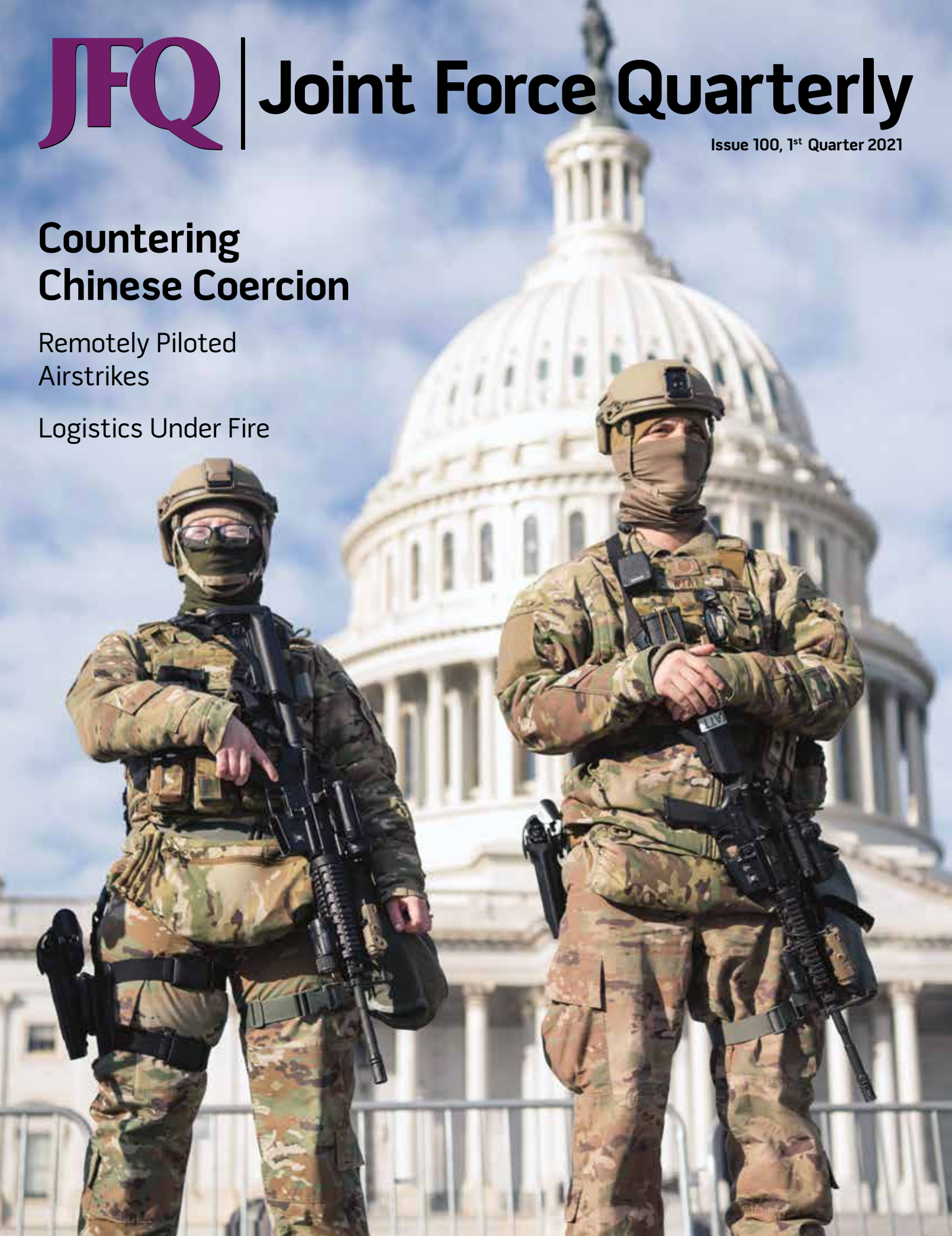
JFQ | Joint Force Quarterly

Issue 100, 1st Quarter 2021

Countering Chinese Coercion

Remotely Piloted Airstrikes

Logistics Under Fire



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Cover 2 images (top to bottom): Hospital Corpsman 2nd Class Elizabeth R. Pinon, assigned to USS *Halsey*, exercises topside, South China Sea, September 4, 2020 (U.S. Navy/Andrew Langholf); Trainee attacks dummy during Basic Expeditionary Airman Skills Training, as part of Air Force Basic Military Training, Lackland Air Force Base, San Antonio, Texas, March 18, 2019 (U.S. Air Force/Bennie J. Davis III); Information Systems Technician Seaman Gabriella Hernandez practices mock takedowns during security force training aboard USS *Momsen*, South China Sea, July 4, 2019 (U.S. Navy/Sean Rinner)

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Virginia National Guard Airmen assigned to 192nd Security Forces Squadron, 192nd Mission Support Group, 192nd Wing, help secure grounds near U.S. Capitol, January 13, 2021, in Washington, DC, assisting Federal and District of Columbia authorities in support of 59th Presidential Inauguration (U.S. Air National Guard/Bryan Myhr)

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Editor, *Joint Force Quarterly*
NDU Press
300 Fifth Avenue (Building 62, Suite 212)
Fort Lesley J. McNair
Washington, DC 20319
Telephone: (202) 685-4220/DSN 325
Email: JFQ1@ndu.edu
JFQ online: ndupress.ndu.edu/jfq

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Pictured (left to right, top to bottom): General Mark A. Milley, USA, Chairman of the Joint Chiefs of Staff; General John E. Hyten, USAF, Vice Chairman of the Joint Chiefs of Staff; General James C. McConville, USA, Chief of Staff of the Army; General David H. Berger, USMC, Commandant of the Marine Corps; Admiral Michael M. Gilday, USN, Chief of Naval Operations; General Charles Q. Brown, Jr., USAF, Chief of Staff of the Air Force; General John W. Raymond, USSF, Chief of Space Operations; General Daniel R. Hokanson, USA, Chief of the National Guard Bureau.

THE JOINT CHIEFS OF STAFF
WASHINGTON, DC 20318

MEMORANDUM FOR THE JOINT FORCE

SUBJECT: MESSAGE TO THE JOINT FORCE

The American people have trusted the Armed Forces of the United States to protect them and our Constitution for almost 250 years. As we have done throughout our history, the U.S. military will obey lawful orders from civilian leadership, support civil authorities to protect lives and property, ensure public safety in accordance with the law, and remain fully committed to protecting and defending the Constitution of the United States against all enemies, foreign and domestic.

The violent riot in Washington, D.C. on January 6, 2021 was a direct assault on the U.S. Congress, the Capitol building, and our Constitutional process. We mourn the deaths of the two Capitol policemen and others connected to these unprecedented events.

We witnessed actions inside the Capitol building that were inconsistent with the rule of law. The rights of freedom of speech and assembly do not give anyone the right to resort to violence, sedition and insurrection.

As Service Members, we must embody the values and ideals of the Nation. We support and defend the Constitution. Any act to disrupt the Constitutional process is not only against our traditions, values, and oath; it is against the law.

On January 20, 2021, in accordance with the Constitution, confirmed by the states and the courts, and certified by Congress, President-elect Biden will be inaugurated and will become our 46th Commander in Chief.

To our men and women deployed and at home, safeguarding our country—stay ready, keep your eyes on the horizon, and remain focused on the mission. We honor your continued service in defense of every American.

MARK A. MILLEY
General, U.S. Army
Chairman of the Joint Chiefs of Staff

JOHN E. HYTEN
General, U.S. Air Force
Vice Chairman of the Joint Chiefs of Staff

JAMES C. MCCONVILLE
General, U.S. Army
Chief of Staff of the Army

DAVID H. BERGER
General, U.S. Marine Corps
Commandant of the Marine Corps

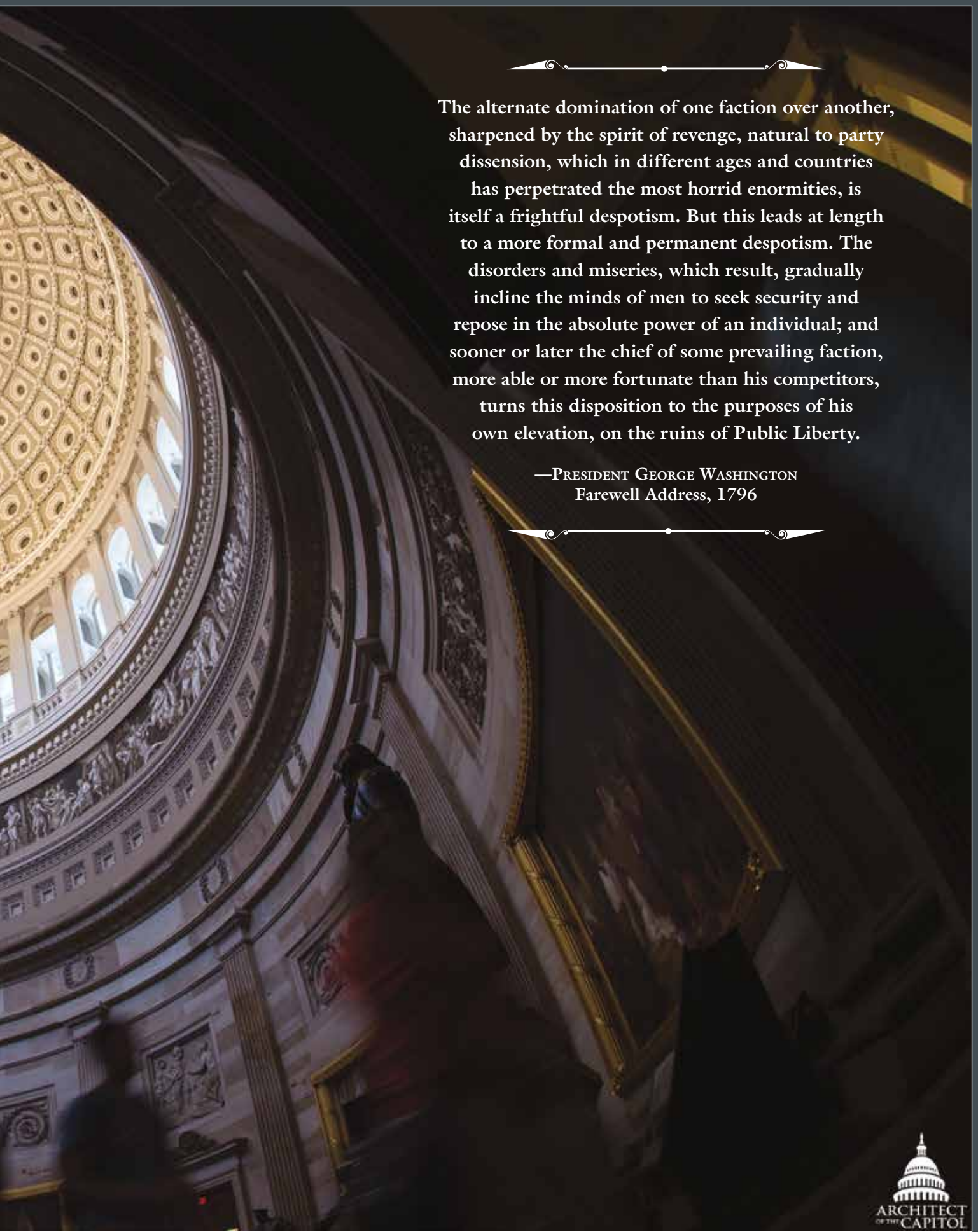
MICHAEL M. GILDAY
Admiral, U.S. Navy
Chief of Naval Operations

CHARLES Q. BROWN, JR.
General, U.S. Air Force
Chief of Staff of the Air Force

JOHN W. RAYMOND
General, U.S. Space Force
Chief of Space Operations

DANIEL R. HOKANSON
General, U.S. Army
Chief of the National Guard Bureau

Statue of George Washington and Constantino Brumidi's 1865 fresco, *The Apotheosis of Washington*, in Rotunda of U.S. Capitol Building, Washington, DC, September 6, 2016 (Architect of the Capitol)



The alternate domination of one faction over another, sharpened by the spirit of revenge, natural to party dissension, which in different ages and countries has perpetrated the most horrid enormities, is itself a frightful despotism. But this leads at length to a more formal and permanent despotism. The disorders and miseries, which result, gradually incline the minds of men to seek security and repose in the absolute power of an individual; and sooner or later the chief of some prevailing faction, more able or more fortunate than his competitors, turns this disposition to the purposes of his own elevation, on the ruins of Public Liberty.

—President George Washington
Farewell Address, 1796

ARCHITECT OF THE CAPITOL

American flag flies outside Capitol Building during 59th Presidential Inauguration ceremony in Washington, January 20, 2021, when President Joseph R. Biden and Vice President Kamala D. Harris took oath of office on West Front of U.S. Capitol (DOD/Carlos M. Vazquez II)

Executive Summary

We the People of the United States, in Order to form a more perfect Union, establish Justice, insure domestic Tranquility, provide for the common defense, promote the general Welfare, and secure the Blessings of Liberty to ourselves and our Posterity. . . .

—**Preamble to the U.S. Constitution**

We train as a team, fight as a team, and win as a team.

—**General Colin Powell,** *Joint Force Quarterly* **1 (Summer 1993)**

It is January 2021, where the daunting challenges that have become everyday life in a global pandemic continue to mount, and your *Joint Force Quarterly* team is rolling out this 100th issue. Since the first issue in 1993, *JFQ* has had 9 Chairmen, 7 editors in chief, 40 staff members who collectively published nearly 2,000 articles, hundreds of book reviews, with thousands of photographs and graphics, on more than 12,000 pages. *JFQ* has remained *the* leading source of what General Powell wanted us to be: "the voice of the joint warfighter."

For over 27 years, your *JFQ* team has always worked hard to bring you the best of what you have submitted so that we can improve our collective efforts to achieve what General Powell and our joint leadership saw as both possible and necessary to protect the Nation. Together, you, the readers and writers for *JFQ*, your teammates here at the National Defense University Press and the Joint Staff, and on up to the Joint Chiefs and the Chairman, have done great service toward that end.

But as recent events have shown, we all have work to do to secure the liberties and the Republic we all hold dear. The joint

force has been a key and essential element of the Nation's success. How well we work together, help each other, learn from each other, and trust each other will determine the outcome of our collective efforts.

Within the joint force, there are lingering questions of how well people can work with each other and handle the stresses of 21st-century society and warfighting. Can we continue to assert that we are ready to fight and win the Nation's wars when we seem unable to solve issues such as sexual harassment and assault, or the very existence of right-wing extremists within the ranks? How are we doing on making sure equal opportunity is actually the norm and not simply an online training session taken annually? The same question should be asked on a range of important social issues that, if unresolved, remains systemic and corrosive to the joint force's ability to be a successful team. Which of these issues are most important? How can they be worked holistically at every level in the Services, agencies, joint headquarters, and associated partners? How do we further deepen our commitment to jointness, which I see as a commitment to trust each other, to accept our differences, and to use these differences to forge a better and long-lasting union of capabilities and operations? Should not all training and operational employment of our forces through the combatant commands be aimed at using and improving the best of available resources and ideas?

Having stewarded the *JFQ* team for 40 issues, I know we must continue to develop relationships with our teammates, whether they are in our tactical unit, the cubical next door, or from any of the Services, agencies, international partners, and commercial industries. Key to that development is trust in what you know and a willingness to trust your partners, especially those you may not fully understand or accept when first you meet.

After working with students and faculty in the joint professional military education colleges and research institutes for many years, I have seen the power that breaking down trust barriers gives to those who do so. It does not mean your organizational culture is "wrong" because you are willing to work with "them." Trust is at the heart of a successful joint force. Learning something new and then passing on that gained wisdom to others can only make us better.

In this centenary issue of *JFQ*, the Forum begins with RAND researchers Christopher Paul and Michael Schwille discussing how the joint force should use the development of special operations forces as a model to advance teams that deal with information operations. As we have witnessed increasing attempts by our adversaries to "flood the zone" with disinformation, Kurt Stahl suggests ways the United States and its partners could counter China's efforts in this area through collective information-based responses. In an emerging area of interest and innovation, Susan Levine comments on the progress DOD has made in developing and deploying nonlethal or "intermediate force capabilities." Equally important to the deployment of new capabilities, Institute for Defense Analyses researchers Thomas Greenwood (a member of the *JFQ* editorial board), Terry Heuring, and Alec Wahlman provide some powerful suggestions on how joint force training has evolved to match the environment of Great Power competition.

In JPME Today, Roderic Butz's first-place winning entry in the 2020 Secretary of Defense National Security Essay Competition leads off with a discussion on the use of remotely flown airstrikes as a part of foreign policy im-plementation. Also compelling is Joshua Sipper's recommended approach to teaching cyber security. Fulfilling a critical need in relevant subject matter, espe-cially as we watch COVID-19 vaccines roll out, Stephanie Myers, Eric Shirley, Brian Joseph Anderson, and Steven Hejmanowski offer us their views on logistics in dynamic combat deployments.

In line with General Powell's call for a lively debate in these pages, we offer two viewpoints that may or may not align with yours. But that is the point of debate in these pages. Looking on how to best support a foreign government with international military forces, Forest Pierce provides his ideas on what worked and what did not in advising local forces providing security during the 2019 Afghan presidential election. Montgomery McFate demystifies the reality surrounding tickborne Lyme Disease, and how important it is to our readiness to protect against it.

Leading off Features, Brandon Archuleta and Jonathan Gerson suggest we need to take another look at how the Pentagon is organized to deal with Great Power competition. In another timely article related to medical issues and the joint force, Brian Neese and Douglas Robb describe a different way to organize exercises for our medical units. Always a favorite discussion in these pages, Chad Buckel takes a look at operational art from the mind of the user, suggesting how we define war drives how we plan and fight. With a great deal of discussion and effort recently to finally integrate command and control capabilities, Jonathan Stafford helps us see integrated air and missile defense as a model for future success.

Finally, in Recall, Bradley Podliska, Karin Hecox, and Oliver Sagun take us inside the planning done by the Germans in World War II prior to Operation *Overlord*, using a process-tracing approach. In Joint Doctrine, Paul Reed and Thomas Kirsch discuss the importance of having our military health system properly prepared for operating in a humanitarian crisis. In light of recent military hospital units supporting local COVID-19 operations, there may be something here for us at home as well. As always, we have three important book reviews and our Joint Doctrine Update to round out this 100th issue.

Whether you are on the ground halfway around the world or standing point here at home in Washington, DC, whether you are in uniform or civil service, in defending our Constitution against all enemies foreign and domestic you are defending both a way of life and a precious set of values all freedom-loving people around the world believe in. Your team here at NDU Press supports your efforts and wants to hear from you as you work the difficult issues and tasks in the days and months ahead. Stay safe. **JFQ**

William T. Eliason
Editor in Chief

Sailor and multipurpose canine from Naval Special Warfare Group One practice crevasse self-recovery techniques during austere high-altitude environment training, at Knik Glacier, Alaska, September 11, 2020 (Naval Special Warfare Group One)

The Evolution of Special Operations as a Model for Information Forces

By Christopher E. Paul and Michael Schwille

U.S. special operations forces (SOF) writhed from perennial neglect before a dedicated combatant command—U.S. Special Operations Command (USSOCOM)—was created, an assistant secretary was appointed, and major force program funding was allocated. This article draws an analogy between historical SOF and contemporary information forces and suggests that the history and evolution of SOF could serve as a possible model and provide cautionary lessons for the future development of information forces.

Information and the information environment are ascendant in Department of Defense (DOD) concepts and conversations. There has been a great deal of productive thinking related to the

Christopher E. Paul is a Senior Social Scientist at RAND. Michael Schwille is a Senior Policy Analyst at RAND.

information environment over the past few years. Significant steps have included the publication of the *Department of Defense Strategy for Operations in the Information Environment* and the *Joint Concept for Operating in the Information Environment* (JCOIE), as well as the addition of information as a joint function—alongside command and control, intelligence, fires, movement and maneuver, protection, and sustainment.[1] Signed on July 25, 2018, the JCOIE represents important progress. It documents 17 required capabilities across 4 broad areas:

- characterize and assess the informational, human, and physical aspects of the security environment
- formulate options that integrate physical and informational power
- execute and modify those options
- institutionalize the integration of physical and informational power.

The JCOIE and the associated capabilities-based assessment have identified gaps in joint force capabilities, practices, and processes available to meet those requirements with the goal of identifying solutions. This effort established a need for more robust information-focused capabilities to support operation planning and the ability to command, control, oversee, and modify operations as they are executed and to leverage and employ informational power as part of operations. Meeting these needs will require the further growth and development of information forces (as pre-USSOCOM SOF needed to grow and receive more focused advocacy and funding in order to meet requirements).

But what do we mean by *information forces*? Information forces, at the very least, include those who contribute to understanding the human and informational aspects of operations, those who plan based on that understanding, and those who generate informational power. (The JCOIE describes *informational power* as the ability to leverage information to shape perceptions, attitudes, and other elements that drive desired behavior and the course of events.) Information forces might also include those who operate and maintain the DOD information network and knowledge management specialists. The information joint function also explicitly encompasses the management of information. Leaving aside information management and the inherent informational aspects of all military activities, information forces would comprise the existing capabilities of the planners and integrators of information operations (IO), the information-related capabilities (IRCs), and the portion of the intelligence apparatus dedicated to supporting efforts. The IRCs include a traditional core of electronic warfare, military information support operations (formerly psychological operations, whose personnel still self-identify as psychological operations), cyber operations, military deception, and operations security. More expansive lists of IRCs also include public affairs, civil affairs, combat camera, information assurance, counterintelligence, special technical operations, and, occasionally, a few others.

Many of these capabilities have been part of the joint force in one form or another for quite some time. Like SOF, what we now call *military information support operations* can trace its roots back to the Revolutionary War. Those early influence efforts involved colonial forces tying strips of paper containing promises of money, food, land, and freedom to rocks and throwing them at British forces to elicit their surrender.[2] Electronic warfare dates back to World War II, and the United States has had airborne jamming capability since at least the Korean War. Deception and operations security are tactics as old as warfare itself, but they lack force structure in the current joint force.

The IRCs have predominantly developed as niche capabilities in specialty areas and thus have evolved and operated independently of one another. Housed within the Services and often poorly understood by Service budget managers, many IRCs suffer from a lack of resources—and insufficient force structure is just one symptom.[3] Not only have some IRCs been historically undermanned, but many also still lack career fields, clear career progressions, or officer or enlisted military occupational specialties.[4] (Similarly, early SOF frequently saw their resources reprogrammed and these forces lacked clear career trajectories, with officers needing to rotate through conventional force postings in order to be promoted.) Further complicating matters, although we discuss these capabilities as part of information forces, personnel in the IRCs do not (yet) self-identify as belonging to broader information forces; instead, they identify with their capability, with their parent organization, or with their special position within the staff. Gathered together, cyber personnel, military information support operations personnel, public affairs officers, and foreign area specialists are more likely to focus on what differentiates them than on their commonalities.

IO emerged in joint doctrine in 1998 as a planning and integrating function seeking to coordinate the IRCs for a common purpose. Even with a doctrinally prescribed staff advocate, effectiveness fell short of what was envisioned. IRCs often lacked a coherent chain of command and reported to different headquarters elements. While the IO cell on a staff was meant to act as the nerve center for these forces, cells and working groups were often undermanned and not well integrated with their commands' standard processes and workflows.[5]

The 2003 *Information Operations Roadmap* sought to address many of these problems and called for IO to become a core competency in DOD, with a trained and capable career workforce to provide IO and related capabilities to the warfighter.[6] The *IO Roadmap* explicitly recognized isolated communities of specialists and relationships between capabilities, organization, education, career force, and analytic support as gaps. Overall, the "current state" as reported in the *IO Roadmap* indicated significant neglect of the development and maintenance of information forces. The state of affairs has improved marginally in many of the areas emphasized in 2003, but significant gaps persist today.[7]

With limited career fields, information forces remain undermanned, scattered across different stovepipes, poorly understood among commanders and staffs,

Guinean special forces soldiers conduct close quarters battle training in abandoned hotel during U.S. Africa Command's annual special operations forces exercise Flintlock 20, in Nouakchott, Mauritania, February 18, 2020 (U.S. Navy/Evan Parker)

and struggling to operate in harmony with each other. Wargames and exercises routinely ignore or underutilize IO and the IRCs—a product of the challenge of effectively simulating the information environment.[8] This has led to a reduced emphasis on IRCs in actual operations, as they have not been demonstrated to be important during training and rehearsals.

At one time, SOF suffered from many of the same challenges and shortfalls, but SOF are now effectively unified, institutionalized, funded, and supported with high-level advocacy. We believe that the ingredients that enabled SOF to grow from a precarious entity to a robust one are a good analogy and offer a possible template for future information forces.[9] The use of historical analogy in policymaking is unavoidable but can be somewhat perilous methodologically; cases that are insufficiently similar can lead to invalid generalizations.[10]

With that said, the two situations under consideration (historical SOF and contemporary information forces) have numerous similarities and appear to be ripe for analogy. The logic of analogy has face validity—the steps taken to reform SOF worked for its circumstances, and to the extent that the situation faced by SOF is similar to the situation faced by information forces, similar steps should work here, too.

Evolution of SOF and the Creation of USSOCOM

Elite commandos have always been a part of U.S. forces. The use of special forces dates back to the Revolutionary War, and modern U.S. SOF can directly trace their lineage to various World War II–era organizations. Despite this long history and many storied successes, SOF were repeatedly subject to postwar cutbacks and an accompanying deterioration of capabilities. This trend reflected tensions between SOF and conventional forces and what Susan Marquis described as the "precarious value" status of SOF:

> *Goals or missions within an organization . . . are in conflict with, or in danger of being overwhelmed by, the primary goals or missions of the organization. Precarious values may be at risk because of a lack of interest by the organizational leadership or because they are in conflict with the primary organizational culture, or sense of mission, of the institution.*[11]

After heavy employment in Vietnam, SOF were once again allowed to decay, limping into the 1980s. SOF struggled when employed due to ambiguous command relationships, ad hoc command and control relationships, and poor integration with conventional forces in planning (similar to the plight of information forces in the current era). Several high-profile failures highlighted these shortcomings and demonstrated institutional problems in how the Services supported SOF—making improvement unlikely. Most glaringly, the Services routinely budgeted for investment in

SOF or SOF equipment but would then usually revise or eliminate those budget lines to free up resources for Service priorities. This led to an acrimonious reform process that involved Congress imposing a new structure for the advocacy and support of SOF: USSOCOM and the Assistant Secretary of Defense for Special Operations/Low-Intensity Conflict (ASD SO/LIC).[12] Congress also gave SOF access to dedicated funding through Major Force Program (MFP)–11 for SOF-peculiar equipment.

Congress had to impose these changes. The need for SOF reform had been apparent for some time and was highlighted by the 1981 disaster of *Desert One* in the Iranian desert that forced Operation *Rice Bowl* to abort instead of attempting the rescue of American hostages at the Embassy in Tehran, and by high SOF casualties in Grenada in 1983, where conventional force leaders misused SOF as light infantry.[13] These repeated disasters served to catalyze and sustain congressional attention. Congress repeatedly encouraged reform and change, writing directives and memos, and programming funding for SOF requirements by which were then repeatedly reprogrammed by the Services. By 1986, it became clear to congressional SOF advocates that sufficient reform would not come from inside DOD. In 1986, advocates in both the House and the Senate pushed through legislation, the Nunn-Cohen Amendment, that called for the establishment of a four-star SOF combatant command, an ASD, and a new Major Force Program.[14] This was the first time that Congress had mandated the creation of a military command. Further legislation in 1987, 1988, and 1989 proved necessary to force DOD to fully implement the reforms.

The creation of USSOCOM placed all SOF under one command, and the benefits were numerous. It aligned SOF force generation, training, and employment under a single command and provided flexible control options for SOF elements during operations. It opened SOF-distinct career paths and eliminated the need for personnel to return to the conventional forces to meet requirements for command billets. It ensured that SOF were commanded by headquarters elements that understood their capabilities and that forces were employed to maximum effect. The end point of the analogy would serve: All these things would also clearly benefit future information forces.

The creation of ASD SO/LIC explicitly provided high-level representation and advocacy for SOF. Congress demanded the creation of this position to defend resourcing, coordinate activities, and represent SOF interests.[15] ASD SO/LIC supports USSOCOM in much the same way as the various Service secretaries support their respective organizations.

The final ingredient in the transformation of SOF from precarious organization to enduring institution was the creation of MFP-11. MFPs are a group of program elements and the necessary resources to ensure successful completion of a mission, objective, or plan.[16] Primary funding for SOF comes from two MFPs: MFP-2 is for general purpose forces, and MFP-11 is specific to SOF. USSOCOM is able to tap these two funding streams because of its distinctive structure: It contains four separate Service components, and each Service is responsible for "Service-common" administration, training, personnel, and equipment. Items that are Service-funded include initial training, basic qualification training, pay, entitlements, officer and Service professional military education, tuition assistance, housing, family services, and access to on-base dining and fitness facilities.[17] In addition to what is funded through the Services, MFP-11 gives SOF the ability to acquire particular equipment for missions. This equipment is distinct from the standard equipment used by general purpose forces and often has different requirements and needs. The equipment can be altered Service-common equipment, equipment designed especially for SOF, or rapidly acquired commercial equipment fulfilling a specific capability requirement. The creation of MFP-11 was a significant change in that it allowed the SOF community to control the resources to obtain these items for missions. SOF no longer had to appeal to the Services and fight for priority within Service budgets every time a new requirement was generated. MFP-11 also provided resources to conduct SOF-specific research and development, something that the Services would routinely repurpose for other priorities during the period in which SOF languished. Today's information forces suffer similar challenges related to funding, with the Services able to reprioritize, deprioritize, or reprogram resources provisionally allocated for IRCs.

In short, the creation of USSOCOM gave SOF an institutional home, tasked these forces with a clear mission, increased their ability to plan and deploy worldwide, provided a coherent chain of command, provided a high-level advocate in the form of the ASD SO/LIC, and guaranteed access to dedicated funding through MFP-11.

Lessons from SOF Evolution

Information forces are *precarious values* in their current state in the same way that pre-USSOCOM SOF were. In learning from this analogy, what can the successful evolution of SOF tell us as we consider the future of information forces? Does the path that led to modern SOF suggest a possible model for future information forces? One of the key insights from the history of SOF is the value of a unified organizational and institutional home. The creation of USSOCOM placed all SOF under one command, which elevated the mission of SOF, centralized the management of SOF careers and training, and provided a clear chain of command for all SOF. To be successful, information forces will need a similar unified organizational home. Whether that should be a new four-star command such as USSOCOM or an existing command that is expanded and rebranded, such as U.S. Cyber Command, remains an open question. Recent discussion about restructuring U.S. Army Cyber Command to become U.S. Army Information Warfare Command might be an example of a Service-level solution, depending on what that actually comes to look like.[18]

Special Tactics Airmen assigned to 26th Special Tactics Squadron post security during full mission profile at Melrose Air Force Range, New Mexico, March 11, 2020 (U.S. Air Force/Maxwell Daigle)

Another essential element of the SOF model is the high-level advocate embodied in ASD SO/LIC, who serves the SOF community in much the same way as the Service secretaries work for their respective organizations—defending resources, coordinating activities, and representing interests. If information forces are to fulfill the requirements laid out in the JCOIE, they will need a similar high-level advocate and defender. In fact, Congress has already demanded something like this role in the 2019 National Defense Authorization Act, Section 1631(a), which calls for the designation of a Principal Information Operations Advisor (PIOA) with a host of responsibilities related to policy and oversight for operations in the information environment. Though a final decision about the level of this PIOA has not been made at the time of this writing, it is clear that this position will be the highest level advocate and proponent for information forces and operations in the information environment to date. Moreover, unlike previous senior advisors (such as the "designated senior official" called for in the 2018 National Defense Authorization Act), the PIOA will be a dedicated full-time position, not an official with multiple portfolios of responsibility wherein information is a secondary (or tertiary) responsibility. Part of the reason that ASD SO/LIC is an effective advocate for SOF is that the office's advocacy role is a central and primary responsibility.

The history of SOF suggests that an organizational home and a senior advocate alone would be insufficient for information forces at this stage of development. The final element in the successful SOF model was a secure resourcing stream as embodied in MFP-11. As a combatant command, USSOCOM has access to resources through general funding mechanisms (such as operations and maintenance, military construction, and research and development), as well as through its own unique line of funding. Taking this as a possible model for information forces, the creation of an MFP-12 or some other enduring and designated funding stream would ensure that the resources required to equip and enable information forces would actually be provided and not reprioritized by other stakeholders, as happened repeatedly with SOF investment under the Services and as seen to some extent for the IRCs under the control of USSOCOM—that is, military information support operations and civil affairs—and the Services.

While the creation of USSOCOM, ASD SO/LIC, and MFP-11 eliminated many of the perennial challenges plaguing early SOF, some remain. Specifically, because SOF are segregated in their training and resourcing and have their own

chain of command, occasionally special operations are still not well integrated with other operations. Information forces have also faced this challenge, with information and information-related capabilities frequently excluded from consideration in planning and sometimes being invited to "sprinkle some of that IO stuff" on already completed plans.[19] More robust information forces should positively contribute to integration by being more capable, better understood, and having more vigorous advocacy. However, information forces (and commanders) will need to guard against their exclusion and inappropriate expectations that they will operate in the information environment somehow separate from the rest of the force and the rest of the operating environment.

Without some kind of change, the goals identified in the 2003 *Information Operations Roadmap*, the 2016 *Strategy for Operations in the Information Environment*, and the 2018 JCOIE will continue to be an uphill struggle. For SOF, the necessary reforms required vigorous and repeated intervention by Congress. While congressional attention and input addressing the reform of capabilities and organization related to the information environment is building, it has by no means yet reached the level of congressional pressure that proved necessary to achieve SOF reform. Hopefully, resistance to reform within DOD will be less for information forces than for historical SOF, and the more modest level of congressional pressure currently present will prove sufficient.

If information forces are going to be available to meet growing demands and compete with Russia and China in the information environment, they must be developed and institutionalized in a way that protects them from being precarious values. SOF were able to escape their status as precarious values, and an analogy with the evolution of SOF offers a possible model for the future of information forces. SOF succeeded with a new organizational home, high-level advocacy, and secure funding. The analogy between SOF and information forces suggests that these three elements would be extremely beneficial in overcoming the challenges now faced by information forces. We would do well to learn these lessons through example and analogy rather than experience to avoid repeating the failures of pre-USSOCOM SOF. **JFQ**

Notes

[1] See the three articles discussing information as a joint function in *Joint Force Quarterly* 89 (2nd Quarter 2018): Alexus G. Grynkewich, "Introducing Information as a Joint Function," available at <http://ndupress.ndu.edu/Media/News/News-Article-View/Article/1490517/introducing-information-as-a-joint-function>; Scott K. Thompson and Christopher E. Paul, "Paradigm Change: Operational Art and the Information Joint Function," available at <http://ndupress.ndu.edu/Media/News/News-Article-View/Article/1490645/paradigm-change-operational-art-and-the-information-joint-function>; and Gregory C. Radabaugh, "The Practical Implications of Information as a Joint Function," available at <http://ndupress.ndu.edu/Media/News/News-Article-View/Article/1490782/the-practical-implications-of-information-as-a-joint-function>.

[2] William Daugherty and Morris Janowitz, *A Psychological Warfare Casebook* (Baltimore: The Johns Hopkins University Press, 1958).

