisive role in the targeting process.

The value of intelligence has been an ever-present subject in military discussions. Sun Tzu wrote that if you know the enemy and know yourself, in a hundred battles you will never be defeated.⁷⁷ George Washington agreed: “The necessity of procuring good intelligence is apparent and need not be further argued.”⁷⁸

Throughout history, no one indeed has seemed to argue the point, although Clausewitz was somewhat critical, writing, “Many intelligence reports in war are contradictory; even more are false, and most are uncertain.”⁷⁹ From these observations it can be concluded that intelligence is of great importance, but good-quality intelligence can be hard to come by. In addition, having more intelligence at one’s disposal does not guarantee strategic success. The quality of intelligence matters at least as much as the quantity.⁸⁰

About fifteen years ago “[w]e moved from ‘Industrial age’ to ‘Information age’ targeting . . . as the combination of new aircraft that could carry large numbers of smaller precision-guided weapons, better and more multi-source intelligence, and the ability to pass dynamic target updates from multiple sensors to airborne aircraft in minutes vastly increased the number of targets that could be struck on a given mission,” says Lieutenant General John N. T. “Jack” Shanahan, Director for Defense Intelligence (Warfighter Support) at the Office of the Under Secretary of Defense for Intelligence.⁸¹ The transformation to the information age implied, and became manifested in, information becoming the driving factor in warfare.⁸² The advent of unmanned vehicles carrying improved sensors not only increased transparency on the battlefield but also enhanced the precision of weapons systems and the speed of command by compressing the time to complete decision-making loops.⁸³

This capability increased the demand for intelligence for targeting, while concurrently the use of these unmanned platforms vastly increased the amount of data produced. When this was combined with increases in other types of data—most significantly, the data from open sources such as the Internet—analysts began to be overwhelmed by the constant flow of vast amounts of data, which made it impossible for them to analyze it all and convert it into information and intelligence.⁸⁴ Simultaneously, battle spaces are changing rapidly and contested areas demand accelerated decision-making—now, and likely even more so in the future.

Practice has taught us that, whether referring to NATO as a whole or to individual member states, current targeting enterprises are not prepared to handle the demands of future conflicts, beyond perhaps a counterterrorism or contingency operation that is limited in both scope and scale. NATO member states learned in the Balkans in the late 1990s, in Libya in 2011, and again at the beginning of Operation INHERENT RESOLVE that it is far too easy to overestimate targeting capacity, and as a result to run out of prepared targets to hit within days or at most weeks of commencing an operation. To bring NATO’s targeting capacity up to speed and solve the multiple challenges the organization is facing today, nations cannot simply throw more people at the problem. Although having more and more-experienced personnel would definitely improve targeting, it will not

be nearly sufficient. As General Shanahan explains, “The reality is that the supply will never equal the demand. Not now. And definitely not five years from now.”⁸⁵ The U.S. Joint Chiefs of Staff also acknowledged this in *Joint Vision 2010*, which explained that “instead of relying on massed forces . . . , we will achieve massed effects in other ways. Information superiority and advances in technology will enable us to achieve the desired effects.”⁸⁶

So if human personnel—even assuming they have the requisite expertise—are not expected to be sufficient to solve the problem, autonomous technology becomes a major driver. This has caused militaries worldwide to invest in these technologies for military purposes.⁸⁷

Artificial Intelligence for Intelligence

Militaries recognize that, among other benefits in both the intelligence and operations fields, technology enables commanders and their staffs to access—sometimes in near-real time—large amounts of intelligence about the operational environment, which can assist them in planning, deciding on, and executing an attack effectively and in accordance with the relevant law and policy. The technology also enables analysts to convert raw data into actionable intelligence that can be used for targeting. Hence, intelligence is of the greatest value when humans and technology join forces. In this information age, the intelligence branch seems to be one of the first military disciplines to experience the effects of this technology on both the quantity and quality of its work—both positively and negatively.

Although the massive increase in data available might seem a positive development, the positive results remain limited if the data cannot be processed for use. With over 1.8 billion images captured on mobile phones daily, we can speak of a real data explosion.⁸⁸ Last year, Cisco (a company that provides Internet traffic forecasts) presented a white paper claiming that “[i]t would take an individual more than 5 million years to watch the amount of video that will cross global IP [Internet protocol] networks each month in 2020. Every second, nearly a million minutes of video content will cross the network by 2020.”⁸⁹ This estimate covers all IP traffic, not just the data relevant to military operations; even so, open sources are becoming an increasingly relevant data source in modern operations. Furthermore, information overload is also experienced through other intelligence sources that are strictly military. For example, the amount of full-motion video (FMV) produced by unmanned aerial vehicles (UAVs) has risen sharply over the past ten to fifteen years. The amount of footage from 2008 already would take a single human being—who never slept or blinked—twenty-four years to watch.⁹⁰ Analysis of all this material is performed by hundreds of young military personnel, mostly Air Force airmen at present, but increasingly soldiers, sailors,

and Marines who view each video as it comes in.⁹¹ Yet even then only a small amount of the data (10–15 percent) can be processed.⁹² The estimate of footage from 2008 already made people wonder: How long will humans be used to review these videos? Today, almost a decade later, very little about this manual process has changed, even though technology has continued to evolve, thereby amassing more and more data—without assisting in the processing, exploiting, and disseminating thereof. Presently, monitoring, messaging, and reporting on one FMV feed from a single UAV takes a minimum of three military technicians (not counting additional personnel for supervision, maintenance, and the like).⁹³ This is a strenuous, labor-intensive effort that would be more effective if supported by technology.

This is one of the reasons the U.S. Department of Defense (DoD) established the Algorithmic Warfare Cross-Functional Team (AWCFT), also known as Project Maven. The overall aim of this team is to accelerate DoD's integration of AI, big data, and machine learning across operations to maintain advantages over increasingly capable adversaries.⁹⁴ Its first task is to field technology to automate processing, exploitation, and dissemination (PED) for theater- and tactical-level UAVs collecting FMV in support of the Defeat-ISIS campaign.⁹⁵ Currently, analysts spend 80 percent of their time doing mundane administrative tasks associated with staring at FMV (e.g., look, count, characterize) and typing data manually into a spreadsheet.⁹⁶ Although it is necessary to conduct such tasks, commanders and Pentagon leaders do not consider them a good use of their analysts' time.⁹⁷ So instead, they are introducing autonomous intelligence processing to help reduce the burden on the human analysts, augment actionable intelligence, and enhance military decision-making.⁹⁸ An example would be technology that can identify relevant activity and then label the data. It is a small portion of what General Shanahan—the man tasked with finding the new technology—expects the project will be able to accomplish in the future, but it is a first step that is necessary to demonstrate the utility of AI for targeting.⁹⁹ “You have to go after a manageable problem, solve it, show early wins and then start to open Pandora's box and go after all of these other challenges across the department,” says Shanahan.¹⁰⁰

One of the main challenges that could be tackled next is the automation of TSAs.¹⁰¹ As mentioned previously, conducting TSAs is a very critical task—potential targets are derived from them—but it is also very complex and time-consuming. Target systems such as air-defense forces, lines of communication, enemy leadership, and ideology exist and operate within a complex system-of-systems context having numerous interrelationships and dependencies that may not be readily apparent, may require analysis of large amounts of data, and may not conform to preconceived notions and biases.¹⁰² TSA therefore requires thorough analysis of a broad variety of intelligence sources and rigorous objectivity

to reveal vulnerabilities in one seemingly unrelated system.¹⁰³ In addition, this needs to be a continuous process to enable adjustment to dynamic circumstances. This is even more difficult when combating insurgents; for example, a hospital may be used as a command center, but a week later the command center may have moved and the local population may have begun to reinhabit the facility.¹⁰⁴

Thus, TSA constitutes a substantial task—and with the limited number of targeters that Western armed forces, particularly NATO, have now, it is almost impossible to perform. This would be even more problematic in a scenario in which NATO was at war against a near-peer opponent. As stated previously, states cannot bring NATO's targeting capacity up to speed and solve the multiple challenges the organization faces today simply by throwing more people at the problem. Autonomous technology, however, could speed up the process, processing large amounts of data so as to discern interrelationships and dependencies that human beings would fail to recognize. Additionally, AI is expected to play a vital role in planning; it would make it possible to run hundreds, or even millions, of simulation exercises to understand the potential effects of actions against targets across a given network.¹⁰⁵

Because the TSA process not only entails the objective assessment of data for generic target system analysis but also recommends targeting strategies tied to the commander's objectives and guidance, any autonomous technology conducting this process would have to be capable of performing complex assessments or assisting a targeter in doing so. So far, no such military technology is in use, but the importance of TSA for target development, and targeting more broadly, and the many ways in which autonomous technologies could support the process mean that TSA is an area that soon could see demands for, or even application of, autonomous technologies.

A different, but similar, project of the U.S. Intelligence Community focuses on finding mobile missile launchers, then flagging them for analysts anytime they transition from a benign to a threatening posture. Basically, this means that the program must be taught what "normal" looks like to be able to flag the difference. According to former U.S. Deputy Secretary of Defense Robert Work, this type of automation could prove most beneficial at the National Geospatial-Intelligence Agency (NGA), which gathers images from America's satellites, analyzes them, and feeds the information to the military and the Intelligence Community for targeting and other purposes.¹⁰⁶ The NGA also deals with datasets so large and complex that they are difficult to process using traditional data-processing applications (so-called big data). To conduct tasks such as making maps, knowing the environment, and navigating the planet, as well as understanding activity, threats, and changes, the NGA too is exploring technological solutions. For example, the NGA is developing a software program that can

determine a geolocation from a picture that was taken of the area of interest. This technology would enable faster searches of the data to determine a subject's location.¹⁰⁷ In practice, this could mean that a social-media picture of an area in which, say, a missile launcher is identified could be used to search through massive amounts of data to determine the location of the launcher within minutes (depending on the search box).

These types of technologies are often neglected in the discourse on autonomous weapons owing to the fact that they are not weaponized.¹⁰⁸ However, to disregard such technologies would be to ignore their potential. These technologies will be vital for target development; in particular, they will be closely connected to target selection, since the actionable intelligence produced by the human-machine collaboration very well could result in targets being selected for engagement on the battlefield. These technologies are designed to give the military a better understanding of what is happening on the battlefield, helping humans to react more quickly than their adversaries, thus giving them a better chance to win a war—or, better yet, to deter an enemy from attacking at all.¹⁰⁹ Automating decisions that have a direct causal link to weapons release might be most sensitive—authorizing machines to kill humans is “a bridge too far” for most political and military leaders—but technologies that can have a substantial effect on which specific targets end up on the approved target list or technologies that determine what data humans see and how they should conceive the battlefield can be just as influential, potentially even more so.

Consider the effect of autonomous technologies that decide, out of large amounts of data, what specific data to show to their operators and what data to ignore, thereby influencing or shaping situational awareness. Another consideration relevant to assessing human control in the targeting process would be the effect of data labeling on target selection. What labels are being applied (e.g., *weapon*, *attack*, *combatant*, *hostile intent*)? And how is this information presented to the human; is there a risk of either automation bias toward or mistrust of the system? One step further would be for target-support systems to suggest specific targets for engagement. Although a human being still would make the final decision to approve or disapprove a proposed attack, the role that autonomous technologies would have in target selection no longer can be ignored.

More importantly, if we fail to consider these types of technologies for intelligence tasks and the manner in which they are implemented within the military architecture, we risk losing a valuable opportunity to examine potential ways to manage them. A lot is being said about what the fight looks like now and what it will look like in the future, but too little time is being spent on the middle piece—the actual steps necessary to get there.¹¹⁰ The aforementioned projects constitute such steps; they are the first attempts at integrating autonomous technologies

into existing military architectures and processes—specifically the targeting process. It is vital that we learn from these first attempts, understand the challenges they raise, and anticipate the ramifications thereof, because the next steps certainly will seek ways to expand the use of such technology into areas beyond intelligence.¹¹¹

THE CONTROL ISSUE—NOW AND IN FUTURE TARGETING

In view of the targeting process and surveying current developments in the field of autonomous technologies for targeting, a few main tentative conclusions about the control issue can be drawn. These conclusions relate to implementing and incorporating autonomous technologies in (1) the military mind-set, (2) military structures, and (3) decision-making processes. These areas of concern are expected to be collectively relevant to solving the control issue.

However, as this article focuses on the targeting *process*, the next part of this analysis will focus primarily on the effect of implementing autonomous technologies into that process. But before beginning this concluding analysis, let me briefly address the challenges that arise out of implementing autonomous technologies into the military mind-set and the military structure.

Changing the Military Mind-Set

The military is well-known for its focus on hardware such as aircraft, satellites, missiles, and other platforms and munitions. But advanced software technologies are becoming more and more crucial to the success of today's military. As a U.S. Air Force general explains it, "The B-52 lived and died on the quality of its sheet metal. Today our aircraft will live or die on the quality of our software."¹¹²

Currently, there is a wealth of potential innovation in the commercial sector that the military (at least Western, particularly U.S., armed forces) finds difficult to identify and introduce into the defense system.¹¹³ If military services want to take advantage of technological developments in the commercial field, they will need to be fast and agile in identifying and incorporating emerging technologies, as these commercial developments will be equally exploitable by many other states and nonstate actors. This is a challenge for an institution that takes a slow and deliberate approach to the acquisition and fielding of technologies.¹¹⁴ Furthermore, there is a need for militaries to change from having a hardware mind-set—a platform-centric innovation and acquisition process—to being software-minded and understanding the potential contributions and risks that autonomy and AI can bring to military missions.¹¹⁵

This will require a fundamental change in mind-set, one that will be most difficult to achieve; military historian Basil H. Liddell Hart famously observed that "the only thing harder than getting a new idea into the military mind is to

get an old one out.”¹¹⁶ Even though the military’s mission likely will never be fully compatible with the commercial culture—which defense analyst Peter Singer describes as “fast, flat in structure, and happy to fail and fail rapidly”—the ability of militaries to take risks and adapt will prove critical to retaining a military edge in this new environment.¹¹⁷

Dealing with the Military Structure

Transitioning from a hardware mind-set to a software mind-set will require some significant changes to the military structure, as any step in the process would need to be implemented across military branches to promote interoperability and effectiveness. However, military organizations often are very “stovepiped” and disjointed in structure. By way of illustration, a Pentagon official from the Joint Staff Targeting Division explained that when DoD acquires new software it generally is not compatible with the existing system.¹¹⁸ Continuing, he noted that every geographical combatant command (known as CENTCOM, EUCOM, AFRICOM, etc.) has different architectures and can be developing tools to improve these architectures independently.¹¹⁹ Thus, different developments are occurring at different commands and within different services because they use different base systems that are not compatible with another service’s or command’s systems.¹²⁰

According to Dr. Bernadette Johnson of the Defense Innovation Unit Experimental, “Part of our problem is a legacy problem of the historical foundation of our independent services, and if we were a fresh brand-new country standing up today then we wouldn’t design the military in the way that we currently have it.”¹²¹ Clearly, this existing military structure makes implementing new technologies across the board and achieving interoperability difficult.¹²²

The Effect on Human Control in the Targeting Process

The third area of concern—but the primary one of this article—that should be considered when implementing autonomous technologies is the process within which these technologies operate. Current discussions focus on autonomous weapons and ignore the type of autonomous technologies that this article discusses. One of the reasons for this exclusive and narrow focus on weapons and the platforms that carry them seems to be that, like intelligence, these autonomous technologies are considered to have “supporting” functions, implying that they support but do not replace a human decision. As a result, it is expected that a human being remains accountable for any violations of the applicable law, policy, or military ethics.¹²³ Also, the level of risk in the event that the technology makes a mistake is considered to be lower because the human will act as the ultimate decision maker.

Nevertheless, it should be noted that even if these technologies are playing a supporting role, and even if a human being ultimately makes the decisions,

the technologies can influence critical targeting decisions—which could be both positive and negative. On the one hand, autonomous technologies could be beneficial, for example, in terms of speeding up the process and processing large amounts of data to discern interrelationships and dependencies that human beings would fail to recognize. Western armed forces are struggling to keep their targeting capacity up to speed, and the complexity, scope, and scale of the targeting process mean that mistakes happen. Autonomous technologies provide opportunities to improve this process and its results. On the other hand, implementing these technologies in the targeting process gives rise to additional and new challenges with regard to human-machine interfaces, (incompatible) ethical frameworks, trust issues, training, and more. These are all fundamental discussions that influence the manner in which the control issue is perceived. Although solving all of them is beyond the scope of this article, some operational effects can be identified that are relevant from a human-control perspective.

With the targeting process as the reference framework, one could conclude that an effect of using increasingly autonomous technologies for targeting is that human actors and technologies are becoming part of a long chain within which decisions made by one link in the chain almost definitely will affect the control or limit the decisions of others in the chain.¹²⁴ In short, implementing autonomous technologies will affect the control that human actors further down the chain (i.e., within the targeting process) can exercise. This could result in a shift of responsibilities that, for example, might generate an increase in responsibilities for certain superiors or the developers of systems, but also could result in a lack of accountability if the effects of implementing these technologies are not considered adequately before the technologies are introduced into the process. (This issue is also closely related to the military structure.)

Even without autonomous technologies, the targeting process is an inherently complex process within which many individuals make numerous decisions on a daily basis. Hence, responsibility for critical decisions typically is spread across the entire process. On the one hand, this provides multiple opportunities to exercise control and apply checks and balances. On the other hand, it should be no surprise that such complex processes—within which a conglomeration of cultural, organizational, educational, and linguistic differences are at play—are prone to human errors. Mistakes are made; the question is whether autonomous technologies can reduce these mistakes or ultimately will cause more, or perhaps different, mistakes.¹²⁵

Furthermore, it should be noted that the use of autonomous technologies *changes the activities* of human actors; such technologies do not simply *supplant* the human beings, who simultaneously relinquish all the responsibilities and

control they exercised previously.¹²⁶ To the contrary, the proper use of autonomous technologies may lead to improved situational awareness and a better understanding of the operational environment that may even enable human beings to enhance their control. Nevertheless, this is not without risk; the redistribution of existing tasks and the creation of new ones change the relationship between human actors and technologies, which can give rise to a transformation in decision-making processes.¹²⁷ If these transformations are not considered thoroughly, the use of autonomous technologies could ultimately result in an unacceptable loss of human control. Whether humans remain in control of critical targeting decisions depends on how well they succeed at creating a framework within which this control can continue to be exercised alongside the use of increasingly autonomous technologies.

So far, no state has addressed these concerns comprehensively and effectively. However, some first attempts at creating a framework can be observed on the current political landscape, where a significant number of states seem to be open to prescribing self-imposed restrictions on the development and use of autonomous weapons, with specific reference to human control.¹²⁸ In fact, some states already have gone one step further and implemented certain requirements in their national policies. The U.S. DoD, for instance, published a policy that directs that “autonomous and semi-autonomous weapon systems shall be designed to allow commanders and operators to exercise appropriate levels of human judgment over the use of force.”¹²⁹ And according to the Netherlands, “meaningful human control is required in the deployment of autonomous weapon systems.”¹³⁰ Even though the number of such government policies currently is small—most governments merely commit to official statements or working papers presented in expert meetings held under the UN Convention on Certain Conventional Weapons (CCW)—the majority of these policies or statements include a reference to the relevance of human control.

Hence, nations seem committed to keeping human beings in the decision-making loop for important targeting decisions—at least for now. However, it could very well be that, if a major conflict arises, all bets will be off, with states feeling forced into more reliance on autonomous systems because their adversaries are willing to take more risk.¹³¹ Considering warfare’s historical action-reaction cycle, algorithm-versus-algorithm warfare between two adversaries may not be too far off.¹³²

However, this is not an inevitable result of these technologies; rather, it is a choice that human beings make if they decide to introduce these technologies into the targeting process without considering—or after deliberately accepting—the

consequences. In the current situation and for Western armed forces, this is not likely to be a deliberate choice, but it very well could be the result of a misunderstanding of the issue that leads to an erroneous method of dealing with these new technologies. For example, by focusing merely on weaponized technologies, states, participants, and commentators fail to take into account other significant phases of the targeting process and the technologies that affect critical targeting decisions in other ways. What they do not seem to realize is that focusing solely on weapons employment is like assembling a jigsaw puzzle while staring only at one corner—through a soda straw.

Therefore, this article advises taking an expansive view, considering the targeting process as a reference framework under which to examine holistically the effect of autonomous technologies on human control. While doing so, governments could learn from current projects that aim to implement autonomous technologies in targeting, such as Project Maven.

They also should consider learning from previous experiences with implementing new technologies in the targeting process. For example, the Center for Naval Analyses (CNA) concluded in its report on mitigating civilian casualties resulting from the use of drones that “[f]ailure to recognize and mitigate factors besides the platform in the targeting process resulted in an increased risk to civilians from the use of drones, despite some desirable characteristics of those systems.”¹³³ Research into operational data from U.S. drone missions in Pakistan and Afghanistan confirmed that “reducing civilian casualties depends on the entire engagement process, including planning and training considerations, not simply on characteristics of the weapon platform.”¹³⁴ Although the platforms under discussion in this article are not the same, much of the decision-making process is. Hence, these assessments could help states understand the changing dynamics in the targeting process caused or exacerbated by the introduction of new technologies.

To conclude, the reality is that autonomous technologies already are and will continue to be important for targeting. Therefore, safely incorporating these technologies into targeting is not a concern for the future but a challenge that should be addressed today rather than tomorrow. States that claim that human control or judgment is essential to making proper targeting decisions often simultaneously pursue autonomous technologies, claiming that these technologies represent the future of targeting. It could be concluded from this article that one approach does not need to preclude the other, but we ought to be mindful of the effects that autonomous technologies will have on our decision-making processes.

The development and use of autonomous weapons have created a host of legal, political, and ethical questions and concerns that continue to be scrutinized, primarily within the CCW process. However, the annual deliberations that are held under this framework convention have resulted in little progress over the past four years. Nonetheless, so far over two dozen states have endorsed the notion of “meaningful human control” or a similar concept that ought to prevent humans from losing control over autonomous weapons. Yet how the concept should be interpreted and applied remains vague and disputed.

This article has argued that the principal concern should be to consider these autonomous technologies within the decision-making processes in which they will be used, because that is the primary context within which their effects can be assessed properly. The reference framework that I propose is the targeting process. Yet there appears to be a considerable lack of knowledge about targeting among many groups and individuals, many considering it to be merely the practice of destroying enemy forces and equipment. This historical approach is no longer suitable for describing contemporary targeting.

Today, targeting should be perceived as a deliberate, analytical, and iterative process, rather than an isolated tactical action. It aims to achieve specified effects on and beyond the battlefield by means of not only classic kinetic lethal actions but also nonmilitary, nonkinetic, and nonlethal activities.

This process begins on a political-strategic level, at which military intervention is decided on and political guidance and overarching military objectives are formulated. This guidance is passed down to the operational level, at which time the targeting process commences. Through the six phases that follow, military forces formulate operational objectives, select and prioritize targets, match them with the appropriate response, consider operational requirements and capabilities, execute the mission, and assess whether the desired effects were achieved.

The targeting process provides an appropriate and holistic framework to consider concepts such as “meaningful human control” or “appropriate levels of human judgment.” Human control and judgment are exercised within this process, and hence the targeting process should be considered in its entirety to determine the effect of increasingly autonomous technologies on human control. Also, inquiry should not be limited to weapons deployment but expanded to the entire targeting process; such an expansive view demonstrates that critical targeting decisions are made throughout the process, so the scope of the control issue exceeds the mere use of autonomous weapons. In this context, the detailed analysis of phase 2, target development, not only demonstrates the complexity of the targeting process; it moreover confirms that critical targeting functions need have no direct relation to weapons or kinetic action. It also redirects attention

to the targeting role of a military branch—intelligence—that largely has been ignored in the debate on autonomous weapons.

With the advent of the information age, the intelligence branch appears to be one of the first military disciplines to experience the effects of technology on both the quantity and quality of its work, both positively and negatively. Western armed forces cannot deal with the targeting challenges they face simply by throwing more people at them, so states are driven to invest in technological solutions. The U.S. DoD's AWCFT—tasked with integrating AI, big data, and machine learning across operations—provides an example. One of its first efforts has been to automate intelligence processing to reduce the burden on human analysts, augment actionable intelligence, and enhance military decision-making. This is only one of many ongoing research and development projects that Western states—and most certainly many others—are pursuing.¹³⁵

Nevertheless, these types of technologies often are neglected in the discourse on autonomous weapons because they are not weaponized. This article establishes that disregarding these technologies is a mistake. First, these autonomous technologies used for target development have an effect on which specific targets end up on the approved target list by determining what data humans see and how they should conceive the battlefield. The fact that these technologies are not weaponized is irrelevant, as their tasks are potentially even more critical for targeting than those of their weaponized cousins. Second, these projects provide an opportunity to examine challenges and potential ways of dealing with the implementation of increasingly autonomous technologies in the targeting process.

A closer look identifies three main challenges. First, as advanced software technologies become more and more crucial to the success of today's military—assuming the various services want to take advantage of these technological developments—militaries need to change from a hardware to a software mindset, since the ability of militaries to take risks and adapt will prove critical for retaining an edge in this new environment. Second, the military structure is very stovepiped and disjointed, making it difficult to implement new technologies across the board. Third, implementing autonomous technologies in the military targeting process will be a task of significant difficulty. Even without autonomous technologies, the targeting process is an inherently complex process within which many individuals make numerous decisions on a daily basis, inescapably resulting in mistakes.

Although imperfect, the targeting process serves as a reliable basis on which to analyze the effect of increasingly autonomous technologies, work toward better protection of civilians, and preserve military effectiveness. Autonomous technologies could improve this process, while, at the same time, there is a risk that

the use of autonomous technologies could ultimately still result in an unacceptable loss of human control because we were not sufficiently mindful of the consequences of these technologies with regard to our decision-making processes.

One effect of using increasingly autonomous technologies for targeting is that human actors and technologies are becoming part of a joint chain in which the decision of one almost certainly will affect the control or limit the decisions of others involved in the chain. Also, autonomous technologies change the activities of human actors; they do not supplant those actors while simultaneously relieving them of all the responsibilities and control they exercised previously. The use of autonomous technologies prompts a change in the relationship between human actors and technologies that will require a transformation in decision-making processes. If these changes and transitions are not considered properly or are ignored altogether, the use of autonomous technologies for targeting could ultimately result in a loss of human control.

So far, no state has addressed these concerns comprehensively and effectively, but some states have made initial, minor attempts at creating a framework. Such states seem to be open to prescribing informal and formal self-imposed restrictions on the development and use of autonomous weapons, with specific reference to human control. However, if a major conflict arises all such self-imposed restrictions—such as the need for meaningful human control—very well may be discarded, potentially resulting in an unacceptable loss of human control over critical targeting decisions in the targeting process.

This concern may turn out to be justified, but, as I argue in this article, this is not an inevitable result of the development and use of these technologies. Instead, whether humans remain in control of critical targeting decisions will depend on how well they succeed at creating a framework within which this control can continue to be exercised alongside the use of increasingly autonomous technologies. Even though the targeting process creates a structure that provides a basis for negotiating, exercising, and maintaining this control, we also should be honest about our targeting capacity—and the limitations thereof—and about the complexity of organizing and executing military operations—and the mistakes that result from that. Using the targeting process as a reference framework thus creates opportunities for human beings to remain in control of increasingly autonomous technologies, as long as we assess it holistically and do not ignore the complexities and challenges inherent in these complex enterprises.

NOTES

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1. The pluralistic terms and inconsistent use of terminology in the discourse on autonomous weapons often result in lengthy semantic disputes. What is meant by terms such as *autonomous*, *targeting*, *human control*, or even *weapon*? The meanings of most such terms can diverge between and within different disciplines; they often have different labels that are used interchangeably; some terms represent parts of broader concepts; and some of the concepts in question are just inherently complex. This significantly complicates the debate. Read more about the complications of a common language in Merel A. C. Ekelhof, "Complications of a Common Language: Why It Is So Hard to Talk about Autonomous Weapons," *Journal of Conflict and Security Law* 22, no. 2 (July 2017), pp. 311–31.
2. *Ibid.*, pp. 316–17. In international discourse, most references to targeting are actually to target recognition, focusing on the ability of the autonomous weapon to differentiate combatants from noncombatants. Commonly, functions considered critical to target selection and attack relate to the weapon itself, not the more deliberate planning phases of the targeting process.
3. There are two types of targeting: *deliberate targeting* and *dynamic targeting*. This article focuses primarily on deliberate targeting, but in large part also applies to dynamic targeting. Dynamic targeting consists of the same steps, but is more responsive than deliberate targeting, since the process is used to prosecute targets that are identified too late to go through the deliberate targeting process. The dynamic targeting process is compressed in time. North Atlantic Treaty Organization [hereafter NATO], *Allied Joint Doctrine for Joint Targeting*, AJP-3.9 (n.p.: NATO Standardization Office, 2015), p. 2-4. With regard to autonomous technologies, dynamic targeting raises some distinct issues that fall outside the scope of this article but may be addressed in a later piece.
4. In 2016, the International Committee of the Red Cross (ICRC) introduced *critical functions* as a concept to describe the challenges that autonomous weapons raise, and states, participants, and commentators have used the concept since then. The ICRC refers to critical functions in relation to the weapon itself. ICRC, *Autonomous Weapon Systems: Implication of Increasing Autonomy in the Critical Functions of Weapons* (Versoix, Switz.: Expert Meeting, 2016).
5. Examples include the Algorithmic Warfare Cross-Functional Team (Project Maven); research into military autonomy at the Netherlands Organization for Applied Scientific Research (TNO); scouting by the Defense Innovation Unit Experimental (DIUx) for emerging technologies; many commercial projects that are relevant to the military, such as learning algorithms used by Facebook and Google; and National Geospatial-Intelligence Agency research into geolocation software. Earlier investigations into fratricide with automated weapon systems, such as the U.S. Army and Navy investigations into the Patriot shoot-down of a Navy F-18 in Iraq in 2003, continue to be relevant. Larry Lewis, *Operation Iraqi Freedom: Ground-to-Air Fratricide*, CNA Research Memorandum D0008910.A4 (CNA, July 2004).
6. Intelligence operations specialist in the office of the Under Secretary of Defense for Intelligence at the Pentagon, interview by author, May 18, 2017.
7. The information in this article was cleared for public release by the Netherlands Ministry of Defense. The personal information of the interviewees remains confidential; however, an overview of the different command centers and offices that were consulted during this research can be provided on request.
8. "Netanyahu: Strikes in Syria Targeted Hezbollah Arms," *Al Jazeera*, March 18, 2017, www.aljazeera.com/; Angus McDowall and Idrees Ali, "Air Strike on Mosque near Aleppo in Syria Kills 42: Monitor," *Reuters*, March 16, 2017, www.reuters.com/; Jim Sciutto, "U.S.: 'Jihadi John' Targeted in Drone Strike," *CNN*, November 13, 2015, edition.cnn.com/.

9. William H. Boothby, preface to *The Law of Targeting* (Oxford, U.K.: Oxford Univ. Press, 2012).
10. Frans P. B. Osinga and Mark P. Roorda, "From Douhet to Drones, Air Warfare, and the Evolution of Targeting," in *Targeting: The Challenges of Modern Warfare*, ed. Paul A. L. Ducheine, Michael N. Schmitt, and Frans P. B. Osinga (The Hague, Neth.: T. M. C. Asser, 2016), p. 29.
11. Paul A. L. Ducheine, Michael M. Schmitt, and Frans P. B. Osinga, introduction to *Targeting*, ed. Ducheine, Schmitt, and Osinga, p. 1.
12. U.S. Air Force, "Dynamic Targeting," in *Annex 3-60 Targeting* (Montgomery, AL: Curtis E. LeMay Center, 2017), p. 7. As explained in note 3, this article focuses on deliberate targeting and does not discuss dynamic targeting specifically. There are strong similarities between the two types of targeting, although dynamic targeting often is considered more ad hoc in nature because the targets in question are identified too late to be included in the deliberate targeting cycle.
13. See, for example, U.S. Air Force, *Annex 3-0 Operations and Planning* (Montgomery, AL: Curtis E. LeMay Center, 2016), p. 13.
14. NATO, *Allied Joint Doctrine for Joint Targeting*, p. 2-4.
15. *Ibid.*, p. vii.
16. *Ibid.*
17. *Ibid.*, p. 1-1.
18. A request for the development of an operational plan will follow by Supreme Headquarters Allied Powers Europe, known as SHAPE—prepared at the level of the JFC and adjusted and approved by the NAC—after which the NAC issues a NAC execution directive and the targeting process can commence. Targeting experts, interview by author, February 22, 2017.
19. See, for example, S.C. Res. 1973, Libya (March 17, 2011), and Chris De Cock, "Targeting in Coalition Operations," in *Targeting*, ed. Ducheine, Schmitt, and Osinga, pp. 238–39.
20. A TST is a target that requires immediate response because it poses (or soon will pose) a danger to friendly forces or is a highly lucrative, fleeting target of opportunity. TSTs are of such high priority that their effective engagement can make or break the campaign, so the JFC is willing to divert assets away from other targets to find, fix, track, target, engage, and assess them. NATO, *Allied Joint Doctrine for Joint Targeting*, p. Lexicon-9.
21. These objectives and guidance are passed down from the NAC to the JFC, through the Military Committee and Strategic Command. *Ibid.*, p. 3-1.
22. De Cock, "Targeting in Coalition Operations," p. 238.
23. NATO, *Allied Joint Doctrine for Joint Targeting*, p. 2-3.
24. *Ibid.*
25. U.S. Air Force, *Annex 3-60 Targeting*, p. 42.
26. Mark Roorda, "NATO's Targeting Process: Ensuring Human Control over (and Lawful Use of) 'Autonomous' Weapons," in *Autonomous Systems: Issues for Defence Policymakers*, ed. Andrew P. Williams and Paul D. Scharre (Norfolk, VA: Headquarters Supreme Allied Commander Transformation, 2015), p. 155.
27. NATO, *Allied Joint Doctrine for Joint Targeting*, pp. 2-3–2-4.
28. Targeting expert, interview by author, December 1, 2016.
29. NATO, *Allied Joint Doctrine for Joint Targeting*, p. 2-4.
30. U.S. Air Force, *Annex 3-60 Targeting*, p. 70.
31. Targeting expert interview.
32. U.S. Air Force, *Annex 3-60 Targeting*, p. 70.
33. NATO, *Allied Joint Doctrine for Joint Targeting*, p. 1-10.
34. Thus, collateral damage issues are considered not only in phase 3 but also in phase 1 (commander's objectives and guidance), phase 2 (target development), and phase 5 (mission planning and execution), and therefore are a good example of considerations that play a role in different phases.
35. No attack is to be launched that is expected to cause collateral damage excessive to the concrete and direct military advantage anticipated. Protocol Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection of Victims of International Armed Conflicts arts. 51(5)(b) and 57(2)(a) (iii), June 8, 1977.

36. NATO, *Allied Joint Doctrine for Joint Targeting*, p. 2-4.
37. Roorda, "NATO's Targeting Process," p. 159.
38. Precautionary measures include doing everything feasible to ensure the target is a lawful military target; taking all feasible precautions in the choice of means and methods of attack, with a view to avoid or minimize collateral damage; canceling or suspending an attack if it becomes apparent that the target is not a lawful military objective or the attack will be disproportionate; and giving effective warning, if the circumstances permit. Protocol Additional art. 57; Roorda, "NATO's Targeting Process," p. 160.
39. This cycle also is used to describe dynamic targeting. It applies even to the deliberate process because operations, by their nature, are dynamic.
40. U.S. Joint Forces Command, *Commander's Handbook for Joint Battle Damage Assessment* (Suffolk, VA: Joint Warfighting Center, 2004), p. I-8.
41. NATO, *Allied Joint Doctrine for Joint Targeting*, p. 2-7.
42. Larry Lewis, *Drone Strikes in Pakistan: Reasons to Assess Civilian Casualties* (Arlington, VA: CNA, 2014), pp. 17-20.
43. Some of these can be targeted both kinetically and nonkinetically, while others, such as political leadership, can be targeted only nonkinetically. NATO, *Allied Joint Doctrine for Joint Targeting*, p. B-1.
44. Ibid. If the JFC wishes to appoint targets from categories that are not included in the NAC-approved target sets, the JFC has to seek approval.
45. Ibid., p. 2-3.
46. Joint Chiefs of Staff, *Target Development Standards*, CJCSI 3370.01 2011 (Washington, DC: Office of the Chairman, 2011), p. C-4. Besides the TSA process, there is also a target audience analysis (TAA). TAA is defined as follows: "The systematic study of people to enhance understanding and identify accessibility, vulnerability, and susceptibility to behavioral and attitudinal influence activity." Rita LePage and Steve Tatham, *NATO Strategic Communication: More to Be Done?* (Riga: National Defense Academy of Latvia, 2014), p. 10.
47. Joint Chiefs of Staff, *Target Development Standards*, p. B-10.
48. Ibid., p. C-2.
49. A target system most often is considered as a collection of assets directed to perform a specific function or series of functions. U.S. Air Force, *Annex 3-60 Targeting*, pp. 7, 11, 61.
50. Ibid., p. 11.
51. Experienced targeteer, interview by author, during NATO exercise, February 2017.
52. U.S. Air Force, *Annex 3-60 Targeting*, pp. 35, 61.
53. Intelligence operations specialist interview.
54. John N. T. "Jack" Shanahan [Lt. Gen.], interview by author, May 17, 2017; targeting experts interview.
55. NATO, *Allied Joint Doctrine for Joint Targeting*, p. 2-3.
56. Target development begins in phase 2 after receipt of the commander's objectives and end state, but it continues in phase 3 (capabilities analysis), phase 4 (force planning and assignment), and phase 6 (assessment). The focus on continual target development in these phases should ensure that the most current and accurate target intelligence is part of the commander's decision process. Joint Chiefs of Staff, *Target Development Standards*, p. B-6.
57. NATO, *Allied Joint Doctrine for Joint Targeting*, p. 2-4.
58. U.S. Air Force, *Annex 3-60 Targeting*, p. 63.
59. Ibid., pp. 63-64.
60. NATO, *Allied Joint Doctrine for Joint Targeting*, p. 2-4.
61. Ibid., p. 4-7.
62. Ibid.; Protocol Additional arts. 48, 51-52.
63. NATO, *Allied Joint Doctrine for Joint Targeting*, p. 4-6.
64. Ibid., p. 4-7.
65. Phillip R. Pratzner, "The Current Targeting Process," in *Targeting*, ed. Ducheine, Schmitt, and Osinga, p. 82.
66. Ibid.
67. Joint Chiefs of Staff, *Joint Targeting*, JP 3-60 (Washington, DC: Office of the Chairman, 2013), p. B-3.

68. Joint Targeting School, "Collateral Damage Estimation Course Syllabus," October 2015, available at www.dtic.mil/.
69. Frank Slijper, *Where to Draw the Line: Increasing Autonomy in Weapon Systems—Technology and Trends* (Utrecht, Neth.: PAX, 2017), p. 10, available at www.paxvoorvrede.nl/.
70. John N. T. "Jack" Shanahan [Lt. Gen.], e-mail to author, December 30, 2017.
71. Ekelhof, "Complications of a Common Language," p. 2.
72. Military transformation has been a U.S.-led process that, among other aspects, has centered on the exploitation of new information technologies. Therefore, the examples and descriptions of developments in the field of autonomous technologies that feature in this analysis primarily reflect U.S. projects and procedures. European states simply have been unable to match the American level of investment in new military technologies. Chinese and Russian developments are not included in the analysis owing to a lack of sufficient reliable sources. Theo Farrell and Terry Terriff, "Military Transformation in NATO: A Framework for Analysis," in *A Transformation Gap? American Innovations and European Military Change*, ed. Terry Terriff, Frans Osinga, and Theo Farrell (Stanford, CA: Stanford Univ. Press, 2010), p. 1.
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81. John N. T. "Jack" Shanahan [Lt. Gen.], "The Future of Targeting" (paper presented at the NATO ACO Targeting Conference, Strasbourg, Fr., February 7, 2017). Also see Osinga and Roorda, "From Douhet to Drones," pp. 43–44.
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83. Ibid.
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110. Pentagon official from the ISR division, e-mail to author, July 20, 2017.
111. Weisgerber, "The Pentagon's New Algorithmic Warfare Cell."
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123. For an assessment on distributed responsibility within the context of the military chain of command, see Marcus Schulzke, "Autonomous Weapons and Distributed Responsibility," *Philosophy and Technology* 26, no. 2 (June 2012).

124. On responsibility practices and unmanned systems, see Merel Noorman, "Responsibility Practices and Unmanned Military Technologies," *Science and Engineering Ethics* 20, no. 3 (September 2014), pp. 809–26.
125. It is relevant to note here that there is an important difference between discussing which human-machine relationship would be most beneficial for achieving a desired goal (i.e., how AI can improve the targeting process) and determining what we would consider ethically acceptable.
126. The effects of their introduction into the targeting process will vary, but the understanding that autonomous technologies are not simply human replacements could be illustrated by the introduction of UAVs. Although often perceived as taking the pilot out of the cockpit, the actual effect of UAVs has been much more significant than that. Armed UAVs still need a substantial crew, including the pilot, a sensor operator, a mission-intelligence coordinator, and several analysts to deal with tasks at hand. In fact, it can take up to 168 people—including operators; coordinators; advisers; analysts; crews for landing, takeoff, and flight; technicians; and maintenance personnel—to keep a Predator in the air for twenty-four hours. Noorman, "Responsibility Practices and Unmanned Military Technologies," p. 818.
127. *Ibid.*, p. 817.
128. This mostly refers to statements made during the Convention on Certain Conventional Weapons 2013–16 expert meetings on lethal AWSs, during which a majority of states pointed out—frequently—the need for some form of human control. See Ekelhof, "Complications of a Common Language."
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THE ROLE OF THE HUMAN OPERATOR IN THE THIRD OFFSET STRATEGY

Adam Biggs and Rees Lee

The Third Offset Strategy has become a common topic of discussion in Department of Defense (DoD) circles. In these debates, people regularly throw around new ideas about research and development (R&D) priorities, as well as about the often-desired deliverables, the shiny new toys—people love widgets they can hold or capabilities they can see in the form of new equipment. But these research initiatives are about more than the technology. Like its predecessors, the Third Offset Strategy is truly about maintaining American military superiority—a critical point sometimes lost amid fascinating debates about artificial intelligence (AI) and swarms of learning machines on the battlefield. Specifically, the Third Offset Strategy is not about securing future battlefield capabilities in the twenty-second or twenty-third century; it is about securing our advantage for the next ten or twenty years. Today's active-duty personnel need to see these benefits for battles they will fight but that have not yet begun.

This defined timeline is not a simple discussion point; it is the linchpin that keeps the conversation focused. Third Offset discussions regularly are given a wide berth when it comes to potential technologies, so a second point becomes critical to maintaining good order and discipline in the debate: that military R&D does not begin or end with the Third Offset Strategy. The initiative is a guidepost that will point to a series of research priorities for the near future. Not all R&D projects will fall under this initiative, nor should we ignore futuristic science that falls completely beyond its current scope. Instead, we can use the Third Offset Strategy to define a series of plausible research priorities to guide resource allocation, funding, and desired deliverables or outcomes. A related consideration is that the goals cannot be research-only deliverables. It is not enough to deliver

a buggy prototype or to push the science forward; these initiatives must yield tangible battlespace advantages for our personnel.

Already we have not started this article in the way that most Third Offset Strategy discussions begin. We did not lead by outlining technology objectives or descriptions of the previous offset strategies—and there are several good reasons why. First, lists of technological objectives split off in many different directions more quickly than a company of young sailors or Marines on their first special liberty. Second, this offset is not actually about the technology. The new gadgets will prove useful, but our focus should be on the human operators—our personnel are the most critical component to continued operational success. Moreover, we have a near-unique opportunity to leap forward in optimizing human performance. Third, the current offset strategy is not like its predecessors. It will become necessary later in this discussion to contrast and compare the different offset strategy examples, but right now—at the onset of this offset—the purpose of discussion must be to establish priorities, tangible deliverables, and a timeline.

- Our priorities are determined by the resources we have and the adversaries we face.
- Our tangible deliverables are determined by the realistic improvements and advancements that are possible within the relevant time frame.
- Our timeline covers the first half of the twenty-first century.

Now we can get started; we can move on to the question that must be answered before the Third Offset can move forward—the multibillion-dollar question: What should our Third Offset Strategy actually be?

ENHANCED HUMAN PERFORMANCE: THE GOAL OF THE THIRD OFFSET STRATEGY

We propose that enhancing human performance should be the ultimate goal of the Third Offset Strategy. To clarify this point: we are not suggesting a minimal or irrelevant role for technology within this agenda; technology will prove just as critical as in the previous offset strategies. Instead we are saying that the technologies developed should provide new operational capabilities or enhancement opportunities for the human operator.

This approach builds on a theme that we will mention again and again, because it should be a critical underlying philosophy of the Third Offset Strategy: let the computers do what they do best, and let the humans do what they do best. Computers are much better than humans at processing raw information, so let the computers crunch the numbers and feed that information to the human operators. However, computers cannot clear rooms or steer ships. Human operators remain the backbone of our operational capabilities, so human performance

remains crucial to our tactical success. Let the computers give better information to our human operators and improve the human operators' capabilities, and the combined effect will be increased operational effectiveness.

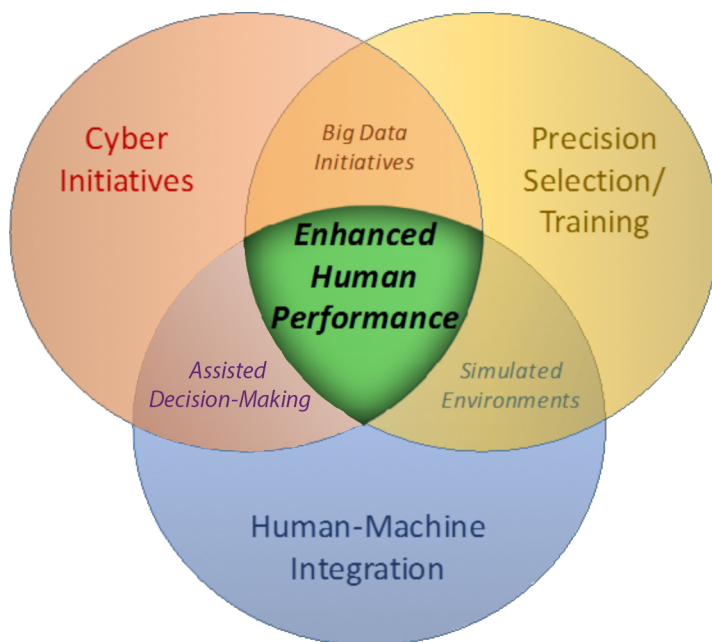
Although the human performance element has been the one constant in five thousand years of warfare on this planet, what has changed is the capabilities and opportunities that are emerging or newly available—i.e., just at our fingertips—today. We divide these opportunities into three overlapping areas: (1) cyber initiatives, (2) human-machine integration, and (3) precision selection/training.

We suggest—somewhat counterintuitively—that consideration of cyber initiatives, although they represent the most technological thrust of the Third Offset, can remain within the scope of human performance considerations. These aspects remain amenable to the theme of “let the computers do what they do best.” The various initiatives can create better information-processing systems so the most useful, most accurate, and most reliable information is delivered to the human operator who makes the critical decision.

Human-machine teaming represents a subject often considered within the scope of Third Offset Strategy projects. This category involves a wide array of opportunities to enhance human performance by integrating machine products and programs directly into critical tasks. For example, augmented-reality (AR) systems can improve performance by delivering updated information directly into a heads-up display (HUD). We now have the ability to integrate humans and machines in complex ways that result in true interdependence and yield superior performance attributes that neither the machine nor the human alone could achieve.

This article is set apart from most other Third Offset Strategy discussions by its consideration of the third opportunity: precision selection/training. Together with improving the machines (cyber initiatives) and improving the integration of machines into human performance (human-machine teaming), this aspect completes our triad of enhanced human performance by directly improving the way we select and train the humans in the loop (precision selection/training). In this area, we recommend using various initiatives such as so-called big data to inform our selection procedures, thereby taking advantage of the wealth of information that modern technology makes available.