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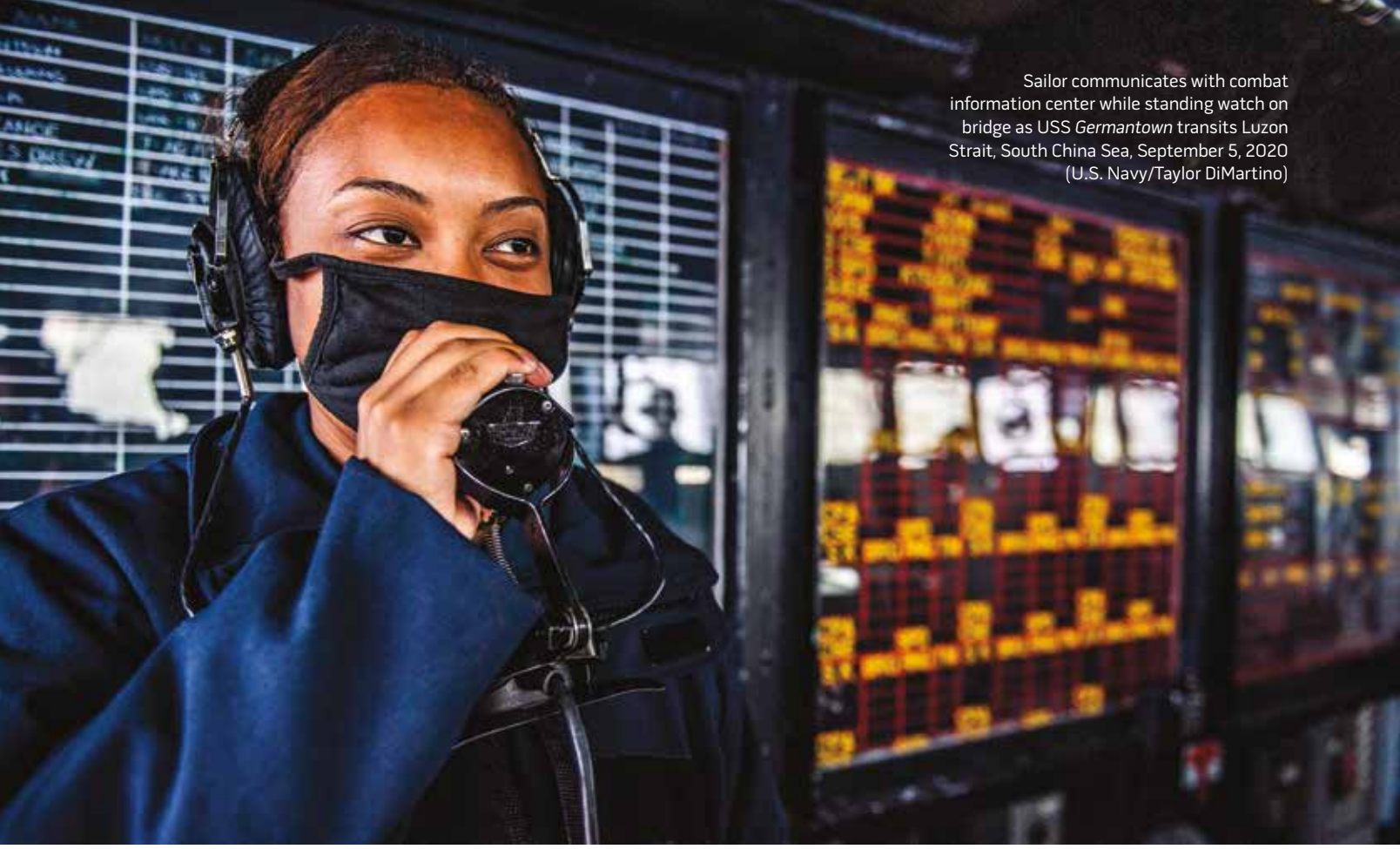

Sailor communicates with combat information center while standing watch on bridge as USS *Germantown* transits Luzon Strait, South China Sea, September 5, 2020 (U.S. Navy/Taylor DiMartino)

Harnessing the Power of Information

A Better Approach for Countering Chinese Coercion

By Kurt Stahl

China has implemented an incremental approach toward coercive activities in the Indo-Pacific region, including the South China Sea, placing the United States and its allies in a deteriorating position to counteract Beijing effectively.[1] This strategy has enabled Beijing to avoid direct military conflict to date and has forced the United States to pursue new solutions for countering China in the region.[2] China has claimed the rights to all land features in the South China Sea, which has resulted in maritime territorial and jurisdictional disputes with the surrounding countries—the Philippines, Vietnam, Malaysia, Indonesia, and Brunei.[3] The coercive tactics China has used to navigate these disputes include building up military power in the South China Sea, threatening the use of force against foreign naval vessels, and exploiting natural resources within the exclusive economic zones of other countries. While these actions may appear insufficient to warrant a lethal military response, they are directly undermining vital U.S. interests, and some analysts suggest China's ultimate goal is to force the United States out of the Indo-Pacific region.[4]

As described in the National Defense Strategy, the United States must maintain a presence in the region to achieve its aims by "deterring aggression, maintaining stability, and ensuring free access to common domains."[5] Specifically, vital U.S. interests in the region must include curtailing China's continued infringements on the sovereignty of other countries, preserving freedom of

Major Kurt Stahl, USMC, is Director of Communication Strategy and Operations for 3rd Marine Division in Okinawa, Japan.

navigation and commerce in the global commons, and strengthening international influence to advance American ideals, economic interests, and collective security solutions. China's pattern of conduct is at odds with U.S. interests, and the United States must respond with determination. While China's behaviors in the South China Sea should be considered acts of aggression, adventurism by the People's Liberation Army has not yet induced a lethal military response. Thus, the United States should adopt a strategy that will be effective without provoking a war.

An underutilized approach to addressing these problems is an information-centric strategy empowering partners and allies to apply collective pressure by bringing international attention to China's predatory ambitions and activities. The goal is to raise the reputational costs for China to a level that compels Beijing to moderate its behaviors—halting further militarization and territorial expansion in the South China Sea, curtailing coercive tactics to settle its maritime disputes, respecting the sovereignty of neighboring countries, and demonstrating a willingness to operate within established international norms. Successful implementation of an information-centric counter-China strategy requires an effectively designed information campaign that is aligned with the other instruments of U.S. national power and an understanding of this power's potential impacts. A successful information campaign will affect the knowledge, attitudes, and behaviors of both the international community and China's political leadership. Recent efforts in this arena have lacked the organization, cohesion, and energy needed to advance such a narrative internationally or within the United States.

This information-centric strategy presents a paradigm shift from current practice. Informational approaches are often applied in support of other instruments of national power, commonly dominated by diplomatic, military, or economic objectives. However, this new strategy asserts the informational approach as the supported instrument of national power because it offers the best opportunity to counter Chinese influence and advance U.S. interests in the region without a greater risk of military conflict.

The South China Sea and Beyond

Exposing and highlighting Chinese actions and intent in the South China Sea through a persistent and cohesive narrative has the potential to bring countries together and unite the international community against China's aggressive and coercive expansionist policies. With a large economic and military footprint in the region, coupled with deep ties to partners and allies, the United States has a powerful voice capable of influencing attitudes and behaviors. Beyond informing the broader international and U.S. domestic public, the United States should focus communication efforts on protecting the sovereign rights of all countries currently having maritime disputes with China in both the South China and East China seas. Any infringement on that sovereignty by China, such as territorial expansion or resource exploitation into internationally recognized borders, should be collectively condemned on an international stage to impose reputational costs. Territorial expansion by China can take many forms: bullying its neighbors into accepting its position in dispute settlements, as it appeared to do following the 2016 South China Sea arbitration by the international court in favor of the Philippines; asserting physical presence to control areas within another country's exclusive economic zone or the international commons, such as by building artificial islands with military bases in the Spratly Islands; and acquiring foreign assets through debt traps, such as the case involving the Hambantota Port in Sri Lanka.[6]

Individually, the countries most frequently affected by China's policies tend to shy away from direct confrontation. However, the United States can help provide cover for these countries while advocating their concerns through a clear narrative highlighting Chinese predatory behaviors to the international community, raising China's reputational costs to a level that could compel a change in behavior. This goal could be achieved through an effort that starts at the national level, planned and synchronized by the National Security Council. Political, diplomatic, and military leaders must all play a role in supporting the strategic narrative. One method of implementation could be a Web site, run by the Department of State, publicizing every coercive or predatory action taken by China through weekly updates and quarterly reports. These reports would serve as a form of ammunition to reinforce the narrative advanced by U.S. leadership and echoed by the media and international community. Every time China intentionally violates established international rules and norms, the United States needs to lead and organize the effort to expose and rebuke these actions to provide top cover for the impacted countries. Raising the reputational costs through an information campaign could deter further Chinese territorial expansion and compel China to respect the sovereign rights of the neighboring countries.

Additional tactics in support of this information campaign should include simple actions such as public condemnation of specific incursions by China and more complex measures such as displaying disapproval through targeted economic actions or nonlethal military demonstrations. Public condemnation could involve the U.S. Secretary of State or, in egregious cases, the U.S. President making a statement to the media denouncing and drawing attention to instances of bullying behaviors by the Chinese government, such as harassment of Japanese naval vessels around the Senkaku Islands and human rights violations against internal minorities such as Uyghurs and Tibetans. China's history of persecuting its minority groups should be exposed to inflict additional reputational cost, particularly considering the widely reported use of state-run internment camps oppressing millions of Uyghurs in the Xinjiang region.[7]

Economic actions could take the form of precise sanctions to protest

objectionable behaviors or calculated foreign investments to offset predatory investments by China. Targeted, nonlethal military activities could also be utilized to demonstrate disapproval of Chinese behaviors by conducting exercises or maritime patrols in response. For example, if China initiates steps to construct a new artificial island in the South China Sea, the United States could organize a series of freedom of navigation operations in the vicinity. These tactics would be designed not to provoke an armed conflict but to send a resolute message of disapproval to Beijing while demonstrating solidarity with regional partners and allies. These actions might appear counterproductive and likely to increase the potential for military conflict, but placating an aggressively expanding China would only embolden its policymakers and ultimately lead to a more significant threat of war.

The informational approach must be the focal point of the U.S. strategy deterring Chinese adventurism within disputed territory in order to preserve freedom of navigation in the global commons of the Indo-Pacific region. A report by the Center for a New American Security calls for a "Truth Campaign" in the form of a white paper publicizing every unlawful action Beijing conducts in the South China Sea (including environmental damage).[8] While this suggestion is a step in the right direction, an information campaign that helps achieve the desired endstate must be more robust than a white paper. This strategy requires deliberate planning and coordination at the national level. Further coordination, direction, and assessment should be conducted by the combatant commander in concert with interagency partners and allies. Military leaders and diplomats must understand the strategic narrative and be empowered to advance it through every key leader engagement and security cooperation activity.

This information-centric approach could yield positive results in the South China Sea and in other regions where China is applying similar subversive tactics. An understanding of malicious Chinese intent has the potential to dissuade cooperation with and tolerance of Chinese aggression, even when masked through an incremental approach. By raising China's reputational costs and challenging the narrative that its ambitions are peaceful, the international view of China could be altered and utilized to pressure Beijing into changing its tactics and adopting an approach that conforms with international rules and norms. Even if China does not change, however, the information campaign would still raise the situational awareness of the international community and cost the United States little to implement. Furthermore, with increased awareness, other countries would be in better positions to make decisions on how to handle the problem and potentially have increased leverage with unity under a common narrative.

One potential high payoff of this proposed information campaign could be that the international community recognizes China's exploitative and predatory actions in the South China Sea, compelling countries in other regions to resist expanding Chinese influence. Oriana Skyler Mastro argues that the United States must recommit to advancing its values globally since it can provide an asymmetric advantage in Great Power competition, highlighting that China's major vulnerability is that "its leaders have failed to articulate a vision of global dominance that is beneficial for any country but China."[9] Therefore, China's aspirations of becoming the global leader may be susceptible to eroding international cooperation based on the values and image it is projecting, making the present a critical time for the United States to lead through the power of information. When direct military confrontation with China will likely result in mutually assured destruction, the ability to achieve National interests hinges largely on how effectively the United States can influence through communicating information, values, ideas, and vision.

Aligning Instruments of National Power

An information campaign can be a powerful tool, but it must be part of a broader strategy, integrated with and supported by the other instruments of national power.[10] For this information campaign to help achieve strategic objectives and goals, it requires a top-down vision with coordinated and synchronized guidance across the entire government enterprise. The same themes and messages must be mutually supported by the military as well as diplomats and politicians. Such an effort requires the National Security Council to systematically and diligently plan, coordinate, direct, and assess strategic messaging efforts. The theater-level effort must be nested with the national strategy and involve key players in the U.S. Indo-Pacific Command (USINDOPACOM), U.S. Department of State, interagency partners, and regional allies. This function could be accomplished with something as simple as a weekly working group led by USINDOPACOM, or it could be structured as a standing theater interagency information coordination center led by a senior State official. Recognizing that growth generally incurs additional monetary cost, the price tag of implementing an effective information-centric strategy would be far more economical than continuing an arms race or bearing the cost of war.

The military, diplomatic, and economic arms of the United States all communicate information and ideas to both international and domestic audiences. Therefore, they must work cohesively toward the same ends. Additionally, an information campaign would be ineffective if it is not backed by other tangible approaches and tools. A capable forward-deployed military that is engaged in the region is a requirement for physically communicating and lending credibility to strategic messages, while demonstrating the strong interconnectedness of military and informational approaches. The mere presence of a significant military force sends a message of commitment to the region's allies, partners, and potential adversaries. More specific to the South China Sea, the U.S. military, and particularly its naval and aviation assets, continue to conduct freedom of navigation

Sailors conduct visit, board, search, and seizure exercise in rigid-hull inflatable boat from amphibious dock landing ship USS *Germantown*, operating in U.S. 7th Fleet area of responsibility to serve as ready response force to defend peace and stability in Indo-Pacific region, Philippine Sea, September 10, 2020 (U.S. Navy/Taylor DiMartino)

operations in the region to reinforce the U.S. interpretation of established international rules for navigation of the seas.[11] Military operations such as these, combined with multilateral exercises and patrols, should be integrated into the broader information campaign and strategy to dissuade China from continuing to violate international norms and infringe on the sovereignty of other states.

The importance of the economic instrument cannot be overstated, and its use must reinforce the information campaign. Economic policies could send strong strategic messages—rewarding desired behaviors, punishing objectionable actions, or building partnerships by generating opportunities. China has expanded its areas of influence through monetary investments and economic commitments such as the Belt and Road Initiative. The United States must thus offer an alternative promoting economic advantages and dissuading countries from conceding to predatory economic relationships with China.[12] The United States should assume that countries in the Indo-Pacific region would continue to cultivate economic and diplomatic relations with China due to its power and proximity, but there are still opportunities to employ targeted economic initiatives to curb China's growing influence, including resurrecting the Trans-Pacific Partnership. One of Beijing's vulnerabilities is its tendency to employ predatory tactics to advance its economic and foreign policy agendas.[13] These behaviors should be highlighted as part of the information campaign to inflict further damage to China's reputation. The United States should offer more appealing alternatives in the form of bilateral or multilateral trade deals and economic investments with the potential to yield long-term dividends for allied and partner countries. While the United States might not have the money to match offers from China in every case, it could focus on quality over quantity with mutually beneficial economic initiatives.

Diplomacy is also central to the success of an information campaign. Diplomats are key agents for developing an understanding of the information environment and play a critical role in synthesizing, coordinating, and disseminating information and strategic messages. Officials within the State Department, particularly those operating at U.S. Embassies and consulates in the region, could work with foreign leaders to develop and promulgate consistent messaging that supports strategic objectives. Diplomats could leverage traditional and social media platforms in local languages and facilitate private exchanges with political and military leaders across the region.[14] The State

Chinese People's Liberation Army Corporal Ke Mei Luo, right, receives route map with instructions before leading her team of fellow Chinese soldiers, U.S. Marines, and Australian soldiers to summit of Queensland's highest peak during Exercise Kowari 2017, Mount Bartle Frere, Australia, August 28, 2017 (U.S. Marine Corps/Emmanuel Ramos)

Department must be fully immersed in developing, implementing, and assessing this information campaign for the goals to be achieved.

Designing the Information Campaign

To achieve its intended goals, an information campaign must be deliberately planned, coordinated, and implemented with a whole-of-government approach and in concert with regional allies and partners. James Farwell notes that "information strategy is about framing issues, defining the stakes, and molding, shaping, and influencing target audiences to affect their behaviors."[15] This task can be effectively accomplished only with expertise and perspectives across the government, commonly reflected in the composition of the National Security Council. Furthermore, strategic communication would become exponentially more powerful if the messages are coherent and mutually supporting information is communicated by other countries. A successful strategic information campaign requires deliberate planning and coordination among U.S. political, military, diplomatic, and economic leaders. At the outset of planning, these key players must determine and understand the goals and objectives.[16] This step is critical because it shapes all future actions. Next, the planners must build a compelling narrative that supports the desired endstate, which requires an understanding of the information environment.[17] Allies and partners would be invaluable in this effort by helping identify nuanced cultural and political sensitivities and building collective wisdom through the addition of unique experiences and perspectives. This collaborative effort is invaluable in crafting and advancing a narrative that resonates with the intended audiences.

Any counter-China strategy would meet resistance from those who argue that the United States should pursue a strategy of cooperation with China, rather than competition, due to its global power and importance.[18] Hal Brands and Zack Cooper categorize this approach as a strategy of "accommodation" and argue that it would produce "devastating effects for the U.S. position in the Asia-Pacific—with no guarantee that it will actually reduce the danger of an eventual conflict with China."[19] China has demonstrated a pattern of expansion and an intent to continue doing so in the South China Sea, the East China Sea, and beyond. If the United States and likeminded nations fail to counter this aggression now, there might be no end in sight. A coherent strategy is urgently needed, and it must leverage an information-centric approach

to influence China, avoiding military conflict and leaving the door open for future cooperation when behaviors change.

To date, the United States has failed to enact a coherent strategy to address Chinese expansion and coercion in the South China Sea and other regions. The requirement for such a strategy is urgent, and the United States must lead the international community in developing and implementing one that is effective and sustainable. Specifically, the United States, in cooperation with partners and allies, must employ an approach waging a robust, coherent, and coordinated information campaign, aligned with all instruments of national power, to compel China to change its strategy of coercion. Until China demonstrates a willingness to adhere to international rules and norms, the United States should resist calls for strategies of accommodation. Similarly, the United States must avoid provoking a war with China, as the results would be devastating globally. An information-centric strategy is the most suitable, feasible, and acceptable approach to countering China and would provide the greatest strategic flexibility and sustainability. JFQ

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Infantrymen with Company D, 1st Battalion, 168th Infantry Regiment, 2nd Infantry Brigade Combat Team, Iowa Army National Guard, load Common Remotely Operated Weapon Station during eXportable Combat Training Capability rotation at Camp Ripley, Minnesota, July 19, 2019 (U.S. Army National Guard/Zachary M. Zippe)

Beyond Bean Bags and Rubber Bullets

Intermediate Force Capabilities Across the Competition Continuum

By Susan Levine

The phrase *nonlethal weapons* (NLW) often brings to mind capabilities such as bean bags, rubber bullets, pepper spray, and electric stun guns. These capabilities are used domestically by law enforcement and by the military primarily for protection and security missions. Nonlethal weapons technology, however, has advanced significantly over the past 20 years. Technological advancements, including the development of prototype-directed energy capabilities, could provide a variety of counterpersonnel and countermateriel effects without destruction. Could this new generation of capabilities provide senior leaders and operational commanders intermediate force options that support the full spectrum of military objectives? If so, how do they fit in the Department of Defense's (DOD's) focus on increased lethality?

Evolution

During the 1990s, interest in NLW grew from then–U.S. Marine Corps Lieutenant General Anthony Zinni's efforts to make them available during operations in Somalia for the withdrawal of United Nations (UN) peacekeeping troops in Operation *United Shield*.[1] The situation was complex; the availability

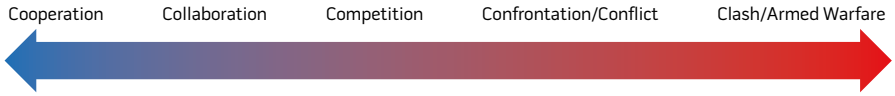
Susan Levine is the Principal Deputy Director of Policy and Strategy at the Joint Intermediate Force Capabilities Office.

of NLW allowed the troops to make clear to local civilians that UN forces would be firm in maintaining order and would apply minimal force as required. Subsequently, Congress directed DOD to establish centralized responsibility for the development of NLW technology, leading to the designation of the commandant of the Marine Corps as the DOD NLW executive agent as well as to the publication of a DOD NLW policy directive.

The policy directive described NLW as a means to reinforce deterrence and expand the range of options available to commanders, including the ability to adapt and tailor escalation of force options to the operational environment, de-escalate situations to preclude the unnecessary application of lethal force, and enhance the effectiveness and efficiency of lethal weapons.[2] Nowhere does DOD policy imply that NLW are intended to make for a kinder or gentler military force or that they are limited to military law enforcement applications. The policy also emphasizes that NLW are not a prerequisite for the use of lethal force, nor are they guaranteed to have a zero percent chance of associated fatalities or significant injury. Rather, NLW are intended to provide a range of scalable options that offer an *intermediate* level of force to fill the gap between presence and lethal effects in those situations when it is desired to minimize risk to innocent civilians or the surrounding environment.

Over the past 20 years, research on a wide range of technologies with applicability to NLW has proceeded at a steady pace with promising results. Effects without destruction delivered at extended ranges, that last for greater durations, and that are delivered from a variety of platforms are now possible. Notably, human effects research has accompanied technology development, providing the basis for risk of significant injury assessments that will enable confidence in use by the joint force. If used to its full potential, this new generation of nonlethal weapons—better described as a subset of intermediate force capabilities (IFCs)—could offer an array of options to senior leaders and commanders when the use of lethal force is either unnecessary or not desired. IFCs are an evolving construct that wholly includes nonlethal weapons and may also include other capabilities not intended to cause lethal effects.

Figure. Continuum of Major State Interaction Postures



Today's Binary Option: Lethal Force or No Force

Recent DOD higher level guidance acknowledges the changing security environment and describes a competition continuum as an alternative to the binary peace-war framework that has historically been associated with the U.S. national security posture.[3] It also emphasizes the DOD focus on overwhelming lethality as a deterrent to armed conflict—the higher end of the competition continuum (see figure).

Competition below armed conflict remains a daily challenge for U.S. forces around the world. While dominant lethality is absolutely essential as a means to deter and prevail in armed conflict, it is not sufficient to enable U.S. forces to dominate in competition below armed conflict. For this part of the continuum, often referred to as the gray zone, hybrid warfare, or irregular warfare, senior leaders have acknowledged that longstanding emphasis on high-end conflict has often left DOD unprepared for irregular conflicts.[4]

Although the binary peace-war framework has been replaced by a competition continuum, the joint force remains trained and equipped to provide primarily a binary response across that continuum—through the use of lethal force or no force at all. Intermediate force capabilities could provide active measures for the joint force to use, as needed, when a mission of presence is insufficient or the use of lethal force is undesired or risks unnecessary escalation.

Freedom of Navigation Operations

It is well documented that China is claiming and building defenses on disputed islands in the South China Sea, turning submerged reefs into artificial islands and generally attempting to dominate the region. According to a report by the Center for Strategic and Budgetary Assessments, the Chinese government uses a combination of civilian fishing vessels, coast guard ships, and maritime law enforcement troops to protect its island-building efforts. The report notes that because these vessels are unarmed, U.S. naval forces cannot respond with military force without significantly escalating the confrontation.[5]

U.S. interests in this increasingly contested region include freedom of navigation for its fleet and those of its allies and partners. China's civilian fishing fleet is emerging as a third element of its maritime forces.[6] There have been numerous incidents of nonmilitary Chinese surface vessels serving as government proxies and approaching U.S. or allied vessels and behaving in a provocative fashion. These actions are largely unopposed as island-building continues, while the world's most powerful and lethal military force watches without an appropriate counter. China's gray zone activities are similar to the actions of Russia in Crimea, in which "little green men" (well-equipped forces without an identifiable uniform) were used to achieve a military objective of taking control of a region without an overt Russian military presence.

In an article titled "Maritime Hybrid Warfare Is Coming," James Stavridis described a future hypothetical scenario in which nonattributable speedboats manned by "little blue sailors" attack dozens of Vietnamese fishing vessels, giving China an excuse to provide protection in the region and reaffirm its sovereignty over the South China Sea.[7] The point of the article was to highlight the need for the United States to analyze and fully understand how such hybrid warfare approaches translate to the maritime sphere, to highlight the importance

of developing tactical and technological counters, and to train and exercise with U.S. coalition partners against this threat.

Intermediate force capabilities are a potential technological counter to the maritime scenario described by Admiral Stavridis. Long-range acoustic hailers paired with translation devices could provide clear verbal warnings; dazzling lasers could deliver visual warnings and provide obscuring glare to personnel, windshields, and optics of approaching vessels or unmanned aerial systems; nonlethal flash-bang warning munitions could be fired directly in front of, or over, vessels instead of using a lethal shot across the bow. Next-generation high-power radio frequency–directed energy weapons could disrupt electronic controls and shut off vessel engines without harming occupants, and millimeter wave active denial–directed energy technology could physically, but nonlethally, repel personnel on approaching vessels. While many of these IFCs have had initial integration and testing and/or have been used in maritime exercises, they are not integrated or resourced at a level within DOD that they would be considered mainstreamed.

China and its proxies conduct these hybrid tactics largely unopposed. The use of IFCs would allow the joint force to push back against the provocative actions with a measured response, denying U.S. competitors unopposed gray zone operations or propaganda victories. Denying China the use of its proxy maritime militia would either diminish its subterfuge to harass the fleets of the United States and its partners or require China to be more overt through the use of its military assets. The latter would increase China's cost, time, and effort—reducing available resources for it to invest in pursuing lethality parity with the United States.

Urban Operations

Intermediate force capabilities could complement lethal systems during complex operations in urban environments, where multiple studies suggest that most future wars would take place.[8] The joint force's ability to maneuver to an objective in the urban environment might be impeded either intentionally or unintentionally by civilian pedestrian and/or vehicular traffic. To aid in clearing paths, selected armored vehicles, including tanks and personnel carriers, could be equipped with an IFC kit for the Common Remote Operator Weapon Station (CROWS). The CROWS is widely used on armored vehicles with lethal systems such as the MK19 automatic grenade launcher and the M2 .50 caliber machine gun. The IFC kit would complement lethality by offering infantry and armor units a readily available escalation of force options that could be employed while under armor. For example, an acoustic hailer paired with a translation device, a bright white light, and a dazzling laser integrated into the CROWS would provide clear warnings and visual suppression as convoys move through city streets. Future IFCs could include millimeter wave–directed energy to repel personnel and high-power microwave–directed energy to stop vehicles.

Scenarios such as unarmed civilians, including children, standing down a convoy by throwing rocks while cell phones livestream the scene across social media provide a true dilemma for the joint force. The convoy commander could choose to win the engagement with lethal force, but then quickly lose the war in information space. Intermediate force capabilities empower the joint force with a proportional response to civilians who might interfere with the convoy's movement. In urban environments, the use of IFCs would support mission accomplishment and serve as a counter to adversaries who have little regard for civilian casualties or collateral damage and who would seek to exploit social media in an attempt to sway American and global public opinion against U.S. forces.

Stability and Security Operations

In his book *Decision Points*, President George W. Bush lamented the "one important contingency for which we had not adequately prepared," which was the descent of Baghdad into a state of lawlessness that included the looting of precious artifacts from Iraq's national museums. President Bush noted that the "damage done in those early days created problems that would linger for years. The Iraqis were looking for someone to protect them. By failing to secure Baghdad, we missed our first chance to show that we could."[9]

The looting described by President Bush illustrates the quandary faced by the joint force armed almost exclusively with lethal weapons. While use of lethal force on looters may have been legally permissible, U.S. Servicemembers killing Iraqi civilians that they had just liberated from a brutal dictator would have been detrimental to the mission. Alternately, a joint force trained and equipped with IFCs would have had options to deter the looters, demonstrating the U.S. commitment to maintain security of the civilian populace to the host country—and the world—while minimizing civilian casualties.

The challenges in Iraq continued for years. In 2006, Lieutenant General Peter Chiarelli, USA, commanding general, Multi-National Corps–Iraq, was convinced that U.S. units' missteps were contributing to the insurgency and violence, particularly in escalation of force incidents in which a perceived threat to coalition troops resulted in the death or injury of civilians. An associated study found that 81 percent of escalation of force incidents occurred during coalition force movement under conditions that gave Soldiers and Marines little time—often only seconds—to make life-and-death decisions on whether approaching Iraqis were a threat.[10]

Many of the escalation of force incidents occurred at checkpoints where U.S. forces were primarily equipped with signal flares, traffic paddles, and lethal weapons. The results of a 2012 military utility assessment (MUA) conducted by the U.S. Army at Fort Benning, Georgia, indicated that increased availability of IFCs might have had a positive impact on checkpoint escalation of force incidents. The MUA evaluated the utility of IFCs at a snap vehicle checkpoint to stop cars that matched specific intelligence criteria.[11] The scenario was not a vehicle checkpoint typically seen at entrances to

Marines with 2nd Battalion, 7th Marines, assigned to Special Purpose Marine Air-Ground Task Force–Crisis Response–Central Command 19.2, throw nonlethal grenades during nonlethal weapons training exercise, January 18, 2020 (U.S. Marine Corps/Branden J. Bourque)

bases, but a hasty one meant to be set up quickly by maneuver elements of an infantry unit instead of security forces, and with no advance warning to the local populace. During the assessment, Soldiers had a baseline capability set to warn approaching vehicles, and this did not include IFCs. An enhanced capability set equipped with IFCs was used later. Numerous iterations of multiple scenarios were conducted where the intent of approaching vehicles was unclear. When IFCs were used, vehicles were detected, hailed, warned, and stopped an average of 70 meters farther away. Additionally, vehicles were 80 percent more likely to stop prior to the use of lethal force, and the likelihood of civilian wounding decreased by 77 percent.

The IFCs used in these scenarios included acoustic hailing devices, green dazzling lasers, 40-millimeter and 12-gauge flash-bang warning munitions, and a vehicle lightweight arresting device. The baseline set consisted of signal flares, traffic paddles, and lethal weapons. Employed in a layered defense, the availability of these relatively low-cost IFCs increased the Soldiers' ability to conduct threat assessments of oncoming cars, communicate with and signal to vehicles, de-escalate a potentially lethal scenario, and reduce civilian casualties. The MUA's results provide a quantitative look at the value of IFCs integrated across the joint force and not only in the law enforcement or security forces communities.

Lessons Learned?

The following are key questions for the joint force: Have the lessons from postconflict Iraq and Afghanistan been learned? Will future postconflict security environments fare any better? A case study by the U.S. Army's Peace Keeping and Stability Operations Institute on the postconflict environment following a hypothetical conventional war with North Korea in which South Korea and the United States prevail provides an illustrative example.[12] The study examined the aftermath of a kinetic battle, where a tremendously large—and most likely starving and frightened—population would endure. The following case study questions illustrate the challenges:

- How would the immediate security needs of the population be met, especially with several hundred rogue North Korean soldiers and police officers on the loose who have not surrendered, as well as a populace that is at best deeply suspicious of foreigners and at worst deeply terrified of them?
- How would refugee camps be secured? As some desperate North Koreans turn to crime (such as attacking World Food Program convoys), what would be the response?

Soldier with 2nd Battalion, 34th Armored Regiment, 1st Armored Brigade Combat Team, 1st Infantry Division, launches grenade down range with MK-19mm grenade machine gun at Grafenwoehr Training Area, Germany, March 13, 2019 (U.S. Army/Yon Trimble)

- How are strategic communications conducted with a frightened population to reassure them that their immediate needs would be met and that the foreign government personnel and forces should not be feared?

A force trained and equipped only with lethal weapons would be challenged in maintaining security and minimizing civilian casualties in this scenario. IFCs, integrated into conventional platforms along with lethal systems, afford military forces means to provide security at logistics hubs for the distribution of supplies, convoy security, and protection of refugee camps and critical infrastructure. Information on the types of IFCs being employed could be readily communicated to the civilian population through an information operations and public affairs campaign, demonstrating the resolve to maintain security while also protecting the civilian population—the same approach employed by General Zinni in Somalia. A prudent investment by DOD in the training and equipping of the joint force with an appropriate mix of IFCs has the potential to save DOD and the Nation the long-term human and fiscal costs of extended stability operations by quickly maintaining the safety and security of the population.

A Sensible Tool for Building Partner Capacity

Cooperative efforts with our partners on intermediate force capabilities would provide many advantages for the joint force. In competition below armed conflict, partners trained and equipped with IFCs would have a means to push back against competitor aggression without resorting to lethal force. This has the potential for reduced reliance on U.S. assets for deterrence, enabling greater economy of force and reallocation of U.S. resources to other priorities.

Postconflict environments transitioning to civil authority would benefit when host-nation security forces are trained and equipped with IFCs. The Iraq War provides a good exemplar. In Iraq, coalition forces had to reverse initial plans not to provide heavy weapons to Iraqi National Police as the counterinsurgency grew and the security situation deteriorated. Instead of receiving the proper tools to conduct domestic law enforcement, Iraqi National Police units were equipped with heavy weapons such as machine guns and rocket-propelled grenades. As a result, the coalition was effectively training and equipping the police as paramilitaries capable of conducting counterterrorism and counterinsurgency operations.[13] The availability of IFCs would have enabled a force application option when the situation did not call for the employment of heavy weapons, providing an intermediate level of force appropriate for a wide range of policing functions.

North Atlantic Treaty Organization (NATO) policies on nonlethal weapons and the protection of civilians are representative of the applicability of intermediate force capabilities to the Alliance. Over the past 20 years, NATO members have participated in formal systems and analysis studies on NLWs (IFCs) to evaluate measures of effectiveness, inclusion in concepts, and opportunities for future operations.[14] NATO has also conducted NLW (IFC) technology demonstrations as well as maritime and land exercises.[15] The maritime exercise demonstrated that integrating NLWs into escalation of force

situations encountered during visit, board, search, and seizure missions increased the operational effectiveness of boarding teams to warn a vessel's crew, move people, deny access to an area, and suppress individuals. The land exercise demonstrated that integrating NLW into escalation of force situations encountered during counterinsurgency missions increased the operational effectiveness of NATO forces to warn a potential threat, support the threat assessment process, move people, deny access to an area, and suppress individuals. Despite the apparent operational benefits, and similar to the United States, our NATO partners have not prioritized the training and equipping of these capabilities for their respective nations.

Mainstreaming IFCs

DOD has benefited from a formalized NLW program for more than 20 years. Much has been accomplished in that time, including the fielding of NLW primarily in support of military security and law enforcement functions. Extensive research into new technologies has yielded promising results. These technologies are now approaching a form factor such that they and their associated systems and subsystems could be integrated into a wide range of military platforms for missions on land, sea, and air. The scope of these capabilities goes well beyond legacy law enforcement applications and is better described as intermediate force capabilities.

The de-escalatory advantages that IFCs could provide in the gap between shouting and shooting, as well as providing increased time/decision space, are largely missing from joint warfighting concepts and doctrine. To institutionalize IFCs, a comprehensive and sustained approach must be pursued that includes an increased demand signal from the combatant commands and additional support from the Services, Joint Staff, and Office of the Secretary of Defense. Further work is needed in concept development, use of modeling and simulation to assess the contribution of IFCs to mission accomplishment, and routine inclusion of IFCs in wargames. By doing so, IFCs could begin to be mainstreamed into operational planning, exercises, and mission essential task lists, as well as in training and professional military education.

Summary

A joint force trained and equipped with intermediate force capabilities would be better prepared to compete, fight, and win across the spectrum of operations. Along with the clear objective of having the world's most powerful and lethal military force, U.S. political and military leaders also continue to emphasize a key value of the Nation: to use that force only when absolutely necessary, stressing the importance of minimizing civilian casualties and the loss of innocent life when lethal force must be applied.

Intermediate force capabilities provide a means to assess potential threats, de-escalate situations, and increase the time and space to make decisions on the use of lethal force. Technology has significantly evolved beyond the traditional bean bags, rubber bullets, and tear gas of the last century—enabling a new generation of capabilities that could expand the competitive space and counter adversaries' strategies to exploit U.S. vulnerabilities. Sustained commitment by DOD civilian and military leadership is needed to mainstream these capabilities and make them part of the tool kit for all warfighters—from the infantry squad to the combatant commander—in support of national security objectives. With proper tools and training, our warfighters will remain unbeatable across the entire competition continuum. **JFQ**

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Airman with 57th Munitions Squadron secures door on BSU-33 conical fin assembly for BDU-50 inert bomb at Nellis Air Force Base, Nevada, March 13, 2019 (U.S. Air Force/Perry Aston)

The "Next Training Revolution"

Readying the Joint Force for Great Power Competition and Conflict

By Thomas C. Greenwood, Terry Heuring, and Alec Wahlman

After two decades of conducting counterinsurgency (COIN) operations and nation-building in the Middle East, the United States seeks to regain the strategic advantage with its Great Power competitors, China and Russia. The military modernization campaigns that both potential adversaries embarked on after the attacks of September 11, 2001, would make closing this strategic gap a difficult proposition under normal circumstances. The COVID-19 pandemic's devastating effect on the medical, economic, social, and "psychological" well-being of the United States and international community, however, renders this a herculean task. It also forecloses the likelihood that the United States will be able to spend its way out of this geostrategic conundrum.[1]

Thus, instead of a "theory of victory" based primarily on quantitative and technological superiority across multiple domains—land, sea, air, space, and cyber—the joint force will need to ensure that it can create and sustain an asymmetric advantage in human capital in order to achieve a higher degree of military competence than either China or Russia at every level of competition. The path to realizing this goal is for the Pentagon to invest in a new training revolution,

Colonel Thomas C. Greenwood, USMC (Ret.), Dr. Terry Heuring, and Dr. Alec Wahlman are Research Staff Members at the Institute for Defense Analyses.

one that adroitly integrates new technology into a joint force that is far and away more operationally competent than adversaries with similar technology. Such a force could credibly deter during competition and, if deterrence fails, is ready to defeat its adversaries in conflict.