Additionally, we recommend some large “cultural” changes in training procedures. Recent scientific advancements have opened new training opportunities, enabling us to begin training individuals on the basis of their individual needs. Rather than every Marine receiving the same training, individualized training protocols can address specific performance deficiencies or help an individual reach a particular goal or acquire a particular skill set required for a specific duty. This approach would make some training assessments more akin to medical

PERFORMANCE ENHANCEMENT TRIAD

Achieving the human-performance goals articulated by the Third Offset Strategy will require R&D initiatives on three fronts: (1) information-technology and cyber initiatives, especially in the areas of effective use of multiple, big datasets and assisted decision-making; (2) precision selection and training of human operators to ensure that the right operator is assigned the right task and receives task-specific training individualized to his or her needs; and (3) optimized human-machine integration, including simulated environments such as virtual and augmented realities.

assessments, with their related individualized treatment plans. There is already a model in place on which we can build: special operations. Our proposed precision selection/training ideas would use individual assessments and special operations forces (SOFs) training as the models for applying these techniques more widely, to the military at large.

These three components (cyber initiatives, human-machine teaming, and precision selection/training) represent our Performance Enhancement Triad, the overall model we recommend to guide Third Offset Strategy R&D. The article will now delve more deeply into each aspect of the triad.

Cyber Initiatives

Modern warfare no longer is limited to the physical battlefields of the sea, sky, and land. The ability to use global communication and data networks to disrupt directly the energy, financial, political, and military sectors of a nation is a reality. The most effective warrior of the future battlefield may not be the Marine with the rifle but the sailor or airman at a computer in Colorado. The conception of enhanced human performance needs to broaden enough to include these cyber warriors.

One illustration of enhancing human performance in the sphere of cyber warfare involves deep-learning systems. Machines can be used for cyber defense and electronic warfare; this may involve analyzing, for example, tens of thousands of social-media posts to identify critical data patterns that might be of use. Other technologies may sense unknown radar signals and help pilots sort tremendous amounts of information in real time without needing to return to base to conduct the analysis.¹ Either example represents a cyber initiative that attempts to circumvent the traditional limits of human performance. However, both systems actually are providing valuable information to the human operator to enable an eventual decision and reaction. Third Offset technologies, even seemingly cyber-only investments, fundamentally enhance human performance by creating new capabilities for the operator. The deep-learning systems remain a good example of a single “machine” that quickly can perform an operation that otherwise might take a single human operator weeks, thereby allowing real-time decision-making based on the most complete data analysis ever delivered to a combat environment.

Another emerging cyber initiative centers on antiaccess/area-denial (A2/AD) capabilities, or operations in denied and degraded environments. Any major operation depends on the ability to move forces rapidly in theater. Some analysts have even referred to operational warfare as an empty concept if forces are unable to conduct large-scale movements on land, at sea, and in the air.² Classic A2/AD methods have been aimed at denying a human operator access to some location; scenarios ranged from medieval caltrops stopping a cavalry charge to the use of various forms of land mines. In any such case, the goal involves protecting friendly forces, blocking enemy forces by denying them access, or both. Anti-A2/AD initiatives attempt to overcome these area-denial strategies. They can take one of two approaches: breaching the enemy’s A2/AD systems or enhancing friendly A2/AD capabilities. Third Offset substrategies could focus on enhancing the human operator’s ability to breach an area’s defenses. For example, new exoskeletons could reduce the danger to a human operator while he or she physically breaks through the enemy’s front lines.³ In the cyber arena, Third Offset technologies could extend the ability of the human operator to analyze quickly the status of global networks, then develop strategies to deny enemy forces access to the networks controlling energy, communications, navigation, and other critical infrastructures vital to waging war. On the flip side of the cyber coin, other Third Offset initiatives could pursue new technologies to ensure unimpeded cyber access by friendly forces. New A2/AD systems will need to survive cyber attacks and other enhanced defensive capabilities if our human operators and Second Offset technologies are going to continue to have the same impact on future operations.

Human-Machine Integration

Augmented performance through human-machine integration represents perhaps the most commonly cited component of the Third Offset Strategy. Augmented performance would enhance the human operator by providing more information, increasing functional capability, or maximizing performance and endurance in austere environments. The goal is to enhance situational awareness and operational performance by giving the operator directly everything he or she needs in the most convenient and expedient manner possible.

The foremost example of this idea is already well into development. Specifically, helmets can be equipped with AR aspects to create better HUDs than any prior system. The best-known example at present is the F-35 helmet, which can allow the pilot to “see” through the aircraft.⁴ This capability was made possible by advances in AR, which differs in several ways from virtual reality (VR) systems. With VR, the technology creates a self-contained world; all stimuli are created within that visual system, with no reliance on the physical world around the operator. In comparison, an AR environment does not create a self-contained world, but merely augments the world around the user by introducing computer-generated elements. Pilots wearing AR helmets still can see their cockpits, but other information will appear on their visors, such as current heading and altitude. The F-35 helmet uses this technology and cameras embedded in the skin of the plane to create a view for pilots that is unobstructed by the physical aircraft—they can “see” through the floor because they actually are looking at the camera images integrated into their visors. In a similar manner, Navy engineers are developing futuristic HUDs capable of embedding information on the inside of a diving helmet.⁵ The underlying concept is the same: to provide an operator—particularly an operator in a harsh environment or wearing protective gear—critical information that otherwise might be difficult to access or track.

Use of AR technology is not limited to the operational environment. In the training field, the Fleet Integrated Synthetic Training/Testing Facility (known as FIST2FAC) blends live action with virtual assets and adversaries.⁶ Thanks to this unique blend of live action and AR capabilities, sailors can stand aboard actual ships and simulate using machine guns to engage multiple fast-attack craft. The combination yields new training capabilities that otherwise would be possible only via an untenable financial investment. In other words, the blended training yields maximum training efficiency at minimal cost. This capability certainly falls under the general umbrella of an offset strategy, by creating a new and economically viable military advantage, while also fulfilling the Third Offset Strategy intention of enhancing human performance.

To demonstrate the effectiveness of human-machine teaming beyond merely providing information to the operator, we will draw on a now-classic example

drawn from the game of chess. It once was assumed that machines never would be able to outthink humans in this field, but a computer system named Deep Blue shattered this assumption when it beat world champion Garry Kasparov in 1997.⁷ Now computer systems regularly beat human players—which has spawned another evolution. The new format has different names (including three-play chess, freestyle chess, centaur chess, and so forth), but the premise is that during game play a computer aids the human.⁸ The human player can ask questions of the computer, which then compares various scenarios faster than the human could. The human player still makes the decision, but the computer provides invaluable aid during the process. The combination is not as simple as a HUD, because it involves comparing strategic moves and their consequences before the operator actually has to make the move. It is quite possible that future command-and-control equipment will integrate such technology platforms further into our operations. This is in keeping with the theme of “let the computers do what they do best, and let the humans do what they do best.”

The development of combined human-machine efforts faces other challenges, though, especially as the outcome performance can depend entirely on the specific machine involved and the specific human in the loop. Thus, the greatest challenge in human-machine teaming is trust. Although this phenomenon is not new, it remains a pervasive issue. Everyone is enamored of the capabilities of the newest computer—until it unexpectedly crashes and you get the “blue screen of death.” The driverless car currently is careening toward a wall of passenger mistrust that will have to be overcome.⁹ Third Offset technologies will face similar trust issues. Human operators must trust the accuracy and validity of the equipment they are using, or the entire synthesis becomes untenable. For example, the U.S. Naval Aviation Safety Center cites spatial disorientation as the number one human causal factor of Class A mishaps—the worst category of aviation mishaps, those involving more than two million dollars in damage and loss of aircraft, life, or both.¹⁰ Spatial disorientation can occur in a number of ways, with visual illusions often listed as a primary factor. In a visual-illusion scenario, operating in dark environments (or without visual reference points for some other reason) can disorient pilots. Despite instrument indications to the contrary, pilots continue to trust their eyes over their machine to fly safely—even when their eyes could be lying. Unfortunately, this is merely one example; human-machine trust issues are all too common. As new technologies are introduced to aid the warfighter, the issue has the potential to become much more significant.

Precision Selection and Training

While cyber initiatives will provide superior “machines,” selection and training initiatives will be pivotal in ensuring that those machines are integrated with the

best possible human operators. The key to success for these selection and training initiatives will be precision. Traditional military selection and training have been a matter of mass production, in which sailors and Marines are treated as identical cogs in a giant machine. Current screening tools, such as the Armed Services Vocational Aptitude Battery (known as ASVAB), are notoriously blunt instruments that ignore the developing science of incorporating physiological, neurological, and cognitive components. Furthermore, the military has a long, proud tradition of being able to take any motivated man or woman, regardless of background or aptitudes, and train him or her to be an effective soldier, sailor, Marine, or airman. While this approach may have worked in the era of mass armies and large-unit tactics, the fluid battlefield that is characteristic of fourth-generation warfare and cyber warfare makes this selection and training approach obsolete—and risky.

It will not be sufficient to have just any sailor pushed through a training pipeline; for the Third Offset Strategy to succeed, the military must push the *right* sailor through the pipeline. In other words, decisions regarding selection and training must be made with a precision never seen before in the U.S. military. In the world of the Third Offset Strategy, selection and training decisions would be more similar to those a doctor makes in treating a patient, involving creating an individualized plan designed to achieve the optimal outcome. In fact, the research techniques designed to discover the biomarkers to be used in this new era of precision medicine also may help usher in the precision selection and training approaches necessary for the success of the Third Offset Strategy.

The difference in warfare environments between current and future operations further makes this “precision challenge” both timely and apropos. A large, blunt training procedure cannot deal with the nuances that the conduct of multigeneration warfare creates.¹¹ Fortunately, a model already exists for conducting this style of military training. The SOFs template is the ideal base on which to build. SOFs already embody several aspects that are essential to meeting current operational-flexibility demands, including the need to conduct smaller, dispersed engagements and perform expedited responses. SOF operators are among our best-trained and most capable military personnel. If we are going to build a mold from which to cast future operators, SOFs offer an ideal subset to consider in determining how to select and train human operators.

The template begins by adopting some of the basic truths applied to special warfare for application across a wider segment of the military. The U.S. Army Special Operations Command dictates five truths about SOFs, which can serve as a philosophical guide for selection and training. The first truth states that “[h]umans are more important than hardware.” The fourth truth states that “[c]ompetent Special Operations Forces cannot be created after emergencies

occur.”¹² Preparation during peacetime aligns well with the spirit and general purpose of an offset strategy. So, from a philosophical perspective, SOFs already apply the template for human operators that will be needed to carry out a Third Offset Strategy.

Of course, the general purpose of personnel selection and screening is nothing new. For especially important duties, the different service branches long have sought better means of selecting and screening personnel, ranging from combat-readiness evaluations to special-operations training. The question remains the same—How will we achieve this end goal?—but the difference now is the tools we have at our disposal to make these evaluations. For example, deep-learning systems take advantage of “big data” analytics, which can crunch numbers far more quickly than human analysts. These advanced analytical approaches can be used to enhance our existing selection procedures by using as a starting point the personnel we have already, along with the requirements of the duty in question.

This idea sounds rather vague until one considers a specific application. One example is that big-data analytics and new research could be used to develop a combat-readiness profile (CRP).¹³ The CRP would identify numerous physiological, cognitive, and neurological components to predict which individuals will have the highest likelihood of performing well under particular combat conditions. Physiological variables to be measured might include heart-rate variability, cognitive factors, and response inhibition; neurological variables might include event-related potentials in the brain.¹⁴ These rich sources of information provide an insight deeper than does outward behavior alone, because they literally identify activity going on in the hearts and minds of our personnel. Recent technological developments have continued to make sensors of these various factors smaller, more durable, and more practical to employ in otherwise difficult-to-access environments. By taking advantage of this available yet underused data source and big-data analytics, we could evaluate combat readiness in a manner never attempted before in military history. The ability to quantify combat readiness on the basis of objective factors could supplement training officer decisions by identifying precisely those individuals who are and are not ready for combat—no matter how they appear to behave under pressure during training.

The potential to select personnel precisely represents an interesting new way to enhance operator performance in the Third Offset Strategy: by matching the right operator to the right duty at the right time. There is an opportunity to take these selection mechanisms one step further by developing new training methods that are based on human abilities that current military training underemphasizes—specifically, cognitive abilities. The idea stems from a concept called “Sharper Minds, Sharper Sailors.”¹⁵ Essentially, we currently train the bodies of our personnel through physical training and we give them new

procedures to execute and new technology to operate. However, the thing that operates that body, executes the procedures, and uses the technology—the mind—receives no directed training. But if we enhance the mental capabilities of our personnel, we could expect to improve operational effectiveness. Thus, the Third Offset Strategy takes a rather direct approach to enhancing human performance of military duties: by enhancing the human who will be performing the duty.

The challenge is in identifying how to enhance the individual operator. So-called brain-training initiatives have purported to cure everything up to and including Alzheimer's disease by having subjects perform a few minutes of directed cognitive-training tasks each day. However, the Federal Trade Commission (FTC) slapped key elements of the brain-training industry with fines for making such grandiose claims with no empirical evidence.¹⁶ Even the scientific community is somewhat split over the issue, with many lining up to denounce the entire brain-training industry, while others proffer the simpler criticism that so far the industry has overstepped any reasonable conclusions.¹⁷ Scientists still are learning which cognitive training platforms can be used as interventions for which problems, and how the training methods should be applied. Nonetheless, the field holds substantial potential, with promising preliminary results being replicated in new studies. For example, alcohol-consumption behaviors can be altered by increasing response inhibition for alcohol-related stimuli (e.g., pictures of beer).¹⁸ This example demonstrates how sound science paired with specific intent can achieve a worthwhile goal. The success comes from careful application of validated scientific methods. In comparison, the brain-training industry rushed an idea forward for immediate profit without generating any supportive evidence for its claims.

Military research cannot make the same mistake. Developing new training techniques must be an evidence-based endeavor. As noted above, response inhibition appears to be a trainable cognitive function, and this cognitive ability has direct relevance to combat operations.¹⁹ Classic response-inhibition experiments often use a "go/no-go" task, in which one stimulus is paired with making a response and another stimulus is paired with withholding a response. For example, participants in these experiments might hit a key (i.e., a "go" response) whenever they see a green square, but withhold a response (i.e., a "no-go" response) whenever they see a red square. The transition to a military operational environment can be very direct—shoot a hostile in a combat zone (i.e., a "go" response), but do not shoot an ally in a combat zone (i.e., a "no-go" response). Such a link between inhibitory control and either friendly-fire incidents or civilian casualties already has been demonstrated in the psychology literature and, in a more direct application to the training issue, there is at least one demonstration that

response-inhibition training could reduce the likelihood of inflicting a civilian casualty.²⁰

These examples demonstrate how the Third Offset Strategy should pursue new training methods to maximize human performance. Specifically, any novel approaches should be (1) based on sound science, (2) demonstrated in a context relevant to military operations, and (3) replicated in different experiments before the proof of concept is turned into a concept of operations. For example, we should not hesitate to explore novel technologies, such as transcranial stimulation, to enhance human cognitive performance, as well as to leverage our understanding of the neurobiology of fatigue to mitigate its adverse cognitive effects.

A REALISTIC BALANCE BETWEEN HUMAN OPERATORS AND TECHNOLOGICAL GOALS

Our argument is that an agenda that addresses enhanced human performance would satisfy best the timeline, priorities, and deliverables that our current operators face. Still, any Third Offset Strategy argument should not address simply satisfying these criteria; rather, the discussion should hinge on these criteria themselves. Anything discussed should focus on realistic R&D goals that achieve some measure of increased operational readiness or expanded force capabilities. For example, consider two novel technologies currently under discussion for fulfilling future naval purposes: AR and AI. The question then becomes whether AR or AI systems meet our three needs of priorities, tangible deliverables, and a timeline (i.e., which technology should be our focus?).

AR technology exists today in an ever-growing commercial market, and it would be easy to program the scenarios to fulfill military requirements. But how well does AR match up against our three needs—does it match our priorities? Yes. One of our greatest challenges at the moment is that our new strategies must be flexible and must adapt to a wide array of adversaries, including the “4+1” concept that identifies four potential adversary states (Russia, China, Iran, and North Korea) and various nonstate actors (e.g., terrorist organizations).²¹ Each possible adversary presents different challenges, so our training and operational activities must be flexible enough to adapt to and overcome those challenges. AR training can be programmed to mimic a wide array of situations, from operating a gunner platform firing at fast-attack craft to planning high-volume troop movements. AR also can provide advanced operational capabilities, such as the various information displays within the F-35 helmet. Does AR provide tangible deliverables? Yes. In the near future new technological capabilities could be demonstrated that would provide the needed equipment, and we can measure human-performance differences to determine their operational impact. Can AR meet a realistic timeline? Yes, the technology as it exists today can be adapted to

fit any of these suggested purposes. AR systems represent an ideal technological template for Third Offset improvements and investments.

AI systems could alter the battle space dramatically, with thinking machines adapting to overcome new problems faster than communication signals could be relayed to an operator. An entire army of thinking machines could overwhelm an enemy battalion without ever losing a human life. The idea already is swimming about in the conceptual seas of both allies and adversaries; Russian general Valery Gerasimov recently predicted a future battlefield populated by learning machines rather than humans.²²

But as interesting as these possibilities may be, would drones or some other form of AI meet our three needs? Is overwhelming our enemies a priority? Absolutely. Does AI offer tangible deliverables? Yes—but in enough different forms that an acquisitions officer could go from butter bar (O-1) to full bird (O-6) before seeing a final, delivered product. Is such a timeline acceptable? Definitely not. We should continue to invest in these capabilities—their potential is nearly endless and the technology could revolutionize warfare. But will swarms of drones dominate the battlefield by 2030, or even 2040? Given the challenges of technology development, infrastructure, manufacture, and acquisition, the safe answer is no.

Typically from this point, Third Offset Strategy writings would continue down the road of discussing technological opportunities, but we are focusing on enhancing human opportunities. However, confusion can arise when discussing the source of these enhancements. We are not suggesting that human performance should be enhanced *separate from* advancing technology; we are suggesting that human performance should be enhanced *through* technology. Advanced technological capabilities will provide new opportunities to achieve optimal human performance. This approach adheres to the theme of “let the computers do what they do best, and let the humans do what they do best.” Computers can process information faster than human operators, so let the computers crunch the numbers; human operators can make decisions that incorporate a level of context and consequence that computers cannot, so let the humans make the decisions.

A CULTURAL CHANGE: THE CONSEQUENCES OF PURSUING HUMAN-PERFORMANCE ENHANCEMENT

The ideas introduced thus far largely are novel in and of themselves, and integrating them into our ongoing operations—making them a reality—will require changes in the areas of personnel, equipment, and funding. But several suggestions would require more: major cultural changes.

One important issue deriving from the advancements in cyber capabilities was referred to earlier: that the most effective warriors may be the sailors, airmen,

or others who remotely pilot vehicles that have a direct battlefield impact. This idea seems to conflict with our advocacy of a SOF-type approach to personnel selection and training, but the two elements actually dovetail quite well. Precision selection procedures can be applied to both realms; the difference is in the abilities assessed to select operators to fill various roles. Some selection procedures will focus more on the overtly physical (e.g., physical fitness evaluations, long-distance swims, etc.), whereas others will focus more on response speed and fine-motor control (e.g., hitting buttons quickly, making microadjustments with joysticks). However, this differentiation merely reflects variations in specific procedures; the greater challenge will require effecting cultural changes in how we view certain training and procedures.

The first cultural change involves an emerging trend regarding the battle space, not the battlefield. *Battle space* quickly is coming to be defined by multiple entities operating in multiple locations across multiple platforms. Whereas we once fought the battle of Saratoga in upper New York State, a future “battle of Saratoga” may involve airmen in Saratoga operating remotely piloted vehicles to survey a land area in Iran, causing fighter jets (or maybe even other drone aircraft) to launch from an aircraft carrier in the Persian Gulf to strike a location in Syria. This is battle space, not a battlefield—multiple domains coordinated in real time to conduct operations across the world.

This aspect is actually the cultural change that most in the military will accept readily. The real cultural change will be to take those same procedures and ideas that we have applied only to special operators and apply them to our larger force. If drone pilots may be launching aircraft from Colorado to aid special operators in the Middle East, we must hold those operators to the same standards as our special operators in theater—perhaps not in the number of push-ups performed or the marksmanship exhibited, but in remaining in the top 1 percent for reaction time or fine-motor control.

More than that, the same principles applied to special operators could apply elsewhere. For example, consider the special operations truth cited earlier that “[h]umans are more important than hardware.” Our best and most advanced tactical aircraft—manned or unmanned—are nothing but expensive paperweights without their operators. As noted earlier, “[c]ompetent Special Operations Forces cannot be created after emergencies occur.” If we need a flexible force operating aircraft from stateside to fight overseas, then its personnel must be ready before the emergency occurs. Those operators may not have to sleep in camp tents or fend off desert bugs at night, but they still have to be ready when the alarm sounds. We still train for the top 1 percent of operators; why should the underlying selection and training principles for our special drone operators be different from those applied to our special operators in the field?

To employ a common metaphor, we are talking about changing how we view the “tip of the spear.” The spear no longer is hurled at the enemy by one person. Many highly trained operators from many different locations are coordinating to throw “spears” that are far more sophisticated. However, if the tip of the spear is no longer isolated to one physical location—the battlefield as we knew it—then sharpening that spear means keeping it sharp everywhere it will be lifted. Personnel-wise, this includes the special operator on the ground, the drone operator conducting reconnaissance, and others. Sharpening the spear in this sense means identifying the best human operators and enhancing their performance to peak levels. SOF truths are the perfect model to guide us in applying these ideas to human operators outside of SOFs.

Another big cultural change involves how we go about making these ideas a reality. As mentioned earlier—and proudly reaffirmed here—the military has a long tradition of being able to take any motivated man or woman, regardless of background, and train him or her to be an effective soldier, sailor, Marine, or airman. The current operational model is akin to that of a factory machine. The goal is to take raw material and conduct training until all aspects of that raw material perform and function in the same way. For more-specialized operations, we select people for the necessary roles on the basis of existing capabilities: Can they pass the test, or survive the experience?

Our take on precision selection directly contradicts this process. We do not provide the same training to everyone; rather, we identify individual strengths and weaknesses and train individuals to reach a given standard. Identifying training opportunities that address individual weaknesses enhances the training process. We help the individual achieve the necessary standard faster by identifying his or her current individual capabilities and focusing on those areas that are not yet up to standard. Sailor Smith and Sailor Jones no longer get all the same procedures—some, to be sure, but not all. Sailor Smith receives the training he needs, and Sailor Jones receives the training she needs.

This process can be focused all the way down to a cognitive level because performance problems can occur for many reasons, such as insufficient sleep or low morale or poor cognitive functioning. The roadblock that must be negotiated is the identification of the criteria on which we would make these precision selection and training assessments. We need new procedures that identify cognitive skills and capabilities that current training does not address directly.

This approach can achieve optimal human performance, and it represents the greatest opportunity for the Third Offset Strategy to have a real and long-lasting impact on U.S. military operations. However, it will require a basic shift in how we consider and pursue selection and training—a shift that can begin by adapting SOF principles and truths to a wider array of military activities.

COMPARING OFFSET STRATEGIES: WHAT SHOULD WE LEARN FROM PREVIOUS INSTANCES?

As its name makes obvious, the Third Offset Strategy is not the first of its kind. We have been down this road and used this approach to great effect throughout the latter half of the twentieth century. The previous examples can provide more than just historical context. Lessons learned from the previous strategies can be applied to the Third Offset Strategy to ensure its greatest possible effect.

The discussion that follows of the First and Second Offset Strategies will address the following questions:

1. What constitutes an *offset strategy*?
2. In the previous offset strategies, what considerations were given to the human operator?
3. What factors created the longest-lasting benefits?
4. What factors created the most-volatile situations?