The United States could learn from military history and its own pre- and postwar experiences with adaptation to make this a less daunting task. In their classic work on military innovation, Williamson Murray and Alan Millet describe how a materially inferior Germany was able to integrate the wireless radio, airplane, and tank into the blitzkrieg during the interwar years. But this transformation would have been incomplete without multidivisional exercises during the 1920s that taught German commanders how best to integrate these capabilities by using rapid maneuver to compensate for a discontinuous (that is, nonlinear) front and exposed flanks.[2]

After the Vietnam War, U.S. conventional warfighting capabilities were woefully deficient vis-à-vis the Soviet Union—a mismatch that could not be solved simply by attempting to field more or better weapons systems. Rather, a new operational approach was required, one that focused on the character of an extant military problem, leveraged the combined arms lessons of the past, and maximized the potential of emerging technology. Yet the modernized AirLand Battle force of the early 1980s would have been as hollow as the force it replaced if not matched to readiness levels that could only be achieved through innovative and rigorous training. Consequently, transforming a force capable of fighting AirLand Battle doctrine required creating the U.S. Army National Training Center in California's Mojave Desert.[3] Deemed the "first training revolution" by the Defense Science Board (DSB), this peacetime investment in preparing for future conflict not only contributed to the North Atlantic Treaty Organization (NATO) maintaining a credible conventional deterrent for the Cold War's duration but also helped pave the way for victory in the first Gulf War.[4]

A similar but contextually different form of military adaptation occurred in the post-9/11 era. Following the initial success that U.S. forces enjoyed after invading Afghanistan and Iraq, the forces found major aspects of their organization, concepts, and training ill-suited for complex protracted insurgencies. The nature of these two conflicts, fought largely against nonstate actors who frequently operated in urban areas, demanded heightened tactical proficiency at the small unit level (fire team, squad, and platoon) vice larger formations that were AirLand Battle's focus.

Major General Robert Scales, USA (Ret.), was a key proponent of the post-9/11 training adaptation. He observed that the changing character of warfare required a new training approach to ensure that junior leaders could more effectively cope with uncertainty, decide rapidly, sustain unit cohesion, and adapt to an increasingly complex security environment. Joint warfare and the participants of other elements of military power, according to Major General Scalres, are

increasingly being applied at lower and lower levels to the extent that functions formerly considered the purview of senior commanders are being taken up by combat leaders of much lower rank and experience. The challenge today is to create a second training and education revolution that prepares our military leaders to fight in this new age of warfare.[5]

General Scales thought that focusing the Services on learning was significant enough to call it the "second learning revolution" (the first being after Vietnam). Accordingly, he outlined nine initiatives to help create learning organizations across the U.S. military—initiatives that are not yet fully implemented. Nevertheless, the United States once again finds itself at an inflection point as it seeks to more effectively compete with China and Russia.[6] Both countries continue to skillfully operate below the threshold of conflict, use disinformation, and harness nonkinetic effects to undermine international norms of behavior in support of their own narrow national interests.[7] Thus, the "next training revolution" is essential to ensuring the joint force is ready to meet the new demands of the 21st-century security environment.

The First Training Revolution

There were three catalysts that converged to drive the first training revolution: the end of the Vietnam War, the 1973 Yom Kippur War, and the increasing threat that the Warsaw Pact posed to NATO. Understanding how these three events coalesced is essential to fully appreciating why the United States so fundamentally restructured its training approach, processes, and infrastructure.

Vietnam and Air Combat Performance. The air war over North Vietnam did not produce the same level of American air superiority as previous conflicts. Historically, the United States had enjoyed a kill ratio of greater than 10 to 1, while over North Vietnam that ratio was closer to 2 to 1.[8] In 1968, the Chief of Naval Operations directed Captain Frank W. Ault to investigate this disappointing performance. In addition to technical shortcomings with some of America's aircraft, the report highlighted that U.S. pilots lacked the necessary air combat skills against the Soviet MiG aircraft that the North Vietnamese were using. Ault concluded that a lack of realistic training with too few engagement opportunities was the main cause of poor air-to-air combat performance.[9]

Prior research reinforced Ault's findings by showing that pilot performance greatly increased after surviving 10 engagements.[10] Ideally, these 10 engagements would take place in a stressful training environment before Navy pilots went into combat. Thus, rather than increasing the amount of status quo pilot training on existing facilities, Ault recommended creating dedicated air combat maneuver ranges tailored for instrumented mission evaluations to allow for hard-hitting critiques of pilot performance.[11] The goal was to provide new pilots with their first series of 10 or more engagements in a safe but challenging training environment. Realistic

force-on-force training with credible adversary aircraft on an instrumented range would allow pilots to learn from their mistakes. Three months after the Ault report was published, the Navy established its "post-graduate fighter weapons school," or TOPGUN, in Miramar, California, and began reassigning some of its best pilots from the fleet to teach novice pilots improved gunnery and air combat skills.

TOPGUN training results were almost immediate: the kill ratio for Navy pilots rose from roughly 2 to 1 to more than 12 to 1 within the first year (significantly better than Air Force pilot performance that had not yet reaped the full benefit of that Service's commitment to force-on-force training at Nellis Air Force Base). Convinced of TOPGUN's institutional value to the Service, the Navy continued to support the program that has trained every generation of pilots since the end of Vietnam War.

The Air Force was not far behind the Navy in adapting to the hard combat lessons learned over North Vietnam. Annual gunnery competitions, known as Gunsmoke and William Tell, had allowed Air Force pilots to perfect their air-to-ground and air-to-air gunnery skills dating back to the late 1940s. Yet neither afforded pilots sophisticated air combat maneuvering training against a red adversary.[12] That changed in November 1975, when the first Red Flag exercise was conducted at Nellis.[13]

The 1973 Yom Kippur War. This war focused Army and Air Force leadership on the increased lethality of the modern battlefield, the availability of advanced weapons to third-world nations, and the latter's surprising ability to employ them effectively.[14] Unlike the 1967 Arab-Israeli War when the Israelis won an easy one-sided victory, the Israel Defense Forces now found themselves in the opening gambit of this war unable to employ their airpower in support of their ground forces on account of Egypt's sophisticated air defenses. Additionally, Israeli armor operations proved highly vulnerable to Egyptian and Syrian fielded antitank guided missiles.[15] The attrition levels that resulted from the combined arms battles were stunning: in the early days of the war, the Israelis reported losing more than 500 tanks,[16] and by the war's end, the toll of armor and artillery losses on both sides exceeded the entire inventory of U.S. Army forces in Europe.[17]

The Yom Kippur War's implications were not lost on Pentagon planners trying to reorient U.S. forces from a decade of COIN operations in Vietnam to more effectively face the threat posed by the Warsaw Pact—whose equipment and tactics were given a trial run of sorts in the 1973 war. The correlation of forces and comparative inventory of combat platforms greatly favored the Soviets. Unable to match Moscow's force levels and uncertain about its technological advantage, the U.S military rightly looked elsewhere to solve its operational dilemma.

The DePuy-Starry Transformation. General William E. DePuy, the first commander of the newly created U.S. Army Training and Doctrine Command (TRADOC), was at the center of the Army's post-Vietnam training reform effort. DePuy's combat experience in World War II, Korea, and Vietnam had convinced him that Army training needed to change in order to meet the new Soviet threat. Historically, the Army had relied on national mobilization after a war started—a system that emphasized processing a large number of raw recruits through basic training as quickly as possible, so they could move overseas and reinforce forward-deployed forces. Training, therefore, was measured by man-hours expended rather than proficiency levels attained by both the individual Soldier and the unit to which they were assigned. The result was poorly trained Soldiers and units sent into combat ill-prepared and, consequently, severely bloodied in the early weeks and months of fighting. DePuy had experienced this himself in World War II, when his division suffered massive casualties in the first 2 months of fighting in Normandy.[18] DePuy was heavily influenced by the imperative to reform Army peacetime training so that it would produce combat-ready Soldiers and units *before* they went to war. This would enable them to win their early battles and, ideally, avoid long wars of attrition.[19]

DePuy also went to school on the insights that emerged from the 1973 Yom Kipper War, which he viewed as a prologue for a possible future war between the United States and Soviet Union. In DePuy's mind, the 1973 war revealed major operational gaps and seams across the U.S. Armed Forces that needed to be bridged or eliminated if America was going to fight the Warsaw Pact and win. His remedy was to trade space for time in Europe in order to allow U.S. forces to mobilize and deploy across the Atlantic. DePuy named his warfighting concept *Active Defense*.

As a doctrine, however, Active Defense was relatively short lived given its unpopularity with NATO Allies who saw the United States trading away its territory as U.S. forces moved westward toward the English Channel. In the end, Active Defense proved infeasible; however, DePuy's successor at TRADOC, General Don Starry, continued developing warfighting concepts that focused the Army's efforts on interdicting and destroying the Soviet Union's second echelon forces. This approach was much more palatable to NATO and leveraged both technology and an inherently offensive military culture.

Change was not quick or easy. The evolution from Active Defense to AirLand Battle doctrine took a decade. Writing concepts and inculcating them as doctrine across the force are two distinct challenges. The bridge between them was a new training system. This began with TRADOC developing new training standards called the Army Training Evaluation Program (ARTEP), which enumerated combat skills and tasks that Army formations had to master by meeting exacting conditions and standards.[20] ARTEP ushered in performance-based training across the Army and facilitated progressing to force-on-force training.

Borrowing a page from the Navy's TOPGUN playbook, the Army quickly realized it needed a "training facility where a total combat environment could be simulated for training heavy battalion task forces," with "realistic maneuver

Weapons dropped from Air Force B-1B Lancer bombers and Marine Corps F-35B Lightning II practicing attack capabilities impact Pilsung Range, Republic of Korea, August 31, 2017 (Courtesy Republic of Korea Air Force)

areas, battalion live fire range areas; an opposing force equipped to simulate a Soviet motorized rifle regiment; unconstrained air space; full nuclear, biological, and chemical warfare play; and integration of artillery, attack helicopters, and Air Force close air support."[21] This vision was ultimately realized at Ft. Irwin and became the National Training Center (NTC), with a laser-based scoring system, ample maneuver space to allow for brigade-level, force-on-force engagements, and near Nellis Air Force Base, which enabled integrating offensive and defensive air support into all training evolutions. A dedicated opposing force schooled in Soviet motorized tactics also became a permanent fixture at NTC.[22]

After nearly a decade of Army units training at NTC to win the first fight, the United States went to war in Iraq, where it used AirLand Battle doctrine to win decisively, albeit, over a rather inept enemy. Nevertheless, the first training revolution helped transform the Army into a modern force capable of conducting high-intensity combined arms operations against a larger and more sophisticated adversary. This revolution not only helped U.S. forces achieve unprecedented readiness but also bolstered deterrence by signaling that combat credible forces were ready to ably defend Europe should the Soviets miscalculate and attack the Alliance.

Post-9/11 Training: Adaptation While at War

The initial plans for Operation *Iraqi Freedom* (OIF) envisioned defeating Saddam Hussein's military and rapidly transitioning U.S. security responsibilities to Iraqi forces.[23] Not surprisingly, that plan was reflected in unit predeployment training. For example, the initial elements of 2nd Brigade, 82nd Airborne Division, that trained at NTC had been certified for a range of warfighting skills, but counterinsurgency was not among them.[24]

But a COIN fight is exactly what U.S. forces faced after the collapse of Iraq's conventional military in April 2003. The number of attacks on U.S. and coalition forces and on Iraqi infrastructure continued to increase, reaching more than 13,000 insurgent attacks by mid-2004, many using improvised explosive devices (IEDs).[25] That summer, insurgent attacks turned on Iraq's population, something the thinly spread U.S. forces and immature Iraqi security apparatus was ill-prepared to handle. The civilian fatality

Marine employs bamboo sickle stick to search for buried improvised explosive devices during Joint Improvised-Threat Defeat Agency explosives training, at Twentynine Palms, California, February 13, 2013 (U.S. Marine Corps/William Jackson)

rate climbed, and by 2006 approached levels seen during the major combat operations of March–April 2003.[26] The U.S. and Iraqi forces' inability to provide essential government services and basic security severely undermined the population's support for both the new Iraqi government and the coalition. This led insurgents to concentrate their attacks in urban areas, challenging coalition control for cities such as Ramadi, Fallujah, Mosul, and, most important, Baghdad.[27]

In 2003, major combat operations were still ongoing when the senior U.S. ground commander, Lieutenant General William Wallace, stated, "The enemy we're fighting is different from the one we'd war-gamed against."[28] That same year, General John Abizaid, commander of U.S. Central Command (USCENTCOM), requested that the Department of Defense (DOD) initiate a "Manhattan-like project" to address the growing IED problem. This request led the Army to create a series of organizations that eventually morphed into the Joint Improvised Explosive Device Defeat Organization (JIEDDO) in February 2006 (34 months after the capture of Baghdad).[29]

The DSB also focused its 2004 summer study, titled *Transition to and from Hostilities*, on the many challenges presented by ongoing COIN operations in Iraq and Afghanistan. It presented its findings to the Secretary of Defense on August 31, 2004, and recommended that the Army and Marine Corps incorporate stability and reconstruction capabilities into their premier training events.[30] Nevertheless, U.S. casualties in Iraq continued to rise, and by 2006 conditions in Iraq had reached a crisis that prompted Defense Secretary Donald Rumsfeld to state, "In my view, it is time for a major adjustment. Clearly, what U.S. forces are currently doing in Iraq is not working well enough or fast enough."[31]

Executing Change. While conditions in Iraq were worsening, the NTC adapted its training approach and methodology. By the end of 2004, the more conventional battle scenarios that focused on core warfighting competencies—referred to as *decisive action scenarios*—had been replaced with *mission rehearsal scenarios* that prepared units for forthcoming deployments. NTC personnel ensured the training scenarios reflected real-world operations in Iraq and Afghanistan by staying in contact with units in theater (many having previously rotated through NTC), by monitoring DOD Web sites that covered COIN/stability operations, and by sending NTC personnel into theater to gather lessons learned.[32]

The physical and human infrastructure at NTC changed with the training scenarios. While NTC had four small urban complexes before OIF, by 2006, the number had grown to 13. Each village/town was populated with 25 to 250 Arab-speaking role players; the total number of role players per rotation could reach 1,600 (with 250 being Iraqi-Americans who often role-played as Iraqi police). Seven cave complexes, five forward operating bases, and a mountain stronghold were also constructed. The forward operating bases were equipped with detainee facilities, required security posts to be manned 24/7, and were regularly subjected to simulated mortar and rocket fire. To ensure NTC's training staff (called observer/controllers) remained of the highest caliber, Iraqi and Afghanistan veterans were heavily recruited to fill key positions. By 2006, 80 percent of the trainer positions at NTC were filled with veterans of both wars.[33]

Cultural awareness training was also a major training component of NTC. Soldiers were required to deal with English- and Arabic-speaking members of the press (sometimes played by journalism students), chemically contaminated urban areas, and how best to prudently spend Commander's Emergency Response Program funds.[34]

NTC forged several partnerships to improve training and readiness. In collaboration with the Defense Advanced Research Projects Agency (DARPA), NTC developed software to improve the realism of information dissemination in the scenarios. DARPA also helped build country-realistic structures using building materials from Iraq.

One of NTC's most important partnerships was with JIEDDO. In 2006, then–Brigadier General Robert Cone, NTC's commander, noted that NTC was becoming the home to JIEDDO's center of excellence because it gave training units rotating through NTC access to the latest counter-IED tactics and technologies. That same year, NTC received "conditional accreditation" from U.S. Joint Forces Command for helping Army units become proficient in essential COIN and IED defeat tasks as well as in joint urban operations.[35]

NTC's training transformation predated the broad policy changes in DOD and the Army. New DOD directives on stability operations and irregular warfare came out in late 2005 and late 2008, respectively.[36] The Army published its new field manual on COIN in late 2006 (FM 3-24), and a new overarching training manual in late 2008.[37] These policies and manuals reflected many of the earlier ideas about COIN and stability operations that were being debated across DOD and the Army. Moreover, lessons learned from Iraq and Afghanistan, as well as from NTC, provided much of the tactical and operational grist comprising these publications. Importantly, the NTC did not did not wait for these publications to be released before it began adapting its training curriculum. General Cone, who gave the command vision and stable leadership from 2004 to 2007, deserves much credit for institutionalizing these training reforms. His leadership made this post-9/11 adaptation a success.[38]

Results. NTC's adaptive new approach was well received across the DOD enterprise. A March 2006 DSB report stated that "the members of the task force were uniformly impressed" with the changes made at major Army and Marine Corps training centers. Moreover, Army Chief of Staff General George Casey initially was concerned about the quality of predeployment training, but those concerns were alleviated when he observed training at the Army's major centers.

Training approaches in any era cannot remain static for long, or they fail to keep up with the modern warfare's changing character. A 2010 paper written at the Army's School of Advanced Military Studies noted that commanders had sacrificed training for high-end conventional wars in order to find the training time for COIN and stability operations. This opportunity cost was intentional on the Army's part because it recognized that success in Iraq and Afghanistan required commanders to accept risk and to focus on the current fight given its limited resources.[39]

The Next Training Revolution

As with the post-Vietnam training revolution and post-9/11 training adaptation, the United States in 2020 again needs to pivot its training approaches to relearn how to compete, deter—and if necessary—successfully fight major powers in big wars. However, the COVID-19 pandemic, coupled with its anticipated fiscal fallout, means the U.S. military should try to leverage its competitive advantage in human talent to achieve qualitative superiority over China and Russia rather than only seeking expensive leap ahead, state-of-the-art technologies. The rise of other global economies, near record levels of deficit spending required to help mitigate COVID-19's adverse effect on American society, and likely flat or declining U.S. defense budgets will require the joint force (in concert with Allies and partner nations) to embark on an innovative and rigorous campaign of training and experimentation in order to become competent at conducting joint/combined all-domain operations at scale.[40]

Like the first training revolution and post-9/11 training adaptation that were belatedly guided by official doctrine outlining the tenets of both AirLand Battle and COIN, Joint Staff–approved doctrine on all-domain operations remains a work in progress. However, two other unclassified government publications are available and can act as surrogates so the next training revolution can begin posthaste.

The first publication is the 2012 Capstone Concept for Joint Operations (CCJO) in which the Chairman of the Joint Chiefs of Staff identified increasing cross-domain synergy as one of eight key elements that will allow the joint force to successfully conduct globally integrated operations.[41] The CCJO states unambiguously that:

complementary vice merely additive employment of capabilities across domains in time and space [is essential]. . . . *In the future, emerging capabilities and doctrine will make cross-domain synergy possible at lower echelons. Future Joint Forces will thus be positioned to exploit even small advantages in one domain to create or increase advantages in others, compounding those mutually reinforcing advantages until they overwhelm the enemy.*[42]

The second publication is the 2018 National Military Strategy (NMS), which states:

To achieve military advantage over competitors and adversaries, the NMS introduces the notion of joint combined arms, defined as the conduct of operational art through the integration of joint capabilities in all domains. The joint force and its leaders must be as comfortable fighting in space or cyberspace as they are in the other traditional domains of land, sea, or air.[43]

Regardless of the terminology embraced by the Joint Staff and separate Services—*joint combined arms*, *multi-domain* or *all-domain operations*—the seminal idea both documents convey is that the joint force must be competent operating across all five domains to

include being able to deliver space and cyber effects in real time at all levels of war. Complexity aside, this is not traditional combined arms or simply "old wine in a new bottle."[44] This is a fundamentally different approach to 21st-century warfare—one that has the potential to surpass AirLand Battle and become transformational—as the Service components become interdependent in support of the joint force commander who is integrating force providers to accomplish the following operational tasks:

- agnostically connect sensors with shooters from across different domains and Service formations
- integrate nonkinetic fires—especially cyber and space—with kinetic fires
- conduct decentralized command and control in a highly degraded and contested security environment
- effectively integrate autonomous and unmanned platforms into the joint force
- exploit artificial intelligence/machine learning to accelerate decisionmaking
- enable the joint force to penetrate and effectively operate inside U.S. adversaries' antiaccess/area denial defenses
- harness all elements of national power during competition to render U.S. adversaries' potential use of force costly and politically irrelevant.

Vive la Révolution

Implementing the next training revolution so the joint force can achieve unmatched proficiency when conducting the all-domain tasks cited herein will not be easy. It will require leapfrogging existing combined arms training at the Service level and annual status quo joint exercises—that too often resemble VIP demonstrations and parades—to embrace competitive force-on-force operations against opposing red and blue formations that fight each other across land, sea, air, space, and cyber domains. These mock wars should be rigorously evaluated and graded so leaders who excel at all-domain operations could be promoted more quickly than their contemporaries.

While major U.S. and Alliance Cold War training exercises provide a useful historical backdrop for understanding the potential value of such an approach, fresh thinking needs to be applied in five areas in order to match or surpass the success that resulted from the first training revolution.[45]

First, the joint force must exploit simulation technologies so that joint capabilities are more aggressively integrated into simulated/virtual all-domain combat operations (think an "endless" ad hoc theater-wide campaign against a peer adversary) that could occur *without* formations having to leave home station or while performing routine training missions in the United States. Existing technology permits ground, naval, aviation, space, and cyber assets to perform simulated/virtual mission profiles—all linked into a joint communications network (training or real world) under the command of an actual or role-playing joint force commander. However, much of this architecture is nascent and needs to be expanded well beyond fifth-generation aircraft and Navy surface combatants to include the remainder of the joint force, along with critical intelligence functions, joint fires processes, and other enablers of joint and coalition "kill chains."

Second, any conflict against a peer adversary will require extensive use of nonkinetic systems in a degraded and contested communications environment, which means the joint force will need to conduct distributed/dispersed operations using highly decentralized decisionmaking processes. Thus, tactical commanders will need both the authorities and the means to deliver space, electromagnetic, and cyber spectrum effects inside their battlespace without having to request permission from higher. So the delegation of warfighting authorities that allows for these nonkinetic effects (simulated or real) to be created must become integral to the next training revolution's systems architecture.

Third, a world-class adversary (red team) that goes well beyond the size and capabilities of existing resident red teams at Army combat training centers will need to be established to challenge the joint force across all domains. This will likely require a technical revolution of distributed human-in-the-loop simulations, mobile and adaptable threat emulators, instrumentation systems to capture feedback on leader decisions, and unit execution. The scale and sophistication of this adversary all-domain force will be expensive and require a significant DOD-wide investment if it is to occur.

Fourth, much wider space for experimentation must be intentionally sculpted into every joint training event so that emerging concepts—even more so than technological capabilities—can be operationally examined to see whether they contribute to joint force success. Some portion of every training event and exercise should be devoted to testing the boundaries of concepts, technologies, or human cognition. This information should be captured and added to a continuous campaign of learning activities—and should be as important to the joint force and subordinate commands conducting the training as any other metric now used to assess leadership performance and readiness levels in DOD today.

Fifth, any conflict with a peer adversary will require the United States to effectively fight with its allies and partner nations. So increasing the frequency, complexity, and duration of peacetime exercises and operations with Allies and partners will be an indispensable attribute of the next training revolution. U.S. Indo-Pacific Command is out in front in this area. It is committed to transforming its vast array of disparate bombing ranges and Service-controlled training areas into a networked, state-of-the-art, and instrumented all-domain training complex that will have the capacity to absorb joint and coalition forces at scale. This training complex will allow simultaneous training events for global conflict to occur from Alaska, to Hawaii and the Central Pacific, to Northeast Asia, as well as to Australia.

Conclusion

The effectiveness of emerging warfighting concepts such as blitzkrieg and AirLand Battle cannot be determined from official manuals, no matter how brilliant the authors or insightful the prose. Rather, Soldiers and formations

Soldiers assigned to 1-252 Armor Regiment, 30th Armored Brigade Combat Team, move to safe location after chemical attack by opposing force in Mojave Desert during 19-09 rotation at National Training Center, on July 12, 2019 (North Carolina National Guard/Leticia Samuels)

must stress-test such concepts during repeated peacetime experiments and exercises that are intentionally designed to expose their strengths and weaknesses, as well as the initial ineptitude of forces attempting to master new operational approaches. This was and remains the genius behind the Navy standing up TOPGUN, the Army creating a world class opposing force (OPFOR) at the NTC, the Air Force establishing Red Flag, and other centers of excellence being formed around DOD for electronic warfare, cyber operations, and other warfighting functions. But tying these various centers together into a single network that could fight the same operational scenario under a joint/coalition commander whose headquarters is also being tested remains an unfulfilled possibility. In many cases, U.S. forces aspire to embrace the next training revolution or do so in name only—while continuing to cling to outdated training approaches that may have been appropriate when preparing to fight weaker adversaries but are not tailored for great power competition and conflict.[46]

This situation must change if the U.S. military and its Allies/partners want to be taken seriously by revisionist powers seeking to disrupt and control the international system. The next training revolution must continue much of the good work that began after Vietnam and the attacks on September 11 to increase the operational effectiveness of small infantry units. But tomorrow's training trajectory must move beyond tribal engagements, manning vehicle checkpoints, and countering IEDs to being part of a much broader and integrated joint/combined campaign at the theater level of war. The Chairman's 2018 NMS acknowledges the only way that this can be accomplished: "To prepare the joint force for employment, exercises build readiness, interoperability, and the mutual trust required for a joint combined arms approach to global campaigning."[47] Those exercises are key to building interoperability, relationships, and capabilities of Allies, partner nations, and interagency partners, as well as enabling units and leaders to "punch above weight class" when necessary. Exercises can also facilitate near-term experimentation to rapidly incorporate innovative ideas and disruptive technologies that promote competitive advantage.[48] **JFQ**

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MQ-9 Crew Chief at Holloman Air Force Base, New Mexico, December 19, 2016 (U.S. Air Force/J.M. Eddins, Jr.)

Beneath the Crosshairs

Remotely Piloted Airstrikes as a Foreign Policy Tool

By Roderic K. Butz

The key principles of the laws of war are necessity, distinction, and proportionality in the use of force. Drone attacks and targeted killings serve these principles better than any use of force that can be imagined.

—Richard Pildes[1]

Nearly a year before the attacks of September 11, 2001, the United States flew its first unarmed remotely piloted aircraft (RPA) sortie against Osama bin Laden and al Qaeda in Afghanistan.[2] In November 2001, following the terrorist attacks, the United States launched its first armed RPA kinetic strike against an al Qaeda leader in Afghanistan.[3] Since then, the United States has executed more than 6,000 RPA strikes against a myriad of declared terrorist organizations and threat groups across the globe.[4] The tactical value of RPA and their crews has proven to be, as Richard Pildes stated, "the most discriminating use of force that has ever been developed."[5]

Lieutenant Colonel Roderic K. Butz, USAF, wrote this essay while a student at the Army War College. It tied for first place in the 2020 Secretary of Defense National Security Essay Competition.

While the proven utility of armed RPA represents a significant evolution in military capability and the character of war, perhaps more important, it also represents a revolution in U.S. foreign policy. Successful RPA strikes have led some to believe their use allows "Presidents to punt on questions of war and peace," relying on tactical military capability to supplant strategy.[6] Because RPA strikes offer the unique ability to directly affect strategic objectives with a low risk to forces and a small footprint, policymakers may be tempted to resort directly to the use of force to resolve complex security challenges.[7] But RPA strikes are a tool, not a strategy in their own right. They are a facet of a broad effort to attain political ends through the concerted use of all available instruments of national power. Without a clearly identified endstate and coordinated whole-of-government strategy, RPA strikes alone actually increase risk to national policy objectives, destabilize fragile regions, and isolate key partners.

A comprehensive study of the effects of RPA strikes on foreign policy would require vast background knowledge, unbiased analysis, access to classified data, and a complex contextualization of the character of belligerents, geopolitical relationships, and U.S. policy goals. This article represents a more limited analysis and instead focuses on five topics within the context of U.S. military RPA strikes outside declared theaters of active armed conflict (ODTAAC). First, it outlines key assumptions and facts related to the legality, authorities, and classification of RPA operations. Second, it explores the evolution of U.S. policy on the use of RPA over the past two decades and three Presidential administrations. Third, it lays out the unique attributes of RPA operations that facilitate their use as a foreign policy tool in ODTAAC environments. Fourth, it analyzes the attributes of RPA strikes that alone may detract from national security objectives and lead to instability, governmental illegitimacy, and increased strategic risk, including ineffective targeting theory and mischaracterization of the operational environment. Finally, the article offers a series of recommendations for the effective use of RPA in ODTAAC environments as a facet of national strategy.

Scope

America's rapid expansion in the use of armed RPA following the attacks of 9/11 created a broad array of new legal, ethical, and political issues that remain widely unaddressed today. These issues include but are not limited to the employment of armed RPA through the lens of U.S. legal code, international humanitarian law (IHL), military rules of engagement, and the legal authorization for use of military force (AUMF).

First, analysis and examination of U.S. military RPA strikes in ODTAAC theaters are based on the assertion that the use of armed RPA by the United States is authorized through established mechanisms within the Department of Defense, the Office of the Director of National Intelligence, and the national security establishment. In today's counterterrorism (CT) campaigns, authorization is established through various classified and unclassified permissions including Public Law 107-40, which declares:

That the President is authorized to use all necessary and appropriate force against those nations, organizations, or persons he determines planned, authorized, committed, or aided the terrorist attacks that occurred on September 11, 2001, or harbored such organizations or persons, in order to prevent any future acts of international terrorism against the United States by such nations, organizations, or persons.[8]

Second, from a legal perspective, this article assumes the targeting processes and strike approvals are consistent with an AUMF and U.S. legal code and do not constitute assassination or extrajudicial executions.[9] Because of the character of CT targets and the authorized use of force, RPA strikes do not violate the Ronald Reagan administration Executive Order (EO) 12333, which states "no person employed by, or acting on behalf of, the United States Government shall engage in, or conspire to engage in, assassination."[10] Additionally, this legality is not differentiated by the specific source of authority, be it Title 10 or Title 50 of *U.S. Code*, whereby an approved AUMF covers both traditional military and intelligence activities against external actors.[11]

Finally, within the scope of IHL, the authorized rules of engagement for U.S. military RPA strikes are consistent with the concept of jus in bello, with a mandate of proportionality, distinction, humanity, military necessity, protection of nonbelligerents, and a minimization of suffering for the victims of armed conflict.[12] Critics posit that RPA technology makes attainment of military distinction and proportionality "more ambiguous and their achievement more problematic."[13] On the contrary, according to Pildes, because of the networked human interface, legal insight during targeting, technological advances, and command-level oversight, RPA operations "serve these principles [of IHL] better than any use of force that can be imagined."[14] Finally, this analysis on the efficacy of RPA strikes in the ODTAAC environment is at the unclassified level and proceeds with the assertion that they are both legal and ethical when authorized through traditional national security processes of the U.S. Government and executed in accordance with approved rules of engagement.

Policy Evolution

To better analyze the implications for U.S. policy of using armed RPA as a military tool, it is necessary to understand how the rapid expansion of this capability following 9/11 drove the evolution of policy through three Presidential administrations. The first operational use of the RQ-1 Predator, the successor to the widely proliferated MQ-1 and MQ-9 Reaper, occurred in 1995 over Bosnia. Employed primarily for intelligence, surveillance, and reconnaissance (ISR) through use of its full-motion video, the RQ-1, according to Richard Whittle, "played a key role in helping [the North Atlantic Treaty Organization] bring key factions . . . to peace talks," enhancing the quality and quantity of targetable intelligence.[15] In

Enlisted pilot student, left, and basic sensor operator course instructor at 558th Flying Training Squadron at Joint Base San Antonio, Texas, conduct training mission utilizing Predator/Reaper Integrated Mission Environment simulator, July 17, 2018 (U.S. Air Force/J.M. Eddins, Jr.)

late 1999, based on the success of the RQ-1 in Bosnia, and in response to the growing threat of al Qaeda following terrorist attacks in Tanzania and Kenya, the United States began efforts to arm the Predator. One year later, the United States commenced limited employment of unarmed MQ-1 sorties for ISR missions over Afghanistan, resulting in an assessed sighting of Osama bin Laden in September 2000.[16] For the next year, though the concept of RPA strikes was proved as feasible, policymakers, military leaders, and intelligence officials grappled with the formulation of a comprehensive, multiyear counterterrorism campaign to address the al Qaeda threat.

Even though RPA strike approvals were granted through the National Security Council and aligned with U.S. legal channels vis-à-vis EO 12333, on September 4, 2001, the plan to strike bin Laden was tabled. The primary reasons for this delay were based on budget disputes between the Central Intelligence Agency (CIA) and the Air Force, a fear among analysts of escalation in the event of an MQ-1 shootdown, and existing technological limitations on the reliability of the hellfire missile.[17] In an impassioned response, Richard Clarke, the National Coordinator for Security, Infrastructure Protection, and Counterterrorism, declared to the U.S. Principals Committee, "decisionmakers should imagine themselves on a future day when [they have] not succeeded in stopping al [Qaeda] attacks and hundreds of Americans lay dead in several countries, including the [United States]."[18] Unfortunately, while there is no evidence that a decapitation strike against bin Laden during the summer of 2001 would have prevented impending attacks, the future day that Clarke spoke of occurred less than 1 week after the meeting.

With only a handful of unarmed Predators over Afghanistan in September 2001 under the authorities of Operation *Enduring Freedom*, the United States was not postured to execute immediate kinetic strikes against bin Laden and al Qaeda, requiring a mobilization of thousands of intelligence and military professionals. Within 1 week of 9/11, concurrent with President George W. Bush's AUMF (Public Law 107-40), the United States commenced its first armed MQ-1 sortie over Afghanistan—harkening the evolutionary era of armed RPA operations as both a military tool and a tool of American foreign policy. Subsequently, because of the pre-9/11 policy disagreements and rapid expansion of this emerging capability following the attacks, the United States never

developed a coherent, comprehensive legally based policy before conducting its first RPA strike on November 12, 2001. The operational demands of the war on terror necessitated emergency expansion of RPA operations, leaving Presidential administrations, lawmakers, and military leaders in a reactive position to analyze policy issues, classification levels, departmental authorities, strategic impacts, and the long-term efficacy of this capability.

Under the administration of President Bush, aligned with theater campaign plans, the RPA force expanded rapidly in both declared theaters of active armed conflict (DTAAC) and ODTAAC environments within the Middle East, Africa, and the Pacific. Beyond Afghanistan and Iraq, wherein RPA were highly effective against al Qaeda, the Taliban, and other terrorist networks, the Bush administration directed approximately 57 RPA strikes supporting named operations against declared terrorist organizations in ODTAAC regions in Pakistan, Yemen, and Somalia.[19] Under the auspices of the war on terror, President Bush established the foundational assertions of the legality, ethicality, and policy use of RPA that evolved little in nearly two decades. Though the corporate view of the CIA, according to the *International Journal of European Relations*, was reluctant or outright opposed to armed RPA strikes, that position changed following 9/11. The attacks on 9/11 led the CIA to change its position, wherein it developed a deliberate targeting and strike system that separated "targeted killing" from assassination "rather than defending assassination itself."[20] While the Bush administration was successful in its limited ODTAAC RPA strike campaigns, executing approximately 57 strikes, the legacy lay in the policies that withstood the early years of the war and bolstered President Barack Obama's dramatic increase of remote strikes as a foreign policy tool.