Defining an Offset Strategy

While the term *offset strategy* has entered military jargon fully, there does not appear to be a consensus on what qualifies an approach as an offset strategy. Recent communications from senior DoD officials have called for a Third Offset Strategy, but these mostly provided a general direction and a common language for discussions about military R&D priorities in the early twenty-first century.²³ Other writings have described a variety of technologies that the Third Offset Strategy should pursue.²⁴ Perhaps the only universally agreed-upon point with regard to the Third Offset Strategy is that we are reaching an era in which American dominance on multiple fronts—sea, sky, space, and cyberspace—no longer can be taken for granted.²⁵ But what is an offset strategy, and why would having one help us now?

One definition of an *offset strategy* as a military tactic relies on the following three criteria:

1. Asymmetrical advantage: A nation seeks to compensate for a military disadvantage or force disequilibrium by attaining an advantage the adversary cannot match.
2. Unconventional approach: Simply increasing the size of existing forces to achieve the desired military advantage is not an option owing to fiscal, political, or practical constraints. Instead, a nation pursues some novel approach—through tactics, technology, or some combination thereof—to achieve the advantage.

3. Long-term sustainability: The novel solution must be sustainable over the long term, without an excessive drain on the national economy or military budgets.²⁶

An interesting note is that, when taken together, the latter two criteria produce a maxim for an offset strategy: maximum deterrence at minimal cost. An offset strategy gives a military an advantage that an opposing country cannot match; it accomplishes this goal by using unconventional means, primarily aimed at deterrence; and the military maintains this advantage for a long period. This maxim also indicates why a nation might pursue a particular course of action. Generally speaking, practicing deterrence is an economically efficient approach that does not require a nation to relinquish its military advantage.

Historical Context of the Previous Offset Strategies

Two previous cases in U.S. history often are held up as examples of offset strategies. The First Offset Strategy originally was called the New Look. The most narrow sense of the term merely described the DoD budget for fiscal year 1955.²⁷ During the Cold War, the United States faced a monolithic adversary in the Soviet Union. Matching Soviet conventional resources would have cost the United States more than three times its entire defense budget, which would have led to an “unbearable security burden leading to economic disaster.”²⁸ President Eisenhower and his administration decided to shift tactics. They found a military advantage that would deter the Soviets without needing to match conventional forces—the First Offset Strategy.²⁹ In short, they offset a conventional weapons disadvantage with a nuclear weapons advantage. The United States thus opted to pursue nuclear deterrence via a policy of massive retaliation rather than by matching conventional forces.³⁰ The First Offset Strategy appears to have been successful for a time—military expenditures, as a percentage of the total budget, declined, without sacrificing overall U.S. military strength.³¹

The Second Offset Strategy began to emerge once the Soviet Union neutralized the U.S. nuclear advantage. With mutually assured destruction a reality, both nations could rely on conventional forces only, and in that area the Soviet Union still held a mammoth advantage over the United States.³² Again, matching those conventional forces would have bankrupted the United States and NATO. (Thus, economic concerns emerge yet again as a critical factor in determining why a nation would pursue an offset strategy instead of conventional superiority.) The solution came not in nuclear yield but through precision. The trick was to take human error—the inaccuracy of human operation of the targeting systems—out of the equation, so as to guarantee mission accomplishment. The role of the human operator changed in the Second Offset Strategy; precision accuracy was achieved through technology, not via human aim. The result exceeded all expectations. By

1984, a top Soviet official called one Second Offset program, Assault Breaker, a “military-technical revolution,” a formulation that morphed into the American axiom “a revolution in military affairs.”³³ American precision capabilities could destroy two thousand Soviet tanks, from miles from the front lines, in less than a day.³⁴ Second Offset advantages put American capabilities ahead of Soviet conventional forces—yet again without having to attempt the unsustainable investment necessary to match forces soldier for soldier.

Ultimately, the United States managed to maintain a military advantage without experiencing economic collapse, whereas the Soviet Union did not fare so well. Many different factors contributed to the eventual dissolution of the Soviet Union—which factor was most influential is debatable—but economic issues certainly contributed.³⁵

Second Offset Strategy advantages proved durable over decades, leading to continued U.S. military successes. Both Gulf Wars demonstrated the advantage of Second Offset technologies over adversaries unable to match that technology.

Lessons Learned: The Role of the Human Operator in Previous Offset Strategies

With regard to the First Offset Strategy, human operators armed with conventional weapons represented an unsustainable economic weakness—the United States could not attempt to match its forces against Soviet-led capabilities. It also could be argued that large armies represented a tactical vulnerability; after all, in the nuclear world, large standing armies became optimal targets that could be eliminated with a few nuclear bombs. Another consideration of the First Offset Strategy was a secondary, but no less important, liability: the dependence on error-prone, sometimes unpredictable, human operators.

The Cuban missile crisis demonstrated this issue, although the specific incident in question is not widely known. Typically, Soviet submarines could launch nuclear weapons if the captain and political officer agreed to the action. Aboard *B-59*, however, nuclear launch required the approval of a third officer: Vasili Arkhipov. He was second in command of *B-59*, yet also commander of the submarine flotilla. This authority made him equal in rank to the captain and gave him a say in whether nuclear weapons could be launched. When several practice signaling depth charges dropped by USS *Beale* (DD 471) struck the boat’s hull on October 27, 1962, the captain and political officer wanted to launch a nuclear torpedo against the U.S. fleet.³⁶ Only Arkhipov disagreed—thereby preventing an action that likely would have escalated the confrontation into full-scale nuclear war.³⁷

Because of the tactics involved in the application of the First Offset Strategy, tens of millions of American lives came down to the actions of a single man—and not even a member of the American military. He easily could have acted

differently; in fact, two of the three men in his situation, on the same submarine, did act differently. While we are all thankful for Arkhipov's discretion, the events on *B-59* reveal the potential danger of trusting so many individual human operators to execute reliably a First Offset Strategy that relied on a consistent willingness to use the apocalyptic power of nuclear weapons when necessary. Thus, the human operator represented a multifaceted liability within the First Offset Strategy.

For the Second Offset Strategy, the human operator shifted from being a liability to a cog in the machine—a button pusher. Precision guidance required taking the human out of the targeting systems as much as possible and letting computer systems guide our birds to their targets. While the extent to which precision guidance relegated human operators to being mere button pushers could be argued, it is clear that the role of the human operator changed significantly. In many cases, once a decision to engage the enemy was made the human operator was consigned to being a bystander.

Beyond considering the role of the human operator in each strategy, we can learn from what each strategy did effectively. The First Offset Strategy did succeed, although its advantages were volatile and short-lived. Its continuing contribution is the concept of mutually assured destruction; however, today this reality affects our immediate and practical operations very little. A weakness of the First Offset Strategy was that its tactical contributions were eliminated almost entirely once other countries achieved nuclear parity. The Second Offset Strategy fared much better in that regard. Specifically, precision weapons are as useful today as they were in the 1980s. We have not discarded these capabilities, and they continue to impact our ongoing operations. The Second Offset Strategy had to start fresh because it could not build on the advantages the First Offset Strategy had achieved. The Third Offset Strategy can build on Second Offset Strategy advantages, and that aspect should be considered as we plan for the new strategy. Our long-term goals should be to develop capabilities that future developments cannot simply eliminate or overwhelm. This idea further confirms enhanced human performance as an ideal focus for the Third Offset Strategy, because the performance procedures we develop now will continue to be useful long after the Third Offset Strategy itself enters the history books.

Another important difference between the emerging offset strategy and its predecessors involves how we will pursue these technologies. Unlike the earlier approaches, we are well aware that a new strategy is emerging; whereas the previous strategies scrambled to address existing challenges, this time we have the opportunity to be proactive. This awareness allows us to design our approach in a more deliberate fashion than with the previous methodologies. This point becomes more important given that the Third Offset Strategy is really a series

THE HUMAN IMPACT ON OFFSET STRATEGIES

Offset Strategy	U.S. Personnel	Adversary Personnel
First Offset: nuclear deterrence	Liability: The economic and logistical challenges of fielding U.S. personnel in the numbers necessary to win a conventional war made them a liability.	Tyranny of numbers: The Soviet Union and the Warsaw Pact could field an army in Europe substantially larger than NATO was willing to support.
Second Offset: precision conventional weapons	Source of error: The complexity of the modern battle space exceeded the capabilities of the human being to engage the enemy effectively and rapidly without unacceptable errors, requiring development of strategies to remove the human element to the extent possible.	Remote and hidden: Nonstate actors strike from locations hidden in urban environments, while more-traditional state enemy forces hide behind a shield of overwhelming numbers of conventional weapons. Both scenarios create a tremendously complex battle space.
Third Offset: enhanced human performance	Strategy focus: Astonishing advances in information technologies allow presentation of an overwhelming array of data to human operators and their commanders. Enhancing the physical, cognitive, and decision-making capabilities of the human operator becomes central to successful military operations.	Flexible: Advances in cyber (Internet, mobile communications, etc.) and other technologies allow enemy personnel to operate without the limitation of state borders. Management and synthesis of complex data from multiple sources are required to track and target enemy personnel effectively.

of smaller strategies all working toward the eventual overall goal of enhanced human performance. To that end, we can construct a more theoretical guide to identify, describe, and structure concurrent efforts.

The United States employed two offset strategies during the twentieth century as means of creating viable and sustainable military deterrents. The First Offset Strategy developed principles of nuclear deterrence and massive retaliation that, while effective at the time, were flawed in that they treated the human being as a necessary liability. Both offset strategies were employed to great effect and maintained a military advantage throughout the latter twentieth century at a minimal cost. This fiscal component proved vitally important, as the continual buildup of conventional military forces contributed to the collapse of the Soviet economy, while the U.S. economy endured.

Unfortunately, the significance of precision weapons in maintaining a military advantage is dwindling as other nations develop similar technologies. The revolution in communication and information technologies as well as the involvement of nonstate actors has created challenges never before seen. Additionally, the advent of fourth-generation warfare and cyber warfare threatens to make Second Offset technologies less relevant.³⁸ A new offset strategy is required. Although the Third Offset Strategy remains in its earliest stages of development, central to its success will be the human operator. Current and future battle spaces will be global and multidimensional, with the only common element across the dimensions

being the human being. By emphasizing the human element, the Third Offset Strategy can create an asymmetrical advantage that potential adversaries will be unable to match. Previous offset strategies limited the human element; the First Offset Strategy viewed the human operator as a fiscal liability (i.e., maintaining conventional strength could be considered too expensive compared with maintaining nuclear weapons), and the Second Offset Strategy tried to minimize human error by removing the human from the equation as much as possible.

Now we propose the opposite: to maximize human performance through emerging technology and new systems, from human-machine combat teaming to assisted human operations.³⁹ This new offset strategy incorporates distinct roles for both technological innovation and the human operator, as well as leveraging the capabilities of both to create an advantage greater than either could achieve alone.⁴⁰ To provide platforms for these new capabilities, we propose efforts in three key areas.

- Cyber initiatives and “big data” can sustain operations in previously denied environments, process information more quickly than human operators could, and ensure that the most-reliable and most-accurate information is delivered to the operator.
- Human-machine teaming will become essential for both operations and training, but this integration presents a host of new challenges for which Third Offset Strategy initiatives must prepare.
- Precision selection and training can produce the individual enhancement and flexibility our future forces will require, and we should build this precision model on the truths embraced by SOFs and using all available tools, including those being pioneered as part of the precision medicine revolution.

Ultimately, the Third Offset Strategy should take a new tack, one that seeks to maximize human performance by using new evidence-based technologies to provide task-specific personnel selection; create individualized, competency-driven training; optimize the operator’s physical, cognitive, emotional, and decision-making abilities; and augment warfighter capabilities in the field through well-researched and proven human-machine integration. In short, as the fundamental framework for a successful Third Offset Strategy, we propose a Performance Enhancement Triad consisting of cyber initiatives, human-machine integration, and precision selection/training. Constructing each component of the triad will require a broad strategic investment in an equally broad array of technologies. Working across these three domains, the ultimate goal will be the enhancement of human performance. Although constituting a dramatically different philosophical approach and practical application from the previous offset

strategies, a focus on human performance may represent a viable, economically sound method of creating new military advantages over potential adversaries for the twenty-first century.

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29. The First Offset Strategy was not referred to as such at the time; this terminology was adopted more recently. The term features prominently in the foundational speeches that identified the Third Offset Strategy as a key priority for future R&D. These included Chuck Hagel's keynote speech at the Defense Innovation Days conference in Newport, Rhode Island, on September 3, 2014, and Deputy Secretary of Defense Bob Work's speech "The Third U.S. Offset Strategy and Its Implications for Partners and Allies" (Willard Hotel, Washington, DC, January 28, 2015).
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31. John Lewis Gaddis, *Strategies of Containment: A Critical Appraisal of American National Security Policy during the Cold War* (Oxford, U.K.: Oxford Univ. Press, 1982), p. 162.
32. Bitzinger, *Assessing the Conventional Balance in Europe*, pp. 22–23.
33. Annie Jacobsen, *The Pentagon's Brain: An Uncensored History of DARPA, America's Top Secret Military Research Agency* (Boston: Little, Brown, 2015).
34. Thomas G. Mahnken, *Technology and the American Way of War since 1945* (New York: Columbia Univ. Press, 2010), p. 130.
35. Ronald G. Suny, *The Revenge of the Past: Nationalism, Revolution, and the Collapse of the Soviet Union* (Stanford, CA: Stanford Univ. Press, 1993).
36. William Burr and Thomas S. Blanton, eds., "The Submarines of October: U.S. and Soviet Naval Encounters during the Cuban Missile Crisis," National Security Archive Electronic Briefing Book 75, *National Security Archive*, October 31, 2002, nsarchive2.gwu.edu/, p. 31; Edward Wilson, "Thank You Vasili Arkhipov, the Man Who Stopped Nuclear War," *The Guardian*, October 27, 2012, www.theguardian.com/.
37. Michael Dobbs, *One Minute to Midnight: Kennedy, Khrushchev, and Castro on the Brink of Nuclear War* (New York: Vintage, 2008).
38. Lind et al., "The Changing Face of War," pp. 22–26.
39. Lange, "3rd Offset Strategy 101."
40. It is worth reiterating a subtle but important philosophical point here. The Second Offset Strategy sought to achieve maximum effort through precision and minimal error. In that context, minimizing human error required removing the human from the operation as much as possible. In contrast, the Third Offset Strategy seeks to enhance human performance. Although enhanced performance also seeks to minimize human error, the basic approach is to do so through improved human performance rather than by minimizing the role of the human operator. Another subtle difference is that enhancing human performance is about not only avoiding errors but improving performance ceilings as well.

CHARTING A NEW COURSE

The Knox-Pye-King Board and Naval Professional Education, 1919–23

David Kohnen

Education occurs in many forms within the context of military organizations, whether during peace or war. Training often reflects the prevailing doctrines, as prescribed within the hierarchical context of rank-oriented organizations. The nexus between education and training remains an uncharted area of historical interest among contemporary military thinkers. As we look beyond the present to the unexplored frontier of the future, the past may offer some perspective on the question of professional military education.

Given these broad assertions, this article focuses on the problem of education within the U.S. Navy of the First World War era. In considering the efforts of Captains Dudley W. Knox and Ernest J. King of a century ago, contemporary practitioners may recognize familiar trends concerning the future of professional

military education. Throughout their careers of more than fifty years, Knox and King challenged fellow American naval professionals to open their minds in addressing the strategic problem of education. With Commander William S. Pye contributing, Knox and King studied the problem in detail on their return from Europe after the First World War.

Knox and King presided in compiling their recommendations, while Pye gathered evidence to substantiate their conclusions concerning the problem of education within the Navy. Knox, King, and Pye characterized U.S. naval professionals,

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particularly at the higher levels of command, as having been fundamentally unequipped, from an educational perspective, to perform within the context of the First World War. Broadly, USN officers suffered from ignorance after being educated by the Naval Academy “only in preparation for the lowest commissioned grade.”¹ In making this provocative assertion, Knox and King drew inspiration from their personal interactions with a variety of ranking officers. In particular, King and Knox recalled the “salt horse” culture that had prevailed in their First World War dealings with such figures as Royal Navy (RN) admiral Sir David Beatty and USN admirals Henry B. Wilson and Hugh Rodman. Reputations centered on questions of seamanship and years of practical experience; King railed against this in his characterizations of Beatty and with his observation that “Wilson, like Rodman and some other senior officers, distrusted ‘book learning.’”² Acting on their assertions, Knox and King collaborated with Pye to stage an educational revolution from within the middle ranks of the Navy after the First World War.

Admirals Henry T. Mayo and William S. Sims provided inspiration and bureaucratic “top cover” for their protégés Knox and King. In keeping with the tribal culture that defined the American naval service at that time, the individuals in question all maintained strong professional connections with each other. Transcending their initial Naval Academy education, they adopted the prevailing Navy-wide culture that viewed the service more as a fraternal society than a lifelong vocation.³ During the first fifty years of the twentieth century, American naval officers demonstrated such commitment that Henry L. Stimson characterized them as being almost religious about their profession. Having served in a number of presidential administrations (twice as Secretary of War and once as Secretary of State), Stimson grew to respect the “peculiar psychology of the Navy Department, which frequently retired from the realm of logic into a dim religious world in which Neptune was God, Mahan his prophet, and the United States Navy the only true church.”⁴

JUST BELOW THE SURFACE OF NAVAL HISTORY

The problem of education and its underlying strategic importance to the U.S. Navy was reflected in efforts to define the naval profession. The unresolved fight over professional education in the Navy of the nineteenth century also defined the early twentieth-century perspectives of Knox, Pye, and King.⁵ To place their perspectives into a historical context: Navies traditionally had required personnel with technical expertise in the sciences, rather than the humanities, for the practical purposes of operating and maintaining ships. Drawing from the ideas of British historians such as Sir John Knox Laughton and Spenser Wilkinson, Rear

Admiral Stephen B. Luce, USN, stirred debate after he established the Naval War College in Newport, Rhode Island, in 1884.⁶ His protégé Captain Alfred Thayer Mahan also considered the problem in one of his earliest writings, in 1879. In an article entitled “Naval Education,” Mahan challenged the prevailing attitude of the Navy Department bureaucracy, arguing that the historical functions of the sea services should be considered a national investment.⁷ He encouraged Americans to seize a future economic stake in the international context. To this end, Mahan pressed for the development of a strong merchant marine and a credible navy to participate in the global maritime arena.⁸

Historically, navies comprised seagoing practitioners of multiple social backgrounds and cultural identities. In considering the historical and social dimensions of maritime strategy, Mahan warned the U.S. Navy to avoid overemphasizing the “necessarily materialistic character of mechanical science,” which “tends rather to narrowness and low ideals.”⁹ He also considered the historical nexus of peace and war to be an uncharted area of consistent strategic interest for future historical discussion. By comparison with other navies in the global maritime arena, the U.S. Navy was among the least remarkable from a technical perspective in 1890, when Mahan gained international fame with the publication of his *The Influence of Sea Power upon History*. Mahan acknowledged technologies as a variable, but he encouraged fellow naval professionals to seek a deeper understanding of the maritime arena. “Nevertheless,” Mahan lamented, his fellow American naval professionals tended to suffer from a “vague feeling of contempt for the past, supposed to be obsolete, [that] combine[d] with natural indolence to blind men even to those permanent strategic lessons which lie close to the surface of naval history.”¹⁰

The culture of the American naval service reflected the scientifically oriented curriculum of the U.S. Naval Academy. Naval Academy training conditioned midshipmen to follow the rules, adopt a mathematical approach to solving problems through a “concentration on fractions,” and accept rote doctrinal solutions. The Naval Academy engineered the development of practitioners to become tactically minded masters of seamanship. Before the First World War, the formulaic approach of the Naval Academy curriculum fueled a counterproductive culture within the Navy, beginning when the “average midshipman, reluctant to admit his ignorance, would stand at the blackboard chewing chalk rather than ask a question.”¹¹ On graduation, junior practitioners sought to earn reputations for competence by offering scientifically framed empirical answers in their interactions with the more seasoned, seagoing salt horses among the senior ranks of the Navy.¹² Junior officers refuted their senior-ranking counterparts at their peril, which tended to stratify further the ranks of the Navy.

Thus, the Naval Academy indoctrinated graduates to take a mathematical approach to solving abstract problems, and the hierarchical system of bureaucracy and ranking by lineal seniority governed the culture of the service; however, these tendencies only somewhat overshadowed the underlying nuances and informality that operated among individual personalities. These group dynamics among associated individuals that characterized the underlying culture of the service also influenced the development of professional education in the Navy. William S. Sims served as one nexus for such informal but important associations.

Having spent thirteen years in Canada in his youth, Sims returned to the United States shortly after the Civil War. In his youth he constantly sought adventure, avoided working for grades in school, and assumed the nickname "Bloody Bill."¹³ He considered pursuing a career as an artist. But as the U.S. Navy went through a technological transformation from the era of wooden ships and sail to that of steel and steam, Sims also found inspiration in the progressive vision of the Navy, which provided opportunities to operate on the cutting edge of technology, and he successfully sought an appointment to the Naval Academy. He performed well as a student but poorly as a midshipman, earning a reputation for collecting demerits. Sims proudly remembered running afoul of one instructor: Lieutenant Commander Alfred Thayer Mahan. Standing watch on campus, Mahan sternly punished Sims for being "disorderly on the quarterdeck and disrespectful to the officer of the deck."¹⁴ Sims nearly failed to meet the requirements for graduation from the academy, but long before he graduated in 1880 he had earned a reputation within the ranks.

Sims directly participated in a period of revolutionary changes in both technology and American strategy. For him, rank held no great significance in the pursuit of a shared vision of a U.S. Navy "second to none."¹⁵ Combat experiences further solidified the unique connections among individuals that characterized the culture of the American sea services. During the 1900 Boxer Rebellion in Asiatic waters, Sims became a close mentor to Knox and friendly with King. Beyond their shared interests in naval gunnery and battleship design, Sims enjoyed discussing esoteric subjects in naval history with Knox and King. Later, as naval aide to President Theodore Roosevelt, Sims continued nurturing ties with Knox and King. In particular, Sims frequently traveled from Washington to Annapolis, where he called on King while the latter served as an instructor at the Naval Academy.

With Sims acting as a common mentor, Knox and King developed a lifelong friendship that originated in their shared fascination with maritime history. Both served with Lieutenants Harry E. Yarnell and William S. Pye under Rear Admiral Hugo W. Osterhaus in the Second Battleship Division of the Atlantic Fleet after

1909. Knox and King collaborated with Yarnell and Pye in planning gunnery exercises with the Royal Navy during a cruise to European waters in 1910. At that time, Commander Sims reported into the Second Battleship Division in command of the predreadnought USS *Minnesota* (BB 22).

Junior-ranking personnel frequently gained insight into the higher-ranking politics of the Navy when they served on fleet staffs. Assignment under Osterhaus in the Atlantic Fleet provided such a perspective for Knox, King, and Pye. Among other matters, they observed higher-ranking officers discussing the controversial appointment of Sims to command *Minnesota*. In 1910, Sims stood seventieth on a list of 120 officers in the rank of commander; such an assignment usually was reserved for officers of a higher lineal seniority or of lower seniority in the rank of captain.¹⁶ Captain William S. Benson warned Sims to tread carefully as skipper in *Minnesota*, as Sims's connections to Roosevelt clearly had influenced his assignment. Benson warned Sims that many naval officers thought that the appointment "established a dangerous precedent of giving battleships to Commanders."¹⁷ On reporting for duty in *Minnesota*, Sims met with Osterhaus and his relief, Rear Admiral Joseph B. Murdock. As the higher commanders set all the details for the forthcoming cruise to European waters, they gossiped; and observing from the corners were Knox, King, and Pye.¹⁸

Sims nurtured his reputation and carried himself with a cosmopolitan demeanor to attain celebrity status within the service. Beyond his close association with Roosevelt, Sims had significant political influence through his wife, Anne, and his father-in-law, Ethan Allen Hitchcock, the American ambassador to the tsarist court of the Russian Empire. In addition, Sims boasted close friendships with famous RN personalities, including the First Sea Lord, Sir John A. "Jackie" Fisher; Captains Sir Percy M. Scott and Sir John R. Jellicoe also counted Sims among their closest friends.¹⁹ The American officer anticipated the development of a transatlantic relationship between the British Empire and the United States.