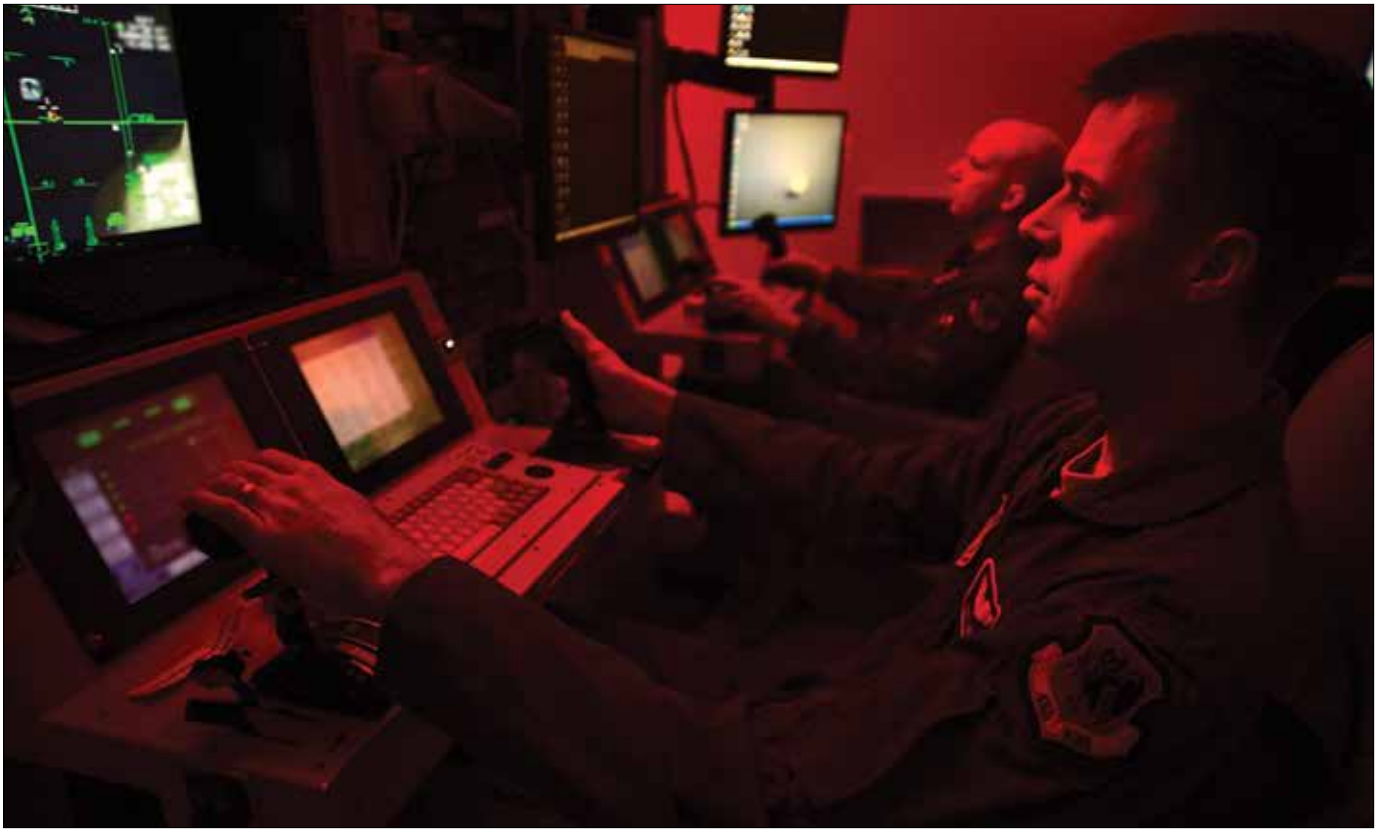
While President Obama has been credited for significant military drawdowns in Iraq and Afghanistan during his Presidency, according to the *Washington Examiner*, his true legacy will be that of the "Drone President."[21] According to the Bureau of Investigative Journalism, over 520 RPA strikes occurred during the Obama Presidency, a near 10-fold increase from the previous administration.[22] Additionally, sources claim that the number of American "drones" increased over 14,000 percent from approximately 50 in 2000 to over 7,000 in the arsenal by 2012.[23] Unfortunately, like significant portions of reporting on RPA, this claim is not entirely applicable to the discussion of RPA strikes, as only 372 were armed RPA variants as of 2014.[24]

Regardless of the precision and accuracy of such claims, due to wide proliferation and technical advancements of weapons, sensors, and platforms, the use of armed RPA as a policy tool increased dramatically under President Obama. Concomitantly, under heavy scrutiny regarding collateral damage and civilian casualties, the administration undertook a comprehensive examination of policies, authorizations, oversight, and RPA employment practices. In 2013, this examination culminated in new Presidential Policy Guidance (PPG) that provided the legal framework for target identification, operational authorities, and lethal strike approvals.[25] Additionally, President Obama signed a 2016 EO further outlining the criteria for "near certain" avoidance of collateral damage and civilian casualties, while mandating requirements governing employment, congressional oversight, and annual reporting of lethal strikes.[26]

While the use RPA strikes under President Obama expanded substantially from 2009 to 2016, with a former CIA officer declaring "phenomenal success" at diminishing terrorist organizations worldwide, the administration took active steps to declassify, regulate, limit, oversee, and report on the use of RPA strikes as a tool of foreign policy.[27] The move toward transparency, oversight, and limitations on the use of armed RPA under President Obama was a necessary first step in lifting the veil of secrecy and normalizing the legal use of this critical capability. But the constructive momentum to codify the employment, oversight, reporting, and legal attributes of RPA strikes effectively ended with the inauguration of President Donald Trump.

Upon taking office in 2017, President Trump replaced the Obama PPG with his own Principles, Strategies, and Procedures (PSP) that regulate direct action CT operations, including the use of armed RPA strikes in ODTAAC environments. According to the *New York Times*, the new PSP loosened the requirements for target selection, streamlined strike approval delegation, and removed the requirement for high-level vetting, oversight, and reporting.[28] Coincident with a significant increase in RPA strike operations, including the campaign against the so-called Islamic State (IS), the new PSP meant that the threshold for when to conduct strikes was lower and that there was not nearly as much high-level oversight of these strikes.[29] Notably, there remain significant levels of planning, operational analysis, legal reviews, and oversight at and above the combatant command level. While the impact of the current administration's changes is not yet known, the policy reversal away from transparency, high-level oversight, and reporting requirements restricts necessary evaluation and debate of the efficacy of this capability as a tool of foreign policy.

Though there has been a marked decline in strikes against IS in Syria as its territorial caliphate dissolves, the widespread use of lethal RPA strikes against terrorist leaders, facilitators, and fielded forces in other theaters has increased substantially since 2017, with the Bureau of Investigative Journalism reporting over 5,500 strikes in the first 2 years of the Trump Presidency.[30] While the reporting of actual numbers of strikes has become more difficult to assess due to President Trump's PSP, it is clear that this capability has expanded in both frequency and territory, including the establishment of a new RPA base in Agadez, Niger.[31] Categorically, the use of armed RPA against terrorist threats has increased substantially since the late autumn of 2001 and will likely continue. While Presidential policy on the strategic



Airmen with 91st Attack Squadron fly simulated training mission on MQ-9 Reaper at Creech Air Force Base, Nevada, May 8, 2014 (U.S. Air Force/Nadine Barclay)

use of armed RPA continues to evolve, preventing transparent analysis, debate, and foreign policy formulation, it is critical that lawmakers, military planners, and the public not conflate policy challenges with the tactical prowess of the MQ-1 and MQ-9 enterprise, which has proved extraordinarily effective as a military capability. Furthermore, in order to analyze the efficacy of armed RPA operations at the strategic level, it is necessary to understand the unique characteristics of this capability that often drive policymakers to use it as what Jacqueline Hazelton calls "the new face of US foreign policy."[32]

The Unique Value of Armed RPA Operations

The tactical use of RPA and kinetic strikes represents a "means" and a "way," respectively, to meet strategic ends. Comprehensively, RPA employment is unique from both a resourcing and capability perspective. It is both rational and reasonable to see how this tactical means could be harnessed as a foreign policy tool to meet combatant commanders needs in ODTAAC environments. These characteristics include perceived decreased risk, decreased cost, and decreased deployed signature compared to conventional, manned strike assets.

The primary reason lawmakers tend to support RPA strikes as a principal foreign policy tool to address security challenges is due to the relatively low risk to U.S. forces combined with the tactical effectiveness of the capability and low risk to the military mission itself. RPA operations, by design, mitigate risk to U.S. forces by protecting remote operators from the typical threats to air operations, including antiaircraft artillery and surface to air missiles. Additionally, though current RPA operations require a small footprint of deployed personnel to support taxi, takeoff, landing, and aircraft maintenance requirements, these forces typically remain beyond conflict zones and in lower threat areas and established installations.

In addition to the decreased risk to force, technological advances, precision weaponry, and aircrew expertise decrease the overall risk to successful tactical mission execution. This expertise and decreased risk to mission is evident in the analysis of armed RPA operational effects and their continuous improvements since 9/11. For example, from 2013 to 2019, a single Air Force RPA squadron of less than 100 U.S.-based personnel executed over 1,000 kinetic strikes against enemy forces in seven countries.[33] The results of these strikes were 2,592 enemy killed in action with a staggering success rate of 98 percent with zero loss of life to U.S. Servicemembers.[34] While the combat results of this squadron are unique and distinctive, this example highlights the low-risk effectiveness of RPA strikes to support U.S. policy objectives. This uneven combat risk between belligerents when using remote strike capabilities is a significant evolution in the character of warfare that leads toward policy preference to meet contemporary security challenges.

An added factor that drives a preference for RPA strikes as a policy tool is the financial cost of deployment and

employment. Additionally, compared to a conventional strike capability, the deployed footprint utilizing RPA is decreased by nearly 94 percent.[35] As figure 1 highlights, to fulfill a sustained (beyond 30-days) 24/7 kinetic strike capability, the decreased requirement for aircrew and maintenance "boots on the ground" makes RPA a preferable option to fulfill an operational need.[36]

These personnel savings manifest themselves in significant financial savings from mobilization costs and deployed financial entitlements as well as aircraft operating costs. To support sustained airstrike capability the hourly difference to operate an MQ-9 versus an F-16 is over $17,000 and nearly 6,000 pounds of fuel.[37] Per diem, this results in a savings of nearly $420,000 and 187,000 pounds of fuel with one MQ-9 sortie versus 24 F-16 sorties, according to a RAND study.[38]

Finally, in addition to the resourcing and financial savings, it is necessary to understand the opportunity cost of RPA employment versus manned aircraft. As the United States shifts security focus to peer/near-peer threats in contested environments, key capabilities such as multirole, manned strike aircraft must be apportioned and allocated appropriately to mitigate contemporary threats beyond the ODTAAC CT fight. Typical operational requirements in the ODTAAC environment to support ISR and tactical airstrike capability,necessitate persistence, flexibility, and limited strike capability. The fact that RPA can meet/exceed this 24-hour requirement with a typical force package of three aircraft, vice 18-24 F-16s according to a RAND study, provides policymakers with greater flexibility for apportionment of high-end, manned capabilities to meet the challenges posed by rogue nations and revisionist powers.[39] Necessary to annotate, while RPA provide extraordinarily precise, persistent strike capability, some situations demand strike options that RPA simply cannot provide due to operating limitations (satellite bandwidth/footprint, basing), limited armament payload, and a lack of defensive capability.

While this data drives policymakers often to prefer RPA to manned strike aircraft from a resourcing standpoint, RPA offer unique tactical capabilities as well that further support U.S. security policy. Specifically, modern U.S. RPA employ diverse technologies that represent an evolution in airpower capability, including advanced precision weapons, integrated communications, and multi-intelligence fusion.

The current MQ-9 aircraft employed across the globe maintains the ability to loiter over a single target for over

Figure 1. Requirements Comparison for 24/7 Sustained Flight Operations

20 hours, providing capability that historically required multiple types and quantities of various manned aircraft. Highly trained crew employ technological capabilities within the platform that facilitate ISR collection through use of high-definition infrared, short-wave infrared, and visual spectrum (electro-optical) full-motion videos. Additionally, use of synthetic aperture radar and signals intelligence provides combatant commands with a broad array of capabilities to collect and disseminate information regarding enemy personnel and capabilities. The communications suite on the current MQ-9 includes FM, UHF, VHF, satellite communications, voice over Internet protocol, secure Internet (at the secret and top-secret level), and secure telephonic capability. Finally, the MQ-9 retains the ability to carry an extensive variety of precision-guided weapons including 500-pound laser-guided bombs, 1,000-pound GPS-guided munitions, and various laser-guided Hellfire missiles.

The combined capabilities of a single MQ-9 offer military commanders and policymakers an evolutionary cost-effective tool to support the entire joint targeting cycle to find, fix, and finish (kill) enemy forces while concurrently exploiting, analyzing, and disseminating intelligence information. Examples of these synergistic and diverse kinetic capabilities inherent to the MQ-9 include previously infeasible strikes against fast-moving targets in highly populated areas, strikes using extremely low-collateral-damage weapons, and massed employment against fortified positions and enemy formations.

The evolutionary leap in airpower capability that the MQ-9 represents is displayed through a number of recent strike, including the one against General Qasem Soleimani near the Baghdad International Airport, where MQ-9s were able to use multi-intelligence collection, a robust command and control network, and niche weapons capability to execute a strike against a moving vehicle in a dense urban area with no collateral damage. Additionally, as reported from recent strikes in Syria, using modified niche weapons with lower explosive yield, MQ-9s are able to strike individual targets in densely populated areas with no collateral damage.[40] Last, in contrast to the precision low-yield strikes, the MQ-9 also retains the capability to conduct massed attack against fortified positions and large troop formations as seen in the 2016 strike against an al Shabab training camp that resulted in 167 enemy killed in action, the deadliest single-salvo airstrike since 9/11.[41] Because of the niche tactical competencies of RPA, the staggering disparity in risk and resource requirements, and the opportunity costs associated with manned capability, RPA will continue to be the primary option to meet operational requirements for ISR and air-to-ground strike capability in permissible ODTAAC environments.

While RPA strikes often attain strategic effects, it is important to remember that the tactical use of RPA and kinetic strikes represents merely a means and a way to support policy objectives and must not supplant formulation of effective national strategy. Despite the myriad niche capabilities and the potential strategic effect of RPA strikes, they are often conflated as a strategy or policy in and of themselves. As Jeremy Scahill states, "drones RPA are a tool, not a policy."[42] Moreover, with overdependence on this highly effective capability as an often chosen tool to address security challenges, policymakers and senior leaders must understand those characteristics of RPA strikes that consequently detract from national security objectives in ODTAAC environments.

The Potential Cost of Armed RPA Operations

The term *drone* carries a generally negative connotation with thoughts of killer flying robots, breaches of personal privacy, and safety risks to aviation. The phrase *drone strike* may convey even deeper malice, conjuring images of civilian casualties, collateral damage, assassination, extrajudicial killing, and the militarization of American foreign policy.[43] While this view may simply be a biased narrative based on current literature and ill-informed reporting, it is critical that the concept be analyzed from a strategic perspective to identify those characteristics of RPA operations that may actually detract from U.S. policy objectives. Specifically, this examination of RPA strikes must identify factors that result in political scrutiny, socioeconomic instability, host-government illegitimacy, and increased strategic risk. The primary factors that often produce the above risks include opaque U.S. policies on the use of RPA, the destructive narrative of drone strikes, an incomplete characterization of the enemy's operating environment, and what author James Kiras explains as "the appeal of an apparent simple, direct and low-cost solution to a difficult strategic problem."[44] Collectively, lacking an understanding of these factors and an active mitigation plan, reliance on armed RPA operations as the core of a narrow security strategy may further destabilize fragile regions, isolate key partners, and detract from national security objectives.

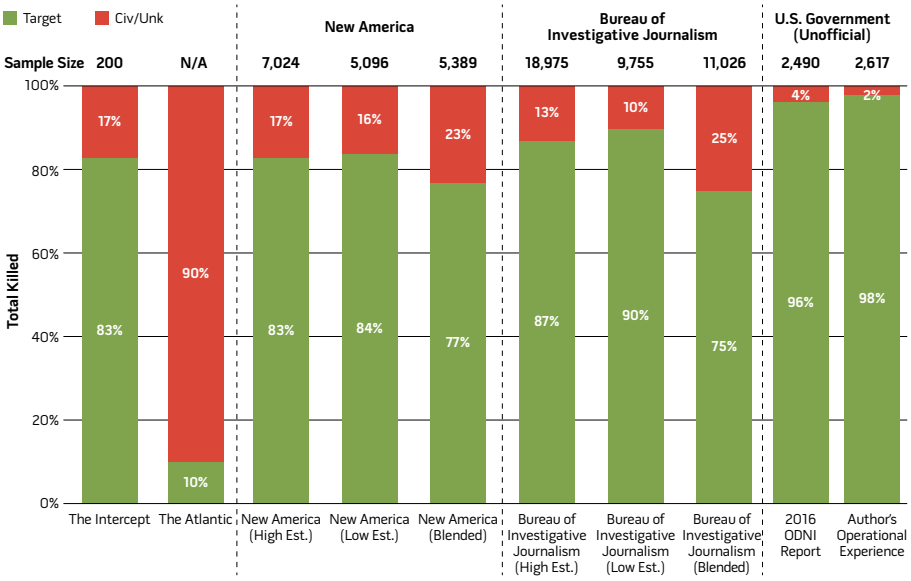
A primary risk factor in the use of armed RPA, and a consistent criticism from both domestic and international entities, is the opaque nature in which strikes are authorized, executed, and reported. This lack of transparency, from a policy and oversight perspective, restricts necessary debate on the appropriate use, legal framework, and strategic effectiveness of this niche capability as a policy tool. While limited steps toward policy transparency occurred between the Bush and Obama administrations, the Trump administration's rollback on these initiatives increased opacity, resulting in what Rachel Stohl argues is "a lack of clarity over who represents a legitimate target, and greater secrecy regarding the ways in which operations are conducted, by whom, and the results of such operations."[45] This continued opacity increases policy and strategic risks, wherein transparency is both appropriate and necessary.

Though the assertion is made, and necessarily so, that certain facets of armed RPA operations must remain classified (for example, collection methods, weapons capabilities, operating locations of deployed personnel), there is value in

transparent reporting of U.S. targeting efforts, strategic objectives, and the associated successes and challenges. Viewed holistically, armed RPA operations are an evolutionary step in warfare and jus in bello, resulting in greater discrimination in the use of force, increased confidence in effective targeting, and substantially decreased risk to noncombatants. Lacking transparent reporting and accountability, the extraordinary tactical effectiveness of armed RPA operations (in both DTAAC and ODTAAC environments) is relegated to a narrative of excess, illegality, immorality, and destruction. This misinformed narrative, resulting from the opacity of U.S. policy, is further enhanced by an overwhelming quantity of imprecise media reports, individual editorials, books, movies, and an ineffective U.S. informational counternarrative.[46]

Critics assert that RPA advocates often highlight technological advances as the main factor in assuring proportionality and discrimination. Sarah Kreps highlights this point when quoting State Department legal advisor Harold Koh, who stated that RPA technology "ensures that only legitimate objectives are targeted, and that collateral damage is kept to a minimum."[47] Koh's argument based on technology fuels critics, who assert that technology intrinsically confuses the "determination of legal or ethical legitimacy."[48] Both Koh and Kreps do not acknowledge the central role of the human interface within the RPA operational framework. This include oversight and review from national-level authorities to the combatant command leadership, legal experts, operational planners, all-source intelligence analysts, targeteers, and individual aircrew members. While it may seem apparent, airplanes do not make decisions; when operated by highly trained crews, RPA represent a means to better inform and facilitate human decisions. In fact, the RPA human network is significantly more robust than more traditional weapons systems, decreasing the ambiguity of distinction and proportionality. As is the case with all aspects of IHL, it is within this human interface that those legal and ethical determinations are attained.

Figure 2. Reported Combatant/Noncombatant Deaths



The second risk factor to consider is based on the malign narrative of armed RPA operations. For instance, reviewing results of a simple Internet search of the phrase *drone strike* illustrates the overwhelmingly aspersive narrative surrounding American use of armed RPA, with nearly 80 percent of search results demonstrating negativity and disapproval. This narrative primarily highlights civilian casualties, collateral damage, the (il)legality of targeted killings, and what Amnesty International terms American "imperial overreach."[49]

While transparent and constructive dialogue on topics such as legality, ethicality, unintended consequences, and strategic use of RPA is critical to ensure effective utilization of this capability, it is too often imbalanced, unverified, and/or wholly inaccurate. A simple comparison based on data from various reporting organizations reveals broad statistical disparity, and when compared to a smaller subset based on personal experience, the inaccuracies become even more apparent.

Figure 2 analyzes sample data of RPA strikes (comparing reported enemy deaths to those of assessed noncombatants) from four media outlets, the Office of the Director of National Intelligence (ODNI), and my own personal experience having commanded and directed over 6 years of RPA strikes across seven countries. Of note, because the duration of reporting periods differs among all sources, the reported sample size is included in the figure.

Within these reports, even from within specific organizations, is a wide disparity of data as expressed by author Cora Currier, stating "the estimates are largely compiled by interpreting news reports relying on anonymous officials or accounts of local media, whose credibility may vary."[50] Additionally, because the data range from some individual sources (New America Foundation and the Bureau of Investigative Journalism) is so broad, the figure reflects low estimates, high estimates, and a blended sample that reflects the lowest total number of personnel killed with the highest claim of civilian casualties.[51] With media reports of civilian casualties ranging from 10 percent through 90 percent of all strike deaths, compared to ODNI and personal accounts of 4 percent to 2 percent noncombatant deaths, respectively, the disparity of accounting is apparent.[52] Additionally within media reports, there is no distinction annotated on how the recorded data was confirmed as RPA strikes, vice any other type of air-to-ground or surface-to-surface engagement. Notably, in searching for accurate data through an Internet search of "drone civilian deaths," the openly available ODNI report does not even

Figure 3. Characterization of Strategic Risk in Armed RPA Operations

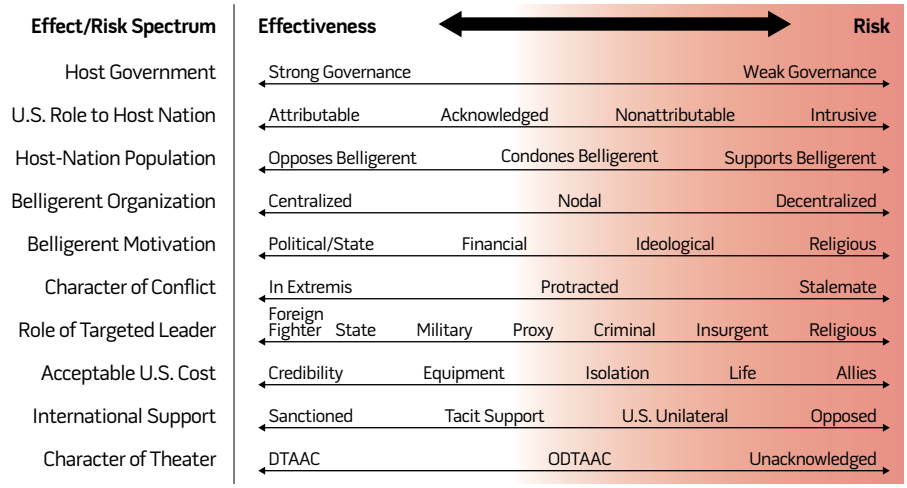
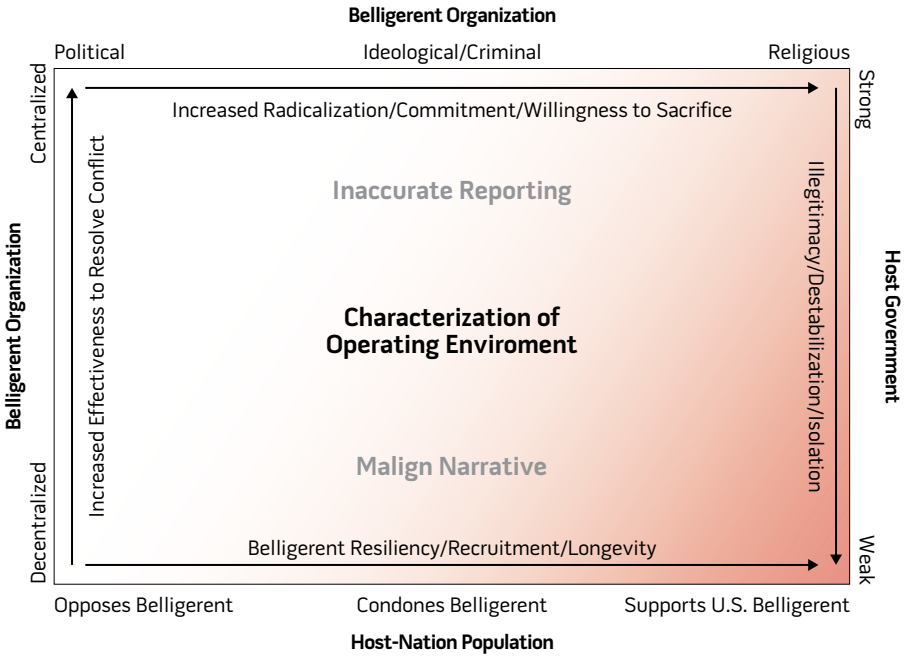


Figure 4. Notional Risk/Effect Analysis



occur within the first 100 search items, further illustrating this narrative bias. Unfortunately, the data from government sources is completely overshadowed by an ill-informed media narrative that results from disparate reports, sensationalism, and a lack of transparency.

This narrative is further refined through the use of popular media, to include television, books, and movies that deal with drone warfare. According to Paul Rich, media and feature films can be "highly influential in framing major political issues."[53] This is certainly the case with the use of armed RPA and has bolstered a malign narrative that, as illustrated by *Guardian* columnist Henry Barnes, "forgets there's someone at the controls, emphasizing the alien nature of a remote, robotic death."[54] This narrative has been further bolstered by legal officials declaring that RPA strikes are "kind of antiseptic . . . like a video game . . . like *Call of Duty*."[55] Mark Bowden goes so far as to state that in war the use of RPA strikes "ignores the spirit of the contest."[56] These cultural implications of "remote death" drive a biased and often false narrative. Without transparent, informative, and accountable engagement by the U.S. Government, the niche capability provided by armed RPA operations is vulnerable among both domestic and international information spheres, increasing the political risk of use when deemed appropriate. Furthermore, in order to counter this malign narrative and maximize the strategic influence of armed RPA, policymakers and senior leaders must transparently assess the proper use of this capability and resist historical tendencies based on incomplete characterizations of the mission, the operating environment, and the policy objectives.

There exists a third risk factor to the use of armed RPA that is even more critical than either the opacity of policy or the malign narrative. This is the mischaracterization of the operating environment that creates an inarticulate strategy, directs improper use of force (to include armed RPA), and detracts from policy objectives. Reflecting on the conventional targeting theory prior to 9/11, we see the concepts of effects-based operations, John Boyd's OODA Loop, and John Warden's Five Rings.[57] Because of the rapid expansion of RPA operations (and CT strikes) in Afghanistan and Iraq through 2003, planners and senior leaders remained wedded to pre-9/11 concepts. This lag led to a dependence on decapitation strikes to support Warden's dictum that the enemy leader and his command structure are the only entities capable of "determining a nation's (or group's) will to fight."[58] But these assertions did not hold, and they relied on a mischaracterization of the enemy and the operating environment. After 9/11, the United States was no longer fighting a conventional highly centralized, state-managed force. Instead, the United States found itself matched against a disparate, decentralized, religiously based terrorist movement that garnered support from the indigenous population.

From the beginning of the war on terror, the United States became fixated on decapitation strikes and failed to comprehensively assess the role of RPA strikes to achieve strategic objectives in support of policy ends. Moreover, without a coherent policy and war termination criteria, military planners were relegated to decapitation operations (including direct action special operations and conventional operations) that did not address root causes of the conflict. James Kiras captures this sentiment, asserting, "decapitation strikes are appealing precisely because they compress the vertical and horizontal dimension of strategy into a single flat line in which actions, unburdened by friction or imperfect knowledge and unimpeded by political considerations, achieve their effects against an enemy system in a preordained manner."[59] Unfortunately, decapitation targeting theory does not target the foundational principles that foment instability and violence in contemporary CT/counterinsurgency (COIN) campaigns: the malign ideology and its psycho-social influence on the host-nation population. Political scientist Robert Pape captured this sentiment in 1996, stating, "decapitation is not likely to coerce adversaries and can be counterproductive."[60]

In order to fully assess the appropriate role (or lack thereof) of RPA decapitation strikes as a policy tool at the strategic level, senior leaders must fully consider that additional risk factors, such as social, political, cultural, and economic characteristics, shape military responses.[61] As a result of the mischaracterization of these risk factors within the operating environment and false assumptions of the efficacy of decapitation strikes in current conflicts, the U.S. Government has not provided a clear explanation of how RPA strikes will be coordinated with broader foreign policy objectives.[62] Moving forward, before the adoption of a national strategy that includes leadership decapitation operations, it is imperative that policymakers understand the complex interaction between effectiveness and the above risk factors. Figure 3 details this interaction using an effect/risk spectrum based on 10 characteristics within the operating environment.

The strategic risk model is not intended to be a checklist-based examination on the efficacy and risk of RPA decapitation strikes, but instead to provide analytical context to policy decisions. The model asserts that an attributable U.S. strike against a leader within a strong bureaucratic state, sanctioned by international support, within a declared theater of conflict is likely the most effective and least risky type of decapitation strike. In contrast, the model asserts that the least effective (and highest risk) decapitation operations are against leaders of decentralized, religiously motivated organizations with weak host-nation governance and strong host-nation popular support. Adding to the challenge, the complex interactive relationship between risk and effectiveness is neither binary nor directly opposed; it is unique to each operational environment, pointing to a greater need for constructive analysis and dialogue prior to commencement of decapitation strikes.

Figure 4 represents this notional risk/effect analysis portraying the complex interactions of the operating environment based on 4 of the 10 principles. In understanding and accounting for inherent risks of RPA strikes (policy opacity, inaccurate reporting, and malign narrative), policymakers must deliberately forecast and anticipate the effects on popular sentiment, the host-nation government, the belligerent organization, and the belligerent's motivation. In this figure, we highlight those characteristics that increase strategic risk, manifesting in potential unintended consequences and what the CIA refers to as "blowback."[63]

Figure 4 also highlights increased radicalization and host-nation illegitimacy as the two greatest strategic risks associated with armed RPA operations. Within contemporary CT/COIN operational environments, these two factors manifest in increased belligerent recruitment, resilience, and commitment, while concomitantly delegitimizing and isolating the host-nation government and security apparatus. Many of today's CT/COIN environments are defined by weak governance, popular acquiescence, and support to belligerents and the targets represent decentralized, religiously motivated ideologies, creating a destructive cycle that actually detracts from policy goals. Moreover, while the preponderance of scrutiny on RPA operations derives from civilian casualties, in this destructive cycle, even successful RPA strikes (that is, targeted individual killed with no collateral damage) could result in blowback. For example, a successful U.S. RPA strike against a belligerent leader often devolves into a narrative that highlights U.S. overreach, further delegitimizing the host-nation government. This principle is characterized by Mark Bowden, writing, the "political message [of an RPA strike] emphasizes the disparity in power between the parties and reinforces popular support for the terrorists, who are seen as David fighting Goliath."[64] Without an effective US counternarrative, this popular sentiment foments instability and isolation of the host nation.

In order to mitigate the potential for blowback, and concurrent with any proposal to conduct decapitation operations, policymakers must characterize the operational environment to understand the likelihood of success and its complex association with the strategic risk. While Warden's theories of decapitation strikes continue to drive contemporary airpower theory since 9/11, they do not account for these characteristics within the operational environment. In today's CT and COIN campaigns, this mischaracterization often creates more instability, host-nation illegitimacy, and strategic risk to U.S. policy goals. An expansion on the theories of Warden and other advocates of decapitation strikes must capture the analysis of the operating environment prior to creation of strategy.

Expanding on the theories of Warden, figure 5 reorganizes the risk characteristics, providing an analytical model to capture the risk characterization of leadership strikes inherent in his Five Rings model. Because neither model is prescriptive, policymakers must understand the complex relationship between the likelihood of effective decapitation strikes and the opposing risk. While the models above are

Figure 5. Expansion of Warden's Inner Ring

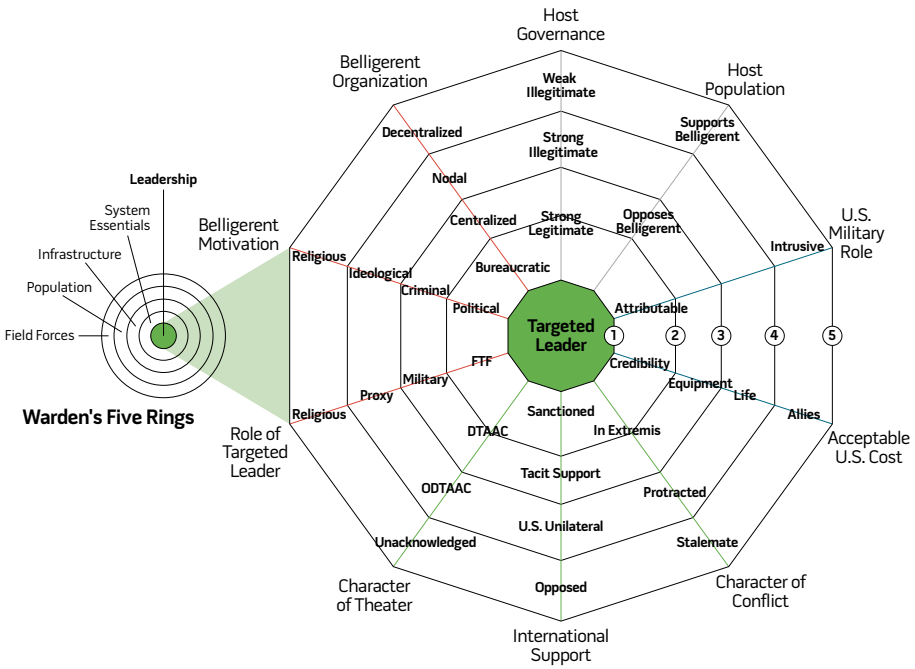
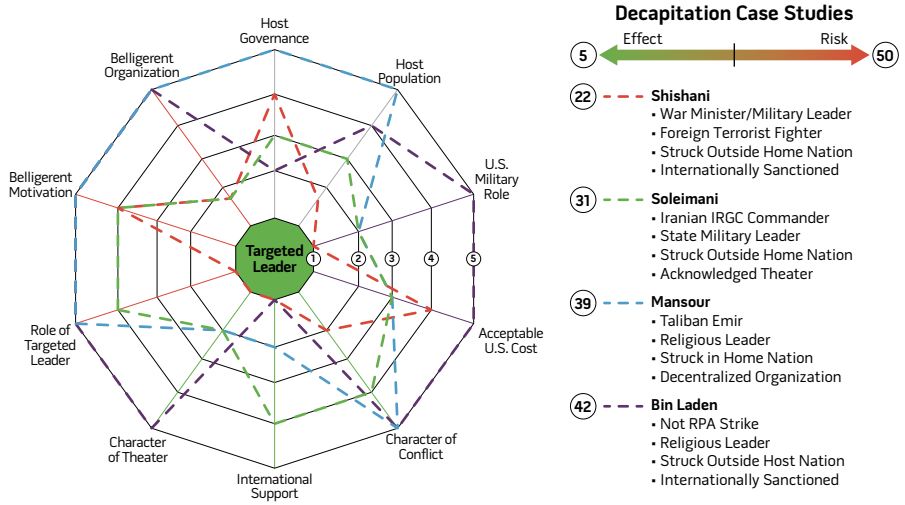


Figure 6. Decapitation Operation Case Study (Effect vs. Risk)



primarily subjective, is flexible enough to represent a more objective analysis by measuring the overall effectiveness/risk spectrum based on the 10 characteristics. By assigning a weighted numerical value to each characteristic (situationally dependent), planners can inform policy decisions based on likelihood of success versus inherent risk. Figure 6 displays examples of four notable decapitation operations. While three of the four were in fact RPA strikes, distinct characteristics (including the highest risk) from the operation to capture and/or kill bin Laden illuminate the need for subjective decisionmaking ability instead of a purely objective analysis.

As the case studies show, using the weighted risk of each characteristic, certain aspects of decapitation operations drive likelihood of success, while others drive risk. Whereas the decision calculus and interplay of these complex relationships is difficult to ascertain, certain assertions can be made about the efficacy of a given strategy. For example, based on the model's additive score of 22, the airstrike against Abu Omar al-Shishani, the IS minster of war, had a higher chance of success (in influencing IS) compared to a relatively lower risk to operational environment (blowback). According to the U.S. special operations task force commander that directed the operation, the death of Shishani resulted in a significant degradation to IS military capability.[65] In contrast, the strike against Taliban Emir Mullah Akhtar Mansour in May 2016, with an assessed score of 39, retained a high risk of blowback (and failure to achieve lasting effects on the Taliban), regardless of whether the strike itself was tactically successful. This objective postmortem of historic strikes using the model is useful to assess proposed roles of military force in current and future conflicts. Because these models are designed for risk analysis at the policy and strategic level, they deliberately avoid discussion of "risk to force" and other tactical risk factors that emerge through joint operational and tactical planning. Understanding the importance of strikes against leadership targets (akin to Warden's model), these models expand the analysis of the operating environment and highlight those unique characteristics that will likely neuter effective decapitation operations from the strategic level.

Though armed RPA will undoubtedly continue to play a role in U.S. foreign policy, the imperative for success lies not in the hands of the RPA operators, but in the characterization of the environment and the strategy nested therein to support policy goals. Prior to decisions to use force, including armed RPA, policymakers must examine and debate appropriateness to a given situation based on informed analysis of the operating environment. Too often, without a comprehensive whole-of-government effort (based on an understanding of the complexity of effects versus risk), the tendency to employ RPA as the tool of choice alone results in further instability and strategic risk to policy objectives.