In celebrating the unique connection between the two maritime powers during a celebratory dinner at the Guildhall in London in December 1910, Sims muddled his way into an international controversy. The scope of his remarks went beyond official American policy, extending to a prospective Anglo-American alliance. The *New York Times* characterized the Anglo-American celebrations at the Guildhall as a "Love Feast." "Had that speech been made by any other officer below the rank of Captain in the Atlantic Fleet, except Sims," one USN officer suggested to the *New York Times*, "it's dollars to doughnuts that no attention would have been paid to it, but coming from Sims, who despite his rank and youth is one of the best-known officers in the service, made it different."²⁰ For his indiscretion, rivals within the service ensured that Sims was removed from

command of *Minnesota*, which resulted in his extended exile away from the fast track to higher command—as a student at the Naval War College in 1911.²¹

Sims recognized the assignment to the College as a punitive setback, which likely carried personal consequences in the fierce competition for higher command among the seagoing ranks of the Navy. But Sims accepted his fate and committed himself to his studies. He soon recognized the broader value of historical studies, informed debates in a classroom setting, and provocative argument in written form.

The issue of professional education within the U.S. Navy remained unresolved by the time Mahan died in 1914 and Luce in 1917. Sims took up their cause, as the future of the Naval War College seemed bleak—particularly under the administration of Secretary of the Navy Josephus Daniels.

“REMAIN CHEERFUL”



Captain Dudley W. Knox, USN.

U.S. Navy photograph, courtesy North Sturtevant

Sims's dashing reputation, coupled with his unique willingness to buck the system, automatically inspired great respect from many junior officers within the ranks. In particular, Knox considered Sims to be the “model of an American naval officer.”²² Personal correspondence between Sims and King also reflected a close friendship, although King disingenuously recalled in his memoirs that he “was never one of the group of Sims's devoted disciples and followers.”²³

As the First World War raged in Europe and Asia, Sims secured orders to command the then-named Atlantic Fleet Destroyer and Torpedo Boat Flotilla in 1914. In this role, Sims employed Naval War College methods to inspire subordinate protégés to carry forward the cause of educating other seagoing practitioners of the Navy.

Pulling every bureaucratic string, Sims circumvented the Navy Department's detailing processes to arrange orders for a very select team of junior officers to serve under his command in the flotilla. In particular, he pulled Knox from service in the tender USS *Dixie* (AD 1) and King from his assignment as skipper of USS *Terry* (DD 25). In this role, King fell under the immediate operational command of Commodore Henry T. Mayo during the conduct of convoy-escort duties in support of operations against the Mexican insurgency off Veracruz. Sims asked King to leave command of *Terry*, with the enticement of “coming to the flotilla to lend us a hand in the schemes we are trying to develop.”²⁴ Sims sweetened the proposal by offering King command of USS *Cassin* (DD 43). With Sims assuming the Nelsonian role of senior mentor among equals, Knox and King assumed their roles in the flotilla—the “band of brothers.”²⁵

Service in the “Sims flotilla” inspired strategic connections among key personalities as the U.S. Navy carried out the transformation of its fleet from one

dominated by coal-burning battleships to one of oil-powered warships of various types and specialized capabilities. Among others on Sims's flotilla staff, Commanders William V. Pratt, Joel R. P. Pringle, and Harry Yarnell helped foster close bonds among the individual destroyer skippers, including Lieutenant Commanders Harold R. Stark, William F. "Bill" Halsey Jr., and Joseph K. Taussig.²⁶ In their personal correspondence, veterans of the Sims destroyer flotilla tended to use the phrase "remain cheerful" as their parting salutation, denoting their mutual membership in a unique fraternity within the ranks of the Navy.²⁷

Sims inspired subordinates to focus on a common vision and work together as a team. He issued mandatory reading lists for his skippers to enable them to participate in open wardroom discussions, whether on topics in naval history, including reconstructions of past battles, or the testing of their current theories during tabletop wargames. Sims referred to the atmosphere established among the officers in the flotilla as a "War College afloat."²⁸ Through such open discussions, Sims and his staff developed totally new tactics for maneuvering destroyers in unison, using a wireless communications system of fewer than thirty-one words.²⁹ The cost savings resulting from conducting the developmental tests with destroyers rather than the larger battleships enabled Sims and his men to pioneer

new tactics that could be applied to larger fleet operations.

In the process, Sims himself transformed from being a seagoing salt horse into a zealot for the Naval War College brand of professional education. Such commitment to this cause put him out of step with the political agenda of Navy Secretary Daniels; Sims's relationship and dealings with Admiral William S. Benson as the first Chief of Naval Operations also remained tenuous. Given the costs involved with maintaining a separate Naval War College, Daniels and Benson judged the institution's curriculum to be sufficiently analogous to that of the Army War College in Carlisle, Pennsylvania. Given the pressures of balancing budgets and political horse trading within Congress, Daniels and Benson endorsed the idea of a unified Army and Navy war college, which could be established closer to the capital.³⁰



Josephus Daniels, Secretary of the Navy (left), and Admiral William S. Benson, Chief of Naval Operations (right).

Naval History and Heritage Command

For Sims the idea of closing the Naval War College seemed outrageous, as the U.S. Navy stood on the brink of potential involvement in the global conflict already raging among the empires of Europe and Asia. He considered the fundamental differences between armies and navies so profound that the “Naval War College should be made one of the principal assets of the Naval Service.”³¹ Against the overarching emphasis that Daniels and Benson placed on the maintenance of seagoing forces, Sims argued for the potential necessity of placing warships “out of commission in order to avoid decreasing the efficiency of the education of our officers.”³² Sims challenged fellow naval professionals to recognize the strategic advantages to be derived from supporting the educational mission of the Naval War College. With a clear purpose in mind, Sims articulated his points in an article published in the Naval Institute *Proceedings* in mid-1916 under the provocative title “Cheer Up!! There Is No Naval War College.”

In the article, Sims cited complaints from some within the seagoing ranks that many of their colleagues needed a “dictionary to tell them the meaning of the commonest terms.” Sims chastised critics of the Naval War College, suggesting that they suffered from “wholly unpardonable ignorance,” then broadened his charge: “When I went to the college . . . the service was very generally ignorant of its purposes and the practical value of its teachings.” He deplored the failure of many officers to understand “its vital importance to the efficient conduct of our fleet.”³³

Sims stated that he wished to “make plain that he [was] a thorough and enthusiastic advocate of the college.” The article characterized the Naval War College as an educational forum wherein practitioners enjoyed freedom of discussion. Sims offered the seemingly counterintuitive argument that there was

no War College, as the term “college” is usually understood. There is no president or corps of professors who remain during life and good behavior and whose duty it is to impose their conclusions upon the pupils. . . . [The] assemblage of officers is practically a board convened each year for the purpose of determining the best manner of conducting naval warfare with vessels and weapons of ever-changing characteristics. The staff of the college, generally fresh from the fleet and a course at the college, presents the accepted principles of war, and the accepted manner of writing orders, issues the rules of the war games to be played, and helps the pupils play them.³⁴

After their interactions with officers of higher rank, Knox and King frequently compared notes about their discussions of organizational and naval leadership. Reflecting on his personal experiences, King noted that “Captain Sims himself was an officer of extraordinary energy, but given to speaking with exaggeration”; he observed that, for Sims, “all matters were clear white or dead black.” Although King claimed to be less committed, Knox remained cheerfully associated with Sims throughout the First World War and beyond. As head of the Planning



Admiral Henry T. Mayo with Atlantic Fleet staff. Mayo's chief of staff, Captain Ernest J. King, is at far left; his fleet intelligence officer, Commander William S. Pye, is third from left, on the steps behind Mayo.

U.S. Navy photograph

Section in USN Headquarters in Europe, Knox frequently collaborated with King and Pye, both of whom served on the seagoing staff of Admiral Henry T. Mayo, the wartime commander in chief of the Atlantic Fleet. Characterizing his mentors, King thought that “Sims was flighty, Osterhaus steady, and Mayo was the man for me.”³⁵

Debates surrounding the practical functions of the Naval War College and the role of higher education raged in the seagoing wardrooms and officers clubs ashore, even as the U.S. Navy sailed over the horizon to participate in the first war requiring American forces to operate within a strategic context of multinational operations in foreign waters. Having assumed the presidency of the Naval War College in the rank of captain in February 1917, Sims within weeks became commander of USN forces in Europe—largely by accident.³⁶ By June, he was serving in the temporary wartime rank of vice admiral (three stars). Yet Sims lacked a clear prerogative to assert control over the warships now participating in ongoing operations; instead they fell under the immediate command of his lineal senior in rank, Mayo of the Atlantic Fleet.³⁷

Nonetheless, Mayo and Sims collaborated in developing American naval strategy by pioneering organizational means to harness the advantages of wireless



Vice Admiral William S. Sims, USN, as Commander, U.S. Naval Forces in Europe during World War I.

U.S. Navy photograph, courtesy Dr. Nathaniel Sims

communications and to enable naval headquarters ashore to orchestrate the interactions of operations and intelligence. To their great credit, Mayo and Sims unified their collective strategic efforts, empowering their immediate subordinates to act with their authority in planning multinational strategy, making recommendations governing USN tactical forces in European waters, and executing operational decisions. Relying on their previous associations with those who were now their subordinates, Mayo and Sims empowered them to overcome problems of command organization. From within the “London Flagship” headquarters, Sims authorized Knox to work with King and Pye in mobilizing the forces of Mayo and the Atlantic Fleet. However, while Mayo and Sims established a great rapport, subordinate

Atlantic Fleet commanders such as Wilson and Rodman frequently challenged Sims’s authority, which just as frequently required Mayo to promulgate directives to enforce those of Sims.³⁸

In dealings with foreign allies, the U.S. Navy suffered from intramural fighting among its various disjointed commands. The parochialism and patriarchalism within USN culture ultimately convinced Mayo to sign a memorandum concerning the Atlantic Fleet staff that had been drafted by Captains King and Donald C. Bingham, with assistance from Commander Pye, under the title “Education and Training of Officers for Staff Duty.”³⁹ On February 20, 1919, in one of his last acts as Atlantic Fleet commander, Mayo submitted the recommendations to the Bureau of Navigation in Washington.

“Officers assigned to ‘staff duty’ should,” Mayo argued, have the “same viewpoint and perspective as that to which flag officers . . . have attained by reason of their study, training, and long experience throughout their careers in the service.” Mayo criticized the prevailing system of educating officers to master tactical doctrines and technical functions governing shipboard routines rather than subjects focused on higher strategic levels. He observed that the Navy suffered from the “present lack of arrangements for the education and training of officers for ‘staff duty.’” Mayo endorsed the Naval War College approach, arguing that the



Admiral William S. Sims with Admiral Henry T. Mayo in 1918.

U.S. Navy photograph

curriculum represented a prerequisite for practitioners to succeed at higher levels of command. He noted that the College's curriculum was "generally reserved for the instruction of higher ranking officers"; as a result, the Naval War College lacked "facilities of sufficient general scope for the education and training of officers for 'staff duty.'"⁴⁰

Mayo returned from the First World War determined to address the fundamental problem of education within the U.S. Navy. In 1919, he accepted reduction from four- to two-star rank and a sunset advisory assignment to the General Board of the Navy. He also arranged orders for his protégé King to assume command of the Naval Postgraduate School at the Naval Academy in Annapolis. After reporting for duty on May 1, King immediately lobbied the Navy Department

for an expanded budget and additional personnel for the school.⁴¹

EDUCATION BEFORE THE MAST

The special bond among American naval practitioners influenced the development of professional identity within the Navy. Within the structured culture of the naval service, sailors all stood essentially equal in the unique context of shipboard life at sea. Skippers traditionally took responsibility for nurturing their subordinates so that eventually they would earn commands of their own.

Seagoing experience prevailed in establishing reputations for higher command within the ranks of the Navy. Mayo and Sims stood out as advocates for professional education among the salt-horse culture that persisted after the First World War among the members of the elder generation of practitioners. By contrast, their contemporaries in rank—particularly Benson, Rodman, and Wilson—resisted challenges to the status quo. "The opinion has been generally held in the Navy," King noted, that the "only way to learn things is to do them," whereas "[b]ook learning [and] abstract knowledge is like fertilizer," he observed; it "does not of itself produce anything, but it stimulates growth and advance when the live seed [of] practical experience is instilled into the soil."⁴²

Wartime experiences inspired King to enter the fray in efforts to establish higher professional education standards in the U.S. Navy. He first broadened the Naval Postgraduate School curriculum, focusing on the mission of preparing student practitioners for assignment to receive graduate education at civilian universities. He fostered partnerships between the school and the Massachusetts Institute of Technology, Harvard, Columbia, Northwestern, the University of Chicago, and the state universities of Iowa, Wisconsin, and Michigan. King developed the curriculum to focus on transcendent concepts of permanent value rather than empirically framed staff school solutions. King assumed the function of teacher, rather than examiner, at the school. His approach contrasted with the traditional culture of military discipline that prevailed on “the Yard” at the Naval Academy. In the spring of 1919, King solicited assistance from his mentors Mayo and Sims.

While peace negotiations dragged on at Versailles, outside Paris, after the armistice, USN forces demobilized from wartime operations and returned to American waters. But in wartime propaganda Sims had attained heroic status as the personality most associated with victory in the First World War and international fame as the widely mythologized personification of the spirit of future Anglo-American collaboration. With Sims having been promoted from captain in 1917 to four-star admiral by 1919, it appeared politically inevitable that he would remain in four-star rank as Chief of Naval Operations.

However, after the American declaration of war Sims had performed his wartime service in a temporary status, so technically he remained in his permanent assignment as President of the Naval War College. And over drinks with his friend Knox in Paris in January 1919 Sims learned about the Navy Department’s plans to proceed with the disestablishment of the separate Army and Navy War Colleges; Captain William V. Pratt had written to Knox earlier about the plans of Navy Secretary Daniels and Secretary of War Newton D. Baker to establish a consolidated war college in Washington, DC. With this most recent news, Sims requested immediate orders to return to the Naval War College. In the course of his reassignment, he accepted demotion from his temporary wartime rank of four stars to a permanent peacetime rank of two stars.⁴³

Sims recruited his protégé Knox and his former intelligence officer in London, Lieutenant Tracy Barrett Kittredge, to join the faculty of the College. Sharing similar concerns about the future of professional education within the Navy, Sims and Knox developed a strategy to save the Naval War College. Sims also worked through the good offices of King at the Postgraduate School and Mayo on the General Board in Washington. Together, they drew from the model that Sir Julian Corbett had designed at the Admiralty in London, wherein historically trained analysts associated with the Historical Section of the Naval Intelligence Division



Lieutenant Tracy Barrett Kittredge, USNR.
Courtesy Branden Little

examined issues of contemporary importance to the RN staff. In June, Sims empowered Knox and Kittredge to organize at the Naval War College an analogous subdivision known as the Historical Section. The section's immediate charter was to synthesize analytical requirements supporting the higher educational mission to align with those of the Operations Navy (OpNav) planning staff in Washington.

Rather than proffering overt challenges to the authority of Daniels or the Navy Department, Mayo and Sims worked outside the General Board and the Naval War College—through their protégés. Mayo and Sims empowered these more junior officers to incite a bureaucratic revolution from below. Mayo acted through King at the Postgraduate School in Annapolis to initiate actions, which provided the pretext for Sims in his turn to initiate a study of the problem of education.⁴⁴ Knox, the Naval War College chief of staff, recommended the establishment of a board to study the critical issues and offer recommendations for future action.

King subsequently shared Knox's recommendations with the superintendent of the Naval Academy, Rear Admiral Archibald H. Scales.⁴⁵ In turn, Scales endorsed the idea of organizing a board to examine the issues, offer findings, and provide a strategy for professional education.⁴⁶

This methodology granted Mayo and Sims bureaucratic immunity, as it was Knox and King who influenced Scales to endorse a recommendation to the Bureau of Navigation to establish a board consisting of Naval War College and Naval Postgraduate School personnel to study the strategic problem of professional education. Knox worked the ropes with other members of the Naval War College faculty while King and Pye gathered evidence to substantiate their arguments.

In particular, King drew inspiration from the works of Professor Edgar James Swift of Washington University in Saint Louis, Missouri. King would use Swift and his 1918 book, *Psychology and the Day's Work: A Study in the Application of Psychology to Daily Life*, as tools in the longer battle for educational reform in the Navy. King invited Swift to lecture at the Postgraduate School and influenced Sims to sponsor Swift on a regular basis as a visiting lecturer at the Naval War College. Swift offered a critical argument that not "until facts have been accumulated and ordered are suggestions that are worth while likely to appear." He maintained that "[k]nowledge gives the raw material for solving problems, but in

addition to knowledge there must be a sensitive, open mind anxious to see things as they are, instead of as we should wish them to be.”⁴⁷

Meanwhile, the bureaucratic wheels of the Navy Department churned blindly among the various bureaus. Since the establishment of the Navy Department in 1794, whenever the seagoing forces navigated the uncharted waters in the nexus between peace and war, the department had followed a sustained administrative course fueled by politics and mediocrity. Having muddled through the First World War, the Navy Department bureaucracy under Secretary Daniels settled back into its traditional peacetime routines.

Before the First World War, Daniels had used naval education as a means to amalgamate immigrants and the lower economic classes, encouraging them to embrace their identity as American citizens. As part of shaping the future in general, he considered the U.S. Navy an ideal platform to advance the broader military policy of the United States. “It is my ambition to make the Navy a great university,” Daniels reported, “with college extensions afloat and ashore.” He suggested that every warship “should be a school . . . [and] every enlisted man and petty and warrant officer should receive the opportunity to improve his mind, better his position, and fit himself for promotion.”⁴⁸

Although Daniels somewhat shared Sims’s vision about the role of education, their opinions on civil-military relations proved radically different. Daniels worried that Navy professionals might use education as a means to undermine traditional American civil-military ideals. He wanted the Navy to support education to create American citizens, rather than merely to satisfy the applied purposes of military or naval practitioners.⁴⁹ Given these concerns, Daniels endorsed the recommendation by the chief of the Bureau of Navigation, Rear Admiral Thomas Washington, to organize a board comprising Knox, King, and Pye to examine the question.

Traveling between Newport and Annapolis during the summer of 1919, Knox, King, and Pye gathered their evidence. Knox later recalled the moment when their report came together at King’s hand, explaining that while Knox “was theoretically the senior member . . . and many ideas were contributed by Pye,”

the principal man was King. After much deliberation, King suggested that we write the report. King sat down at a desk and wrote that report in the course of perhaps a day. Scarcely any change [was] made from [the] preliminary draft. He wrote it and followed the details through in his logical way. The report came out of King’s head primarily. There was a great deal of ground work by Pye, but the stringing together and the argument that you make in such cases was all King’s. No one without outstanding ability could have done what he did there.⁵⁰

King attempted to frame the board’s findings in objective, empirical terms within a thirty-one-page treatise that bore the awkward title “Report and



Sims with Assistant Secretary of the Navy Franklin Delano Roosevelt at the Navy Department in 1920.

U.S. Navy photograph

Recommendations of a Board Appointed by the Bureau of Navigation Regarding the Instruction and Training of Line Officers.” The authors formally submitted their findings to the Bureau of Navigation on October 16, 1919.

The original, typewritten report circulated among the various bureaus of the Navy Department. While Admiral Washington acknowledged receipt of the report with thanks to Knox, King, and Pye, he considered their recommendations impractical because they would have required the Navy Department to sustain a forty-year strategy for educating individual naval practitioners throughout their careers. He declared that inadequate bureaucratic and budgetary resources to maintain educational programs ashore, amplified by the shortage of officer personnel for service afloat, prevented the Bureau of Navigation from acting on the board’s recommendations. Washington effectively suppressed the report; the original vanished into the black hole of the Navy Department bureaucracy after its last reported sighting in April 1920.⁵¹

Undeterred by the report’s purported loss, Knox and King conspired to force the Navy Department to address the strategic problem of education within the service. Acting with the confidence of their convictions, Knox and King launched a bureaucratic revolution from below, within the ranks of the service. Six years

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employment in the career of an officer from ensign to commander. Endeavor has been made to generalize employment as much as practicable and to show, in addition to the three general instruction periods involved (Naval Academy, General Line Course, Junior War College Course), how specialization may be carried into effect, whether by instruction or employment, or both.

25. Coordination among and between the several agencies of instruction is required in order to ensure systematic progression and unity to the training scheme regarded as a whole. For this purpose a permanent Supervisory Board should be created.

Samuel J. King Captain, US Navy, Senior Member.
W. H. King Captain, US Navy, Member.
W. H. King Commander, US Navy, Member
and Recorder.

Original signatures from K-P-K Report of 1919.

Library of Congress

earlier, on the advice of Sims and Knox, King had accepted the voluntary position of secretary-treasurer of the Naval Institute. In this role, he edited and reviewed articles in the institute's professional journal *Proceedings*. Thus, King's position

was one of significant influence. Following the disappearance of the board's original report to the Bureau of Navigation, King used a duplicate copy to arrange the report's publication in the *Proceedings* issue of August 1920.⁵² King later admitted to "arranging" the publication of the report. In the published version, King added the caveat "Published by permission of the Navy Department for the information of the service. The Report of the Board has been approved, but the shortage of officers will not permit the recommendations to be carried into effect at present."⁵³

With some editorial adjustments, the published version in *Proceedings* reflected the original narrative of the typewritten original. Even though he was the report's primary author, King claimed no immediate responsibility for its publication; the article appeared in *Proceedings* without any attribution to authors. Even so, the report would become widely known within the Navy as that of the Knox-Pye-King Board, or K-P-K Board.⁵⁴

In the article, the supplemental recommendations to the Navy Department to take action on the question of education appeared in starkly framed prose. Between the lines of the article's narrative, the K-P-K Board railed against the problems of bureaucracy, the dogmatic deference to doctrine among service practitioners, and the coercive intent and power of orthodoxy in the education of USN professionals.⁵⁵ By its construction in two sections, the article makes the assertions in the original report resonate more sharply.⁵⁶ Unlike the published *Proceedings* variation, the signed original reads like an indictment against the bureaucratic culture of the Navy.

Given the timing of the article and Sims's close association with the authors of the K-P-K Board report, Secretary Daniels associated such criticisms with Sims. In effect, Sims was daring Daniels to ignore the findings and recommendations of the K-P-K Board—and the oily politician Daniels disliked the watery practitioner Sims for challenging the policies of the Navy Department. The ensuing bureaucratic duels between Daniels and Sims became infamous, inspiring formal congressional inquiries and embarrassing the Navy Department—but remained a persistent influence on the development of the U.S. Navy.

The rivalry between Daniels and Sims must be considered when placing the K-P-K Board report into the broader context of historical discussions concerning the still unresolved historical question of professional education and the U.S. Navy. Notwithstanding that, the findings of the K-P-K Board defined a progressive vision of professional education. Publication of the report achieved the K-P-K Board's design: it sparked heated debate within the tribal culture of the Navy about that progressive vision. Lines of division became clear as the debate on naval education stratified relations between policy makers such as Secretary Daniels and practitioners such as Admirals Mayo and Sims.



Sims and the Naval War College class of 1923. Future Chiefs of Naval Operations Commander Chester W. Nimitz and Commander Harold R. Stark are at fourth row, center, no. 54, and third row, fourth from left, no. 36, respectively.

Naval War College photograph

Ultimately, the K-P-K Board offered a coldly honest portrayal of fellow naval professionals as being insufficiently prepared for the broad spectrum of challenges facing the naval profession. For those serving at the lowest levels to the highest levels of command, the K-P-K Board provided a lasting warning against allowing the U.S. Navy to sail under the command of officers who were “educated” only to the lowest commissioned grade.” The solution to this fundamental problem actually preceded the original setting out of the question, as Mayo and Sims worked through Knox and King in a roundabout strategy to first acknowledge the problem of ignorance before addressing the transcendent question of professional education within the Navy.

One emphasis in the report was a requirement for officers to attend the Naval War College twice in their careers. The authors of the report led that charge; for example, King completed the College’s correspondence course in 1924, then graduated from the residence course in 1933. Among others, the K-P-K Board directly influenced the Naval War College studies of future admirals Thomas Hart, Harold Stark, Harry Yarnell, Edward C. Kalbfus, and Chester W. Nimitz.