Conclusion and Recommendations

While RPA represent an evolution in military capability, they have revolutionized the U.S. ability to project power. In so doing, the use of armed RPA and decapitation strikes as an intrinsic policy, absent a whole-of-government strategy, increases risk to national policy objectives, destabilizes fragile regions, and isolates key partners. With this approach, policymakers risk defaulting to military force as the preferred strategy, instead of analyzing and utilizing other means of national power. With less analysis on other instruments of national power, military force may result in longer term damage to comprehensive national policy goals.

To mitigate this temptation, policymakers must incorporate the unique capabilities of RPA, not to supplant national strategy but as one facet of a broad effort to attain political ends through concerted use of all available instruments of national power. Additionally, greater transparency on the use of armed RPA is necessary to dispel malign narratives and to maximize the effectiveness of this niche strategic capability. In concert with robust analysis and debate on the appropriate use of military force, policymakers and senior leaders must characterize the operational environment to determine the efficacy and risk of military force to address a given security challenge. Complementing historic theories of airpower employment, contemporary theorists must examine the social, political, security, and psychological characteristics of the targeted individual's environs to determine if decapitation strikes would indeed support or detract from stated policy goals. In future policymaking discussions, instead of debating the role of RPA strikes as a strategic tool, the more appropriate consideration must analyze the efficacy of the overall strategy to meet U.S. policy ends. Lacking transparency and executed without a clearly identified endstate and coordinated whole-of-government strategy, RPA strikes alone could be detrimental. Comparatively, the evolution in character of war displayed through employment of armed RPA, as part of a comprehensive whole-of-government strategy, provides niche, low-risk strategic capability to support policy goals and mitigate immediate threats to our nation, our partners, our interests, and our allies. **JFQ**

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Soldier with Cyber Electromagnetic Activities section, 1st Armored Brigade Combat Team, 1st Infantry Division, points toward nearby objective during final day of training with section's new electronic warfare equipment, Fort Riley, Kansas, April 6, 2018 (U.S. Army/Michael C. Roach)

It's Not Just About Cyber Anymore

Multidisciplinary Cyber Education and Training Under the New Information Warfare Paradigm

By Joshua A. Sipper

Dr. Joshua A. Sipper is a Professor of Cyber Warfare Studies in the Air Force Cyber College at Air University.

Education and training have been complementary philosophical cognitive frameworks necessarily focused on harmonious, yet separate, areas of information delivery to people in a vast array of careers. Much research has compared and contrasted these two philosophies, revealing the need for an understanding of how best to target learning in order to accommodate the needs of students, of organizations in need of talent, and of society as a whole. The fact is that we need welders and plumbers just as

badly as we need doctors and lawyers. However, the way we train and educate across these vastly different career trajectories must by necessity flow and work in different ways.

The same could be said concerning education and training in the cyber career field. While cyber at a coding, hacking, systems administration, and applications level requires targeted training, education—which includes a more strategic and policy leadership bent—must be approached from a high-level, critical thinking vantage. There exist obvious similarities between training and education, such as a multidomain approach using cognitive, psychomotor, and affective strategies to promote learning. But the root philosophies have been and remain decidedly different. As Reginald Melton wrote, "It is important that we should not lose sight of the differences between education and training, for it is these differences that help us to keep the links clearly in perspective."[1] Yet there are also important links that must be maintained between education and training in order to communicate needs, standards, and knowledge, skills, and abilities (KSAs).

Cyber education and training are currently experiencing an unavoidable renaissance due to the inclusion of additional disciplines within the greater information warfare (IW) framework. This IW paradigm shift has been effected primarily by a natural confluence of information-related capabilities (IRCs), namely cyber operations (CO); intelligence, surveillance, and reconnaissance (ISR); electromagnetic warfare (EW); and information operations (IO). Each of these IRCs plays a distinct yet integral part in the IW superstructure, enabling military offensive, defensive, and exploitative operations at multiple levels. With this influx and cross-pollination of IRCs, education and training will necessarily take on new challenges as well as a transformation that will ostensibly enable joint all-domain operations (JADO).

Cyber Training and Education

As with any complex technical discipline, cyber training and education are connected and related at many levels. While these connections might serve to obscure where the dividing lines between training and education lie, they also enable the all-important multidisciplinary nature of cyber and the continued flow of cyber into and between ISR, EW, and IO within the nascent IW construct. Within the various military Services, however, technical cyber training and academic cyber education still maintain a necessary and complementary separation important for ensuring operational and organizational efficiency. As stated by Professor Melton, "Developing individual competencies to meet [industry] needs is what training is all about. . . . Meeting the totality of an individual's needs is what education is all about."[2] Both training and education are critical from this standpoint, as industry and individual needs must be met in order to ensure all gaps are closed. This is nowhere truer than in the cyber sphere, where organizations and individuals across the national, military, and state levels require technical and policy expertise on a near-constant basis.

With the demands currently placed on cyber in practically every corner of education, government, military, and corporate environs, ensuring the steady flow of network operability and a well-trained and well-educated workforce is not only challenging but also absolutely critical to maintaining security and operations. In order to effect this massive undertaking, cyber training and education must be understood individually, taking into account each area's subtle differences and strengths. Additionally, training and education overlap, and similarities within cyber specifically must be examined in order to find the common ground and interoperability necessary to continue the dominant nature of the U.S. military cyber panoply.

Cyber Training. Training is, at its core, about giving students the tools to accomplish tasks. With this understanding in mind, it is easy to see that the basic function of training is the development of competencies. Major General Burke Wilson and others discuss the need for Air Force cyber training in these terms: "A critical step towards normalizing cyberspace operations is the continued incorporation of advanced concepts in technical training school, which better equips our Airmen for the challenges they face in an increasingly contested operating environment."[3] Another issue foundational to keeping pace with the complexities and growth of cyberspace is a ready and expanding cyber professional force.

According to Francesca Spidalieri and Jennifer McArdle:

> *Compounding the shortage of highly trained cyber forces are the increasing scale, complexity, and continuous growth of DOD* [Department of Defense] *networks that are providing new avenues for adversary exploitation. In 2011, DOD cyberspace architecture was already the largest in the world, including over 15,000 networks and seven million computing devices spread across hundreds of installations globally. Today, the networks continue to expand, adding new features and assimilating new technologies, such as mobile devices and cloud computing.*[4]

The addition and proliferation of new technologies require expanded training and continuous learning across the joint force and within government and commercial sectors. Nancy Blacker writes, "Increased opportunities for training and education across the interagency through formal channels should lead to strengthened relationships that facilitate planners and decisionmakers at all levels of government. A focus on training and education should find its way through the jungles of personnel bureaucracy."[5]

Of course, with the expansion of any new and important field, government, military, and commercial organizations recognize the necessity for taming what can sometimes be viewed as a Wild West scenario in which there is no policy, guideline, or law. As Karen Dill argued, "The growth of the cyber domain continued while laws and policies to shape cyber security practice lagged due to a lack of knowledge gap within either a centralized government or private administration."[6] There has also been growing focus on cyber training across every cyber region

Associate research engineer Cassandra Stanfill, with Intelligence, Surveillance Augmentation, and Reconnaissance Branch, uses eye-tracking technology, among other methods, on test subject, Lieutenant Michael Emard, at Air Force Research Laboratory, Wright Patterson Air Force Base, Dayton, Ohio, July 21, 2016 (U.S. Air Force/J.M. Eddins, Jr.)

due to the recognition that cyber is a critical enabler of every aspect of JADO. This is of utmost importance within the joint military cyber enclave. DOD's main efforts in this area have largely focused on training cyber warriors, those highly specialized individuals with extensive technical training who can engage in the defensive cyber operations (DCO) and offensive cyber operations (OCO) vital to mission effectiveness. Training relates directly to highly specialized skills critical for accomplishing the tasks necessary for DCO and OCO. This is the cyber training wheelhouse, appropriately positioned for driving military cyber war.

Cyber Education. The word *education* carries with it several interesting connotations: *professional*, *strategic*, *nontechnical*, *leadership*, and *managerial*, to name a few. While many of these terms are definitive of the purpose and trajectory of education, this method of learning must not be pigeonholed any more than training. For instance, a common view is that education does not deal directly with technical problems and solutions, which may lead some to question its applicability within the cyber technical framework. However, this is a common misunderstanding currently being corrected through technically focused cyber career education within military and civilian institutions alike. For example, the Air Force Association CyberPatriot program "was well received by industry professionals and is now sponsored by multiple corporations including Northrop Grumman Foundation, Cisco, Symantec, and the University of Maryland University College."[7] Through programs such as CyberPatriot, technically savvy young women and men have their KSAs cultivated, eventually with the possibility of commissioning into a military service branch. Other governmental organizations are involved in the same types of workforce cultivation: "The National Security Agency (NSA) outreach to [science, technology, engineering, and mathematics] programs employed throughout the public school system and their National Centers of Academic Excellence in Cybersecurity serve as a foundation for curriculum development."[8] Other organizations are taking technical understanding to a more fundamental level. The U.S. Military Academy Mathematical Sciences Department is using mathematics education to "help prepare future military officers for leadership roles in the cyber-affected world in three tiers: (1) what all officers should know, (2) what highly technical officers should know, and (3) what cyber leaders should know."[9]

Such educational efforts are becoming more prevalent throughout military and civilian universities. This highly technical

focus belies the fact that cyber is a career field that not only crosses boundaries but is also filled with progressive challenges. With these challenges comes the need to educate and train personnel to a standard that includes a prismatic display of KSAs. This necessity has also highlighted the need to potentially use alternative methods of recruiting:

The cyber community has already acknowledged the idea that acquiring and developing the talent required for cyberspace operations may come from nontraditional sources or by nontraditional means. . . . The 2017 National Defense Authorization Act included a provision that allowed a pilot program for the direct commission of officers for cyberspace specialties.[10]

Through direct commissioning, the recognized gaps in the officer corps across DOD could effectively be filled in much the same way the specialty fields of medical doctors, chaplains, and lawyers are currently handled. This would allow civilians to enter the Armed Forces with increased rank, bonuses, and other incentives commensurate with opportunities, pay, and benefits offered in the corporate realm. Cyber talent is hard to come by, and direct commissioning is just one way to help with the critically undermanned force our military is currently experiencing.

Of course, technology is also a huge factor in education. Learning Management Systems, Student-Centered Active Learning Environments, and imbedded technologies within classrooms and across campuses are continuing to grow and advance. As highlighted in a RAND study of cyber learning as it relates to infrastructure operability:

Cyber learning relied on the fiber-optic network to deliver course content online to students throughout the region. Stakeholders reported that the fiber-optic network was the foundation for the program, without which students would not have been able to enroll, and that the network supported all student participation in cyber learning courses.[11]

Education is certainly a key to staffing and operating within cyberspace. Incorporating technology, alternative commissioning, advanced educational strategies, and technically focused education all play a role in assembling the JADO force necessary to ensure the Nation's security and dominance across the global cyber cosmos.

Cyber Training and Education Cross-Pollination. While training and education inhabit peculiar hemispheres within the cyber learning ecosystem, there is a natural and important wicking of concepts always present between the two. As stated aptly by Blacker, "When the opportunity arises to share or distribute expertise, each participating agency wins. Knowledge is gained and captured to spread around. Knowledge, if kept prisoner in its originating agency, will not contribute to the greater good."[12] Only through the sharing of the cyber challenges and lessons learned gathered by the training and education spheres can the advances and synthesis necessary for continued cyber progression take place. Spidalieri and McArdle claim:

Cyber-strategic leadership . . . is not the same as, nor does it replace, the specific technical skills, knowledge, and abilities required to develop, administer, and defend the cyber environment. Rather it is a different and complimentary [sic] *set of skills, knowledge, and attributes essential to future generations of leaders whose physical institutions nevertheless exist and operate in, through, and with the digital realm*.[13]

Another bridging concept between training and education is the ability to transmit task-oriented learning alongside critical thinking. Without both present, the relationship shared between the learning and work environment will break down. Frank Katz writes, "In any educational setting, one of the great debates is whether a program of study provides both breadth and depth of knowledge in that curriculum."[14] While education is often seen as a method of delivering a breadth of information at a cost to depth, it is important to recognize the need to get "down in the weeds" in order to understand how cyber actions actually take place. This allows the leaders who emerge from educational programs to communicate intelligently and effectively with the technical force they have been tasked to lead. Conversely, technical students in training must be given the opportunity to understand strategic goals and objectives in order to comprehend how their discrete actions have lasting and deep impacts within the cyber strategic force construct and vision. Only through the complementary overlap between training and education will this beneficial relationship form and persist.

The IW Paradigm and IRCs

Although *IW* as a term and concept was broached in the 1990s, only recently has it returned with full force and promise as an established and mature organizational construct. As a result, CO and the training and education undergirding this capability have been perturbed and given a new mandate: interoperability with the ISR, EW, and IO disciplines. It is with this new perspective in mind that leaders, trainers, educators, and all the institutions surrounding them must proceed, bringing with them the responsibility of interleaving this impressive collection of IW capabilities and disciplines. An understanding of each discipline is necessary in order to see how they interrelate and combine within the IW superstructure. Trainers and educators can fix the focus and leadership of cyber warriors in the fusion and combinatory power expressed across these functions.

Cyber Operations. While the IRCs of ISR, EW, and IO have been available and in use for the better part of the 20th century and forward, cyber is the most nascent and is the capability that ties the rest of the IRCs together. This unusual placement of cyber operations in the company and annals of traditional IRCs makes cyber not only an intriguing field but also a veritable icon in its classification. When it comes to capability maturity, cyber is definitely a candidate, yet also an ever-growing IRC. This fact simultaneously makes cyber a powerful tool, a dangerous weapon, and an

Soldiers of 780th Military Intelligence Brigade set up cyber tools overlooking mock city of Razish at National Training Center, Fort Irwin, California, May 7, 2017 (U.S. Army/Bill Roche)

unbridled and sometimes wild beast. With this image in mind, we must understand the power of such a tool and how, as it ties the other IRCs together through networks, communications, and additional technological and infrastructure enablement, cyber is also a delicate and harrowing dynamo.

CO, especially in the U.S. stable of IRCs, is a capability unmatched by any other power in the world:

U.S. skills at cyberwar have no equal. U.S. institutions lead the world in the commercialized arts of persuasion, and the collection and analysis of personal information for commercial and political purposes have proceeded farther in the United States than anywhere else. No country is more advanced in digitizing and networking things.[15]

This supremacy is also relevant in relation to cyber capability across the spectrum of not only warfare but also industry, banking, and other critical infrastructure auspices. An article asserts:

The use of cyber assets has been a form of force projection that helps initiate crises far ahead of and beyond the frontlines, creating forms of more complex crises that affect energy infrastructure, banking systems, and political leadership, and not solely the Armed Forces fighting on the frontlines. Again, the extension of traditional military conflict is not a new strategy, but new technologies have been able to provide both the means and vulnerabilities to allow such operations at a scale not often witnessed before, and with a smaller investment in resources on the part of the aggressor.[16]

It is abundantly evident that cyber has wormed its way (pun intended) into basically every area of life, and it shows no sign of stopping. This is also evident in the fact that cyber has been established as a domain, specific to its own capabilities and effects within the greater military construct: "The allocation of 'domain' status to cyberspace (alongside maritime, land, air, and space) serves a bureaucratic purpose to ensure that CO receives sufficient financial and material support."[17] Overall, cyber has grown exponentially within its own sphere, reproducing itself like a virulent string into the nooks and crannies of practically all other areas of military strategy, operations, and training, techniques, and procedures. The cognitive effect from such rapid growth has been enormous, with *cyber* becoming not only a term on the tip of every tongue, but also a capability that every entity desires. Kamal Jabbour and Erich Devendorf claim, "Few cyber phenomena have captured the fascination of the media and the general public more than information theft through cyber exploitation and data exfiltration."[18] The terror and splendor inflicted on the collective considerations of the public show just

Texas Army National Guardsman analyzes network traffic as part of training week for exercise Cyber Shield 2019, at Camp Atterbury, Indiana, April 7, 2019 (U.S. Army/George B. Davis)

how powerful and mature cyber has become and just how much we have yet to learn.

Intelligence, Surveillance, and Reconnaissance. ISR is one of the oldest IRCs, with roots in warfare back to the dawn of recorded history. However, with the capabilities introduced in the 20th and 21st centuries, especially within the past two decades, ISR has become even more capable and powerful. As a discipline, there has never seemed to be any question concerning the power and necessity of ISR. This is evident in the amounts of money invested in IRC from the highest echelons of government, from organizations such as the NSA, Central Intelligence Agency, and Federal Bureau of Investigation, all of which depend on ISR operability and capability to function.

The great enabler in much of the maturation of ISR has been technology, again an area of obvious importance from the top down. With technology comes the need and desire to integrate other IRCs, most notably cyber capabilities, into the ISR capability framework. With this integration has come a new way of conducting ISR operations, including the kinds of information sought and the kinds of information environments accessed and used. After the breakdown of IW in the 1990s, ISR and the other silos of IRCs continued on parallel paths:

The ISR community kept building and operating systems of greater acuity and range. Electromagnetic warriors went back to mastering their magic in support of air operations, counter–improvised explosive devices, and other combat specialties. Psychological operators continued to refine the arts of persuasion and apply them to an increasing roster of disparate groups. Cyber warriors bounced through the space community before getting their own subunified command within which they could practice their craft.[19]

These paths have characterized the ways in which ISR has expanded its own sphere of operational influence and continued to add to this important and versatile IRC. Yuriy Danyk, Tamara Maliarchuk, and Chad Briggs write:

A key component of such independent operability in both ISR and combat operations is the development and use of unmanned drones. The increasing use of drones for different functional areas (intelligence, electromagnetic countermeasures, direct strikes, etc.) and different operational environments (land, sea, air, amphibious) is an important consideration for flexibility in dynamic conflict situations.[20]

With key capabilities like drone and other network-dependent operations has come the inescapable tie-in of cyber, which has only served to abut ISR and cyber even more closely. With the merger of the Cyber 24th Numbered Air Force (NAF) and the ISR 25th NAF into a new 16th NAF, the objective is clear: a combined capability bringing with it not only cyber and ISR but also other IRCs into a combined IW capability.

ISR as a capability is also maturing across the globe:

Foreign intelligence services use cyber tools in information-gathering and espionage. Several nations are aggressively working to develop information warfare doctrine, programs, and capabilities to enable a single entity to have a significant and serious impact by disrupting the supply, communications, and economic infrastructures that support military power.[21]

With this idea in mind, it is important to see the advantages of such constructs and how the North Atlantic Treaty Organization (NATO) and the United States are going to meet the challenges of other nation-states and the capabilities they continue to develop. The maturation of ISR as a capability has kept pace with and even melded with cyber, leading to a continued technology and IRC arc that shows every sign of culminating in a combined IW construct.

Electromagnetic Warfare. As a shift and maturation of cyber and ISR capabilities has occurred, EW has followed a similar trajectory. As technology and cyber and ISR capabilities progress, EW as an IRC finds itself at a distinct advantage due to the peculiar niche it fills. EW is focused on controlling, disabling, and manipulating various signals and devices from and within multiple electromagnetic environments:

Electronic warfare can . . . be carried out by controlling devices that emit radio-frequency (RF) energy. New forms of RF signals pervade homes and cities: Bluetooth, Wi-Fi, 5G, keyless entry systems, and global positioning system, to name a few. The coming Internet of Things is essentially an Internet of RF-connected items. If software-defined radios (those capable of broadcasting or receiving signals over an arbitrarily selected frequency) become ubiquitous, they could be hijacked to jam or spoof targets hitherto inaccessible using traditional EW boxes.[22]

With this powerful reach into the RF spectrum, EW stands as an excellent cyber-enabled resource, capable of combining with other IRCs in many powerful ways. Other nations, such as China, have recognized this combination of capabilities for some time. For example, "A 2004 White Paper on National Defense increased the [People's Liberation Army] focus on 'informationalization' and advocated the use of cyber and electromagnetic warfare in the early stages of a conflict."[23] Under these circumstances and with a full understanding of the scope of these capabilities, it is in the distinct interest of NATO and the United States to hone their own capabilities in this realm while leveraging the full power of other IRCs. Again, Russia is already moving forward with this philosophy: "Russia has . . . developed multiple capabilities for information warfare, such as computer network operations, electromagnetic warfare, psychological operations, deception activities, and the weaponization of social media, to enhance its influence campaigns."[24] Not to be outdone, China has announced progress related to EW. In early writings, Major General Dai Qingmin anticipated operations involving "the destruction and control of the enemy's information infrastructure and strategic life blood, selecting key enemy targets, and launching effective network-electromagnetic attacks." He argued that this integration of cyber and electromagnetic warfare would be superior to the U.S. military's approach at the time of network-centric warfare.[25]

EW is another IRC that has existed for much of the 20th and 21st centuries. However, there has been a marked growth in capability with the advent of cyber and the continuing growth and expansion of ISR and IO that has led to a closer tracking of these capabilities, now seen from a holistic perspective. As these IRCs continue to cross streams and implement the others' precious proficiencies, the need for closer attention and support from NATO and the United States will be necessary.

Information Operations. IO is an IRC on par with ISR. IO looks at information in a way distinct from the other IRCs, however, especially as it relates to influence and the power of propaganda. NATO's Allied Joint Doctrine for Psychological Operations states that information operations are "coordinated and synchronized actions to create desired effects on the will, understanding, and capability of adversaries, potential adversaries, and North Atlantic Council approved audiences in support of the Alliance overall objectives by affecting their information, information-based processes, and systems while exploiting and protecting one's own."[26]

With the creation and proliferation of social media, IO has become a powerful tool in the world of cyber in general and ISR specifically. IO also draws power significantly from cyber as an enabling force. IO has been used for centuries as a way to influence, deter, and coerce through nonkinetic and generally nonlethal means: "Nonlethality and ambiguity, for their part, may be exploited to modulate the risk of reprisals—notably, violent reprisals—for having carried out information operations."[27]

This technique, combined with other nonlethal means such as cyber and EW, can generate power across the battlespace at many levels. China has used such integration and should be expected to continue this strategy into future conflicts in peace and in war. Elsa Kania and John Costello write, "The [PLA] Strategic Support Force's cyber corps approach the cyber domain in a much more comprehensive way, reflecting a highly integrated approach to information operations that actualizes critical concepts from PLA strategic and doctrinal approaches."[28] Other nations recognize the flexibility and power of IO as well as other advantages, including scalability, portability, cost, and ambiguity. For instance, "Russia recognizes that information operations offer an

opportunity to achieve a level of dominance . . . it provides a significantly less costly method of conducting operations since it replaces the need for conventional military forces."[29]

It is difficult not to see how powerful IO is in regard to influence and dominance since information has become and remains a key to everything from business to commerce to military operations, especially as it relates to social media:

Apart from its monetizing potential, social media has also become an excellent channel to mobilize support, disseminate narratives, wage information operations, or even coordinate military operations in the real world. States and non-state actors have started to extensively use social media to influence perception, beliefs, opinions and behaviors of their target audiences.[30]

The mature capability of IO across the globe and in and through organizational constructs lends itself well to the growth potential of IW, making it an undeniable asset in the combined scope of IW capabilities.

Recommendations and Conclusion

The mature capabilities manifested in and through CO, ISR, EW, and IO, respectively, tend to culminate in a combined IW merger that could harness and exploit all these competencies in myriad combinations. It is therefore incumbent on military and civilian training and educational institutions to keep pace with these changes. This is no easy task, especially considering the complexity of each IRC separately and then combining them in seemingly infinite ways. However, through its inherent professional and technical learning auspices, the IW construct can find purchase in the cosmic cyber intellectual domain.

While some schools have already begun to delve into interdisciplinary training and education regarding the IW IRCs, the integration of training and education regarding these capabilities and their interoperability must be further explored. This could be done through the introduction of curricula in a cross-disciplinary fashion to familiarize students with each capability while keeping their own discipline at the forefront. This will not only allow students the focus they need but also introduce them to how they and the other IRCs operate within the larger IW construct. Additionally, early exposure to the actual operational IW environment could be of special significance to students because this provides them a firsthand look at how these IRCs interleave and fuse together into a holistic product. Altogether, the confluence of IRCs, training, and education must combine into a structured JADO interdisciplinary construct unrivaled by our peer adversaries. JFQ

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Marine attached to "Lucky Red Lions" of Marine Medium Tiltrotor Squadron 363 lowers payload from MV-22B Osprey to USS *Henry M. Jackson* in vicinity of Hawaiian Islands, Pacific Ocean, October 21, 2020 (U.S. Marine Corps/Matthew Kirk)

Logistics Under Fire

Changes for Meeting Dynamically Employed Forces

By Stephanie Myers, Eric Shirley, Brian Joseph Anderson, and Steven Hejmanowski

The United States has not faced contested lines of logistics since World War II. Over time, U.S. forces have become dangerously comfortable with having what they need, when they need it. The most notable difference between logistics during World War II and logistics now is that our supply lines are spread much thinner.[1] The Department of Defense (DOD) can no longer rely on established forward bases and uncontested lines of supply. The Indo-Pacific area of responsibility (AOR), for example, comprises nearly 100 million square miles, encompasses nearly half of the Earth's surface, is home to 36 nations, and contains more than 50 percent of the world's population (speaking 3,000 different languages).[2] The geographic and cultural challenges of the Indo-Pacific

Lieutenant Colonel Stephanie Myers, USAF, is Commander of the 633rd Contracting Squadron at Joint Base Langley-Eustis, Virginia. Colonel Eric Shirley, USA, is an Executive Officer at the Headquarters for the Deputy Chief of Staff, U.S. Army Logistics G4. Captain Brian Joseph Anderson, USN, is the Commanding Officer of Navy Supply Systems Command Fleet Logistics Center, San Diego, California. Captain Steven Hejmanowski, USN, is the Director of Training at the Naval Aviation Warfighting Development Center.

AOR strain current DOD logistics practices.

Today, similar to the early 1940s, the U.S. military finds itself in Great Power competition with peer adversaries. The peers have changed, but the logistics challenges have not. The U.S. military must adapt new logistics concepts to replace fixed (and therefore vulnerable) support sites—that is, main operating bases. The combat branches of each Service are enacting the direction spelled out in the 2018 National Defense Strategy to be more agile and less predictable, a concept known as dynamic force employment (DFE). The Air Force and Army components are aggressively exploring, and in many cases relearning, adaptive basing models.[3] The Navy, meanwhile, is already employing its assets dynamically and unpredictably.[4] The Services are not, however, applying the same energy toward the *combat support functions* that execute the extremely complicated tasks of supporting DFE.[5]

The new operational concept of DFE, coupled with antiaccess/area-denial (A2/AD) environments, present new challenges to the logistics community. "Operations Normal" will not cut it anymore. To support DFE in A2/AD environments, we must change our logistics practices dramatically. Sustaining joint forces in permissive DFE or in more complex A2/AD environments requires agile and innovative concepts of logistic support. Unlike in recent wars, such as Operation *Desert Storm* and Operation *Enduring Freedom*, today's adversaries are far less likely to allow prolonged U.S. force buildup and mostly uncontested lines of communication. Joint logisticians must develop support concepts that do not depend on robust logistics formations, traditional sources of supply, or traditional distribution networks.

This article highlights the need for leveraging business intelligence in order to provide agile logistics support to DFE operations. A brief discussion of the concept of operational contract support (OCS) and a definition of business intelligence will show the links between robust business intelligence, OCS, and logistics support for DFE. To properly leverage business intelligence, we propose some of the changes necessary—namely those in policies and procedures, culture, and planning and exercises. And finally, we demonstrate the benefits of leveraging business intelligence to support all types of operations.

Operational Contract Support

According to Joint Publication 4-10, *Operational Contract Support*:

Operational contract support (OCS) is the process of planning for and obtaining supplies, services, and construction from commercial sources in support of combatant commander (CCDR)-directed operations, as well as CCDR-directed, single-Service activities, regardless of designation as a formal contingency operation or not. OCS is a multi-faceted, cross-functional staff activity executed primarily by the combatant command (CCMD), subordinate staffs, Service components, theater special operations commands, and, in some cases, functional components, along with supporting combat support agencies (CSAs).[6]

One option that logisticians can explore in a deliberate, proactive manner is expanding the theater logistics analysis of OCS solutions. These solutions can be incorporated into refined theater posture plans, contingency plans, and the execution of theater exercises and contingency responses. OCS can extend intervals between intertheater resupply by leveraging supplies and services available in the local market rather than by shipping supplies from a U.S.-operated hub. In order to fully operationalize the benefit of these solutions (that is, in order to fully leverage nonorganic, commercial support solutions), a business intelligence application that captures and displays commercial vendors, their capabilities, and their supply and service capacities is required.

Business Intelligence: The Foundation for OCS

Business intelligence, as defined in this context, is the identification, collection, display, and dissemination of vendors, supply and service capacities, supply chains, transportation infrastructure, and general business practices (for example, traditional work days and hours, local holidays, types of currency accepted, language in which business is conducted, taxation and customs rules) for use in support of military operations. Like other forms of military intelligence, it requires a refresh at appropriate intervals based on operational need. Business intelligence is the foundation for OCS, allowing the United States to seize operational opportunities by leveraging nonorganic, local supplies (food, water, fuel, commodities, building materials, material handling equipment) and services (Porta-John services, cleaning services, transportation services), thus lengthening the required time between resupply. Developing accessible and relevant business intelligence that planners and commanders can use to employ and sustain the force will ensure the ability to "regenerate in all domains while under attack."[7]

Business Intelligence Platform. Although DFE and adaptive basing–type movements conducted during conflict require units to source locally, DOD lacks knowledge of local markets, vendor capabilities, and a repository of local businesses—all pertinent forms of business intelligence. Business intelligence, from every potential AOR, should identify local commercial vendors, available supplies and services, maturity of the market, and viability after hostilities begin. To make this information available and accessible, the data should be hosted on a cloud-based database and presented in an application available on smartphones or tablets.

Lieutenant Colonel Karen Landale and Major Mike Sweeney, both fellows in Air University's Blue Horizons Program, have proposed that DOD develop easily accessible business intelligence to inform troop support, movement, and basing decisions. Partnering with industry, Landale and Sweeney are developing an application called BIZINT, which crowdsources vendor data (similar to how the Waze app crowdsources information) and displays vendors as pins on a map (similar to those

Contingency contracting officers with 379th Expeditionary Contracting Squadron share best practices, at Al Udeid Air Base, Qatar, December 17, 2018 (U.S. Air Force/Christopher Hubenthal)

used in Google Maps) that, when clicked, provide a "baseball card" of vendor data (contact information, supplies/services available, and performance ratings). The map has filtering functions that allow the user to see vendors by class of supply, distribution distance, last validation (that is, the last time a user validated the vendor), past performance, and so forth.

Like all forms of military intelligence, the data must be continuously updated. Updates can occur via real-world events, scheduled theater exercises, inputs by Embassy acquisition personnel, or temporary duty for contingency contracting officers (CCOs) to reconnoiter vendor bases. All data inputs are time- and signature-stamped, making it possible to know when the vendor was last validated and by whom.

At present, readily accessible large-scale business intelligence data do not exist for globally employed forces. As a result, CCOs go into new events "blind"—with little understanding of the market beyond what Google searches and Embassy personnel can offer. Too often, CCOs are forced to learn the market "on the job," mostly by walking through local business areas and making contacts. Thus, although CCOs are innovative and forward-leaning, the lack of business intelligence results in an inherently reactive support response. Worse, any lessons learned by CCOs are kept in their heads or transmitted via text-based after-action reports. Contracting units individually collect vendor data (such as vendor location and contact information); however, the data are kept in Excel spreadsheets—hardly accessible to users in the field and hardly considered institutional knowledge. Furthermore, there is no common operating picture or dashboard of available supplies and services to inform planners across the CCMD.

Commercial companies such as Amazon, FedEx, UPS, and Walmart have large repositories of supplier data, the technology to analyze and display the data, and expertise to make data-driven supplier-related decisions; however, the sanctity of that data is protected (that is, not available for purchase by DOD), as access to the best suppliers and robust supply chains is what can make or break suppliers' innovation efforts and bottom line. While these large companies may not be willing to share data related to their supply chains, the quest to transform any antiquated logistics formation and planning process must include the private sector—we can learn a lot from its years of experience in mapping markets and establishing supplier relationships.

Moreover, we should not rule out the option of partnering with these companies to provide the supplies and services we use most during operations. How

F-15E Strike Eagles with 4th Fighter Wing at Seymour Johnson Air Force Base, North Carolina, form behind KC-135 Stratotanker after refueling with 121st Air Refueling Wing, Ohio Air National Guard, June 15, 2018 (U.S. Air National Guard/Tiffany A. Emery)

should we partner with them? What role will they play? How far are these companies willing to go into a war zone? At what price? It is safe to assume that many large companies are not willing to operate directly in a war zone, so there will always be a role for business intelligence collected and used by the joint force. That said, the joint force must have its own "map" of supplies and services to sustain operations.

Paradigm Shift: Policies, Procedures, and Culture. In today's risk-averse environment, acknowledging the need to use nontraditional sources of supply will require a massive paradigm shift. For example, based on current procurement standards, a U.S. veterinarian must scrutinize all food and sources of food consumed by U.S. troops. In a DFE/adaptive basing concept, this practice might be time prohibitive. As another example, cumbersome acquisition authorities requiring competition and set-asides in order to award contracts could also undermine the fulfillment of the operational concept. Perhaps these will be obvious risks to accept in the future, but integrating these potential scenarios into existing plans and exercises may be the forcing function needed to truly prepare Servicemembers.

That said, there are demonstrations that the Services are becoming less risk averse. For example, the Air Force has embarked on a campaign to remove redundant or overly prescriptive Service instructions in order to push decisions down to the lowest level possible and allow commanders to make smarter, on-the-ground risk-informed decisions.[8] A remarkable example of how the next fight might look was executed in summer 2019 by the men and women of the 4th Fighter Wing from Seymour Johnson Air Force Base in North Carolina. They demonstrated the ability of small multifunctional teams to establish and operate at multiple austere locations, rearming and refueling multiple airframes using integrated combat turns—a tactic that had been out of vogue for the last two decades.

These teams were sourced to operate autonomously for up to 72 hours, but if the teams had been allowed to utilize local markets, they likely could have sustained operations for much longer. Removing the weight of food and fuel might result in the ability to carry more ammunition, equating to longer intervals between resupply and potentially the difference between victory and defeat.

As an example of how we can do better, an analysis by the Army Material Systems Analysis Activity indicated that in the initial phase of Operation *Iraqi Freedom*, 32 percent of the tonnage moved to theater was water and 39 percent was bulk fuel (see table for the scope of weight being addressed). How many trucks could the Army have kept off the roads if it had had the ability to

source those items locally? What might those trucks have carried instead of water and fuel? Would it have been necessary to ship so many trucks to the operation in the first place? We are not advocating carelessness—sources of food, water, fuel, and other mission-essential sustainment commodities should be checked and vetted to ensure they meet standards. We are advocating for good decisionmaking—using local supplies where possible to vet to standards rather than automatically reverting to our comfortable, but very long, distribution chain.

Planning and Exercising the Use of Business Intelligence. In an ideal situation, functional planners in each CCMD would be able to view all sources of supply—organic Service component assets; Defense Logistics Agency (DLA) assets; and nonorganic, locally available assets—in order to make decisions that optimize the use of *all* sources of supply *and* associated strategic lift and transportation capabilities.

A2/AD challenges make it equally important to assess whether the locally sourced supply items would remain available after hostilities begin. During the Mexican-American War, for instance, Lieutenant Ulysses S. Grant's troops lived off the land and utilized local markets, including the black market, for procurement of necessary items.[9] Today, using the black market conjures thoughts of courts-martial and Fat Leonard.[10] Grant, however, did not let the proverbial "red tape" stand in the way of making the best operational and business decisions to execute his mission. Units may not be able to go to the extent Grant did because weapons systems are much more complex today, and the demand for oversight and accountability is likely higher. But logisticians, contracting officers, and functional planners must consider the feasibility and evaluate the risk of self-sustainment of food, fuel, and other operations support materials and services to maintain small, fast-moving combat teams.

Logistics classes I through IX have always been included in planning, but in an adaptive basing construct, critical data points are not being collected and analyzed. Incorporating DFE into the planning process requires sacrifices in quality of life, a significant departure from recent forward-operating base amenities that the joint force is used to, and specific attention to data to mitigate risks. Failure to adapt and prepare for the DFE-A2/AD fight leads to risk; however, risk can be mitigated at the CCMD level through detailed geographic analysis of distribution networks, local sources of supplies and services, and available host-nation transportation capabilities. These critical elements of the CCMD campaign plan are captured broadly in the theater posture plan, which is the combatant commander's proposal for forces, footprints, and agreements required and authorized to achieve the command's objectives and set conditions for accomplishing assigned missions.[11]

The Theater Logistics Overview (TLO) codifies the geographic CCMDs theater logistics analysis (TLA) within the posture plan. The TLA contains detailed country-by-country analyses of key infrastructure by location or installation, footprint projections, host-nation agreements, existing contracts, and task orders required to logistically support CCMD campaign plans and contingency operations. The vendor source of supply data could be incorporated into both Annex D (Sustainment) and Annex W (Operational Contract Support) for CCMD plans.