With King orchestrating Anglo-American combined strategy and simultaneously supervising U.S. naval operations on an unprecedented global scale after 1941, Knox attained one-star rank as a commodore while organizing the Office of Naval History. In 1943, Knox and King again joined forces with the President of the Naval War College, Pye, to revisit the question of professional education in the U.S. Navy. Twenty-five years after the original K-P-K Report, Knox and King contributed to the recommendations found in the “Pye Board” Report of 1944, which influenced combined and joint professional education into the Cold War era.⁵⁷

By attacking the problem of education openly and without deference to higher-ranking personalities or bureaucratic protocols, the K-P-K Board helped place the U.S. Navy on the course that would educate the personnel who would secure the strategic victories of the Second World War. Pursuant to the vision of ensuring an American “navy second to none,” the K-P-K Board report remains a critical foundation to establishing the fundamental role that higher professional education has played in framing the future strategy of the U.S. Navy into the twenty-first century and beyond.

NOTES

1. “Report and Recommendations of a Board Appointed by the Bureau of Navigation Regarding the Instruction and Training of Line Officers” [known as the Knox-Pye-King Board report, hereafter K-P-K Board report], BuNav Letter #8039-198, October 16, 1919, supp. annex, p. 3, Walter Muir Whitehill and Thomas Buell collections of the official and private papers of Ernest J. King [hereafter King Papers], box 2, Library of Congress [hereafter LC], Washington, DC.
2. Ernest J. King, *Fleet Admiral King: A Naval Record* (New York: W. W. Norton, 1952), pp. 117–19, 150–53.
3. Peter Karsten, *Naval Aristocracy: The Golden Age of Annapolis and the Rise of American Navalism* (Annapolis, MD: Naval Institute Press, 2008), pp. 1–15; Robert L. O’Connell, *Sacred Vessels: The Cult of the Battleship and the Rise of the U.S. Navy* (New York: Oxford Univ. Press, 1993), pp. 9–101.
4. Henry L. Stimson, with McGeorge Bundy, *On Active Service in Peace and War* (New York: Harper, 1947), p. 506.
5. David Kohnen, ed., *21st Century Knox: Influence, Sea Power, and History for the Modern Era* (Annapolis, MD: Naval Institute Press, 2016), pp. 1–21, 94–107, 145–53.
6. Donald M. Schurman, *The Education of a Navy: The Development of British Naval Strategic Thought, 1867–1914* (Chicago: Univ. of Chicago Press, 1965), pp. 1–14, 85–90; 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. 115–16, 122; Andrew Lambert, *The Foundations of Naval History: John Knox Laughton, the Royal Navy, and the Historical Profession* (London: Chatham, 1998), pp. 30, 121–22, 231–32.
7. Alfred Thayer Mahan, “Naval Education,” *Record of the Naval Institute* 5/4, no. 9 (1879), p. 345.
8. Alfred Thayer Mahan, “The United States Looking Outward,” *Atlantic Monthly* 66, no. 398 (December 1890), p. 824.
9. Mahan, “Naval Education,” p. 352.
10. Alfred Thayer Mahan, *The Influence of Sea Power upon History, 1660–1783* (Boston: Little, Brown, 1890), p. 11.
11. King, *Fleet Admiral King*, p. 106.
12. Karsten, *Naval Aristocracy*, p. 81.
13. William S. Sims Jr. to Anne Sims, notes of “Recollections” circa 1934, December 18, 1934, pp. 3–4, Nathaniel Sims Collection, Correspondence of William S. Sims, Naval Historical Collection, Naval War College, Newport, RI [hereafter NWC].
14. Elting E. Morison, *Admiral Sims and the Modern American Navy* (Boston: Houghton Mifflin, 1942), p. 18.
15. Michael D. Besch, *A Navy Second to None: The History of U.S. Naval Training in World War I* (Westport, CT: Greenwood, 2002), pp. 1–15.
16. *Register of the Commissioned and Warrant Officers of the United States Navy and Marine Corps* (Washington, DC: Government Printing Office, 1909), p. 14, available at www.babel.hathitrust.org/. This publication is better known as the *Naval Register*.

17. Benson to Sims, March 1909, Sims Papers, box 48, folder 1909–1916, LC.
18. Walter Muir Whitehill, “Staff Duty,” notes of interview with King on March 9, 1948, Manuscript Register Series 22, King Papers, box 5, folder 5, NWC.
19. Morison, *Admiral Sims*, pp. 3–14, 280, 389–92. In May 2016, Dr. Nathaniel “Nat” Sims, grandson of the admiral, donated to the Naval War College the original papers that Morison used in writing this biography. The collection included the original manuscript drafts, a comprehensive record of duplications and original correspondence by Sims, and all the original photographs, sketchbooks, and other related ephemera that Morison used. Coincident with the book’s publication in 1942, during the Second World War, Morison served as a U.S. naval reservist within the Historical Section of the Office of Naval Intelligence under Capt. Dudley W. Knox and Prof. Robert G. Albion. Although Morison remained in close contact with his relative Samuel Eliot Morison, the various USN histories written by the two should not be perceived as being directly connected or officially coordinated.
20. “Sims’s Chief Bo’sun for an Alliance, Too: British Heard from the Man before the Mast at That Guildhall Love Feast,” *New York Times*, December 19, 1910, p. 2.
21. Invitation from the Commander and Officers of the Third Division, U.S. Atlantic Fleet to “Mrs. E. A. Hitchcock and the whole St. Louis Family Push,” Sims Papers, box 101, LC.
22. Knox to Anne Hitchcock Sims, October 7, 1936, Manuscript Register Series 31, William S. Sims Papers, folder 16, NWC.
23. King, *Fleet Admiral King*, p. 91.
24. Sims to King, February 20, 1914, Sims Papers, box 68, LC.
25. Morison, *Admiral Sims*, pp. 289–312.
26. These names and their rotation of assignments may be found in the *Naval Registers* for 1914, 1915, and 1916. Individual personal papers also provide critical insight to their service with Sims in the Atlantic Fleet destroyer flotilla.
27. From a survey of personal papers among the key personalities, the phrase “Remain cheerful” appears to be associated completely with Sims and members of the Atlantic Fleet destroyer flotilla, which dates from the First World War era and continued through the Second World War and into the Cold War era.
28. Hattendorf, Simpson, and Wadleigh, *Sailors and Scholars*, p. 89.
29. King, *Fleet Admiral King*, p. 91.
30. Hattendorf, Simpson, and Wadleigh, *Sailors and Scholars*, pp. 115–16, 122.
31. “History of the Naval War College to 1937,” unpublished manuscript, pp. 97–98, NWC Library, NWC.
32. *Ibid.*, p. 98.
33. William S. Sims, “Cheer Up!! There Is No Naval War College,” U.S. Naval Institute *Proceedings* 42/3/163 (May–June 1916), pp. 856–59.
34. *Ibid.*, p. 858.
35. “Staff Duty,” July 31, 1949, King Papers, box 13, folder 7, NWC.
36. David F. Trask, *Captains & Cabinets: Anglo-American Naval Relations, 1917–1918* (Columbus: Univ. Press of Missouri, 1972), pp. 63–65, 141–42; David F. Trask, *The AEF and Coalition Warmaking, 1917–1918* (Lawrence: Univ. Press of Kansas, 1993), pp. 55–56; William N. Still Jr., *Crisis at Sea: The United States Navy in European Waters in World War I* (Gainesville: Univ. Press of Florida, 2007), pp. 25–33; William N. Still Jr., ed., *The Queenstown Patrol, 1917: The Diary of Commander Joseph Knefler Taussig, U.S. Navy* (Newport, RI: Naval War College Press, 1996), pp. 9, 206.
37. Tracy Barrett Kittredge, comp., “A Brief Summary of the United States Naval Activities in European Waters with Outline of the Organization of Admiral Sims’ Headquarters,” August 3, 1918, p. 4, Kittredge Papers, box 8, Naval History and Heritage Command, Washington, DC.
38. *Ibid.*
39. King, *Fleet Admiral King*, p. 149.
40. Commander in Chief, Atlantic Fleet to the Bureau of Navigation (Mayo to Washington), “Education and Training of Officers for Staff Duty,” February 20, 1919, King Papers, box 26, LC.

41. King, *Fleet Admiral King*, pp. 146–47.
42. K-P-K Board report, supp., p. 2, King Papers, box 2, LC.
43. Sims returned from Europe to Newport on April 11, 1919, wearing four stars; the following day he began his second tour as President of the Naval War College in the uniform of a two-star admiral.
44. King to Sims, August 9, 1919, Correspondence, King Papers, box 68, LC.
45. Sims to King, August 30, 1919, Correspondence, King Papers, box 68, LC.
46. King, *Fleet Admiral King*, p. 149.
47. Edgar James Swift, *Psychology and the Day's Work: A Study in the Application of Psychology to Daily Life* (New York: Charles Scribner's Sons, 1918), pp. 81–82.
48. Josephus Daniels, "Report of the Secretary of the Navy," in *Annual Reports of the Navy Department for the Fiscal Year 1913* (Washington, DC: Government Printing Office, 1914), p. 6.
49. Josephus Daniels, *The Wilson Era: Years of Peace, 1910–1917* (Chapel Hill: Univ. of North Carolina Press, 1944), p. 386; William S. Sims, "Naval War College Principles and Methods Applied Afloat," U.S. Naval Institute *Proceedings* 60, no. 6 (March–April 1915), pp. 383–403.
50. Walter Muir Whitehill, notes on "Memorandum of Conversation with Commodore D. W. Knox," May 31, 1946, King Papers, box 5, folder 5, NWC.
51. Ibid.
52. [Dudley W. Knox, Ernest J. King, and William S. Pye], "Report and Recommendations of a Board Appointed by the Bureau of Navigation Regarding the Instruction and Training of Line Officers," U.S. Naval Institute *Proceedings* 46/8/210 (August 1920), pp. 1265–92.
53. Ibid., p. 1265.
54. King, *Fleet Admiral King*, p. 151.
55. Peter Paret, *Understanding War: Essays on Clausewitz and the History of Military Power* (Princeton, NJ: Princeton Univ. Press, 1992), pp. 216–26; Michael Howard, *Lessons of History* (New Haven, CT: Yale Univ. Press, 1992), pp. 6–21.
56. K-P-K Board report, pp. 9, 22, King Papers, box 2, LC.
57. William S. Pye [VAdm., USN], comp., "Report of Board to Study the Methods of Educating Naval Officers," Presidential Papers, Subject Files, box 3, folder 1, record group 28, NWC.

REVIEW ESSAY

IN PURSUIT OF A DISAPPEARING PARADIGM

Martin N. Murphy

U.S. Naval Strategy and National Security: The Evolution of American Maritime Power, by Sebastian Bruns. London: Routledge, 2018. 270 pages. \$155.

The past quarter century has not been a happy one for the U.S. Navy. It has been a period of almost continuous contraction: of budgets, ships, manpower, bases, influence—at sea and in Washington—and military superiority. The Navy has been forced to watch the rise of China to a position of near equivalence and the return of Russia from near death. It has been humiliated by ship collisions that were brought about by sacrificing operational standards in an attempt to maintain its can-do reputation. It has become the service that must “just say no” if it is to stay afloat.

The Navy has been through periods before when it was understood poorly and undervalued: the treaty years in the 1920s, the era of massive retaliation in the 1950s, and during and after the Vietnam War. In each case it was saved by national policy changes, first under President Franklin Roosevelt, who viewed naval construction as part of the New Deal; second, under President Kennedy, whose turn to flexible response released the surface navy from its deterrence responsibilities, allowing it to resume its sea-control mission; and third, under President Reagan, who adopted the Maritime Strategy. Since then the Navy has

been wandering in the strategic wilderness, finding it difficult—indeed, almost impossible—to rediscover its voice as it searches for the formula that will return it to its rightful place in the defense firmament.

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The story of that search is the subject of this book. Its author, Sebastian Bruns, serves as head of the Center for Maritime Strategy and Security at the University of Kiel, Germany; is the coeditor of the recently published *Routledge Handbook of Naval Strategy and Security*; and has served his time on Capitol Hill. His book covers the trials and tribulations of this period with an almost forensic eye, placing each of the numerous relevant capstone documents—starting with the hopefully entitled “The Way Ahead” in 1991—in its political and operational setting before examining its evolution and resulting strategic concept.

Pointing a finger at what has gone wrong is not difficult. Since the end of the Cold War, the Navy for the most part has suffered from a lack of leadership at its most senior level. Admittedly, leading the Navy in an era when the nation’s leaders stumbled from one misjudgment to the next cannot have been easy. Furthermore, the Cold War-era Goldwater-Nichols measures subordinated each of the service chiefs to the Chairman of the Joint Chiefs of Staff and relieved them of responsibility for strategy. As Bruns writes, it was the Navy—whose strategy lies uniquely between the political and operational levels—that was affected most.

Making matters more difficult was that the seemingly interminable and debilitating land wars in Asia placed the focus squarely on the Army and Marine Corps, and to a considerable degree the Air Force, but not the Navy, save for the thousands of bluejackets who were sent to serve in the dusty wastes of Afghanistan and Iraq. Not that service ashore for sailors is unusual; it was the regular fate of their Royal Navy predecessors in the nineteenth century to fight and die beside their army colleagues in defense of the empire. What the Royal Navy of that era did not suffer, however, was seeing its capacities and capabilities worn down by the need to pay for these wars, as the U.S. Navy’s were worn down to pay for the war in Vietnam, and as they have been more recently as well.

Can the Navy rebuild itself now as it did after the Vietnam conflict and the hostile interlude of the Carter years? On its current course, and given the prevailing bureaucratic realities of the defense establishment, this appears unlikely. The Maritime Strategy came about thanks to an unusually fortuitous alignment of factors: first, a sympathetic national policy, in this case the determination of the Reagan administration not merely to contain Communism but to defeat it; and second, an exploitable enemy weakness, in this case the surprise discovery that the Soviet navy prioritized protection of its High North submarine bastions over attacks on Atlantic convoys. The combination meant that the U.S. Navy could build on a range of thought lines—of which Admiral Thomas B. Hayward’s earlier Sea Strike initiative was probably the most influential—to go on the offensive, pursuing a carrier-based plan of attack that accorded with the Navy’s own view of itself as a warrior community built for the big—and *global*—fight. As Bruns recounts, the Navy was willing to accept enormous strategic and operational risks

to make that happen; in particular, its conviction that global conventional war would not turn nuclear, although based on intelligence of Soviet nuclear policy, must be open to question.

Bruns describes the outpouring of purposeful naval thinking that accompanied the Maritime Strategy as a “renaissance.” With it, the Navy achieved its Cold War “zenith.” It was certainly close to a revival. The Maritime Strategy was, Bruns writes, “a product of its 1970s context,” embracing the missions, concepts, and practices that were already on the shelf and matching them with the Reagan administration’s newly assertive national security strategy and with the plans and operational requirements of regional commanders. It succeeded not because it was innovative but because it fitted with what the Navy wanted to do. It reached back to Vice Admiral Forrest P. Sherman’s immediate post–World War II plan for “at source” attacks on Soviet naval bases and infrastructure and, beyond that, to the Navy’s successful Pacific War campaign against Japan. It fitted perfectly with the American way of warfare, which prefers decisive battle over patient persistence.

The post–Cold War world proved to be very different from what had gone before. It may have been a “new world order,” as President George H. W. Bush put it, but the order to which he referred remained elusive. In this new context, innovative thinking was required, and the Navy responded—even though, too often, good ideas that appeared in the formative stages of strategy formulation never made the final cut.

Bruns’s survey of the strategic vision pieces that have followed the Maritime Strategy, however, reveals a service divided among competing schools of naval and maritime thought. The result is that none of the strategic vision pieces the Navy has published since 1990 have come close to winning support at a level similar to that achieved by their 1980s predecessor, and most have gained none at all. The Maritime Strategy may have been disputed, criticized, and disparaged, but it nonetheless succeeded in uniting the Navy Department, the White House, and Congress behind a single vision.

When the Navy did advance a radically different exposition of its role, a decade and a half later, in “A Cooperative Strategy for Twenty-First Century Seapower” (CS21), it failed to gain enough traction within the Navy and on the Hill to survive the political and economic fallout of the 2008 financial crisis. CS21 argued that in the post–Cold War world it would be by defending the institutional, systemic dimension of sea power that the Navy would be restored to relevance, and it elevated war prevention to the same level as war winning; in doing so, it sidelined all the strategic concepts that had been formulated since the Maritime Strategy. Unfortunately, the message of CS21 failed to inspire a service that viewed the Maritime Strategy as the zenith of its conceptual accomplishments.

Bruns's book demands to be read. It reaches no conclusions about which direction is right for the Navy—that is for readers to decide. What he does make plain is that only a “strategy addressing political ends in naval warfare can be assured some impact.” Both the Maritime Strategy and CS21 did that, but from sharply different perspectives.

The sea's strategic and economic importance is increasing at a time when the nations intent on challenging the U.S. Navy are gaining in confidence, competence, and strength. To be able to counter them effectively, it is vital that the Navy finds again the clear, united, and distinctive voice that has commanded attention in the past, but one that this time puts past triumphs behind it, reflects the realities of our changing world, and addresses the complex of military and nonmilitary challenges its competitors present. Now is the time for strategic imagination, for the creation of a strategy that transcends the narrow confines of shipboard life and engages with the political as well as the military realities that are emerging in the twenty-first century.

All USN officers, joint commanders, and national policy makers who are conscious of the sea's continuing importance, genuinely concerned about the decline of the Navy, and fearful for the service's future need to read this book and absorb its lessons.

BOOK REVIEWS

FAILURES AND SUCCESSES

Mission Failure: America and the World in the Post-Cold War Era, by Michael Mandelbaum. New York: Oxford Univ. Press, 2016. 485 pages. \$29.95.

“You Americans are so naive” is one of the opening quotes that Michael Mandelbaum uses to introduce *Mission Failure* (p. vi). The quotation does not come, as one might expect, from a foreign world leader, but from Steve Martin on *Saturday Night Live*. Thus, one sees from the first Mandelbaum’s objective: to narrate and explain U.S. foreign policy from 1991 to 2014 in a way that can be understood by interested general readers who might recognize Martin more than they would theologian Reinhold Niebuhr (the source of another opening quotation). In the backdrop of this narrative is the theme of the failure of humanitarian interventionism—the inclination to intervene in world affairs to promote values rather than for direct self-interests—to achieve meaningful results. Mandelbaum describes his intent for the book rather accurately: “Together the chapters tell the story of good, sometimes noble, and thoroughly American intentions coming up against the deeply embedded, often harsh, and profoundly un-American realities of places far from the United States. In this encounter

the realities prevailed” (p. 13). In his perspective, post-Cold War American decision makers viewed the world through a distorted lens that only their country’s enormous relative power made possible. This distorted view caused them to believe that democratic values and human rights could be exported by interventions using armed force. Mandelbaum describes this as “missionary work” transferred from the religious to the political sphere, and links it to the same impulse that established the Peace Corps. He then begins a general historical narrative of American relations with Russia and China, humanitarian interventions from Somalia to Kosovo, the wars in Afghanistan and Iraq, and the Arab-Israeli conflict, all during the 1991–2014 period. In his final chapter, entitled “Restoration,” he argues that the rise of Chinese economic power and the reemergence of Russia have put an end to the post-Cold War world; the United States no longer has the power to attempt to make changes in other political cultures.

To illustrate the enormous relative power that America held at the beginning

of this period, Mandelbaum starts his introduction with the surrender of the Iraqi army to General Norman Schwarzkopf and the other coalition military leaders on March 3, 1991. The author maintains that, up to then, America's latent desire to educate the world on the benefits of democracy and human rights had been held in check only by the existence of powerful rivals—specifically, one powerful rival: the Soviet Union. Suddenly, with that entity collapsed, China apparently quiescent, and the U.S. armed forces having demonstrated their absolute military dominance on (what was considered) the modern battlefield, American political and social leaders could indulge themselves in doing what they perceived to be in the interest of the collective global good. The United States “chose to spend some of its vast reserves of power on the geopolitical equivalent of luxury items: the remaking of other countries” (p. 7). The difference from previous eras was that now the United States became involved in crises in which it had no direct national interest—crises that, no matter their result, would have little if any impact on American freedom or prosperity. The outcome, according to Mandelbaum, has been “mission failure,” given that much of the world has different cultural values concerning the “good” and that the results have been temporary or they have let loose more destructive forces.

Mandelbaum postulates that the cross-over point at which the aim of American foreign policy changed from achieving national interests to performing “missionary work” occurred between the administrations of George H. W. Bush and Bill Clinton. He sees the subsequent actions of Clinton, George W. Bush, and Barack Obama as a foreign policy of

continuing humanitarian intervention (albeit with differing degrees of overt force), with a shared goal of relieving human suffering and exporting democracy.

Mandelbaum identifies the expansion of NATO—an action that President George H. W. Bush promised the Russians would not occur—as the most catastrophic of mistakes. Against the advice of concerned experts, President Clinton promoted NATO expansion, believing that it would solidify democratic governance throughout Europe without alienating a Russia assumed to have adopted democratic capitalism permanently. The decision “squandered . . . much of the windfall that had come to the United States as the result of the way the Cold War had ended. . . . It did this in return for no gain at all, making NATO expansion one of the greatest blunders in the history of American foreign policy” (p. 69). The author identifies other mistaken actions (such as the Iraq War) and skewers some inept policy makers along the way (Secretaries of State Warren Christopher and Madeleine Albright are particular targets), but the alienation of Russia—which facilitated that country's return to internal authoritarianism—was the factor that ultimately ended hopes for a “new world order.”

Mandelbaum, professor of American foreign policy at the Paul H. Nitze School of Advanced International Studies at Johns Hopkins, maintains a solid and comfortable—if relatively uninspiring—writing style, making his argument in measured terms. As in his other recent books, he aims at a broad audience. He gives no indications, however, that his previous work—such as his collaboration with journalist Thomas L. Friedman, the most successful

troubadour of globalization—argued for a spirit of liberal internationalism that leads logically to efforts at humanitarian intervention. To Mandelbaum, the apparent difference between liberal internationalism and the humanitarian-interventionist approach that some U.S. presidents have chosen is that the United States decided to use its resources to rescue people (metaphorically) rather than to concentrate on defending the global system of economic liberalism. However, how one “defends a system” without intervening in particular crises within that system remains rather unclear. Liberal internationalism supposedly is an antidote to great-power politics, but ultimately Mandelbaum concludes that America’s failure at preserving its beneficial role in the international system (and its interests) was the result of not paying most of its attention to, and sometimes accommodating, the reemerging great powers. The “malign effects” of an angry Russia and a contemptuous China, Mandelbaum writes on his final page, “will be felt long after the failed missions in Somalia, Haiti, Bosnia, Kosovo, and even Afghanistan and Iraq ha[ve] faded from memory” (p. 381).

SAM J. TANGREDI



The Forgotten Front: Patron-Client Relationships in Counter-Insurgency, by Walter C. Ladwig III. New York: Cambridge Univ. Press, 2017. 360 pages. \$34.99 (paperback).

The advent of a new U.S. presidential administration has resulted in a series of new defense guidance and strategy documents—ranging from the *National Security Strategy* to the *National Defense Strategy* and the *Nuclear Posture*

Review—all of which have placed a clear emphasis on the risks posed by the recrudescence of great-power rivalry. The *National Defense Strategy*, in particular, garnered praise from the national security commentariat for its terse declaration that great-power competition, rather than terrorism, now constituted “the primary focus of U.S. national security.” Indeed, for an American public increasingly weary of costly and protracted counterinsurgency (COIN) campaigns in the Middle East, there was something inherently appealing about this apparent reordering of American defense priorities.

Unfortunately, however, events over the past year have demonstrated repeatedly that this much-touted focal rearrangement is not something that simply can be wished into existence. Indeed, despite running on a platform promising greater disengagement from the Middle East, President Trump has found himself compelled to deploy ever more soldiers to Afghanistan and the Levant. Meanwhile, cabinet officials have suggested that Washington may need to maintain an open-ended military presence in Syria, partly as a means of countering growing Iranian influence. Last but not least, the deadly ambush of a unit of U.S. special operations forces (SOFs) in the deserts of Niger revealed to many baffled American citizens the full extent of their nation’s global counterterrorism footprint: eight thousand SOFs active on any given day in more than eighty countries.