To reduce sustainment risk to initial entry forces and follow-on operations, theater or joint task force logisticians and functional planners could reference a business intelligence platform populated with vendor data. Real-time or near-real-time situational awareness for CCMD logisticians could also be maintained by incorporating the outputs of the business intelligence solution into the Global Logistics Readiness Dashboard, which is routinely referenced during exercises and contingencies. These enhancements to the traditional TLO will aid rapid integration of forces deploying in support of DFE events.

Due to the fluidity of DFE, real-time access to the class of supply data is critical. Business intelligence would inform the CCMD theater posture plan and could potentially mitigate submissions on the integrated priority list of known shortfalls, thus providing a set of criteria for the annual joint assessment. The results of this analysis provide CCMD inputs to the Chairman's risk assessment. Without visualized and vetted sources of supply and an understanding of vendor distribution capability in theater, a heavy—almost total—reliance on intertheater lines of communication will persist, along with an inordinate amount of civil-military coordination required to support onward movement and intratheater border crossings, rail and road utilization, and port throughput.

Furthermore, planners and commanders must learn to fully incorporate logistics and OCS functions into exercises. As General Dwight Eisenhower stated, "You will not find it difficult to prove that battles, campaigns, and even wars have been won or lost primarily because of logistics." The issues and challenges that the joint force will face in a peer conflict will not be solved via efforts that stem solely from the continental United States. In order to develop and train logistics and contracting professionals to utilize business intelligence, exercises must address the true challenges these individuals will face supporting Servicemembers in contingency environments. DFE poses a daunting logistics effort and introduces uncertainties; only confidence in training and experience can ensure delivery to the "last tactical mile."

Fully incorporating contracting and logistics functions into an exercise is not easy. First, "business play areas"—or what would be considered the equivalent of a live-fire range where aircrew drop live ammunition and practice real-world tactics, techniques, and procedures—do not exist. Second, exercising contracting functions in the real world has real-world financial consequences that must be considered prior to execution. For example, in small economies, on one hand, the amount of money the U.S. military spends locally during an exercise could provide a significant boost; on the other hand, the U.S. military might buy out supplies (for example, bottled water) and services (bus transportation), producing a shortage for the local populace. Third, dollars are not typically allocated to

Unmanned aerial vehicle delivers payload to USS *Henry M. Jackson* near Hawaiian Islands, Pacific Ocean, October 19, 2020 (U.S. Navy/Devin M. Langer)

exercise the contracting function, which results in a rudimentary simulation of contract awards. Although each exercise would look slightly different, funds should be allocated to allow contracting officers to source the local market to support the force and map the business environment (vendor locations, supply and service capacities, business practices, and so forth), particularly in exercises conducted overseas.

A focused logistics and contracting effort would tease out and improve the increasingly important function of OCS to the overall strategy of the operation. If we are to train like we fight, we need to fully incorporate *real* logistics and *real* contracting functions into our exercises—it will pay dividends in the future.

The Need for Business Intelligence

As directed in the National Defense Strategy, DOD is transitioning from large, centralized, unhardened infrastructure to smaller, dispersed, resilient adaptive basing.[12] Adaptive basing requires forces to disaggregate capabilities from a single base and diffuse forces to many locations for operational maneuver.[13] Because the United States no longer has a significant forward presence overseas and peer competitors have the capability to hold these forward assets and bases at risk, adaptive and agile operations are necessary.

Dynamically employed forces require a small footprint, rapid standup and tear-down capability, and a low profile. Using OCS to travel light and source locally, through developed business intelligence, would enable formations to meet these objectives. The new DFE concept demands faster, locally sourced logistics. Long logistics lines stemming from the United States or one of our traditional operating locations would almost certainly not work for DFE. Long logistics lines require too much time to get to the target, heavily tax our strategic lift capabilities (which might be better used to transport bullets, bombs, and other military equipment), and are vulnerable to attack.

Moving with a small footprint, similar to special operations forces movements, allows troops to relocate without significant time for buildup, which would otherwise signal intent to the enemy. A small footprint requires units to operate with less materiel support and fewer supply lines, which translates to sourcing locally, closer to a just-in-time method. Rapid setup and tear-down, within a matter of days or hours, deny the enemy sufficient time to locate forces and attack. Such swiftness of movement requires preestablished local connections and, in some cases, established contracts with local vendors. Keeping a low profile may mean using local vendors not vetted to the standards generally expected by today's forces.

Because the business intelligence needed to inform adaptive basing does not yet exist, basing decisions have been limited to locations with robust supply chains or those near main operating hubs. If, as former Marine Commandant General Robert Neller described, "we're going to have to fight to get to the

fight," then our logistics tail must be able to keep up.[14]

Studying the island-hopping campaign in the Pacific during World War II might allow contemporary planners to conceptualize the future challenge. The Pacific campaigns were executed after months of logistical placement and preparation. The difference today is that the fight could happen in days or hours rather than weeks or months. At the current pace of advance, the tooth could easily outpace the tail. Business intelligence would enable the tail to anticipate the tooth and keep pace—or even outpace the tooth in some scenarios. In order to provide senior leaders information to make logistically informed decisions about where operations could be best supported (that is, where it is easiest and most feasible to support the force with nonorganic supplies and services), joint logisticians must have access to current business intelligence.

Recommendations

Combat operations in Operations *Desert Storm* and *Enduring Freedom* were overwhelmingly successful; however, each operation had the advantage of time for significant buildup of resources preceding conflict—something that cannot be taken for granted or relied on in future scenarios. Even with that advantage, during the combat phases of those operations, the Army and joint community encountered challenges executing sustained, end-to-end logistics in an agile and precise manner, particularly along the last tactical miles of what the joint force now describes as theater distribution.[15] The initial combat phase of Operation *Iraqi Freedom* revealed a lack of effective theater distribution doctrine, disjointed headquarters architectures, unrefined concepts for contractor support/integration, and unresponsive logistics information systems. The Government Accountability Office, RAND, and Congress have all identified required areas of improvement and points of strategic risk in the DOD supply chain and in the department's ability to execute effective theater sustainment for the joint force from the 1990s to today.[16]

To prepare ourselves for logistics support for DFE operations, the joint force should complete and populate the BIZINT platform; use planning and exercising events to test BIZINT; and create new ways to perform logistics, partner with our allies to share business intelligence, and use business intelligence to our advantage.

First, the BIZINT platform that will host business intelligence must be completed. Currently, the estimated completion timeframe is spring 2022; however, the minimum viable product will be ready to receive data and test functionality by spring 2021. Once the minimum viable product is ready, it should be tested in a controlled manner to determine what changes are necessary to ensure intuitive and nonburdensome user interfaces and interactions. Once full functionality is ready, geographic combatant commands should begin populating business intelligence for their AORs based on their "most likely" and "most dangerous" planning scenarios.

Second, the U.S. military needs to practice planning for and using business intelligence in exercise events. Functional planners should become familiar with the BIZINT platform and understand how to filter through suppliers to determine whether requirements that they would normally source from military stock or DLA locations could (and should) be met using local vendors. Testing those decision calculations would help functional planners make the best use of both organic supplies (for example, do we use our war reserve material first, or do we save it for when the fight is in full swing and vendors are hard to find?) and nonorganic supplies. Functional planners must learn to rely on sources of supply other than those they could add to the time-phased force deployment data (TPFDD) to support operations. It is commonly known that, for any given operation, the list of TPFDD items far exceeds the strategic lift capability to move those items into theater in a timely manner. Leveraging business intelligence and local vendors' capabilities to the operations area would reduce the burden on our already overtasked strategic lift assets.

The process of developing business intelligence is an excellent opportunity to partner with our allies. Our allies know their own business environments and markets better than we ever could. By partnering with them, we could populate our vendor lists faster and easier. We could also leverage their insight to know *where* we should spend our money in their country—in a way that supports them economically while also favorably enhancing our own operations. And we could partner with our allies to ensure that we do not hurt their economy by buying out supplies and services needed by the local populace. In any exercise or real-world event, the U.S. military wields a significant amount of money. We must have a strategic plan for using that money, just as we have strategic plans for any other weapons system we use in the conduct of our operations.

Business intelligence and the associated money we use during operations are capabilities in our arsenal—indeed, they are national assets. How could we creatively employ those capabilities to our benefit? Could we spend money in areas in which we do not actually intend to operate as a feint/form of military deception? Could we use our business intelligence to "buy out" a local supply or service to prevent our enemy from using it? There are many ways to use our business intelligence and our money to our advantage. We just need to think creatively.

Conclusion

Logisticians have always struggled with the challenges of distance and time, and they have consistently demonstrated their ability to surmount those challenges. The solution to providing timely combat support will likely be a combination of host-nation support, prepositioned supplies, traditional transportation of items from established bases, and OCS leveraging commercial vendor networks.[17]

With the advent of DFE, logisticians need to be just as agile as the force they support. Success in the new environment

requires local sourcing, as traditional supply lines will be contested. These, too, are surmountable challenges; however, business intelligence data must be collected, displayed, and disseminated. Also, new ways to properly leverage business intelligence must be developed and refined during exercises, and business intelligence must be considered and trusted as a way to "buy down" risk during the planning process.

We know that past can serve as prologue. What is the U.S. joint logistics enterprise willing to do about it? JFQ

Notes

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Former Secretary of State John Kerry raises hands with Afghan presidential candidates Ashraf Ghani, left, and Abdullah Abdullah, right, at United Nations Mission Headquarters in Kabul, on July 12, 2014, after announcing deal to settle election dispute (U.S. Department of State)

Independent and Credible

Advising Afghan Security Forces During the 2019 Presidential Election

By Forest Pierce

The 2019 Afghan presidential election presented a unique opportunity to the North Atlantic Treaty Organization (NATO) Resolute Support (RS) mission. Specifically, RS leaders needed to align the coalition to support election security operations while reinforcing the independence and credibility of the Afghan-led process. Assessing this challenge required knowledge of recent Afghan history, the roles of election stakeholders, and the capabilities of the Afghan National Defense Security Forces (ANDSF).

RS supported the Afghans by advising the ANDSF at the institutional and corps levels on joint security operations to achieve unity of effort. The ANDSF delivered independent security operations on election day by way of developing a flexible operational framework to adapt to changes in the environment. The Afghans implemented joint plans, realigned coordination centers at echelon, conducted national-level rehearsals, and executed a layered security concept to improve outcomes. ANDSF senior leaders placed highly competent principals and their staff at coordination centers and leveraged lateral communication between the services to improve decisionmaking. Ultimately, RS advising

Major Forest Pierce, USA, is a Functional Area 59 Strategic Plans Officer.

Afghan Air Force security forces member mans base perimeter guardhouse, December 17, 2018 (U.S. Air Force/Clayton Cupit)

efforts highlighted five security force assistance (SFA) imperatives outlined in Joint Publication (JP) 3-20, *Security Cooperation*:

- understand the operational environment
- ensure unity of effort
- support legitimacy
- manage information
- emphasize sustainability.[1]

The RS experience during the 2019 Afghan election illustrates valuable lessons learned, as SFA activities continue to remain within the purview of the U.S. joint force for building partner-nation (PN) capacity.

The 2014 and 2018 Elections

An examination of the previous two Afghan elections reveals the potential challenges and opportunities presented in 2019. The 2014 presidential election generated a political crisis followed by an uneasy compromise. In Afghan elections, the people select the president by absolute majority vote through a two-round system. In 2014, after failing to achieve an absolute majority, the two remaining candidates—Ashraf Ghani and Abdullah Abdullah—entered a runoff election. While Abdullah achieved a significant lead over Ghani in the first-round results, Ghani won more votes during the runoff. Secretary of State John Kerry mediated a resolution between the candidates after both public unrest and accusations of fraud threatened domestic stability. This compromise produced the National Unity Government with Ghani as president and Abdullah as chief executive.[2]

Most concerns from 2014 centered on technical incompetence and public security interests. Public polling revealed a widespread sense of insecurity, distrust in the electoral process, and inadequate quantities of female officials at polling centers. Rampant voter fraud produced nearly 1.5 million invalid votes through a combination of ballot stuffing and proxy voting.[3] Also, the International Security Assistance Force assisted the ANDSF by delivering election materials to polling centers due to logistics shortcomings. The public did not perceive this election as legitimate partially due to the coalition's direct involvement.[4]

The Afghans implemented changes before the 2018 parliamentary election to address these critical issues. Fraud reduction measures included aligning registered voters to their local polling centers, introducing biometric voter verification devices, developing anticounterfeit ballots, and implementing clear election violation laws. Likewise, the security ministries issued guidance to the ANDSF to remain impartial. The NATO coalition advised the ANDSF in order to minimize perceptions of interference and to enable the first Afghan-led election in modern history. Unfortunately, most ANDSF members conducted election security operations away from their

assigned polling centers and, due to antifraud registration laws, could not vote. Nevertheless, the ANDSF maintained political neutrality, and their security operations reduced enemy attacks compared with 2014. Although not incident-free, millions of citizens turned out to vote, defying Taliban efforts to disrupt the election.[5]

Political controversy appeared again before the 2019 presidential election. Election postponements in April and July shifted the election day to September 28, 2019, while President Ghani's 5-year term officially concluded on May 22, 2019. However, Afghanistan's supreme court ruled that Ghani could remain in office and govern through the election period. Ghani's political opponents seized on this controversial ruling by painting his administration as illegitimate. Also, a possible U.S.-Taliban peace agreement loomed over the campaign season until President Donald Trump abruptly canceled peace talks on September 7, 2019, following a Taliban attack in Kabul that killed coalition members.[6] This U.S. policy change shifted Afghan and RS focus from peace talks back to election preparations.

Election Stakeholders

RS planners needed to understand the critical organizations, relationships, and influence pathways to advise Afghan planning efforts. The Election Support Group consisted of donor nations—Australia, the European Union, Germany, Italy, Japan, Denmark, Norway, Sweden, the United Kingdom, and the United States—that contributed funding through the United Nations Assistance Mission Afghanistan (UNAMA). Under UNAMA, the UN Electoral Support Team provided technical advice to the Afghan Independent Election Commission (IEC)—the constitutionally mandated institution responsible for administering elections.[7] Finally, the Elections Complaints Commission worked alongside the IEC to ensure transparency, preserve voters' rights, and adjudicate complaints.[8] Other vital organizations included the Ministry of Finance and Ministry of Women's Affairs, which disbursed election funds and recruited female officials, respectively.

The ANDSF, known as the "security pillars," provided security and logistics support. The Ministry of Interior Affairs (MOI) served as lead, directing the national police to provide election security. The Ministry of Defense (MOD) supported MOI efforts by controlling military forces and assuming responsibility to transport election materials. The National Directorate of Security provided intelligence collection through a network of agents. Last, the provincial governors, chiefs of police, and army corps commanders integrated security planning at the regional level. The security pillars needed to conduct iterative joint planning and rehearsals to guarantee unity of effort across the country.

The RS mission leveraged key individuals and organizations to advise Afghan stakeholders through touchpoints at every echelon. General Austin Miller, USA, commander of the RS mission, maintained relationships with Afghan government and security institution leaders to ascertain Afghan readiness and direct coalition efforts. Sir Nicholas Kay, the NATO senior civilian representative, communicated with Afghan government officials and the international community to align RS efforts with NATO's political goals. The Ministerial Advisory Groups for Interior (MAG-I) and Defense (MAG-D) directly mentored MOI and MOD officials. RS election support planners attended ANDSF meetings and led working groups with joint, interagency, and multinational partners. Finally, the Train Advise and Assist Commands (TAACs) maintained relationships with regional ANDSF leaders and provincial governors. RS advisors at echelon attended Afghan-led security *shura*s in the weeks before election security planning—reassuring their reliable partners at the point of need.

Planning and Preparation

The Afghan security pillars and RS advisors began planning in earnest to meet election requirements. In early July, the MOI and MOD published Joint Plan 232, which directed regional police and army commanders to develop localized security concepts.[9] On July 23, the MOD hosted key ministries, national and regional security leaders, and the IEC during a senior-level rehearsal. RS advisors observed as their Afghan counterparts articulated a combined plan focused on three distinct phases: preelection, election day, and postelection. After this rehearsal, the security pillars issued Joint Plan 2025, which provided a detailed threat assessment, codified specific tasks, outlined the joint command structure, and refined the operational timeline.[10] This joint plan directed regional ANDSF leaders to conduct local rehearsals with provincial stakeholders.

The Afghans planned to protect polling centers using the "Rings of Steel" concept that was successfully implemented during the 2018 parliamentary election. This concept encompassed three overlapping security belts centered on a polling center. The first security belt included Afghan police—with National Directorate of Security intelligence support—securing the immediate area around the polling center. The second security belt involved the army establishing an outer cordon to protect the first belt. The third security belt incorporated both Afghan army and special forces disruption patrols beyond the second belt. The security pillars scaled their assigned forces at each belt according to local threat assessments. The ANDSF planned to emplace Rings of Steel around each polling center in the week before election day.

The Afghans utilized a national command and control architecture to synchronize election security operations. As the lead ministry, the MOI's National Police Coordination Center maintained situational awareness through lateral communication from the MOD's National Military Coordination Center and reporting from regional Operations Coordination Centers. Two collocated national coordination centers, the Central Special Operations Coordination Cell (CSOCC) and Combined Situation Awareness Room (CSAR), also complemented joint coordination. The

Former Chairman of the Joint Chiefs of Staff General Joseph F. Dunford, Jr., meets with U.S. Army General John W. Nicholson, Jr., former commander of NATO-led Resolute Support Mission and U.S. Forces–Afghanistan, while visiting Train Advise Assist Command–North, in Mazar-i-Sharif, March 20, 2018 (DOD/Dominique A. Pineiro)

CSOCC planned special operations missions, while the CSAR coordinated ANDSF operations and directed kinetic strikes. The Afghans planned to assign competent leaders and staff to these coordination centers to ensure effective communication.

The ANDSF conducted two final national-level rehearsals in September—the national rehearsal on September 4 and the conditions check on September 21. The MOI held both rehearsals and hosted the Afghan ministries, security pillars, and international observers to participate. ANDSF senior leaders moderated each event and disseminated guidance to subordinate commanders through a video teleconference (VTC) system. The conditions check provided Afghan and RS leadership one final opportunity to assess readiness before the ANDSF deployed units according to the Rings of Steel concept on September 22. Afghan leadership used these two rehearsals to synchronize operations, outline the command and control architecture, and identify risks prior to execution.

Election Operations Begin

Preelection day operations focused on reassuring Afghan voters by deploying thousands of Afghan security forces as well as ensuring the secure distribution of sensitive election material (SEM). The Afghans needed to transport almost 500 tons of SEM across 34 provinces in less than a month, from August 31 to September 27—a massive security and logistics effort. ANDSF leaders remained focused on securing ground SEM movements, while Taliban leaders instructed their fighters to prevent the election by any means.[11] Prior to execution, RS advisors hosted working groups with the IEC and security pillars to align Afghan air and ground assets against delivery requirements. During execution, the ANDSF coordinated movement operations at national coordination centers and ensured that IEC representatives traveled with SEM shipments to maintain a chain of custody.

Enemy activity immediately complicated SEM distribution. In early September, enemy attacks along northern ground routes forced SEM convoys to return to Kabul. Based on this setback, the Afghan air force (AAF) began contingency planning in order to transport almost 23,000 pounds of SEM via aircraft to the northern provinces. The AAF quickly executed this additional movement without adversely affecting the delivery timeline. Meanwhile, RS advisors struggled to maintain awareness of SEM delivery due to the limited coalition footprint across the country. Advisors bridged this information gap through two approaches: First, MAG-I and MAG-D advisors reviewed reports from national coordination centers, and,

second, TAACs submitted daily status reports from regional coordination centers. RS planners merged these dual reporting chains each evening to generate a common operating picture. Armed with this understanding, RS leaders could gauge the Afghans' SEM distribution status relative to the original plan.

On September 22, the ANDSF began to establish the Rings of Steel in each province. These cordons safeguarded local SEM storage sites in addition to securing polling centers. Meanwhile, Afghan special forces and the AAF conducted shaping operations to disrupt enemy forces through targeted strikes. TAACs communicated with Afghan coordination centers, corps commanders, and provincial chiefs of police to keep them updated on the security situation. On September 27, the IEC—based on MOI threat assessments—announced the closure of roughly 8 percent of polling centers across the country to reduce the risk to voters.[12] That same night, the ANDSF completed SEM delivery to each polling center according to the planned timeline.

Election Day

As polls opened on September 28 the ANDSF held its security posture, while RS advisors maintained communication with ANDSF senior leaders. The ANDSF conducted 13 special operations and 13 airstrikes to target enemy forces preparing for attacks just beyond the security belts.[13] Afghan security cordons thwarted numerous direct attacks, and, subsequently, the enemy mainly used indirect fire to disrupt voting.[14] While the number of enemy attacks increased compared with the 2018 parliamentary election, these attacks proved less effective and resulted in fewer casualties. General Miller noted that the ANDSF took the lead in security operations and performed well due to the coordination between the security ministries and civil authorities.[15]

The Afghan army chief of the general staff, Lieutenant General Waziri, conducted a morning and evening azimuth check on election day with the national coordination centers and subordinate commanders. Using VTC, each corps commander provided an update on local security, voting atmospherics, and areas of risk. Likewise, each coordination center described ongoing offensive operations and provided recommendations to mitigate corps commanders' concerns. ANDSF leaders also discussed the operational transition to SEM retrieval once voting concluded that evening. In fact, the Special Mission Wing commander provided his helicopter fleet to assist army units retrieving SEM that night. Advisors remotely observed the VTCs and disseminated discussion points across the RS mission to create a shared understanding and align enablers to support Afghan operations. Overall, the security pillars expressed confidence in the security situation and their ability to shift to retrieval operations that evening.

Postelection Operations

The Afghans immediately transitioned to SEM retrieval operations in the early hours of September 29. The IEC's ambitious retrieval timeline aimed to return approximately 160,000 pounds of SEM—consisting of the biometric voter verification devices and tally sheets—to the IEC headquarters in Kabul within 7 days on October 5. Similar to distribution, Afghan security forces escorted each SEM movement, while IEC representatives maintained custody during shipment. First, IEC workers prepared ballot boxes and then shipped these items to secure district centers. The next step involved moving district center shipments to the provincial storage centers. Last, the Afghans consolidated provincial shipments for air and ground movements back to Kabul. Any delay in retrieval could slow vote tallying in Kabul, affecting the date of preliminary results and a possible runoff election. The ANDSF needed to maintain tempo during ballot retrieval, especially since imminent winter weather would make roads impassable and limit helicopter flights.

Nine days later, the Afghans effectively returned all SEM to Kabul. However, the ANDSF did not meet the original October 5 timeline as harsh winter weather delayed northern air shipments. Despite this setback, by the seventh day, the Afghans retrieved 31 of 34 provincial SEM shipments back to Kabul. This achievement alone enabled the IEC vote counters in Kabul to continue their work without interruption. Similar to distribution, RS advisors maintained awareness by merging the Afghan coordination center and TAAC reports to assess progress. Overall, the ANDSF performed admirably during retrieval—particularly the AAF, which transported 51 percent of SEM during 16 provincial-level air movements.

Themes from the 2019 Presidential Election

The ANDSF provided election security operations through planning, coordination, and senior leader emphasis. RS advising throughout this process enabled the ANDSF to deliver an Afghan-led independent election. Reviewing the 2019 Afghan presidential election reveals several themes.

First, RS personnel advised reliable Afghan partners at the point of need to enable their success. MAG-I and MAG-D advisors assisted the national coordination centers in improving reporting and developing an ANDSF common operating picture. Frequent engagements between RS and ANDSF senior leaders enabled the Afghans to refine operational guidance to subordinate forces based on changing conditions. RS planners provided white papers to Kabul-based embassies and international organizations, empowering these entities to engage UNAMA and the IEC with advisor analysis. Additionally, RS planners collaborated with ANDSF planners, ministries, and the IEC during working groups—assisting participants in identifying areas for further review. All these iterative engagements assisted Afghan planners in aligning personnel, resources, and attention toward planning priorities.

Second, the ANDSF continue to improve their ability to execute joint operations. The security pillars published joint plans and conducted three national-level rehearsals to synchronize operations. While conducting simultaneous offensive

A-10 Thunderbolt II assigned to 163rd Fighter Squadron flies mission over Afghanistan, May 28, 2018 (U.S. Air Force/Corey Hook)

operations, the ANDSF used their organic air and ground lift assets to distribute and retrieve SEM across the 34 provinces. The AAF rapidly reallocated aircraft to transport an additional 115 tons of SEM to the northern provinces without extending the distribution timeline. Moreover, the Afghans recovered all SEM within 9 days through coordinated ground and air movements. The Rings of Steel concept facilitated voter access to polling centers and prevented enemy forces from conducting high-profile attacks. Compared with the 2014 presidential election, the ANDSF displayed an improved ability to conduct election operations and secure the voting population.[16]

Third, ANDSF senior leaders reinforced joint communication and coordination. Within joint plans and rehearsals, the security pillars outlined the communication architecture and specific responsibilities of national coordination centers. The Afghans also emphasized the importance of lateral communication at the national level between the National Police Coordination Center, National Military Coordination Center, CSAR, and CSOCC. Before election day, the Afghans collocated the CSAR and CSOCC to improve joint planning and facilitate rapid decisionmaking. At every echelon, the ANDSF placed key leaders and staff at their coordination centers to bolster these organizations with competent individuals. These initiatives strengthened interaction between the security pillars and directly contributed to operational success.

Fourth, political controversy following election day overshadowed ANDSF accomplishments. International observers noted that polling center workers did not consistently follow voter verification procedures, and many returned ballots contained inconsistencies.[17] The subsequent dispute forced the IEC's decision to count only biometrically verified ballots, invalidating nearly 300,000 votes. Abdullah's campaign protested the announcement, claiming that the IEC's ruling primarily affected regions consisting of Abdullah's political base.[18] After months of delays and audits, the IEC proclaimed Ghani as the first-round victor with 50.6 percent of the vote, and Abdullah quickly declared the results fraudulent. Confusion followed when Ghani and Abdullah each held presidential inaugurations on March 9, 2020—shortly after the U.S.-Taliban peace agreement on February 29, 2020.[19] After months of negotiations, both parties signed a power-sharing agreement on May 17, 2020, whereby Ghani retained the presidency and Abdullah obtained leadership of the newly created High Council of National Reconciliation.[20] Despite ANDSF efforts to deliver a reasonably secure election, the ensuing political crisis tarnished government legitimacy and threatened Afghanistan's stability.

Lessons for Security Force Assistance

JP 3-20 outlines seven SFA imperatives that promote capable and competent partner-nation security forces.[21] The RS experience highlights five of these SFA

imperatives: Understand the operational environment, ensure unity of effort, support legitimacy, manage information, and emphasize sustainability. A joint task force that implements these imperatives during SFA operations will likely improve a PN force's ability to provide security when needed.

First, a joint task force must *understand the operational environment* by identifying all actors influencing the environment in order to define the goals and methods for developing PN security forces and their institutions.[22] RS endeavored to understand the environment by identifying the key international and PN stakeholders within the election process. RS advisors established relationships with nonmilitary organizations—such as the Election Support Group, UNAMA, and the IEC—to understand election mechanics and stakeholder concerns. These connections proved invaluable, as RS advisors worked alongside ANDSF planners as they developed the Afghan security and SEM distribution plans. Likewise, RS advisors leveraged relationships with reliable Afghan partners to gauge ANDSF capabilities, limitations, and challenges. Armed with this knowledge, advisors collaborated with nonmilitary organizations and the ANDSF to ensure the feasibility of the Afghans' election security plan. Ultimately, the joint task force should recognize that the operational environment will continually change as PN security forces, domestic organizations, international actors, and enemy forces shape it.

Second, a joint task force needs to *ensure unity of effort* during SFA operations to align efforts from multiple organizations, including those outside its control, and to avoid confusion.[23] RS leadership ensured unity of effort at national and regional levels by nesting coalition initiatives to support the Afghan-led process. At the national level, RS advisors interfaced with Afghan ministries and participated in Kabul-based working groups to align joint, interagency, and multinational efforts. At the regional level, the TAACs advised provincial governors and local ANDSF leaders as the Afghans refined their provincial security plans. RS headquarters informed subordinate headquarters by disseminating notes from Afghan planning sessions and synchronizing advising tasks through mission orders. RS maintained unity of effort by implementing a continuous planning process at echelon and by disseminating key information rapidly across the formation. Ensuring unity of effort remains a persistent challenge during SFA activities; however, the joint task force can mitigate risk by influencing PN security forces to focus on the essential areas that will produce the greatest impact.

Third, a joint task force should *support legitimacy* by developing competent security forces that contribute to the lawful governance of the PN's population.[24] RS supported legitimacy by reinforcing the authority of the Afghan security ministries and the ANDSF to deliver election security. RS leaders affirmed Afghan ownership as the ANDSF determined their approach for allocating resources, prioritizing organic assets, and mitigating risk. For example, the ANDSF Rings of Steel concept layered the unique capabilities of each security service to facilitate voter access at polling centers. RS advisors observed as their Afghan partners led three national-level election rehearsals that incorporated the key ministries, ANDSF leaders, the IEC, and diplomatic attendees. Importantly, international observers participated in the two final rehearsals to verify that the security plan adhered to the rule of law and ensured transparency. Afghan joint plans underscored transparency by directing the ANDSF to maintain political neutrality and focus on protecting the population at polling centers. RS underpinned legitimacy by supporting the Afghan-led operation and remaining in an advisory role. The joint task force can emphasize legitimacy by encouraging the PN's security forces to take the lead whenever possible, reinforcing its competence in the eyes of its members and the PN population.

Fourth, a joint task force must *manage information* by incorporating inputs from PN security forces and multinational partners, while coordinating information themes and messages to mitigate propaganda efforts by hostile forces.[25] RS managed information received from both Afghan coordination centers and internal coalition reports. ANDSF leaders codified the Afghan command and control structure during rehearsals to identify each coordination center's roles and responsibilities. The ANDSF underscored the critical role of the coordination centers by placing competent personnel at the national and regional centers. This initiative paid dividends as the coordination centers maintained situational awareness about SEM distribution, election day operations, and SEM retrieval. RS advisors bridged information gaps by reviewing daily Afghan reports from national and regional coordination centers to assess the Afghan SEM distribution and retrieval status. Advisors in Kabul consolidated Afghan reports to create a common operating picture for distribution across the RS enterprise, enabling the subordinate TAACs to focus their advising efforts. Additionally, advisors participated in ANDSF security briefings over a VTC system—facilitating real-time information exchange between RS and ANDSF leaders on election day. During this complex operation, RS information management empowered advisors to focus their efforts by identifying the point of need. Effective information management becomes critical for the joint task force as it must receive, assess, and leverage relevant input from both multinational sources and PN security forces.

Fifth, a joint task force should *emphasize sustainability* by managing its ability to deliver SFA activities throughout the operation and the PN security forces' ability to support their capabilities independently over time.[26] RS prioritized sustainability by providing persistent advising while emphasizing the ANDSF's capacity to continue operations. Any shortfall in Afghan operational sustainment could tarnish the legitimacy of the election, especially if RS needed to intervene to provide election security or SEM distribution. Therefore, RS advisors continually engaged their ANDSF counterparts to develop Afghan solutions to the election security challenge. This approach encouraged Afghan planners to holistically assess the situation, determine their available combat power, and allocate

personnel and resources accordingly. RS placed advisors at national coordination centers to reinforce these Afghan nodes as they directed forces, distributed supplies, and identified areas of need. The Afghans demonstrated flexibility to adapt and continue operations, particularly when the AAF delivered SEM to the northern provinces after ground travel became infeasible. Emphasizing sustainability means that the joint task force must broaden its continuous advising efforts to bolster independent PN security force operations.

Conclusion

On election day, the ANDSF executed independent security operations through joint planning, effective communication, rehearsals at echelon, and fully engaged senior leadership. RS focused advising at the institutional and corps levels to align all efforts, enabling the ANDSF to develop a joint security plan that blunted many enemy attacks.[27] However, the subsequent political crisis eclipsed the ANDSF's achievements and placed future stability in doubt. Overall, RS advisors recognized that the security pillars continue to improve their ability to conduct joint operations and support Afghan institutions.

The SFA imperatives outlined in JP 3-20 capture many of the lessons learned by the RS mission during the 2019 election. A comprehensive understanding of the operational environment enables the joint task force to account for all actors that shape the environment and to develop an approach that assists PN security forces and their institutions. Ensuring unity of effort necessitates continuous engagement by the joint task force to synchronize efforts from the PN's security forces, institutions, and key interagency organizations. The joint task force must support legitimacy by influencing the PN's security forces to take the lead during operations, reinforcing its role as the population's security provider. Effective information management remains critical as the joint task force incorporates reports from both multinational sources and PN security forces. Finally, the joint task force must ensure that it can consistently support SFA activities and that PN security forces can sustain their independent operations. The lessons learned from advising experiences will remain relevant to the U.S. joint force as it continues to build PN capacity in areas of crisis through SFA activities. **JFQ**

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Dolli Lane, 96th Medical Group laboratory technician, reviews sample through microscope November 19, 2015, at Eglin Air Force Base, Florida, after recently discovering rare spirally twisted bacteria, known to cause tickborne relapsing fever, and cultured by Centers for Disease Control (U.S. Air Force/Ilka Cole)

The Myths of Lyme Disease

Separating Fact from Fiction for Military Personnel

By Montgomery McFate

I love everything in the world. Except for ticks.

—Dalai Lama

No one is immune to, and there is no cure for, tickborne diseases. Just one tick bite can destroy a person's career. At age 43, Air Force Colonel Nicole Malachowski was found unfit for duty due to neurological damage resulting from a tickborne disease. Colonel Malachowski was the first woman to fly with the Thunderbirds and then commanded the 333rd Fighter Squadron. She also served as the deputy director for U.S. Air Force Readiness and Training in the Office of the Under Secretary of Defense for Personnel and Readiness and as the executive director of the White House "Joining Forces" Initiative (2015–

Dr. Montgomery McFate is a Professor at the U.S. Naval War College.

2016).[1] While she was commanding an F-15 fighter squadron, Colonel Malachowski began experiencing a rapid onset of multiple symptoms. She wrote that she suffered from

intractable pain, insurmountable fatigue, cognitive dysfunction and major problems with my speech and short-term memory. I endured disorientation, confusion, anxiety and even moments of temporary paralysis. I was unsafe to be left alone. I could not play with my children, care for myself, or interact with my husband. . . . There were times I would have welcomed death. I thought I was tough as a combat-proven fighter pilot but tickborne illness destroyed me. It brought me to my knees and ruthlessly broke me.[2]

Servicemembers are particularly at risk for Lyme disease; they live, work, and play on bases where Lyme is rampant. Some 75 percent of all U.S. military installations are located in states where 99 percent of the approximately 500,000 tickborne disease cases reported to the Centers for Disease Control and Prevention (CDC) from 2004 to 2016 occurred.[3] Moreover, training drills often take place in woods and fields that harbor a variety of tick species. In their leisure time, many Servicemembers and veterans, and their families, also enjoy hunting, fishing, camping, and hiking in the great outdoors, which increases their risk of encountering ticks.[4] Lyme disease is most prevalent in rural counties with relatively high socioeconomic status, abundant forestation, wet conditions, and mid-range temperatures. These American counties tend to be exactly the sort of places where veterans like to retire, and indeed, "Lyme disease incidence rates were higher in counties with greater military veteran population compositions."[5]

Commonly referred to as Lyme disease, *Lyme borreliosis* was first discovered in the United States in Lyme, Connecticut, in 1976. More than 20 children developed what doctors initially mistook for a juvenile form of rheumatoid arthritis. Strangely, each of these children had exhibited a rash resembling a bull's eye, which led the doctors to see a link between the arthritic symptoms and the bite of an insect. In the early 1980s, Dr. Wilhelm Burgdorfer discovered that the causative agent of Lyme infection was a spirochete type of bacteria, subsequently named *Borrelia burgdorferi* in his honor. After extensive field investigations, *Ixodes scapularis*, commonly referred to as the deer tick or blacklegged tick, was identified as the main vector of Lyme infection east of the Rocky Mountains. In areas west of the Rocky Mountains, *Ixodes pacificus*, also known as the western blacklegged tick, was the primary vector.

Lyme disease is now a serious epidemic in the United States, with positive lab tests reported from all 50 states and Washington, DC.[6] The CDC calculates annual U.S. incidence at more than 300,000 cases; however, true incidence is certainly higher.[7] Although the majority of cases have been reported from the northeastern part of the country, infected ticks can be found in about 50 percent of U.S. counties.[8] An increase in both temperature and humidity as a result of climate change is predicted to increase the number of Lyme cases by more than 20 percent in the coming decades.[9] In short, Lyme disease has already reached epidemic proportions in the United States, and the situation will certainly get worse. As the disease spreads, military personnel, veterans, and their families will be at even higher risk for contracting the disease.