All this underscores the need for U.S. security managers to continue to plan for and debate extended counterterrorism and stabilization campaigns—however much they may pine privately for a post-COIN era. It also renders Ladwig’s recent

book—which engages in a thoughtful and historically informed study of the patron-client relationship in irregular warfare and counterinsurgency—all the more timely. Dr. Ladwig, a professor in the Department of War Studies at King's College London, has provided an erudite and intellectually stimulating book, one that does a fine job of shedding light on some of the shortcomings of the more recent COIN literature.

Ladwig's central premise is that one of the assumptions at the heart of recent American writings on COIN—that a security patron and its client will enjoy a variety of shared goals and interests—is misplaced. "In fact," he notes, "the historical record suggests that maintaining power is frequently a competing priority for an incumbent regime, which means that many of the standard reform prescriptions for counterinsurgency—streamlining the military chain of command, ending patronage politics, engaging in economic reform, and embracing disaffected minority groups—can appear as threatening to a besieged government and its supporters as the insurgency itself." When dealing with regional partners—particularly those afflicted with nepotism, deeply factionalized internal power structures, and tense civil-military relations—there always will be a strong potential for strategic misalignment or dyssynchrony, or both.

Paying attention to a client's inner travails and patterns of dysfunction is only the first step, however, in convincing it to conform to U.S. wishes. Ladwig outlines two archetypal "influence strategies" that patron states traditionally have employed as a means of persuading their junior partners to enact more-effective and convergent

policies. The first, *inducement*, aims to reassure and win over the client with generous flows of aid and unqualified professions of U.S. support. The second approach, *conditionality*, takes more of a "tough love" approach: calibrating and rationing U.S. support in accordance with the client's ability or willingness to cooperate and deliver.

The book contains three detailed historical case studies of past U.S. support efforts: one that can be qualified as a success (the Philippines during the Hukbalahap Rebellion, from 1946 to 1954); one that is an all-too-well-known failure (South Vietnam under Ngô Đình Diệm, from 1955 to 1963); and one that falls somewhere in between (El Salvador during the 1979–91 civil war). Each case study is richly textured, drawing on extensive archival research and declassified government materials. Given enough potential material for three books, the author was wise to select these three cases to juxtapose; they provide a useful kaleidoscopic study of the successes and failures of U.S. foreign internal defense (FID) policies during the Cold War.

Unsurprisingly, the author notes that there are no simple solutions to the issues that traditionally have plagued patron-client relationships. FID always winds up being a more complex and challenging undertaking than originally planned. That said, policies of conditionality—which "require making credible threats to a client and careful managing of commitments"—are clearly preferable to policies of pure inducement, which not only are ineffective but can have pernicious second-order effects. The challenge is to maintain a degree of strategic consistency while devising conditionality-based

approaches that can survive not only different administrations and electoral cycles but interagency differences and bureaucratic turf wars.

One of this reviewer's only regrets is that—barring a few segments in the introduction and conclusion—the author chooses not to apply his findings to the study of more-contemporary COIN campaigns. Dr. Ladwig has acquired a reputation in the field of South Asia studies for his careful, methodical approach to the region's security challenges, and it would have been useful for the reader to get a better sense of his take on the past, present, and future of U.S. policy on Afghanistan. It also might have been interesting to explore the challenges that come with more-multidirectional proxy wars, such as that currently unfolding in Syria, which involves multiple potential clients and competing "candidate patron" states, ranging from Turkey to Russia and Iran. These are all minor quibbles, however, and ones that Ladwig no doubt can address in a follow-on study, should he wish to do so.

All in all, this is an excellent and well-timed contribution. Moreover, despite being an academic work, it also is an example of the virtues of the more interdisciplinary, even subtle, approach to security studies embraced by European institutions such as King's College. Drawing not only on well-researched history but on other social sciences such as economic theory, *The Forgotten Front* is refreshingly jargon-free and clearly written, thus making it an ideal study companion for readers of the *Naval War College Review*.

ISKANDER REHMAN



Anatomy of Failure: Why America Loses Every War It Starts, by Harlan Ullman. Annapolis, MD: Naval Institute Press, 2017. 272 pages. \$29.95.

When former Secretaries of State General Colin Powell and John Kerry and former Supreme Allied Commander Europe Marine general Jim Jones (for whom I worked when I commanded the International Security Assistance Force [ISAF] in Afghanistan when it expanded across the whole country) call Harlan Ullman's *Anatomy of Failure* a must-read, people should pay attention. And for those who worry about policy books being boring, *House of Cards* creator Michael, Lord Dobbs deems *Anatomy*, in another blurb, a combination of the works of best-selling thriller novelist Tom Clancy and Carl von Clausewitz. All are correct.

In the interests of full disclosure, the writer and I have been friends and colleagues since my time at ISAF. As Britain's Chief of the General Staff and then Chief of the Defence Staff, I worked with Ullman on many issues. Irrespective of this, *Anatomy* is essential reading for practitioners and students of foreign, defense, and national security policy.

The book's center of gravity is the asking and answering of the vital question of why, since World War II, America arguably has lost all the wars it started and has failed in military interventions in which it did not have just cause to participate. This question alone directly challenges the accepted view in Washington that America has the best and most formidable military in the world. If that is the case, despite some stunning tactical successes, why, at the strategic level, has its record in

using that military been so apparently dismal over the past seventy years?

Of course, Ullman records, we won the big wars: World War II and the Cold War. And, as he notes, George H. W. Bush was entirely successful in winning the First Gulf War in 1991. But in Korea and especially Vietnam, Iraq the second time, Afghanistan, and numerous lesser operations—ranging from Grenada and Beirut in 1983 to Libya in 2011 and the ongoing campaign in Syria—he argues persuasively that the results range from simply bad to catastrophic.

In the first two-thirds of the book, Ullman examines—in depth and with personal insights, in what he calls vignettes—why America’s resort to using military force has been so poor. He produces three overarching reasons that apply not only to the United States but to many other countries—including, most certainly, my own. First, America elected too many presidents who were inexperienced, unprepared, and unready to handle what may be the most difficult job on earth. Through the lens of the use of military force, the book analyzes the strengths and weaknesses of every president since World War II, noting along the way John F. Kennedy’s rueful observation that “there is no school for presidents.”

Second, administrations that failed applied poor, or simply wrong, strategic judgment in determining whether to go to war or to use force. The Kennedy-Johnson decision makers truly believed that monolithic Communism had to be stopped on the Mekong River so it would not spread to the Mississippi. Bill Clinton believed a few bombs would force Serbia’s Slobodan Milosevic to stop killing Kosovars. George W. Bush had the flawed vision that the geostrategic

landscape of the Middle East could be changed forever by democratizing Iraq, although he justified the decision to go to war on nonexistent weapons of mass destruction. Barack Obama drew “redlines” and demanded that Syrian president Bashar al-Assad stand down—to no effect—and he “led from behind” in bombing Libya, bringing about Mu’ammar Gadhafi’s downfall—thereby provoking a brutal civil war. Who knows what Donald Trump could do?

Third, the book shows how the lack of sufficient knowledge or understanding of the regions and conditions where force might be used guaranteed failure, from Vietnam to the current misnamed “war on terror.” What gives this book an added and authoritative dimension is the author’s personal insights that complement the book’s theme. As a Swift boat skipper in Vietnam, his stories of that war underscore the folly of America’s intervention. At times during the Cold War, whether in discussions with former Defense Secretary Robert McNamara or the Pentagon leadership under Ronald Reagan, or in later years with those dealing with terrorism, Afghanistan, and Pakistan, he reveals the damage that lack of knowledge and understanding will inflict on any policy and strategy.

The vignette that struck me in particular was a sensitive mission that Ullman undertook in Vietnam as part of Operation PHOENIX, an assassination program that the Central Intelligence Agency and the South Vietnamese mounted to terminate with prejudice (i.e., kill) suspected Vietcong and North Vietnamese agents. It was a metaphor for why the war was lost.

In the remaining third of the book, Ullman itemizes a series of recommendations to overcome or reduce the likelihood of failures in using military

force that arise from electing unready presidents and using poor or flawed strategic judgment, and to ensure that sufficient knowledge and understanding of the reasons for using or rejecting military force are in place. He calls for a “brains based approach” to strategic thinking—a term that I, as army and defense chief, borrowed shamelessly. He proposes a “Bletchley Park-like capacity” for using open-source material available on social media and unclassified avenues such as Google Earth to enhance knowledge and understanding. Some of Ullman’s recommendations are unique to the United States, but in the main any and all leaders and students of national security will benefit greatly from this book. Indeed, to reinforce the recommendation of Messrs. Powell, Kerry, and Jones, read this book! And, as Lord Dobbs adds, this is a very good and intriguing read as well.

LORD RICHARDS OF HERSTMONCEUX



Fragile Rise: Grand Strategy and the Fate of Imperial Germany, 1871–1914, by Xu Qiyu, trans. Joshua Hill. Foreword by Graham Allison. Cambridge, MA: MIT Press, 2017. 368 pages. \$32.

Once in a great while, a book allows the familiar to be viewed through new eyes. *Fragile Rise* is such a volume. On its surface, it is an account of imperial Germany’s catastrophic grand strategy between the nation’s founding in 1871 and the onset of the First World War. While this is well-tilled ground, *Fragile Rise* provides a clear and convincing account of how Otto von Bismarck mitigated the tensions created by Germany’s newfound power within the European system, and how his successors failed at the same

task. But what makes *Fragile Rise* unique is less what it says than who is saying it. The author, Xu Qiyu, is an active-duty colonel in the Chinese People’s Liberation Army (PLA) who serves as deputy director of the Institute for Strategic Studies at the National Defense University in Beijing—the counterpart to the U.S. National Defense University.

USN readers who harbor cartoonish images of our PLA counterparts may be surprised at the depth of research and insight offered in this volume. Xu has been a visiting fellow and guest of a number of prestigious Western institutions, including the Naval War College, where he is respected as a subtle and engaging thinker. His research and writing reflect that experience, informed by international scholarship and primary-source material from across Europe.

Throughout the book, Xu draws no explicit parallels between the German and Chinese experiences, although the book’s translator points out that the cover of the Chinese edition features the words “When it is difficult to see clearly into the future, looking back into history, even the history of other peoples, might be the right choice.” In China there is a long tradition of using historical examples to offer implicit criticism of what may not be criticized officially, and how *Fragile Rise* can be viewed in this light is apparent upon reading.

Xu characterizes the newly unified Germany as following a “hide and bide” strategy, recalling Deng Xiaoping’s guidance that an emerging China should hide its capabilities and bide its time, avoiding international leadership and the complications that come from displays of power. By 1878, however, Germany found itself a factor and a source of concern in the international

arena, despite its preference for the low-key. Bismarck's active management mitigated the international friction that this shift in power engendered. If one seeks a hopeful message, Graham Allison observes in his foreword that Xu proposes that skilled leaders can "reshape unfavorable situations."

Nonetheless, Xu notes that Bismarck was managing a "fundamental" conflict, one woven into the fabric of a possible power transition. The environment was rife with suspicion, and the European system offered little tolerance for strategic error. Xu assesses that, following Bismarck's dismissal, Germany committed two significant blunders. First, it embarked on an expensive naval expansion that was tangential to its core interests. Its appetite for such an effort was fed by a consistent insensitivity to the value Great Britain placed on sea power. Dismissing arguments that German overseas trade and colonial possessions justified the risk of strategic confrontation, Xu notes that Tirpitz's "luxury fleet" cost Germany any chance of accommodation with Britain. By 1907, as Germany's primary strategic adversary—despite significant economic and cultural ties—Britain embraced what was effectively a containment policy.

Second, Xu is similarly critical of the German army's failure to subordinate its military planning to Germany's wider political ends. Given that Xu serves a military controlled by a single political party, there is perhaps no more pointed criticism in the PLA vernacular.

Fragile Rise devotes lengthy and thoughtful attention to the role of popular opinion in driving Germany to unwise strategic choices. Germany's rapid rise was a source of pride among

the German people, but it created pressures that German institutions were poorly prepared to mitigate. Indeed, Xu argues that the *Weltpolitik* policy of the late Wilhelmine period was primarily a product of domestic pressures. In a China in which the ruling Communist Party makes massive investments in managing, shaping, and controlling public opinion, such concern resonates.

At least one American reviewer has been critical of the tendency for U.S. readers to view *Fragile Rise* through the lens of United States–China power dynamics, arguing that it should be respected as a contribution to the historical literature in its own right. While this is true, naval professionals naturally—given the author's association with China's senior military college—will be less interested in issues of historical interpretation than of Chinese perceptions of historical corollary.

It is possible that an American reader will be left with the impression that a lively debate over the wisdom of China's present course is ongoing. In fact, *Fragile Rise* was completed in 2011 during the closing days of Hu Jintao's rule, when the environment in Beijing was more open and China's course less certain. Xi Jinping effectively has ended this debate. Recent pronouncements of the ruling Communist Party leave no doubt that China has embraced its expanding role in the world and the naval expansion that supports it. All that remains to see is whether China can produce a Bismarck who can navigate around the shoals along the way. In the meantime, *Fragile Rise* presents a small window into a debate that largely has passed into history already, as well as the thinking that accompanied the charting of that course.

DALE C. RIELAGE



Tin Can Titans: The Heroic Men and Ships of World War II's Most Decorated Navy Destroyer Squadron, by John Wukovits. Boston: Da Capo, 2017. 352 pages. \$18.99.

In this, his newest work, distinguished naval historian John Wukovits traces the history of USN Destroyer Squadron (DesRon) 21's Pacific theater operations from 1942 to 1945. According to Wukovits, DesRon 21 was one of the most highly acclaimed and decorated squadrons in the entire U.S. Navy during World War II. DesRon 21 destroyers are noted for advancing on the Solomon Islands in the Pacific and holding back the Japanese navy until U.S. reinforcements arrived. The squadron also launched assaults against the Gilbert and Marshall Islands, into the Philippines, and at Iwo Jima and Okinawa. During the squadron's three years of service, these exploits and more—including dozens of minor clashes, countless patrols, and naval escort missions—earned DesRon 21 “three Presidential Unit Citations, one Navy Unit Commendation, and 118 battle stars” (p. 5), making it a most worthy subject of this exceptional book.

However, while Wukovits's work is a study of DesRon 21, it is the people, rather than the ships, who brought about the unit's wartime success. Wukovits states that “[w]hile DesRon 21's achievements were impressive, it was not a squadron of ships that registered an inspiring resumé, but the people serving aboard those destroyers” (p. 5). Subsequently, this particular emphasis on the men of DesRon 21—Commander MacDonald, Doc Ransom, Seaman Chesnutt, Seaman Whisler, and so many more—is what makes Wukovits's book so uniquely engaging for the reader. This

historical study—like all history—is, at its core, a story about people.

Wukovits tells the story of DesRon 21 and the sailors who served on its vessels in their various battles and campaigns in the Pacific. He introduces the reader to the squadron and its sailors circa mid-1942, in the midst of a gloomy period of operations within the Pacific theater. The reader is taken on a journey throughout the entirety of the squadron's wartime operations up to its ultimate triumph, including having the honor of leading the U.S. Navy, under the guidance of Admiral William F. Halsey, into Tokyo Bay to receive the Japanese surrender in August 1945. This honor was bestowed on the ships and sailors of DesRon 21 by Admiral Halsey, who credited victory in the Pacific to the courage and skill of DesRon 21 and its personnel.

Wukovits divides his work into three parts, with each part containing roughly three chapters, making the reading of this book quite manageable. Part 1 covers the origins of DesRon 21 and the beginning of its campaign in the Solomon Islands, including the battle of Guadalcanal (Operation WATCH-TOWER). Wukovits also does an excellent job of describing the squadron's function and its organization, as well as the origins of the various vessels. Wukovits's attention is well spent here, given the length and difficulty of USN operations in this geographical subset of the Pacific theater during the war. Then, as the book moves forward through parts 2 and 3, the reader is drawn into DesRon 21's bloody and hard-fought campaign that extended all the way from Guadalcanal to Tokyo—and, of course, the lives of its crewmembers, which perhaps constitutes the highlight of the book.

In telling the fascinating story of DesRon 21 and its crew, Wukovits demonstrates without a doubt that, as a scholar and historian, he rivals such naval historians of the Pacific theater as James Hornfischer and Samuel Eliot Morison. The book might have included more maps to ensure correct and continued orientation to the events, places, movements, and battles it describes. Nonetheless, Wukovits has compiled an excellent study of DesRon 21, one that is demonstrably the product of lengthy research into wartime naval records; academic research; and personal oral interviews with those DesRon 21 crewmembers still living, which bring an intimate and personal quality to this historical study. In sum, *Tin Can Titans* unquestionably is a must-have addition for any armchair World War II history buff or student of naval history.

BLAKE I. CAMPBELL



The Official History of the UK Strategic Nuclear Deterrent, by Matthew Jones. Vol. 1, *From the V-Bomber Era to the Arrival of Polaris, 1945–1964*. London: Routledge, 2017. 547 pages. \$155.

The Official History of the UK Strategic Nuclear Deterrent, by Matthew Jones. Vol. 2, *The Labour Government and the Polaris Programme, 1964–1970*. London: Routledge, 2017. 559 pages. \$155.

No inquiry into British nuclear history can be undertaken in isolation from the presence of an intimate U.S. involvement. It therefore is worth taking notice of the publication of the two-volume *Official History of the UK Strategic Nuclear Deterrent*. Matthew Jones, professor of international history at the London School of Economics, was granted unprecedented access

to hitherto unavailable materials to produce this official history.

At the beginning of both volumes, Professor Jones graciously pays tribute to the pioneers of British nuclear historiography, Professor Margaret Gowing and her associate Lorna Arnold. Gowing, official historian of the United Kingdom (U.K.) Atomic Energy Authority and professor of the history of science at Oxford, authored the studies that set the scholarly standard: *Britain and Atomic Energy, 1939–1945* and, a decade later, her two-volume *Independence and Deterrence: Britain and Atomic Energy, 1945–1952*. Arnold assisted Gowing, then in 2001 published her own book, *Britain and the H-bomb*. Jones's two new volumes are worthy sequels.

America's initial monopoly over the atomic bomb fed the British sense of technological exclusion. Determined then to "go it alone," Britain asserted an initial nuclear doctrine of sovereign and independent control over its nuclear weapons. It was only *after* Britain had demonstrated a unilateral mastery of thermonuclear weapons development in May 1957 that the United Kingdom was granted access to specific U.S. nuclear weapons technologies. For Jones, the ensuing 1958 U.S.-U.K. mutual-defense agreement remains "one of the most remarkable examples of pooling of sensitive national security information by two sovereign states, and has rightly been seen as one of the fundamental pillars of the post-war Anglo-American relationship."

The United Kingdom's capacity to inflict assured nuclear destruction, independent of the United States, allowed it to behave as a "second centre of decision." In this position, Britain

secured the ability not only to “leverage” the United States politically but also to command a seat at the geostrategic “top table.” Jones presents the Skybolt missile crisis of 1962 as an example of this nuclear-based political leverage over the United States. Aiming at updating Britain’s nuclear deterrent, the United States promised delivery of the Skybolt system. A nuclear, standoff, air-to-ground missile, Skybolt was designed to penetrate Soviet airspace in the face of an increasing Soviet antiballistic-missile (ABM) capability. When President Kennedy abruptly canceled the agreement in November 1962, he did so ostensibly on *technical* grounds. In truth, the United States opposed, on *political* grounds, *any* extension to the life of the U.K. nuclear deterrent. Seeing through this ruse, Prime Minister Macmillan was instrumental in resolving the crisis at the Nassau conference in December 1962—by hoisting Kennedy’s policy on its own petard. The United States was forced to concede the nature of its opposition to sharing Skybolt, and instead to offer a replacement—which paradoxically became Britain’s second-generation nuclear deterrent: the Polaris missile system. Not only had Britain’s first-generation deterrent *not* been curbed, but the United States in fact had become father to a second generation.

Volume 2 brings with it the advent of a new ministry in 1964, led by Harold Wilson and the Labour Party. The necessity for a Polaris Improvement Program takes center stage in this volume, since the Polaris A-3 missile was becoming obsolescent, just as the second-generation Polaris system was coming on line. There is a fascinating portrayal of the Whitehall bureaucracy at work in the constant race to maintain

a semblance of *qualitative* nuclear parity with the United States.

In the wake of the U.S. shift to the Poseidon’s advanced technology of the multiple independently targetable reentry vehicle (MIRV), Britain under Wilson’s aegis set off alone to begin exploitation of an intermediate technology, Antelope, that the United States had developed but later abandoned in favor of MIRVs. The climax of the U.K. Polaris Improvement Program was reached with Chevaline, a unique configurational change to alter the front end of the Polaris missile, thereby rendering it all but invulnerable to interception by deployed Soviet ABMs. But the history of that program will have to await the projected third volume in this series.

Meantime, Professor Jones has written an excellent description of Britain’s quest for a sovereign and independent strategic nuclear deterrent. Completely mastering his sources, Jones has produced a compelling work of lasting significance. He has come full circle, following in the footsteps of his larger-than-life role models, Margaret Gowing and Lorna Arnold.

MYRON A. GREENBERG



Team of Teams: New Rules of Engagement for a Complex World, by Stanley McChrystal, with Tatum Collins, David Silverman, and Chris Fussell. New York: Portfolio/Penguin, 2015. 290 pages. \$29.95.

During the years he spent hunting Abu Musab al-Zarqawi and battling the forces of Al Qaeda in the streets and deserts of Iraq, General Stanley McChrystal turned the Joint Special

Operations Command into a remarkably lethal, efficient, and effective killing machine. To do so he performed an extraordinary feat of social engineering, one that required modification of very insulated cultures, delegation of significant decision-making to very low levels of the organization, and widely sharing information in a manner few would have predicted possible.

Team of Teams makes it clear that this experience had a profound impact on McChrystal. In the ensuing years of reflection and serious study, the onetime four-star general has concluded that in a world of ever-increasing complexity, networks offer the best chance for organizational success. The book both tells the story of the joint interagency task force and shows how modern leaders can achieve similar results.

McChrystal argues that technologically linked, extraordinarily nimble networks increasingly will run rings around organizations built around nineteenth-century norms of hierarchy and efficiency. The quest for efficiency must give way to the pursuit of effectiveness. Yet speed is still a virtue, and the network must share vast amounts of information in short amounts of time. Accelerating the cycle of assessment, decision, implementation, and reassessment to a pace not previously considered possible will enable cutting inside the decision loops of the competition and ensure victory. In positing this, McChrystal does not lack for boldness.

As the title suggests, McChrystal's twenty-first-century organizational model constitutes a "team of teams." In a true team, the members fully understand and deeply trust one another. However, no small team, however gifted, can

deliver the expertise and products that the entire network demands. McChrystal's prescription involves cross-assigning team members, colocating previously isolated functions, and greatly increasing the sharing of information. Such connections are vital, for they build trust as well as what are described as organizational "neural networks."

To his credit, McChrystal identifies some potential weaknesses in running such a network. For example, the risk of massive compromise, as occurred with Chelsea Manning and Edward Snowden, is always present. McChrystal takes the bold and debatable position that the damage a Manning or a Snowden may cause is still a price worth paying, considering the benefits of a modern network.

With sweeping changes in organizational style come sweeping changes in leadership. In a modern network, decision-making is pushed down to a level where a leader may become uncomfortable with the degree of delegation. The results of those decisions flow to the leader, who, possessed of a more holistic view of the organization, can push information and context back down to leaders far lower in the chain of command.

Questions persist about whether McChrystal's model will work universally. A few organizations, such as NASA (for a time) or the Office of Naval Reactors, might be able to achieve and maintain the degree of dedication, reliability, and intense commitment that McChrystal expected and got from his operators, but these are rare examples.

The book does not address other essential aspects of organizations. How does a networked organization promote, reward, recruit, and retain its personnel?

How does a leader deal with a workforce that is increasingly transient and for which organizational loyalty is no longer a hallmark of professionalism? How are questions involving public relations, legality, and political involvement and interest handled? These problems are not unique to the military. There is no discussion of how leaders cope with periods of disruption, challenge, or failure.

Two other issues deserve mention. The first is the book's method of citation: there are no footnotes or traditional endnotes. This aids the casual reader but not the serious scholar, student, or executive who needs to delve deeper. Perhaps the publisher insisted on this methodology; if so, one hopes it is for the last time.

The other issue is more challenging. McChrystal goes to significant lengths to present *Team of Teams* as a collaborative effort. This is commendable, and there may be portions of the book that represent a collective effort that is so interwoven it defies any assignment of individual credit. However, McChrystal is the only author who truly can explain the senior leader's perspective and feelings. As such, his voice should dominate the work, or at least be given clearly identified and dedicated portions of the book to provide solely his point of view.

Despite these shortcomings, *Team of Teams* belongs on any bookshelf devoted to modern works on leadership. It asks important questions, has more than a few sensible recommendations, and provokes useful follow-on conversations. Its readability also will be a plus for business school students, who increasingly will be likely to find it on their list of required texts.

RICHARD J. NORTON



Gear Up, Mishaps Down: The Evolution of Naval Aviation Safety, 1950–2000, by Robert Dunn. Annapolis, MD: Naval Institute Press, 2017. 224 pages. \$29.95.

The average American's view of naval aviation likely is informed by the movie *Top Gun* or, for those with some historical knowledge, the carrier battles of World War II in the Pacific. Unknown even to most naval aviators is a larger and equally dramatic story: the Navy's struggle to bring its aviation accident rate under control. The number of aircraft and aircrews lost to accidents over the course of naval aviation's history is staggering—in the tens of thousands, far more than ever were lost to combat.

A critical segment of that history occurred during the period that retired vice admiral Dunn reviews in his book. After World War II, tectonic changes occurred in naval aviation, including the introduction of jet aircraft and the advent of nuclear weapons. The pressure on the Navy to demonstrate the effectiveness of its aircraft carriers in the rapidly evolving environment of the 1950s and '60s was intense. The need to fight in Korea with new and inadequately understood aircraft technology, as well as to maintain a viable nuclear deterrent posture day or night, in almost any weather, produced horrendous accident rates. In 1954 alone the Navy and Marine Corps lost 776 aircraft to accidents, and 536 aircrewmen and passengers were killed. There was legitimate doubt that naval aviation would survive if that rate of mishaps could not be reduced.

But survive it did, through reducing accident rates—step by painful step. It is a complex, multifaceted story that

Dunn, a former commander of the Naval Safety Center and Deputy Chief of Naval Operations for Air Warfare, is uniquely qualified to tell. This is a book most easily understood and appreciated by those who have been a part of naval aviation. However, while the book's second half gets rather technical, the author does provide both explanatory endnotes and appendices that offer background information to help the lay reader make sense of it.

Dunn appears to be on a mission to glorify those who made key contributions to the reduction in mishaps. This is entirely justified, as the efforts of such luminaries as James Flatley, Dr. Ashton Graybiel, and Bob Osborne helped to bring the accident rate down from the hundreds of planes and crewmen lost each year in the 1950s to the occasional mishap that naval aviation experiences now. Their efforts, and those of many others, not only saved thousands of lives and aircraft but ensured that the nation would be able to maintain command of the seas. The book is a mixture of narrative and analysis that forms a coherent explanation of how naval aviation shifted from being a freewheeling, daredevil operation to a disciplined and professional enterprise.

The book is well organized and the author's writing is straightforward and clear. However, the book contains some small issues that casual readers likely would miss but that can nag at an experienced naval aviator (such as this reviewer). One is the presence of contradictory statements about the potential utility of the canceled supercarrier USS *United States*; another is what appear to be typos. The latter subtly change the meaning of certain paragraphs, such as the statement on page 22 that the

helicopter community's mishap experience was "atypical" for the day, when the word should have been "typical," or the incorrect statement that the Frenchman Paul Bert's hypoxia experiments took place in the twentieth century versus the nineteenth. There are enough of these "nits" in the first few chapters to distract the knowledgeable reader, although later chapters are cleaner.

The real issue is the book's laudatory tone. Dunn is forthright in describing the various issues that led to the Navy's awful accident rates, and correctly identifies the measures that eventually fixed the problem. Still, he fails to address what is, in this reviewer's opinion, a key issue: the rate at which the Navy reduced its accident rate in comparison with the Air Force. In 1950, the Navy's accident rate was one and one-half times that of the Air Force; by 1960 and through 1970, it was four times higher than that of the Air Force, despite a concurrent reduction in the overall accident rate for both services. Even in 1980, the Navy rate remained three times that of the Air Force. However, by 1990 the relative accident rates for the Navy and Air Force were equal—and have remained so ever since. Any analysis of naval aviation safety improvement in the period the book covers should take on this matter, and the failure to do so is a key drawback of the book. Had the Navy adopted the Air Force's methods in the 1950s, thousands of additional lives and aircraft might have been saved. Why the service did not do so is an important part of the story, one that should be told. Dunn does a good job of describing the various threads that led to the Navy's victory over mishaps and the book is worthwhile reading for anyone who has ever been involved in naval

aviation, but in the end it falls short of delivering more-thorough reporting.

ROBERT C. RUBEL



Navy Football: Return to Glory, by T. C. Cameron.
Charleston, SC: History Press, 2017. 189 pages.
\$21.99.

As both a U.S. Military Academy (USMA) graduate and the father of a USMA graduate, I jumped at the chance to read a book about the success of the U.S. Naval Academy (USNA) football team. Let's face it: Navy has a winning program that has dominated Army football in recent years, even though both teams draw from the same pool of talented high school athletes. T. C. Cameron traces the history of USNA's football team, including its comeback, or "return to glory," over the past fifteen years.

Bill Belichick, the legendary coach of the New England Patriots, wrote the foreword, in which he pays tribute to the Navy coaches and midshipmen who taught him the game of football. "When I think of Navy football, my early role models were some of the biggest legends in the program's history" (p. 7). Belichick grew up in Annapolis and his father, Steve Belichick, was an assistant football coach at the Naval Academy for thirty-four years.

Cameron first traces the history of Navy football. He describes the period from 1950 to 1963 as its "Camelot" years. The Navy football team was successful under Coach Eddie Erdelatz and his assistant coach Wayne Hardin, who later succeeded him. During these years, Navy also built the Navy-Marine

Corps Memorial Stadium. The Navy football team was winning consistently, and legends such as Tom Lynch and Heisman Trophy winners Joe Bellino and Roger Staubach were winning the hearts and minds of football fans across the country. Even President John F. Kennedy, himself a Navy veteran, supported the Navy team. Kennedy's assassination in November 1963 was a tremendous blow to the team, and many wondered whether the Army-Navy game would even be played the week afterward. Ranked number two in the country, Navy won the game, then went on to lose to top-ranked Texas in the Cotton Bowl. After the following season, as Cameron puts it, "Camelot was over. Without knowing it, a long cold winter descended on the Navy program. It would last almost forty years" (p. 26).

Cameron characterizes the years between 1995 and 2001 as the "Big Tease." Under Coach Charlie Weatherbie, Navy football initially did well, experiencing winning seasons. However, as Cameron writes, "[h]is finish was a disaster, as Navy lost seventeen of the last eighteen" games he coached, "and twenty of twenty-one overall" (p. 51). Navy football's true renewed success began when Coach Paul Johnson, the offensive coordinator in 1995–96, returned, and Cameron portrays 2002–2007 under the heading "Johnson Returns." Johnson's record at Navy was 43–27, with five bowl appearances in six seasons. More importantly, Johnson's teams crushed both Army and Air Force, losing only once against another service academy. The football team has continued to have winning seasons under Coach Ken Niumatalolo from 2008 to the present, a period Cameron characterizes as a "Ball of Fire" because

of the coach's dynamic personality on the field. Cameron makes the point that "[i]f Ken Niumatalolo is your neighbor, you think he's a great guy. But if you play football for Navy, in an instant, he can be your worst nightmare" (p. 107).

Cameron does a superb job recounting the intense rivalries that Navy has with not only Army and Air Force but Notre Dame. He describes the 2007 win over Notre Dame—after forty-three consecutive losses—as follows: "The night 'the Streak' died—the longest streak in NCAA history—eighty thousand fans at Notre Dame Stadium watched in stunned silence as Navy let go of forty-three years of misery, embarrassment, and frustration" (p. 136). He details the joy—and other emotions—of football games with Army and Air Force, with the overall winner receiving the Commander in Chief's Trophy. Few other writers can match Cameron's insights into and appreciation of the distinctive qualities of the Army-Navy game. "The annual bit of military theater, greater than any other game, makes the Army-Navy legacy a little sweeter. The nation's game" (p. 106).

Nonetheless, I struggled somewhat with the book. I found it difficult that Cameron seems to be telling two stories, in that as he writes about the chronology of Navy football he intersperses the story of Navy's fierce rivalries with Army, Air Force, and Notre Dame. At times the story was challenging to follow because I was reading about things from two different perspectives: one that portrayed a chronology, and another that recounted memorable games with Navy's leading rivals.

The appendices highlighting Navy's unforgettable games, unforgettable seasons, GOATS (read the book), players, coaches, and a potpourri of other

topics all add value and make this book a must-read for football fans across the country. Cameron has shined a spotlight on Navy's football program through its highs and lows, with colorful commentary that makes it an enjoyable read.

THOMAS J. GIBBONS



The Battleship Holiday: The Naval Treaties and Capital Ship Design, by Robert C. Stern. Annapolis, MD: Naval Institute Press, 2017. 272 pages. \$42.95.

Robert Stern, a writer of more than twenty books on naval matters over three decades, opens his latest effort by admitting that he is tackling a subject on which much has been written already.

The Battleship Holiday explores the history and technical design of capital ships that the five signatories to the 1922 Five-Power Treaty—Great Britain, the United States, Japan, France, and Italy—plus Germany built during and after the "battleship holiday" that the treaty imposed. His fresh approach to analyzing capital ship design and construction during this period addresses the ships and their innovations chronologically rather than along national lines. Throughout this chronology, he explores three major threads: diplomacy, technology, and operational performance. Stern offers that, while other treatments address one or two of these threads, his assessment of all three provides "more complete insight into the interplay of factors that led different nations to build different ships" (p. 10) to achieve their respective national goals.

Divided into two parts, the book first explores how capital ships evolved to the point at which the world's naval powers

decided to limit them. Beginning with the 1862 battle of Hampton Roads, Stern traces the evolution of capital ships up to the 1916 battle of Jutland. His threads run through ship design and construction as each nation emphasized characteristics important to its vision of the battleship's role. Stern steers clear of analyzing strategy and tactics except where necessary to show how different technical decisions combined with tactical developments, such as to produce Jutland's outcome. The chapter "The Art and Practice of Main-Battery Fire Control in 1916" demonstrates Stern's in-depth analysis of technological advancements by the various belligerents. In addition to gunnery and fire control, each country drew from Jutland different lessons on armor, propulsion, and machinery—many of them incorrect. Stern concludes the first section by describing the tension between liberal politicians and naval leaders as they attempted to curtail the exorbitant cost of maintaining a fleet of modern battleships. The resulting Washington Naval Treaty system placed specific restrictions on capital ships. The subsequent battleship building holiday succeeded in preventing unconstrained shipbuilding, but it did not inhibit ambitions to build better battleships.

The second half of the book tracks capital ship design and construction from 1922 to 1946. The idea of naval disarmament began to fray less than five years after its initiation, slowly at first and later accelerating to the point of dissolution. During the intervening years, naval architects fought to design ships that maximized war-fighting capability within the treaty's 35,000-ton restriction. Stern spends significant time discussing the technical details of various designs, including the sacrifices, benefits, and

political ramifications involved. He gives equal coverage to all the navies building capital ships, including their decisions on whether to follow the constraints the Washington Treaty system imposed. He also includes significant discussion of ships not built, and why. The chronological approach demonstrates how the different design decisions responded to or ignored the efforts of other nations.

Stern's assessment culminates with an analysis of the effectiveness of these battleships' offensive and defensive capabilities in combat. Direct comparison is nearly impossible, since only three engagements occurred that pitted new-generation battleships against each other. The German battleships *Bismarck* and *Scharnhorst* succumbed to their peers HMS *Prince of Wales* and HMS *Duke of York*, respectively, in battle at sea, but those actions included other vessels or aircraft that prevented a "fair fight." The other direct action between new-generation battleships consisted of USS *Massachusetts* (BB 59) battering the incomplete French battle cruiser *Jean Bart*, holed up in Casablanca's harbor. Stern assesses other surface actions, including the battleship duel in which the post-Jutland battleships USS *Washington* (BB 56) and USS *Alabama* (BB 57) sank the Japanese pretreaty battle cruiser *Kirishima*, and the cornering and scuttling of the German *Graf Spee* by British cruisers at the Río de la Plata. In almost every case, whether they resulted in sinking or survival, battleship-protection schemes underperformed. Surface action was no longer the norm—the majority of battleship damage and losses in the Second World War resulted from air attack, especially with aerial torpedoes.

Stern provides a fresh and highly technical assessment of the pinnacle

of naval warship design. But in doing so he demonstrates the futility of this construction. Bent on applying the lessons of Jutland to ensure victory in the next great naval battle, nations built the ultimate dreadnoughts, only to see them relegated to convoy protection and anti-aircraft duty, untested in the fleet actions for which they were designed. While America, Britain, France, and Italy continued to operate battleships after the Second World War, the design and construction costs of battleships proved exorbitant in relation to their utility in the era of the aircraft carrier.

JAMES P. MCGRATH



Turkey and the West: Fault Lines in a Troubled Alliance, by Kemal Kirişçi. Washington, DC: Brookings Institution, 2018. 309 pages. \$34.

Turkey's oscillation between the West and East is nothing new, nor is there a lack of literature on the topic. But what Kemal Kirişçi accomplishes in his most recent work is an insightful analysis of Turkey's history and its foreign policy by-products through the lens of the current security quandary. Most valuably, the book demonstrates the interaction among the various currents within Turkey and how they are creating an increasingly anti-Western foreign policy. Given the author's goal of elucidating Turkey's history up to the present day and reducing the confusion about what is behind its government's decision-making, his book offers the most authoritative work available.

Not long ago the United States was touting Turkey as a model for countries seeking to join the international liberal order, in particular for those trying to

reconcile Islam and democracy. Early in his tenure Recep Erdoğan gave a speech at Harvard in which he quoted Thomas Jefferson, praised democracy, and extolled the virtues of Turkey's eventual European Union (EU) accession. As recent as 2011, Erdoğan delivered a speech in Cairo that emphasized democracy and secularism as qualities intrinsic to Turkey. Yes, things can change in a hurry in the Middle East, but why and how did the esteem in which Turkey was held around the world recede so quickly?

The author provides an engaging picture of all the factors at play, many of which are rooted in domestic politics. He traces Turkey's history since World War II, focusing particularly on the period since the Gezi Park protests in 2013. Turkey has banned consumption of alcohol in public spaces, altered the content of educational materials in schools to align them more with Islam, curtailed personal freedoms, and detained journalists. Nowadays Erdoğan makes public comments demeaning the founder of the modern Turkish republic, Kemal Atatürk. Erdoğan is deploying an increasingly majoritarian form of democracy that excludes the 48.6 percent of the country that did not vote for his increased power in the April 2017 referendum. The situation in Turkey portends a mutually reinforcing nexus in which growing authoritarianism within the country's borders moves in parallel with a foreign policy increasingly at odds with that of the West.

In analyzing the international factors at play in Turkey's shift, Kirişçi gives due attention to the war in Syria and the migration crisis. But in addition to these better-known fault lines, what the author does exceptionally well is to explain how Europe and the United States are not without blame for fostering skepticism

of Western sincerity among the Turkish population. The 2003 invasion of Iraq—in the face of Turkey’s objections and its perceptive and rather dire predictions—inflated an already-strong sense of distrust toward the United States. The EU’s halfhearted attempts at accomplishing Turkish accession predictably have come to a standstill, which removes the pull of Europe and the pressure for democratic reform. Perceived insensitivity on the Kurdish question, and even overt sympathy among some for increased Kurdish autonomy, represents another source of contention. The author also brings context to some overlooked fault lines, such as the EU’s acceptance of Cyprus as a member even though that country refused to support the UN-backed reunification plan, on the support of which the Turkish government had expended significant political capital. Other examples include the 2014 failure of Turkey to be reelected as a nonpermanent member of the UN Security Council and Western governments’ delayed and lukewarm condemnations of the 2016 coup attempt.

This book is immensely helpful in understanding Turkey’s foreign policy and the myriad of factors that influence it. A major theme of the book is why Turkey continually shows signs of shifting its orientation away from Europe and the United States toward China, Iran, and Russia. The author provides a

strong argument that if this shift were to culminate in a complete reorientation—especially at a time when the Middle East is more of a flash point than usual and the aggressiveness of Russia is trending upward exponentially—the consequences to the international liberal order would be grave.

No magic solutions are provided, and the book’s candid assessment is that the relationship will get worse before it gets better. The book’s central argument is that the United States and the EU should maintain robust engagement with Turkey. Kirişci also offers a flexible framework for analysis and several recommendations for narrowing the fault lines. Turkey remains anchored in the political, military, and market economy-based institutional structures of the West—at least for the time being. Moreover, in the long run, who is Erdoğan or his eventual successors going to trust more, the EU and the United States or China and Russia? The history of Turkey reveals indicators of orientations in both directions, but more so a Western bent. The question is whether that history of Western integration can survive the rising Islamism in the country and Erdoğan’s seemingly perpetual authoritarian rule. Reading this book might not enable one to predict correctly Turkey’s final direction, but one’s guess at least would be much better informed.

JEREMY SNELLEN

OUR REVIEWERS

Blake I. Campbell is an independent researcher and reviewer, book review editor, and adjunct professor.

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USN ships in Operations DESERT STORM and DESERT SHIELD. He commanded the 1st Battalion, 10th Aviation Regiment (ATTACK) and served as J1 of the U.S. Pacific Command before coming to the Naval War College as the Army adviser. He has a BS from the U.S. Military Academy, an MS from George Washington University, an MA from the Naval War College, and an EdD from Johnson & Wales University.

Myron A. Greenberg is a contracting officer with the Defense Contract Management Agency in Dayton, Ohio. The Naval War College Press published his *Physics and Metaphysics of Deterrence: The British Approach* as Newport Paper 8. He published a review essay in the Autumn 2000 *Naval War College Review*. He holds a PhD in political science from the University of Cincinnati and an MPIA degree from the University of Pittsburgh Graduate School of Public and International Affairs. Dr. Greenberg also participated in the Naval War College's nonresident correspondence program.

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General Lord Richards of Herstmonceux formerly served as Britain's Chief of the Defence Staff, the professional head of the country's armed forces and their strategic commander, as well as the prime minister's military adviser and a member of the National Security Council. Prior to that he commanded the British Army. He also led operations in East Timor, Sierra Leone, and Afghanistan.

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Robert C. Rubel is a retired Navy captain and professor emeritus of the Naval War College. He served on active duty as a light attack / strike fighter aviator. At the Naval War College he served in various positions, including planning and decision-making instructor, joint education adviser, chairman of the Wargaming Department, and dean of the Center for Naval Warfare Studies. Retired in 2014, he continues to serve on occasion as a special adviser to the Chief of Naval Operations. He has published over thirty journal articles and several book chapters.

Jeremy Snellen currently works at the Center for Law and Military Operations in Charlottesville, Virginia. In addition to being a distinguished graduate of the Naval War College, he also holds a law degree from Syracuse University and a master's degree from the Maxwell School of Citizenship and Public Affairs at Syracuse University.

Sam J. Tangredi is a professor of national, naval, and maritime strategy at the Center for Naval Warfare Studies, Naval War College. He is the author of *Anti-access Warfare: Countering A2/AD Strategies* (Naval Institute Press, 2013) and two earlier books on the future security environment.

REFLECTIONS ON READING

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

In early March 2018, the Naval War College responded to direction from the Under Secretary of the Navy to host a workshop entitled “Breaking the Mold: Strategy and War in the 21st Century.” The Honorable Thomas Modly traveled to the College to deliver a rousing keynote address to over sixty scholars and operators from across the Navy and the wider defense intellectual community. He challenged each participant to “break the mold” of conventional thinking to develop new war-fighting concepts in the sea, air, land, space, and cyberspace domains.

Under Secretary Modly said, in part:

In a word, I believe that breaking the mold will require a preeminent focus on the need for *agility*. Agility is *the* term which I believe best describes the overall organizational quality that has determined, and will determine, who and what survives in any increasingly competitive, rapidly changing, and unpredictable environment. This is the environment our Navy faces today, so I think we will ultimately be judged by how well we transition our forces and our supporting organizations to a future in which *agility* is their defining characteristic. Therefore, we must advance agility when we think about, and build, our future force structure. We need more ships and aircraft and vehicles, but that equipment must provide flexibility, adaptability, faster development cycles, reduced maintenance requirements, greater lethality, and an industrial strategy that sustains a modern, flexible, and sustainable industrial base.

The Chief of Naval Operations Professional Reading Program (CNO-PRP) is replete with books that focus on agility, flexibility, innovation, and “mold-breaking” thinking. The following descriptions, adapted from material provided by each book’s publisher, explain why the books are of interest to military officers, government civilian leaders, and others.

- *The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies*, by Erik Brynjolfsson and Andrew McAfee (W. W. Norton, 2014). The authors—two thinkers at the forefront of their field—reveal the forces driving the reinvention of our lives and our economy. As the full

impact of digital technologies is felt, we will realize immense bounty in the form of dazzling personal technology, advanced infrastructure, and near-boundless access to the cultural items that enrich our lives. Drawing on years of research and up-to-the-minute trends, Brynjolfsson and McAfee identify the best strategies for survival and offer a new path to prosperity. These include revamping education so it prepares people for the next economy instead of the last one, designing new collaborations that pair brute processing power with human ingenuity, and embracing policies that make sense in a radically transformed landscape.

- *The Innovator's Dilemma: The Revolutionary Book That Will Change the Way You Do Business*, by Clayton M. Christensen (HarperBusiness Essentials, 2003). This is a revolutionary business book that has changed corporate America forever. Based on a truly radical idea—that great companies can fail precisely because they do everything “right”—this *Wall Street Journal*, *Business Week*, and *New York Times Business* best seller is one of the most provocative and important business books ever written. Entrepreneurs, managers, and CEOs ignore its wisdom and its warnings at their great peril.
- *Thinking, Fast and Slow*, by Daniel Kahneman (Farrar, Straus, Giroux, 2011). In this international best seller, Kahneman, a renowned psychologist and winner of the Nobel Prize in Economics, takes us on a groundbreaking tour of the mind and explains the two systems that drive the way we think. System 1 is fast, intuitive, and emotional; System 2 is slower, more deliberative, and more logical. The impact of overconfidence on corporate strategies, the difficulties of predicting what will make us happy in the future, the profound effect of cognitive biases on everything from playing the stock market to planning our next vacation—each of these can be understood only by knowing how the two systems shape our judgments and decisions. Engaging the reader in a lively conversation about how we think, Kahneman reveals where we can and cannot trust our intuitions and how we can tap into the benefits of slow thinking.
- *Inviting Disaster: Lessons from the Edge of Technology; An Inside Look at Catastrophes and Why They Happen*, by James R. Chiles (HarperBusiness, 2002). Weaving a dramatic narrative that explains how breakdowns in systems result in such disasters as the chain-reaction crash of an Air France Concorde and the meltdown at the Chernobyl nuclear power station, Chiles vividly demonstrates how the battle between man and machine may be escalating beyond manageable limits—and why we all have a stake in its outcome. Included in this edition is a special introduction providing a

behind-the-scenes look at the World Trade Center catastrophe. Combining firsthand accounts of employees' escapes with an in-depth look at the structural reasons behind the towers' collapse, Chiles addresses the question, Were the towers "two tall heroes" or structures with a fatal flaw?

These books, and many others within the CNO-PRP, can help military readers (and would-be innovators) take a detailed look at the inner workings of minds facing sometimes overwhelming challenges. They may help you to "break the mold" of conventional thinking and develop an agile mind, as encouraged by the Under Secretary of the Navy.

JOHN E. JACKSON