More than 40 years after children in Connecticut began getting sick from tick bites, there is still no cure for many of the people who have been bitten. A bitter political battle has ensued in the United States among professional medical organizations, patient advocates, and even the CDC concerning the origin, diagnosis, and treatment of the disease. Mainstream medical opinion has been that there is no such thing as *chronic* Lyme because the bacteria could not survive treatment with antibiotics, evade detection, and cause ongoing symptoms.[10] However, individuals who suffer from the disease and patient advocacy organizations point to their own experiences as evidence that the disease may linger for years. (Indeed, many of the most recent medical studies indicate that Lyme *can* evade detection and cause severe chronic symptoms.) As a result of the so-called Lyme wars, the disease itself has become shrouded in a number of myths. Separating fact from fiction is critical for military personnel and their families since members of the Armed Services could face a heightened risk of contracting Lyme disease based on their occupations, locations, and recreational activities.

It Is Not That Severe: False

Lyme disease can produce a wide variety of symptoms, but typical signs of infection are a round red rash at the site of the tick bite, fatigue, swollen joints, headache, fever, night sweats, cognitive impairment, and sensitivity to light.[11] Many medical professionals in the United States tend to minimize the dangers of Lyme and may mistakenly believe that the symptoms of the disease are not severe. For example, in the words of Dr. Katerina Silverblatt of Heights Pediatrics in Brooklyn, "We've never had a complication from Lyme that would be of any consequence."[12]

On the contrary, many complications from Lyme disease are severe indeed. For example, the spirochete bacteria of Lyme disease can penetrate the heart, even causing death.[13] Dr. Neil Spector, who taught medicine at Duke University, began experiencing muscle pain, fatigue, and irregular heartbeat.[14] Doctors who treated him could find nothing wrong and dismissed his symptoms as stress related. "I was confused," recalled Dr. Spector. "Should I believe a team of doctors assuring me that nothing was wrong? Or follow my gut instinct exhorting me to unearth the mystery responsible for my downwardly spiraling health? I was beginning to question my sanity." Left undiagnosed and untreated, the Lyme bacteria entered his heart. Only a heart transplant initially saved Dr. Spector's life, but he lost his battle with Lyme disease in June 2020.[15] His experience was not unusual: Cardiac manifestations of *Borrelia burgdorferi* infection occur in up to 8 percent of patients,[16] with most of the severe cases occurring in men of military age.[17]

Technical Sergeant Jessica Roofe, 86th Aerospace Medicine Squadron NCO in charge of epidemiology, prepares tick to be sent for testing, September 9, 2016, at Ramstein Air Base, Germany (U.S. Air Force/Tryphena Mayhugh)

In addition to heart problems, Lyme can affect the brain. Lyme bacteria can cross the blood-brain barrier, infecting the central nervous system. This manifestation of the disease—called Lyme neuroborreliosis—occurs in up to 15 percent of patients bitten by an infected tick.[18] Symptoms include meningitis, facial palsy, encephalitis, and stroke.[19] When Lyme disease infects the central nervous system, it may also cause severe psychiatric symptoms such as psychosis, schizophrenia, hallucinations, and dementia.[20] In 2011, researchers at the International Alzheimer's Research Center in Switzerland found evidence of spirochetes (the type of bacteria that causes syphilis and Lyme disease) in the brains of Alzheimer's patients,[21] confirming that Alzheimer's disease may have a bacteriological component and that *Borrelia burgdorferi* may play a role.[22]

Those who suffer from Lyme disease have an increased risk of suicide. Of course, depression and chronic pain might play a role in the suicide risk for Lyme patients, but scientists also believe that biological effects of Lyme on the nervous system (including brain inflammation, neuronal dysfunction, and white matter encephalopathy) could be a factor.[23] One study demonstrated 33 percent of late-stage Lyme disease patients were suicidal, and by conservative calculations, about 1,200 people infected with Lyme commit suicide each year.[24] The risk of suicide is highest in children. One study demonstrated 41 percent of children who had been diagnosed with Lyme disease had suicidal thoughts and 11 percent had made suicidal gestures.[25]

Statistics on suicide often seem abstract, but the experience of one veteran might help illuminate the psychiatric dangers of Lyme disease:

I woke up on a beach out of the country with a bottle of scotch in one hand and my handgun in the other. I did not remember driving there. My doctor said I was in a psychogenic fugue state. My life was being destroyed by Lyme disease and no one had a clue. At work, I had been highly awarded throughout my career, but it became a real struggle and I did not understand why. When I went to work that morning, I was tired, frustrated, and in a state of dread and fear, and I drove 100 miles past the base. I only drank a small amount of the scotch; the bottle was still nearly full. I have never been a big drinker and as a result I fell asleep on the beach. I woke up the next day wondering how I got there and why and drove back to the base and turned myself in for Away Without Leave. After being diagnosed, treated and having recovered, I can relate to other veterans living with undiagnosed and untreated Lyme disease.[26]

Another severe complication of Lyme disease is the transmission from a pregnant woman to her unborn baby. In a systematic review of the medical case studies from the United States, Europe, and Asia between 1969 and 2017,

scientists identified negative outcomes for the fetus or newborns in 61 percent of pregnancies, including spontaneous miscarriage, stillbirth, and death shortly following birth. Babies who survived experienced a variety of congenital irregularities and health issues, including jaundice, respiratory distress, and heart abnormalities.[27] Autism spectrum disorders are also associated with Lyme disease.[28] Interestingly, states' prevalence of autism spectrum disorder correlate with their prevalence of Lyme.[29]

Many people—including many medical professionals—discount the severity of Lyme disease. Yet scientists who study Lyme disease recognize that the closest biological analogy to Lyme is syphilis. Like syphilis, Lyme disease is caused by a highly invasive pathogen with a unique form called a spirochete. Like syphilis, the Lyme disease spirochete can invade the central nervous system and other major systems of the human body. Also like syphilis, Lyme disease begins with a localized infection, spreads throughout the body, and may result in chronic degenerative disorders and possible mortality.[30] Indeed, the bacteria that cause syphilis and Lyme are so similar that scientists who study syphilis use Lyme bacteria as a surrogate in the lab.[31]

It Is Easy to Diagnose: False

Ruben Lee Sims enlisted in the Air Force and served in Vietnam. While serving in the military, Sims was bitten by a tick and contracted Lyme disease. Military doctors neither diagnosed nor treated Sims appropriately and instead discharged him after 14 years of service in 1984, citing "hypochondriasis with psychogenic pain disorder" (meaning pain from psychological factors rather than a physical cause). After his discharge from Active duty, Sims entered the care of the Department of Veterans Affairs (VA). He suffered from multiple symptoms common to late-stage chronic Lyme: vision problems, night sweats, joint swelling, heart palpitations, and depression. Despite his classic Lyme symptoms, the VA refused to perform the tests that could have confirmed the disease and instead referred him to a psychiatrist. "Just ask any VA doctors whether or not they understand Lyme disease," Sims wrote in a letter to his Member of Congress. "The likely response is either no or just take the CDC tests. Surely, they are doctors, but, they have not been trained to clinically diagnose Lyme disease. . . . They are visibly shaken and uncomfortable with Lyme disease. Consequently, veterans with Lyme disease are misdiagnosed and mistreated." In 2015, Sims wrote to President Barack Obama for help. The VA responded to the Presidential inquiry and hired a Lyme disease specialist, who finally diagnosed Sims with the disease after 33 years of misdiagnosis. Sims wrote:

I was misdiagnosed for over three decades and left untreated for Lyme disease. This led to homelessness. Survived attempted suicides. Untreated patients can lose everything, as I did, and become part of the unemployed, underemployed, disabled, and homeless populations that die by suicide and commit violent acts related to the psychological impact of Lyme disease.[32]

Why is Lyme disease so difficult to diagnose? In the early stage of the disease, approximately 50 percent of patients develop an *erythema migrans*, or bull's-eye rash, at the site of the bite.[33] The other 50 percent do not develop a rash but experience flu-like symptoms, including fever, headache, and joint swelling. Many people simply assume that they had a case of the flu, never suspecting that their symptoms were caused by an infected tick.

Suspecting that their symptoms might be Lyme disease, some individuals go to their primary care doctor and get tested. The only type of test currently available for Lyme disease is a serological assay, or blood test, that detects whether the body has developed antibodies in reaction to the presence of the bacteria. Antibodies may not develop immediately, so if the test is taken too soon after a person is bitten by a tick, the results will be negative. Moreover, individuals with compromised or weak immune systems may not produce detectable levels of antibodies in response to an infection, and so they will test negative when in fact they are actually infected.

Most doctors use a two-tier blood test for Lyme diagnosis, which was developed by the Food and Drug Administration, CDC, and others in 1994 and adopted by the Infectious Diseases Society of America as a standard protocol. The first step is an enzyme immunoassay (enzyme-linked immunosorbent assay, known as ELISA) followed by an antibody test (known as the Western blot). Not only is the accuracy of these tests a dismal 50 to 60 percent,[34] but requiring a positive result on two different tests for a diagnosis excludes many patients who actually do have Lyme disease. A 2005 survey of patients by the California Lyme Disease Association revealed that 73 percent of patients were denied a diagnosis for Lyme disease at least once due to a negative ELISA test result according to the CDC criteria.[35]

This two-tier diagnosis system was never intended to be used for the diagnosis of Lyme disease. Rather, it was developed by the CDC as a "surveillance case definition," which is "a set of uniform criteria used to define a disease for public health surveillance."[36] Only patients who test positive according to the surveillance case definition for any particular disease are counted in epidemiological reporting. For Lyme disease, the surveillance case definition is an acknowledged tick bite, the appearance of a bull's-eye rash, and, for those who do not live in a region where Lyme is common, laboratory evidence of infection.[37] Medical doctors generally use the CDC surveillance case definition to diagnose patients, and insurance companies often require patients to meet these criteria before they will cover medical care. However, as the CDC notes, "Surveillance case definitions are not intended to be used by healthcare providers for making a clinical diagnosis or determining how to meet an individual patient's health needs."[38] In short, the misinterpretation and misapplication of CDC epidemiology guidelines by the medical community make Lyme disease even more difficult to diagnose because it excludes a vast number of patients through the use of excessively narrow criteria.[39]

Colonel Nicole Malachowski, USAF (Ret.), former commander of 333rd Fighter Squadron, first female pilot selected to fly as part of Air Force Air Demonstration Squadron "Thunderbirds," and ambassador for Wounded Warrior Project, shares her story with base personnel during visit to Schriever Air Force Base, Colorado, December 19, 2019 (U.S. Air Force/Katie Calvert)

Lyme disease is also difficult to diagnose because ticks may transmit multiple pathogens in addition to *Borrelia burgdorferi*, many of which have symptoms that are similar to Lyme and occur in conjunction with it. Lyme disease is bacterial, but other tickborne diseases can be parasitic or viral. One common coinfection of Lyme disease is babesia, which is caused by a parasite that infects red blood cells and causes headache, nausea, mood changes, and in some cases kidney or heart failure. Viral tickborne infections, such as the Powassan virus, cause swelling in the brain and have a 10 percent mortality rate. No treatment exists for Powassan virus. In the past few years, the Asian longhorned tick has been discovered in the United States. These ticks can transmit a type of hemorrhagic fever as well as an enzyme that causes an allergy to red meat. These pathogens cannot be detected by the standard Lyme disease blood tests, and antibiotics used successfully for Lyme patients may not effectively treat these coinfections.

Given the difficulty of diagnosing Lyme disease due to coinfections, exclusionary diagnostic criteria, inaccurate testing, and lack of clear symptoms, patients must often rely on luck. In June 2019, the *New York Times* published an article titled "My Son Got Lyme Disease. He's Totally Fine," which recounted how the author's son developed a swollen knee. After a magnetic resonance imaging scan showed inflammation on the boy's knee and ankle, an orthopedist suggested it might be juvenile arthritis or an autoimmune disorder. Treatment for inflammation was not effective, so other causes for the strange symptom were sought. The mystery was solved only after the author's husband had a chat with his squash partner—who happened to be a doctor.[40] This lucky little boy got a quick diagnosis and was prescribed antibiotics. But imagine if the father of the family had not played squash regularly with a doctor. In the absence of a bull's-eye rash, it might have taken years to get a correct diagnosis and even longer to get adequate treatment.

It Is Easy to Treat: False

Standard medical practice is to prescribe 28 days of antibiotics for treatment of Lyme disease, and many medical professionals believe that this is sufficient to cure it. In the words of Dr. Eugene Shapiro, professor of pediatrics and epidemiology at Yale, for example, "It's baloney that you can't cure Lyme disease; it's eminently curable."[41]

Unfortunately, in more than 50 percent of cases, Lyme disease is not cured by a single round of antibiotic therapy.[42] These cases are designated as *chronic Lyme* or *post-treatment Lyme disease* (PTLD). Individuals may appear to respond well to the initial treatment with antibiotics and experience a relief of symptoms, but

Dr. Willy Burgdorfer inoculating Ornithodoros ticks, May 1954 (Rocky Mountain Laboratories Historical Collection/Nicholas J. Kramis)

then relapse either months or years later. A subsequent round of antibiotics may lead to the same results. In some cases, this pattern of response and relapse continues for decades. A recent study estimates that the number of people in the United States suffering from PTLD will exceed 2 million by the end of 2020.[43]

Many scientists who study Lyme disease have struggled with the question of why 20 percent of patients fail to respond to treatment with antibiotics. One of the first avenues of exploration has been to determine whether Lyme, like other bacteria such as staph and tuberculosis, could develop a resistance to antibiotics. The bacteria that cause Lyme disease, however, do not develop antibiotic resistance. According to one study, "Given that antibiotic resistance has not been observed for *B. burgdorferi*, the reason for the recalcitrance of late-stage disease to antibiotics is unclear."[44] With that line of inquiry shut down, scientists have proposed and tested different theories, including the possibility that chronic Lyme is actually the result of coinfections from the original tick bite[45] or that it is simply an autoimmune response.[46] Some members of the medical establishment have dismissed the existence of chronic Lyme altogether on the grounds that it "includes a broad array of illnesses or symptom complexes for which there is no reproducible or convincing scientific evidence of any relationship to *B. burgdorferi* infection."[47]

From a diagnostic perspective, the problem with chronic Lyme is that the standard diagnostic tests for infection are often negative and, thus, there is no evidence of actual infection. As Dr. Marcelo Campos at Harvard Medical School noted:

Conventional medicine has a hard time treating something we cannot see or isolate. However, we cannot ignore that people's lives changed after the diagnosis of Lyme disease. Their suffering is real. And the frustration is widespread. On one side, we have distressed patients tired with the lack of answers; on the other side, we have doctors who cannot find a biological proof of what is happening.[48]

One reason that biological proof of an existing infection cannot be found—as scientists have recently discovered—is that Lyme bacteria are actually shape shifters: When exposed to a hostile environment of antimicrobial drugs, the bacteria change from a spirochete to a round body or "cyst" form.[49] The most common treatment for Lyme disease—a course of doxycycline—kills 98 percent of the Lyme bacteria but actually induces the surviving 2 percent of Lyme bacteria to shape shift to cyst form.[50] In other words, when a tick bite is treated with doxycycline, the antibiotic can force the Lyme bacteria to shift their shape into a form that can evade the immune system and resist treatment with antibiotics.

Lyme "doesn't stay in the bloodstream for long," according to Richard Ostfeld, a biologist who studies the ecology of Lyme. "Instead," Ostfeld continues, "*Borrelia* manages to insinuate itself into parts of the body that have fewer circulating antibodies, where it is harder for antibiotics to reach."[51] According to one article, the "defensive morphological forms of *Borrelia burgdorferi*" such as cysts and biofilms make it difficult to detect the bacteria in the blood of infected patients and also allow the Lyme bacteria to evade the patient's immune system and resist even the most aggressive antimicrobial treatments.[52] In short, Lyme disease is not always easy to treat.

Conclusion

The majority of doctors in the United States believe that Lyme disease is easy to diagnose and easy to treat and is severe only in rare cases. However, both the scientific evidence and the experience of patients demonstrate that Lyme disease can often be challenging to diagnose and difficult to treat. In many cases, the symptoms can be debilitating and, in rare cases, lethal. "What we're dealing with is way more sophisticated bacteria than any other bacteria we know," according to Ginger R. Savely, a Lyme disease specialist at Union Square Medical Associates in San Francisco. "The more you really study the bacteria and how it works, the more you become incredibly impressed by how many mechanisms this bacteria has for survival and how difficult it is to get rid of it."[53]

Lyme disease is the most widespread vector-borne disease in the United States, and it has reached epidemic proportions.[54] Thus, it is surprising that there is neither a reliable diagnostic test nor an effective treatment for it. In 2018, the Tick-Borne Disease Working Group—composed of representatives from a variety of Federal agencies—noted in a report to Congress that "progress has been hampered by a lack of attention at the Federal level and by divisions within the field."[55] Despite the epidemic proportion of Lyme disease in the United States, Federal funding for tickborne diseases is drastically less per new case than for other diseases. The National Institutes of Health, for example, spends on average $77,355 for each new case of HIV/AIDS and $36,063 for every new case of hepatitis C virus, yet only $768 for each new case of Lyme disease. In the same report to Congress, it was noted that "Federal funding for tick-borne diseases today is orders of magnitude lower, compared to other public health threats, and it has failed to increase as the problem has grown."[56]

Lack of attention to Lyme disease—despite its epidemic proportions and debilitating symptoms—has led many patient advocacy groups to begin funding their own research. The Global Lyme Alliance, for example, has funded much-needed basic research, including mapping the genome of *Borrelia burgdorferi* and identifying the antibiotic cocktail most effective against biofilm colonies. In some cases, private foundations have picked up the slack where the Federal Government has fallen short and committed significant funding to cutting-edge Lyme research. The Steve & Alexandra Cohen Foundation, for example, has provided $60 million to support more than 25 Lyme disease research projects. Privately funded research may have identified a drug capable of killing Lyme in all of its forms: disulfiram, which has been used for more than 70 years in the treatment of alcoholism.[57] The drug is now undergoing a pilot clinical trial at Columbia University, and a few physicians are prescribing it to patients willing to try experimental approaches.

New basic research into Lyme disease and the repurposing of old drugs such as disulfiram provide some hope for Lyme patients. At the moment, however, there is no cure and no easy treatment for this serious and debilitating disease. Given the dire health consequences, the poor diagnostic tools, the effects of climate change in increasing tick habitats, and the endemic nature of the disease in geographical areas where the military lives, works, and plays, Lyme should be a serious concern for the entire joint force. At the moment, unfortunately, the Department of Defense (DOD) has dedicated scant resources to fighting Lyme and associated diseases. As noted above, DOD participates in the U.S. Government Tick-Borne Disease Working Group, and Lyme is one of the congressionally directed medical research programs.[58] However, DOD has dedicated only $900,000 in fiscal year 2020 to supporting basic research on Lyme and other tickborne diseases.[59] In terms of Lyme prevention, beginning in 2013, the Army began issuing Army combat uniforms (ACUs) treated with permethrin (an insect repellent),[60] which is an important step in the prevention of tick bites. However, any comprehensive program to counter tickborne diseases must also include chemical pest control, testing ticks for pathogens, landscape management, public education, and targeting reservoir hosts such as deer and mice. To date, there is no comprehensive tickborne disease education and prevention program that targets the entire joint defense enterprise, and there definitely should be. **JFQ**

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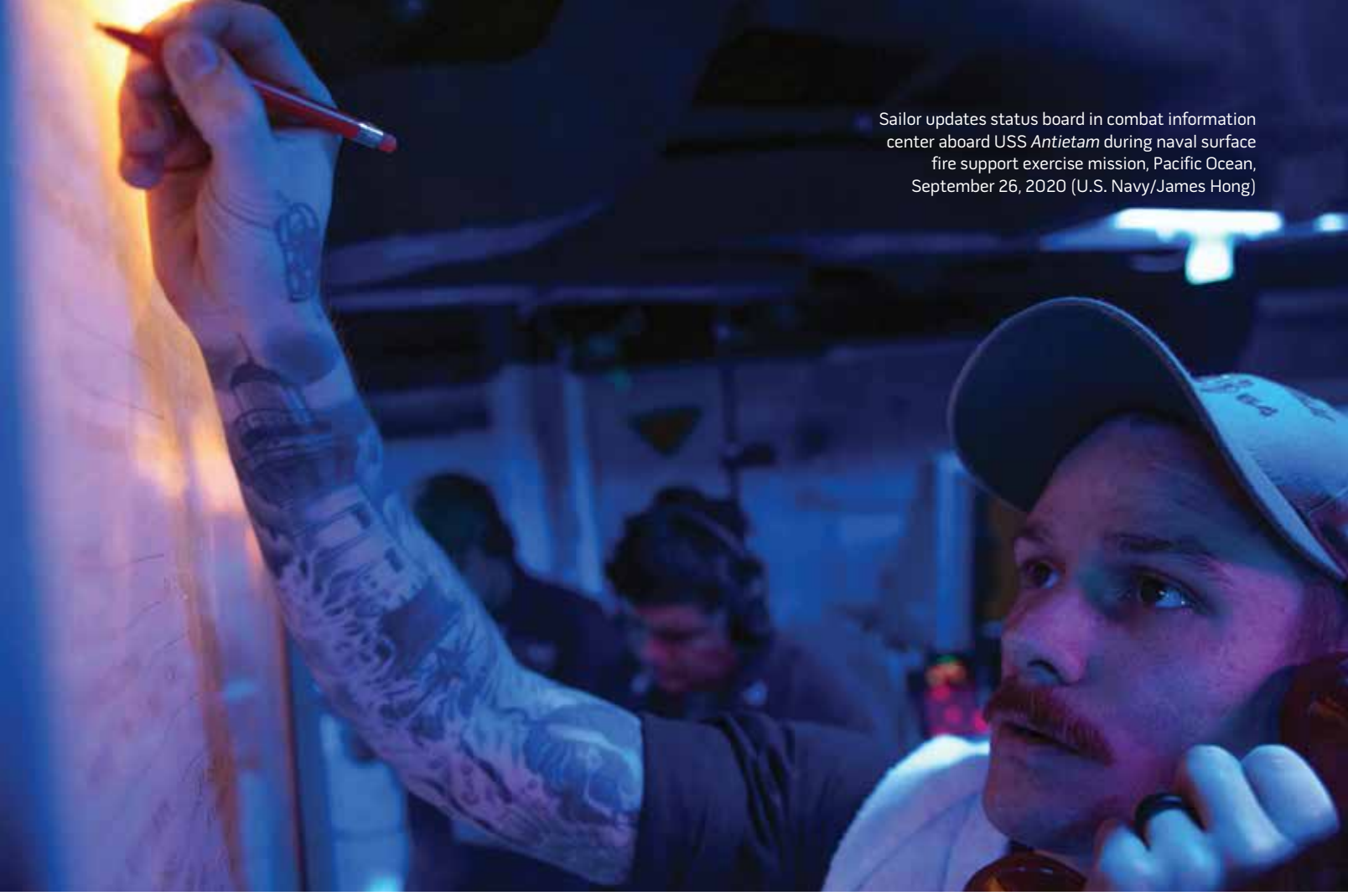

Sailor updates status board in combat information center aboard USS *Antietam* during naval surface fire support exercise mission, Pacific Ocean, September 26, 2020 (U.S. Navy/James Hong)

Fight Tonight

Reenergizing the Pentagon for Great Power Competition

By Brandon J. Archuleta and Jonathan I. Gerson

From General Ulysses S. Grant and the Wilderness Campaign to General Dwight D. Eisenhower and the Normandy invasion, war planning has long been considered central to the study of U.S. military history. But due to a confluence of political circumstances and a series of unique demands placed on the U.S. military from the end of the Cold War through the war on terror, the Pentagon's bureaucratic capacity for strategic planning gradually eroded, eventually giving way to an overreliance on operational plans and grand tactics in Iraq and Afghanistan. Circumstances have changed, however. As Russia and China espouse revisionist aims and U.S. global hegemony comes increasingly into question, it is more important than ever for the Department of Defense (DOD) to reenergize its war-planning apparatus and prepare for what will likely be a prolonged era of Great Power competition (GPC).

This article examines recent developments in the Pentagon's war-planning processes as a consequence of the 2018 National Defense Strategy (NDS) and the U.S. military's subsequent shift toward GPC. This fundamental transformation is manifesting in three ways. First, DOD has recently defined the *continuum of competition* from cooperation to conflict. Second, Pentagon policymakers have introduced the concept of *global*

Major Brandon J. Archuleta, USA, Ph.D., is a Council on Foreign Relations International Affairs Fellow serving as Strategic Advisor in the Office of International Affairs at the Department of the Treasury. Major Jonathan I. Gerson, USA, is a Joint Planner in the Joint Operational War Plans Division, Joint Staff J5. They both served as Strategic Planners in the Army War Plans Division, Headquarters Department of the Army, from 2018 to 2020.

integration to address the nature of the contemporary threat environment. Finally, the Pentagon bureaucracy has reinstituted a rigorous war plans review process with stakeholder input from across DOD and the joint force, and these changes will have implications for the joint force for years to come.

We begin by offering a brief primer on war plans to introduce readers to the three vital inputs for contemporary war plans. Next, we explain the gradual erosion of the joint force's war-planning processes. We then discuss how the Pentagon is reenergizing its war-planning apparatus for GPC. Finally, we offer three recommendations for the joint force as it adjusts to and implements the nascent concept of global integration within its war-planning processes.

A Primer

Contemporary U.S. military war plans are a function of three vital inputs: perceived threats from the international environment, policy endstates, and resource constraints. First, military threat perception is driven by foreign capabilities and intent. In other words, which state and/or nonstate actors present both the credible military capabilities to contest the U.S. Armed Forces and the malign intent to use them? Second, what are the ultimate wartime objectives that senior U.S. policymakers espouse for the military in the event of conflict (for instance, protecting National interests, defending allies, defeating aggression, regime change)? These are inherently political questions that rightfully inform and bound technocratic military planning. Third, what resources—budgets, basing, personnel, materiel, and equipment—does the military have to wage such a war and meet those prescribed wartime objectives? With finite budgets and limited technology, it would be irresponsible for the U.S. military to plan wars—of any scale—assuming unlimited defense spending and yet-to-emerge technology. Save for the Manhattan Project during World War II, rarely does new technology emerge just in time to win a war. Thus, war plans must address perceived threats by conforming to meet politically oriented policy endstates with the given military resources available.

In other words, military war plans are highly dependent on and sensitive to the international threat environment, policy endstates, and resource constraints. These three factors, however, do not always align. Therefore, uniformed commanders are obliged to highlight the potential risks to military strategy for civilian policymakers, but civilian policymakers are free to accept or reject that risk based on the political imperatives of their decision. While senior military leaders are accountable to civilian policymakers, civilian policymakers—elected and appointed—are accountable to the American people. This is part and parcel of what scholar Eliot Cohen refers to as the "unequal dialogue" in civil-military relations.[1]

Planning is not unique to the Pentagon. In fact, elements of the U.S. Government first adopted strategic planning in the early 1980s to "strengthen organizations, improve effectiveness, and create public value in different ways."[2] Like any other governmental plan, DOD war plans must "facilitate understanding of the forces driving issues, explore options in terms of their feasibility and likely consequences . . . regarding the costs and risks associated with various alternatives."[3] The difference, however, is that war plans "may never transition to execution" because they are based on global contingencies that might never come to fruition.[4] Be that as it may, modern war plans are the products of deliberate planning processes based on policy and strategy guidance from the President, Secretary of Defense, and Chairman of the Joint Chiefs of Staff (CJCS).

War plans aim to synchronize military activities in time, space, and purpose with the resources available. "Therefore," U.S. Army strategist Robert Gleckler argues, "the plans must be based on current military capabilities if they are to meet the criterion of feasibility."[5] Former Defense Secretary Donald Rumsfeld made a similar point while speaking to U.S. troops overseas in December 2004: "You go to war with the Army you've got, not the Army you might want or wish to have at a later time."[6] If the war plan is uninformed by resources, it will "not paint a realistic picture of the types of decisions and tradeoffs that senior strategic- and policy-level decisionmakers would be faced with should the plan be required to transition to execution."[7] Furthermore, war planning "blends futuristic thinking, objective analysis, and subjective evaluation" to develop the most clear-eyed strategy for mission success.[8] War plans then serve a vital bureaucratic function for the U.S. military and National security apparatus.

Gradual Erosion of U.S. War Planning

The end of the Cold War ushered in a new era for war planners, as the mid-1990s brought a new series of challenges for the United States, including limited wars. However, without a Great Power adversary such as the Soviet Union to focus U.S. grand strategy, DOD war planning became increasingly listless and ad hoc, responsive only to regional contingencies as they emerged around the world. From Somalia and Bosnia to Kosovo and Rwanda, the United States found itself immersed in police actions and humanitarian interventions as the sole guarantor of the liberal international order. These frequent, small-scale military interventions required U.S. war planners to pivot away from the sort of conventional, high-intensity conflict the Pentagon preferred toward low-intensity stability and peacekeeping operations. Moreover, U.S. victory in the 1991 Gulf War and the initial success of Operation *Enduring Freedom* in 2001 emboldened policymakers into believing the joint force could project power and decisively compel any adversary with a technologically superior force at the time and place of its choosing.[9] Absent a global threat, however, geographic combatant commanders drafted regional war plans that hinged on superior military capabilities but otherwise lacked an appreciation for the strategic level of war.

This oversight became painfully apparent during preparations for the 2003 invasion of Iraq. According to RAND,

Force Reconnaissance Marine with Command Element, 31st Marine Expeditionary Unit, performs simulated breach utilizing welding torch during visit, board, search, and seizure exercise aboard USS *Germantown*, South China Sea, September 6, 2020 (U.S. Navy/Taylor DiMartino)

"In November 2001, at Rumsfeld's request, [U.S. Central Command Commander General Tommy] Franks began a series of revisions of Operations Plan (OPLAN) 1003, the war plan for the Persian Gulf. . . . The plan focused on winning the war. There was no annex in the plan for postconflict operations."[10] Consequently, "What were anticipated to be relatively quick and easy postconflict operations went badly" as "welcoming crowds of liberated Iraqis never formed."[11] Mired by insurgencies in Iraq and Afghanistan, senior Pentagon planners increasingly deferred to commanders in the field—those closest to the fight. Thus, the Pentagon's bureaucratic capacity for strategic planning gradually eroded, eventually giving way to an overreliance on operational plans and grand tactics for day-to-day combat.[12] Moreover, Pentagon policymakers during this period considered conventional war plans versus near-peer competitors, such as Russia and China, an afterthought as they hurriedly executed obligatory reviews in cursory fashion with little credence to the thought of global conflict. But with the prospect of renewed competition between Great Powers looming over the horizon, continuing such an approach would be neither sustainable nor advisable.

Modern U.S. War Plans and the Return of GPC

Pulitzer Prize–winning columnist Charles Krauthammer once famously wrote, "The most striking feature of the post–Cold War world is its unipolarity. No doubt, multipolarity will come in time. In perhaps another generation or so there will be Great Powers coequal with the United States. . . . But we are not there yet, nor will we be for decades. Now is the unipolar moment."[13] Nearly three decades later, famed political scientist Fareed Zakaria declared American hegemony dead in the pages of *Foreign Affairs*.[14] Indeed, the "unipolar moment" has passed and given way to a renewed era of GPC. The NDS clearly illustrates this point: "The central challenge to U.S. prosperity and security is the reemergence of long-term, strategic competition by . . . revisionist powers. It is increasingly clear that China and Russia want to shape a world consistent with their authoritarian model."[15] To meet these emerging challenges, the Pentagon has reenergized its war-planning apparatus to prepare for what will likely be a prolonged era of GPC.

Competition vs. Conflict. To better conceptualize recent shifts in the geostrategic environment, DOD has recently defined the continuum of competition as cooperation, competition below the

threshold of armed conflict, and armed conflict.[16] Since the end of the Cold War, the U.S. military has employed an "artificial distinction between an environment of armed conflict and peace without significant military competition."[17] But the international threat environment is no longer conducive to such constructs. Recognizing this fact, the joint force has "adopt[ed] a better framework for understanding, describing, and participating within a competitive operational environment."[18] To be clear, this is not to suggest that GPC has somehow made the world more dangerous. The pundits who peddle that line are quick to forget that GPC is the historical rule, whereas unipolarity was the historical exception. While the cooperation-to-conflict spectrum is imperfect and has sparked feverish debate among defense scholars, it is an important first step in articulating the changing conditions of the geostrategic environment and "is by far the most mature effort to change the paradigm for military campaign planning."[19]

Global Integration. Beyond delineating the differences between competition and conflict, Pentagon policymakers have introduced the concept of global integration to address the evolving nature of the threat environment. The earliest conceptions of global integration date back to the Goldwater-Nichols Department of Defense Reorganization Act of 1986. Less than a decade after the tragic fall of Saigon and end of the Vietnam War, DOD suffered a number of embarrassing strategic, operational, tactical, and institutional setbacks that called the entire defense establishment into question. First, the Iranian hostage crisis during the Jimmy Carter administration led to a "failed rescue mission—dubbed Operation *Eagle Claw*—to secure the hostages, resulting in the deaths of eight American Servicemen after two aircraft collided at Desert One—the predesignated forward arming and refueling point in Iran."[20] Second, the bombing of the Marine Corps barracks in Beirut pushed President Ronald Reagan to withdraw all U.S. troops from Lebanon. Third, poor planning and intelligence during Operation *Urgent Fury* in Grenada required enterprising Navy SEALs to rely on a pay phone and calling card to coordinate airstrikes onto the island nation.[21] Finally, lavish Pentagon procurement practices that resulted in $400 hammers and $640 toilet seats demonstrated the need for a major overhaul.

To address these myriad problems, Congress passed Goldwater-Nichols, which produced the Nation's most significant military reforms since the National Security Act of 1947. For example, Goldwater-Nichols clarified the role of combatant commands, reorganized the Services, formalized joint education, and firmly delineated the Secretary's role in managing America's global defense responsibilities, in contrast with those of the CJCS as the President's principal military advisor. Taken together, the Goldwater-Nichols reforms pushed the military away from the inter-Service rivalries that dominated the early Cold War era, thereby cementing the burgeoning notion of "jointness" among the military Services. By eventually embracing jointness, the Services laid the intellectual foundation for what would ultimately become global integration.

According to the Joint Staff, four recent changes in the strategic environment are driving the military's evolution from jointness to global integration:

- proliferation of advanced technologies [has] accelerated the speed and complexity of war
- conflicts involve all domains and cut across multiple geographic regions
- American competitive military advantage has eroded
- global demand for forces continues to exceed the inventory.[22]

This last point is especially important because it speaks to resource constraints that frame and bound planning for war. Simply put, there is only so much joint force to go around.

Recognizing this challenge, the Secretary has designated the CJCS as the "Global Integrator" in accordance with the 2017 National Defense Authorization Act.[23] In this capacity, the CJCS is to advise the Secretary "on allocation and transfer of forces among geographic and functional [combatant commands] to address transregional, all-domain, and multifunctional threats."[24] This guidance represents a significant shift in Pentagon war planning by "amplifying" the role of the CJCS in U.S. foreign policy.[25] For decades, combatant commanders drafted regional war plans with the operating assumption that their respective commands would be the priority theater in the event of conflict, thus planning to receive the preponderance of U.S. military forces in crisis. However, resource allocation is a zero-sum process. In short, DOD needed an honest broker to help the Secretary adjudicate global force allocation decisions. Having been a combatant commander himself, then–Secretary of Defense James Mattis understood this point well. That is why he empowered the CJCS, General Joseph Dunford (a fellow Marine), with these newfound global integration authorities.

According to the former director of the Joint Staff, Lieutenant General Kenneth Mackenzie, USMC,

> *Global integration is the arrangement of cohesive joint force actions in time, space, and purpose, executed as a whole to address transregional, multifunctional challenges across all domains. It is a top-down, iterative process that integrates planning, prioritizes resources, and assesses progress toward strategic objectives. Global integration ends include enhanced senior leader decisionmaking, strategically integrated worldwide operations, and a balanced and lethal future joint force.*[26]

To illustrate this point, Professor Hal Brands of Johns Hopkins University argues the United States has forgone its decades-old two-war strategy and "is now building a force . . . around the requirements of winning a high-intensity conflict with a single, top-tier competitor—a war with China over Taiwan, for instance, or a clash with Russia in the Baltic region."[27] This concept again serves to highlight the limits of U.S. military capacity—the joint force simply cannot be everywhere at all times. Thus, global integration has emerged as a joint force imperative in

order to meet the complexities of 21st-century warfare.

War Plan Reviews. Building on Goldwater-Nichols, today's Global Integrator role places greater responsibility on the CJCS as the arbiter of combatant command resource requirements and the President's principal military advisor. With an eye toward emerging global problem sets, the Pentagon bureaucracy has also reinstituted a rigorous war plans review process with input from stakeholders from across DOD and the joint force. Two important innovations include development of Global Campaign Plans (GCPs) and Globally Integrated Base Plans (GIBPs). The former address day-to-day competition below the level of armed conflict, while the latter deal exclusively with contingency and conflict. For example, "GCPs address threats or challenges that significantly affect U.S. interests across the globe and require coordinated planning across all, or nearly all," combatant commands.[28] As planning constructs for competition, these GCPs are resource-uninformed and do not require transportation, sourcing, or logistics assessments.[29] On the other hand, GIBPs are resource-informed and do require transportation, sourcing, and logistics assessments. According to the Joint Staff,

A GIBP recommends adjustments to the day-to-day priorities for all [combatant commands] *in the event of a crisis or contingency. GIBPs are developed from the Global Readiness Review of the state-based priority challenges and make recommendations on the reassignment or reallocation of capabilities to the conflict. The GIBP also identifies Presidential- or Secretary-level decisions for execution of the plan. These decisions include activation of the plan, reallocation of strategic assets, and retrograde options for capabilities no longer essential to the conflict response.*[30]

Interestingly, these plans move through two complementary review processes—the "Tank" process and the Joint Planning and Execution Community (JPEC) process. While Tank refers to the CJCS's personal conference room, the related staffing process surrounding it has assumed the same moniker. Hence, Tank is both a venue and a process. On the first point, this is where the CJCS convenes the other four-star flag officers from across the Pentagon and around the world, either in person or by video, to discuss some of the Nation's most highly classified matters, including war plans. As one might imagine, content does not reach the Tank until it has been vetted and endorsed for four-star review. This speaks to the second point.

Before the CJCS and his or her four-star contemporaries review content, it is "Tanked" by two-star operations deputies followed by the three-star operations deputies with significant staff officer input throughout. While the Tank process is not typically contentious, it is also not meant to be a consensus-building exercise either. Combatant commanders and Service chiefs always retain the right to non-concur with analysis and decisions. That is Pentagon-speak for lodging a formal disagreement. Given the level of seniority involved in the Tank process, senior military leaders generally address broad strategic issues with major policy implications. For instance, when examining policy endstates, a politically appointed policymaker may choose to join the flag officers to represent the Secretary and administration. Again, policy endstates bound and constrain war plans. Rarely does the Tank delve into the operational level of war. This is where the JPEC comes into play.

The JPEC process is akin to what public administrators refer to as Large Group Interaction Models.[31] The JPEC is an ad hoc confederation of about 100 staff officers around the world charged with reviewing war plans line by line. These officers are subject matter experts who apply their operational and strategic acumen to the problem set at hand to ensure plans are feasible, acceptable, and suitable, all the while ensuring their organization's equities are represented. For instance, a combatant command might be most concerned with the plan's scheme of maneuver, while a Service might be primarily focused on resource mobilization. While the Tank processes ensures broad strategic coherence, the JPEC process addresses the fine print, as it were.

With the recent advent of GCPs and GIBPs, the CJCS has implemented two new planning constructs for competition and conflict. The first is an annual GCP assessment that travels through the Tank and JPEC processes.[32] Second, the Joint Staff leads "Global Readiness Reviews of state-based priority challenges" through the Tank and JPEC process as well.[33] In short, this collective effort has given DOD a new planning framework to delineate between competition and conflict, thereby reenergizing the Pentagon's war-planning apparatus to meet the challenges of GPC.

Beyond Joint Staff readiness reviews, former Secretary of Defense Mark Esper, a former war planner himself, reenergized his office's war plans In-Progress Review (IPR) process. IPRs provide "an ongoing process to gain the [Secretary's] review and approval of plans and provide a forum for senior leaders to focus on combatant commander's plans to refine strategic direction and discuss military options early in the planning process."[34] These forums also allow the Secretary to ensure plans are properly aligned to policy endstates and contemporary National security objectives. Taken together, the Secretary, CJCS, and Service chiefs have reenergized the Pentagon for GPC and large-scale combat operations.

Recommendations

As the United States competes with nuclear-armed revisionist states such as Russia and China, it is increasingly likely that the Joint Staff and Services—not only the combatant commands—will play a more important role in the war plans process for the foreseeable future. The prospect of GPC with two global adversaries poses too much risk to leave the entire planning process to compartmented geographic commands without frequent input from the CJCS, Service chiefs, and their respective staffs. After all, the CJCS is DOD's Global Integrator, and the Service chiefs are "purple" members of the Joint Chiefs of Staff. Therefore, we offer three recommenda-

Army Paratroopers assigned to 173rd Airborne Brigade prepare to move into town, August 20, 2020, during Saber Junction 20, held at Army's Grafenwoehr and Hohenfels training areas (U.S. Army/Tomarius Roberts)

tions to further develop the Pentagon's bureaucratic capacity for globally integrated war planning.

First, Service war planners must be prepared to "campaign in competition." In other words, long-term Service investments and initiatives to bolster global posture, command and control, expeditionary logistics, ally and partner interoperability, and force modernization must be geared toward both day-to-day military operations and the rapid transition from competition to conflict through dynamic force employment and joint warfighting concepts. In recent years, Service war planners have simply validated combatant command OPLANs with an eye toward Title 10 resourcing should the joint force be called on to "fight tonight." However, as the competition continuum evolves, the Services will be required to set global conditions in order to gain a positional advantage for combatant commanders versus U.S. adversaries. Service war planners who appreciate cooperation and competition, not just conflict, will be force multipliers for Service chiefs acting in their purple capacities.

Second, the Secretary should carefully balance combatant command authorities with the CJCS's global integration responsibilities. For instance, while geographic combatant commanders are the coordinating authorities for their regional war plans, the CJCS is responsible for synchronizing these myriad plans in time, space, and purpose around the world. We are not advocating for creation of a new general staff, much less an imperial Joint Staff, to be sure. Such a recommendation would be a departure from decades of military leadership and run counter to Goldwater-Nichols. Clearly, combatant command OPLANs benefit from their authors' regional experience and expertise. However, when facing adversaries with global capabilities, someone has got to be the arbiter and honest broker between multiple OPLANs competing for limited resources. As the Secretary and President's principal military advisor, the CJCS is that person.

Third, military strategists must appreciate how the competition continuum varies across domains—land, sea, air, space, and cyberspace. "The great challenge for military and cybersecurity professionals," writes technologist Tarah Wheeler, "is that incoming attacks are not predictable, and current strategies for prevention tend to share the flawed assumption that the rules of conventional war extend to cyberspace as well."[35] Thus, malign activities in space and cyberspace will likely ebb and flow between Phase 0, "Shaping Operations," Phase I, "Deterrence," and Phase II, "Seize the Initiative," well before conventional military operations begin.[36] The joint force could anticipate space and cyber attacks on military information networks and

the joint logistics enterprise to disrupt U.S. global communications and force flow. Consequently, war planners must understand how to craft military activities ahead of and in response to both symmetric and asymmetric threats. The U.S. Army, for its part, refers to this concept as *convergence*—that is, "the rapid and continuous integration of all domains across time, space, and capabilities to overmatch the enemy."[37]

Bound by the realities of the international threat environment, policy endstates, and resource constraints, war plans are the ultimate bureaucratic tool to hedge against global conflict. With these linkages in mind, DOD is reconfiguring Globally Integrated Base Plans into Global Integration Frameworks for fiscal year 2021 and beyond. By defining the competition continuum, introducing the concept of global integration, and reinstituting a rigorous war plans review process, DOD has reenergized its war-planning apparatus to prepare for what will likely be a prolonged era of Great Power competition. Indeed, this fundamental transformation will have implications for the joint force for years to come. JFQ

Notes

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Airman with New Horizons mobile forward surgical team listens to heart and lungs of Belizean girl during medical readiness training exercise, May 1, 2014, in Santa Teresa, Belize (U.S. Air Force/Kali L. Gradishar)

Modernizing the Operational Design of the Medical Readiness Training Exercise

By Brian H. Neese and Douglas J. Robb

Each year, the U.S. military deploys hundreds of medics to see patients in direct patient care training exercises throughout the Americas, Asia, and other regions around the world. "More patients mean better training" is the mantra of mission planners, commanders, and public affairs teams. Only cursory efforts are made during these missions toward building partnerships and host-nation institutional capacity. Geographic combatant commanders, however, expect to leverage these operational readiness training exercises, funded by humanitarian and civic assistance (HCA) dollars, to promote regional security and stability, while host nations want to improve their populations' health, health systems, and institutional legitimacy. At great cost in money and opportunity, the legacy health fair–style medical readiness

Lieutenant Colonel Brian H. Neese, USAF, MD, is Deputy Director of the 81st Medical Group at Keesler Air Force Base, Mississippi. Dr. Douglas J. Robb is the Joint Medical Chair at the National Defense University.

training exercise (MEDRETE) and its thousands of patients seen grossly underdeliver on all counts.

Joint military doctrine defines operational readiness skills in broad terms, allowing leaders to shape the training methodologies that will best advance the member's skill set. Thus, an array of activities can meet these goals, including new training platforms such as the embedded health engagement team (EHET), which sends clinicians to care for sick people in the context of the local health system. U.S. and host-nation personnel collaborate to address clinical and health system issues, leading to growth in capacity and partnership for both sides. Nevertheless, year after year, leaders and planners turn to the pop-up health fair–style legacy MEDRETE as a singular approach to HCA-funded training missions regardless of strategic regional objectives. In so doing, the U.S. military allows an outdated, expensive tactical activity to drive its strategic planning.

Is it possible to build a MEDRETE designed for the modern era—one whose operational planning starts with the strategic endstate in mind, leverages the entire military health system across an array of potential global health engagement (GHE) activities, and fulfills the intent of current military doctrine and *U.S. Code* that govern HCA-funded missions? Indeed, such a model could build meaningful individual and institutional encounters that improve the breadth and depth of military training, increase a partner-nation's institutional capacities and legitimacy, and better the health outcomes of a population. Such interactions might also engender deep and lasting partnerships that advance the combatant commander's security cooperation objectives in a region. In a world of Great Power competition, where coalitions and partnerships are the linchpin to modern warfare, the U.S. military cannot afford to miss out on these competitive advantages.

The Planning Template

The U.S. military has a long history of leveraging health care to make security cooperation gains. During the Vietnam War, U.S. military medics treated millions of Vietnamese civilians as part of the Medical Civic Action Program.[1] Later, this type of civilian-military interaction was linked to military training in the form of the MEDRETE. Today, U.S. Indo-Pacific Command routinely executes this direct patient care outreach mission in its Pacific Angel, Pacific Partnership, and other humanitarian exercises.

U.S. Southern Command started its annual humanitarian support mission in Latin America in the 1980s. Since that time, and with little variation year to year, it has employed a legacy MEDRETE model of primary care providers (family physicians, pediatricians, and the like), optometrists, dentists, and veterinarians delivering direct patient care. Ancillary support functions are included, such as pharmacy (pharmacist, pharmacy technician, and all medications) and medical logisticians with their accompanying medical supply and equipment. This is an expensive proposition; the typical HCA budget for a medical deployment-for-training mission is $500,000.[2]

MEDRETEs have looked this way in part because of a myopic view of "training." What is it to train a joint medic? What does it mean to have advanced one's skills in operational readiness? What drives and scopes these training objectives?

The default methodology for training outpatient physicians has been to simply put a patient—even better, hundreds or thousands of patients—in front of them. MEDRETE-related public affairs communications, as well as situation reports sent up the chain of command, tout mission impact in terms of "4,500 patients seen" or the like. More patients seen, while delivering public diplomacy wins for stakeholders, implies better training for U.S. military medics.

This supposition is deeply flawed. Consider the typical primary care interaction in this setting where a brisk and superficial clinical encounter takes place. The patient, who is basically well, is being seen acutely for opportunistic reasons. Care is provided in a pop-up health system separated almost entirely from the local health system. Chronic conditions are identified but cannot be treated, so the default exchange occurs where the provider dispenses over-the-counter pain and fever medications that are safe, innocuous, and largely ineffectual for the patient.

When the patient steps away, there will be dozens, even hundreds, more just like him or her over the course of the mission. Multiplying this minimally beneficial clinical encounter a thousand times over would still yield only minimal benefits. While there are some readiness training gains for Servicemembers, such as deployment preparation and learning to function in an austere environment, these are generic benefits that come with doing almost any expeditionary activity. The clinical and GHE training is minimal, to say the least, in making a verifiable impact on the patient's health or building the partner-nation's health capacity in support of theater security cooperation.

If this situation is going to be improved, we must look at the source of a military member's operational readiness training requirement. The Department of Defense Instruction governing the HCA mission states that the Universal Joint Task List (UJTL) is the official repository of tasks that "determine operational readiness training."[3] The UJTL is a list of hundreds of tasks, but general themes do occur, such as conducting civil-military operations, promoting regional security, and coordinating security cooperation. Medical-specific areas are also listed, such as providing health services, conducting health engagements, and mitigating health threats. This is just a sampling, but it demonstrates that current military doctrine views operational readiness skills with a broader lens than historically assumed.

While it has proved difficult to properly align operational readiness training objectives to HCA-funded exercises, the security cooperation endeavor typically fares no better. Combatant commanders strive to "create strategic, operational, or tactical effects" in support of their security cooperation objectives, as well as to strengthen their partner nations institutionally, enabling these nations

"Dustoff" pilots and flight crew from 3rd Battalion, 25th Aviation Regiment, 25th Combat Aviation Brigade, train on air-to-ground patient transfers and reporting requirements during multiship joint training with Tripler Army Medical Center and 8th Forward Surgical Team, enhancing medical treatment skills on Oahu, Hawaii, August 8, 2020 (U.S. Army/Sarah D. Sangster)

to better stabilize regional threats.[4] However, GHE efforts in the setting of a legacy MEDRETE are held in check by performance measures falsely perceived as training requirements—that is, seeing thousands of patients at a time. More concerted efforts to build partnerships or institutional capacities within the local health system are diminished. Formal or informal subject matter expert exchanges or bilateral educational seminars with host-nation counterparts are held on the side, if they are held at all, to prevent diverting attention and resources from high–patient volume legacy MEDRETEs.

Through this lens, the interactions between provider and patient appear limited to the extreme. Local patients and their community might take a positive view of the U.S. Government for the good that was done for them. However, the institutions that surround these patients—the ministry of health, the hospitals, the clinics, and the pharmacies that support them all the other days of their life—are left no better off for the experience. Far from improving health care capacity, our presence may even diminish patients' views of their own health system and the government that provides it.

In this way, much as individual clinical interactions, the corporate interaction with the host nation is affected at the most superficial levels. Security cooperation efforts are pigeon-holed into generic "access and influence" effects, and only minimal gains are made along the combatant command's highest priority lines of effort. While it is Department of Defense policy to develop civilian partner-nation capacity and to use GHE to "improve the capabilities or capacities of the partner-nation's civilian health sector," little ground is gained in this regard.[5] The untapped potential of this mission to demonstrably improve health and the health system is unacceptably vast.

Modernizing the Operational Design

The new operational design starts by establishing strategic security cooperation objectives and desired host-nation priorities that will then drive operational efforts and tactical activities. Doctrinally, this is not new methodology, but it must be reiterated that activities will be shaped by the *desired strategic effects*. In the current state of affairs, the MEDRETE will be conducted regardless of any other strategic or operational goals. Thus, the tactical activity is the driver, not the desired strategic effect.

The next step is to develop UJTL-based competency objectives that provide

the standard against which training will be measured. At U.S. Southern Command, the command surgeon is required to "review data pertaining to engagement effectiveness . . . assess whether HN [host-nation] health care and U.S. medical training objectives were met, and potential opportunities to enhance U.S. training."[6] UJTL-based competencies can be used to create training objectives that serve as a target for both activity development and subsequent monitoring and evaluation.

Reviewing examples of well-integrated U.S. military disaster responses, such as the Chile earthquake of 2010, can help clarify what our medics need to gain from an HCA mission. In Angol, U.S. Air Force International Health Specialists worked with U.S. Agency for International Development response teams and the host nation to deploy an Air Force field hospital where a local 190-bed facility had been destroyed. For 10 days, 69 military medical personnel treated patients side by side with their Chilean counterparts. The U.S. Government then donated the facility, and the Chileans continued to operate out of it, even reinforcing parts of the structure to enable its continued use.[7]

This collaboration required military medics to leverage a plethora of UJTL-based competencies, such as coordinating health services, providing logistic sustainment, and synchronizing military efforts with other U.S. Government agencies. Furthermore, the bilateral exchange of information and shared experiences with our Chilean military counterparts strengthened the mutual trust required for successful coalition interaction. Since 2010, the Air Force (including the Texas Air National Guard) has partnered extensively with Chile to learn, train, and exercise aeromedical evacuation capabilities, including mass casualty response and critical care air transportation, in bilateral and multinational scenarios. The goals for this partnership are coalition interoperability that supports regional aerospace medicine and aeromedical evacuation capabilities in South America and beyond. This interoperability demonstrates the power of GHEs, whether in a contingency or training environment, to advance a strategic alliance in support of theater security cooperation and regional stability.

The final step in this new planning methodology is determining a clearly defined health care problem that unifies all GHE activities. Strategic inputs might lead planners to health or disease burdens of national significance related to infectious disease, noncommunicable disease, or even maternal/child health. The World Health Organization's Core Health Indicators further shape activity development by providing relevant quantifiable and measurable targets such as life expectancy, neonatal mortality, immunization rates, or tuberculosis treatment coverage.[8] Aligning U.S. military activities against a single health care target with measurable health indicators allows effectiveness to be assessed, monitored, and evaluated. Future planning is then shaped annually to improve training opportunities and ensure sustainable impacts over time.

The complexity of these health-related problems is a strength of this planning methodology. Working along the entire continuum of care for a disease process or health burden could include preventive, diagnostic, and therapeutic components that engage clinical medicine, preventive medicine, public health, ancillary support, administration, and logistics. Each element provides a node of intervention. By applying all efforts against one clearly defined health care problem, synergies are created across the spectrum of medical activities. This could lead to tangible and measurable benefits to the host-nation's health and health system, such as potential decreases in infant and maternal mortality rates, decreases in infectious disease burden and morbidity, or improved quality of life, to name only a few.

The Embedded Health Engagement Team

Let us imagine that planners are entering their strategic phase for an upcoming mission to Panama. Their first step would be to understand the desired endstate regarding theater security cooperation, medical training, and host-nation health objectives. They would synthesize this strategic guidance in order to begin shaping a concept of operations that delivers optimal impact in all of those areas. In this process, they would determine a clearly defined health care problem to be addressed in the mission. All GHE activities would be designed to impact this one problem.

Planners might determine, for example, that the clearly defined health care problem in Panama is communicable infectious disease. This subject directly connects to the strategic security cooperation objective of mitigating natural disasters (think pandemic influenza, for instance) as well as force health protection concerns for our own deployed military personnel. The host nation might have also prioritized this problem because endemic infectious diseases (such as tuberculosis, leishmaniasis, and malaria) and emerging ones (such as zika and chikungunya) are a significant burden to the country's population health and its health system.

With this in mind, planners could then refine the UJTL-based competencies to which they train their joint medics. Nesting under a global health and global health systems competency, as an example, one of a plethora of relevant force health protection training objectives might be to *understand vector-borne disease risk in the region*. Training our medics to recognize clinical symptoms of dengue fever or malaria, for example, would better prepare them to care for expeditionary military forces.

At this point, planners enter the operational phase. They must start asking themselves, "How do we build training activities that support these objectives?" Or, more germane to the discussion here, "Do we send our military medics down to Panama to execute a legacy MEDRETE health fair–style event in such a case?" The answer would likely be no.

Alternatives to the legacy model that better meet this training objective are a seminar-style information exchange or an embedded health engagement. Regardless of the chosen activity, the key

Soldiers present flyers promoting free medical event to local citizens of Chilanta, Guatemala, during Beyond the Horizon 2019 (U.S. Army Reserve/Olha Vandergriff)

point is that mission planners are fully unshackled from the one solution —that is, the health fair–style clinical outreach— and are able to look with an innovative and creative eye at the entire tool kit of activities that could meet this training objective.

Furthermore, we could bring into this fold all our medical assets for training and engagement. Because legacy MEDRETEs are limited in the career fields they pull from (typically around 20 different specialty codes), many disciplines and ultimately joint medics get left out. By opening our training aperture to a wider range of possibilities, the potential is now there to pull from every discipline and career field that makes up our military health system.

To see this in action, let us focus on the embedded health engagement team as a particular answer to the ills of the legacy MEDRETE, especially in regard to outpatient clinicians. The embedded health engagement team concept of operation calls for small, embedded multidisciplinary teams (12 or fewer joint force personnel) who bring the appropriate skill set for an intended task.[9] The team would have comprehensive global health knowledge and foreign language capability (to include the ability to work effectively through an interpreter), with some team members being novices and others advanced in these areas. The team would be prepared for the mission with country- and culture-specific training. The team would embed into the host-nation's health system for a minimum of 14 days.

Imagining again the hypothetical training objective above, *understand vector-borne disease risk in the region*, an embedded team could be deployed to address this focus area. The team might include primary care physicians, nurses, and medical technicians who work in a regional outpatient clinic or a national infectious disease referral clinic (or both) in order to understand clinical manifestations and disease management of common local infectious diseases. Inpatient physicians from internal medicine and its range of subspecialties (including infectious disease) could embed at national hospitals where the most severe sequela from infectious disease would present. Collegial exchanges of information in addition to the experience gained from direct patient care enhance learning and understanding for both U.S. and host-nation healthcare professionals. This EHET would go to the sick people, as opposed to asking that healthy people come to them.

Simultaneously, EHET teammates might include a public health officer and technician who embed within the regional ministry of health to partner with colleagues conducting disease surveillance work in local communities. A laboratory officer and technician might embed at the regional and national referral labs in order to understand specimen processing and diagnostic communication challenges within the national and international health systems. There could even be a role for immunization technicians, microbiologists, scientific researchers, bioenvironmental engineers, pharmacists, and others to link up with their host-nation counterparts in their fields of interest.

Multiple teams over a span of months could execute this mission, building on lessons learned and shaping the activity as it presses forward. Imagining a process that goes from a mosquito bite in a rural area to a sick patient admitted to the inpatient unit at the national referral hospital, every node along that path is ripe to place an EHET. The pliability of this training platform is made possible by the leanness of the team (they bring few additional supplies or equipment) and the low costs involved (essentially just the member's travel and per diem).

The operational readiness skills training advantage compared with the legacy MEDRETE is immediately clear. Whereas the legacy MEDRETE naturally defaults to a superficial level of care along a narrow scope of practice largely dissociated from the host-nation health system, the EHET demands that its participants fully engage and interact with sick patients in the context of the host-nation's own resource-constrained health care system. EHET members must grow in their knowledge of culture, foreign language, geopolitical and socioeconomic forces, global health systems, health diplomacy, and security cooperation. Not coincidentally, these elements make up the operational readiness skills tasks that HCA-funded missions seek to achieve.

Furthermore, EHET members must work to provide quality care within the

limitations of the local system, while also collaborating to find ways to improve that system. Participants grow from these interactions, as do their host-nation colleagues and institutions. Thus, the effort in context affects the overall health care problem to be addressed in the exercise from both a patient and an institutional perspective.

Shifting primary care specialties such as family medicine, pediatrics, and women's health to work under the EHET model optimizes their impact. This also allows the legacy MEDRETE to focus on optometry, dental, and veterinary services, for which the health fair style fits naturally as both a training platform and an access-and-influence security cooperation tool. Future HCA-funded engagements that properly scope the legacy MEDRETE and effectively integrate the EHET would optimize joint medical training and fulfill the promise of security cooperation gains that combatant commanders expect from these missions.

Conclusion

To press forward with a new operational design for HCA-funded training exercises, a few points must be reiterated. First, training and security cooperation are not mutually exclusive endeavors. As has been shown, quite the opposite is true. The Department of Defense Instruction governing HCA states that HCA activities are to "create strategic, operational, or tactical effects that support combatant commander objectives in security cooperation" while simultaneously "reinforcing skills required for the operational readiness" of personnel.[10] For too long now, the narrow focus on "numbers of patients seen" has driven a faulty notion of training and discarded a legitimate push toward security cooperation gains.

Second, HCA guidance as well as UJTL-based competency objectives are sufficiently broad as to allow a wide array of tactical activities in support of operational and strategic theater security cooperation objectives. The historic lack of creativity in mission types is rooted in the stabilizing nature of the status quo, as well as a lack of understanding as to what truly encompasses operational readiness skills. Alternatives to the legacy health fair–style event abound. These include embedded health engagement teams whose concept of operation is innovative and efficient and enables tremendous creativity in activity design. The advantages of this training platform synergize the positive effects of our security cooperation effort with improved results for each of the stakeholders involved.

Finally, generating change requires medical and line-side leadership to provide a forcing function to mission planners. Combatant commanders should insert language into mission planning orders, such as the exercise directive, stating their intent to leverage all assets and activities against one clearly defined health care problem. Furthermore, HCA managers and combatant command leaders, such as the command surgeon, could build UJTL-based competencies into their accountability rubric to ensure training objectives are being met against a universal joint standard.

When we build lasting partnerships, improve a partner-nation's institutional capacities and legitimacy, and better the health outcomes of a population, we have most certainly advanced the combatant commander's security cooperation objectives in a region. Additionally, operational readiness skills training could take a giant leap forward by minimizing legacy MEDRETEs and maximizing the more pliable embedded health engagement team concept. This new, modernized approach to planning HCA-funded missions ensures that both training and security cooperation objectives are met through innovative, effective, and low-cost initiatives. In a future of increasingly contested environments where building allies and partnerships is fundamental to our strategic posture, the U.S. military simply cannot afford to miss out on these competitive advantages. **JFQ**

Notes

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Photograph taken from Japanese plane during torpedo attack on ships moored on both sides of Ford Island; view looks about east, with supply depot, submarine base, and fuel tank farm in right center distance; torpedo has just hit USS *West Virginia* on far side of Ford Island (center); other battleships moored nearby are (from left): USS *Nevada*, USS *Arizona*, USS *Tennessee* (inboard of *West Virginia*), USS *Oklahoma* (torpedoed and listing) alongside USS *Maryland*, and USS *California*; on near side of Ford Island (left), are USS *Detroit* and USS *Raleigh*, USS *Utah* and USS *Tangier*; *Raleigh* and *Utah* have been torpedoed, and *Utah* is listing sharply to port; Japanese planes are visible in right center (over Ford Island) and over Navy Yard at right, Pearl Harbor, December 7, 1941. (Navy Ministry, Empire of Japan/U.S. Naval History and Heritage Command)

A New Look at Operational Art

How We View War Dictates How We Fight It

By Chad Buckel

A particular strategic policy must be devised for every war; each war is a special case, which requires its own particular logic rather than any kind of stereotype or pattern, no matter how splendid it may be.

—**Aleksandr A. Svechin,** *Strategy*

Since America's founding, most of our tactical experiences have been those of success in battle and hard-won campaigns. Beginning with General George Washington's ability to avoid defeat in detail while wearing down the British army, the United States has enjoyed a long history of tactical victories and successful campaigns. Why, then, with so many *tactical* victories, is the American record of *strategic* success so dismal? What has prevented us from turning our battlefield successes to strategic victories, and why

Major Chad Buckel, USMC, is Aide-de-Camp on the International Military Staff at the North Atlantic Treaty Organization.

have we struggled so much in attaining our stated political goals? The War of 1812, the Banana Wars, World War I, Korea, Vietnam, Bosnia, Somalia, Iraq, and Afghanistan all saw brilliant battlefield victories with limited strategic success. These failures are not a product of the American intellect, spirit, ingenuity, or will. They are a failure of the American view of war and a failure of our model for operational art. The current method by which the United States views the interplay of the *levels of war* is insufficient to translate tactical victories into strategic and political successes, requiring a new way of viewing operational art and warfare.

Operational Art and the Levels of War

Joint Publication (JP) 1, *Doctrine for the Armed Forces of the United States*, describes *operational art* as "the cognitive approach by commanders and staffs—supported by their skill, knowledge, experience, creativity, and judgment—to develop strategies, campaigns, and operations to organize and employ military forces by integrating ends, ways, and means."[1] By this definition, operational art encompasses all three levels of war (strategic, operational, tactical) by synchronizing the actions of units executing tactical missions with the political goals that placed those forces into a theater of operations. What is interesting about the joint definition is that the wording indicates a holistic approach to matching policy ends with national and regional means by developing appropriate ways of employment. The definition also suggests that operational art is a way of thinking that links all three levels of war; however, JP 1 places this definition on page I-8, under the *operational level of war*. This placement alludes to bounding the concept of operational art strictly at the operational level with only limited links to the other levels, despite those links being spelled out in the definition. This duality implies that, as a profession, we still do not have a solid grasp of what operational art is and how to appropriately apply the theory.

To clarify what operational art is, we must first understand where it came from, how it developed, why it developed, and the purpose it was designed to meet. Without this understanding, we are unable to adequately adopt the term and concept to meet our future needs. The term itself, as with the *operational level of war*, is a product of post–Industrial Revolution warfare and was developed to explain how the Napoleonic concept of decisive battle no longer applied to conflict, since armies were now more mobile, more lethal, and more spread out. Since the term evolved from an earlier understanding of the character of warfare, we must assume that it will continue to evolve as that character changes. Like any other art form, operational art must reflect the realities of its time to work appropriately.

A Brief History of Operational Art

Before and during the early years of the Industrial Revolution and the Napoleonic wars, the operational level of war did not exist. Weapons and tactics dictated the massing of troops, with short-range weapons, to engage and defeat an opponent in a decisive battle. At this point, only tactics and strategy existed, since strategy was about deploying one's forces to the battlefield, and tactics were about employing one's forces on the battlefield. The pinnacle of this method of warfare was Napoleon's "strategy of the single point," wherein he maneuvered to converge his forces onto the enemy at a single point for a decisive battle to settle the seasonal campaign or war.[2]

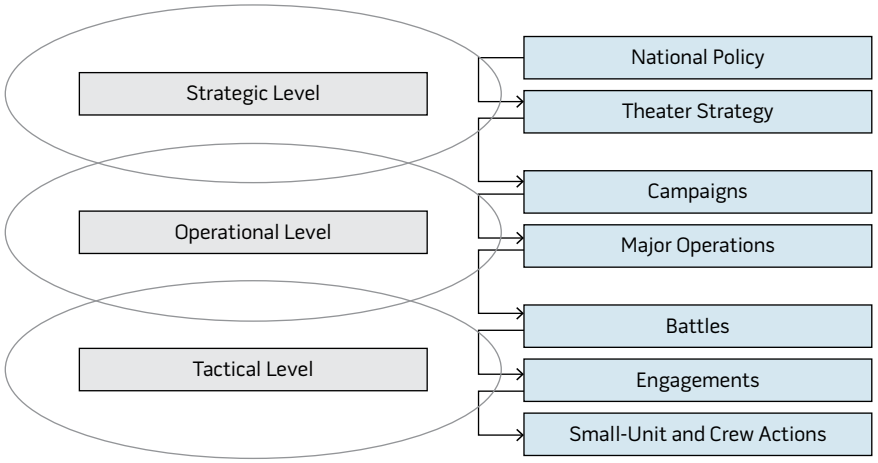
As technology matured and the Industrial Revolution changed militaries, "a critical change in the pace of battle emerged."[3] As deployment and employment became one singular whole, the pace and tempo of battle quickened. Napoleon's single point and Carl von Clausewitz's decisive point began to lose their effectiveness as armies sought to spread out and fight each other over "extended lines" and over longer periods of time and larger spaces.[4] The change in the sizes of armies and battlefields was accompanied by changes in the number of resources used, the requirement of population support, the mobilization and movement of forces and resources, and the emerging link between rear area support and frontline engagements.[5]

The critical turning points in the development of operational art and the operational level of war were the wars of German unification (1806–1871) and the American Civil War (1861–1865), when weapons and transport technology extended the battlefield in length and depth and allowed for a linking of battles to achieve a strategic objective. These changes came to full maturation in World War I, when armies were "unable to achieve decisive results on an operational scale. . . . This meant that the main offensive thrust was often aimed at a point in the enemy's line that could be easily pierced tactically, not 'along an axis that promised operational results.'"[6]

As weapon ranges extended and troop formations spread out, military operations began to evolve. Between World War I and World War II, Soviet theorists sought to find a way to break the positional stalemate and to inject mobility back into warfare, discovering that modern warfare required the linking of multiple operations to bring about strategic success.[7] Soviet theorists also provided some of the first definitions of *operational art*, with G.S. Isserson stating that "an operation is a weapon of strategy, while strategy is a weapon of politics"[8] and Aleksandr Svechin stating that "all branches of the art of war are closely interrelated: tactics takes the steps that make up an operational leap, and strategy points the way."[9]

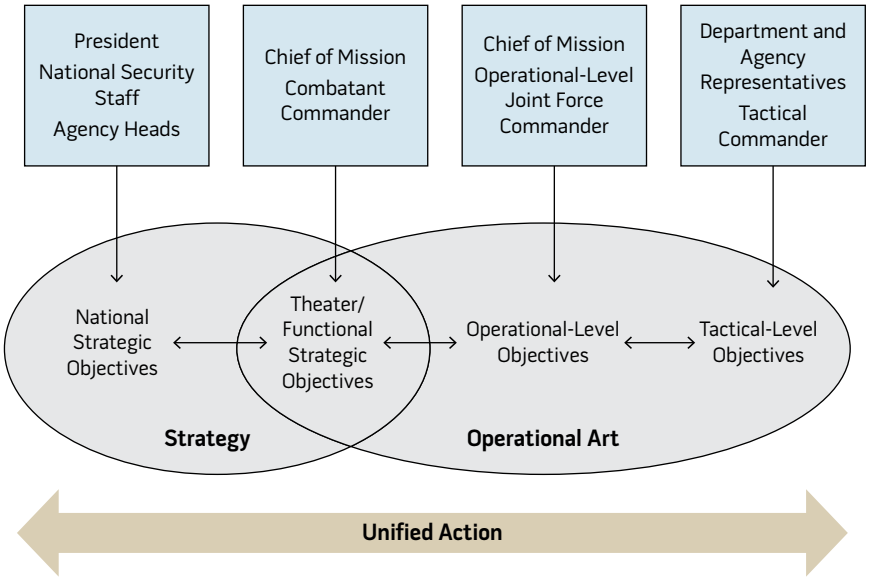
The U.S. military did not embark on a serious study of the *operational level of war* or *operational art* until the 1980s. The catalyst for this change was the Vietnam War and renewed interest in Soviet military studies. Today, the term and concept are under increasing pressure as the United States has been unable to translate tactical success into strategic victory since the Gulf War. As such, a detailed and deliberate look at why we continue to fail in our strategic goals—despite our massive political, diplomatic, military, and economic power—is warranted.

Figure 1. Levels of Warfare



Source: Joint Publication 1, *Doctrine for the Armed Forces of the United States* (Washington, DC: The Joint Staff, March 25, 2013, Incorporating Change 1, July 12, 2017), I-7.

Figure 2. Relationship Between Strategy and Operational Art



Note: Operational art links tactical action to strategic purpose. Operational art governs the deployment of forces and the arrangement of operations to achieve and strategic objectives.
Source: Ibid., I-13.

The Current Model—And Why It Is Failing

Our current joint doctrine spells out how the United States views the relationship between the levels of war and operational art. JP 1 states, "There are no finite limits or boundaries between these levels, but they help commanders design and synchronize operations, allocate resources, and assign tasks to the appropriate command."[10] JP 3-0, *Joint Operations*, further elaborates this point by stating that "tactical actions can cause both intended and unintended strategic consequences, particularly in today's environment of pervasive and immediate global communications and networked threats."[11] Figure 1 shows how the United States views the three levels of war. The figure depicts a stratified Venn diagram with the three levels laid out linearly, with only the operational level experiencing overlap with the other levels. Furthermore, national policy is subsumed into the strategic level. This mental construct and model survive even though JP 3-0 clearly states that tactical actions can have strategic consequences.

JP 3-0 also offers a model of how operational art interacts with strategy and the three levels of war. Figure 2 shows operational art interacting with strategy at theater/functional strategic objectives, overseen by the chief of mission and combatant commanders. In this depiction, operational art is seen starting with the strategic objectives set by the national command authority and delivered via operational and tactical objectives. An arrow and text below indicate that unified action is achieved via this model and that successful operational art "links tactical action with strategic purpose."[12] The reader should once again note that this is a linear model, showing the ideal situation of tactical actions nested in operations, which are in turn nested to strategic objectives. Both of these models fit well with Colonel Arthur Lykke's ends-ways-means model.

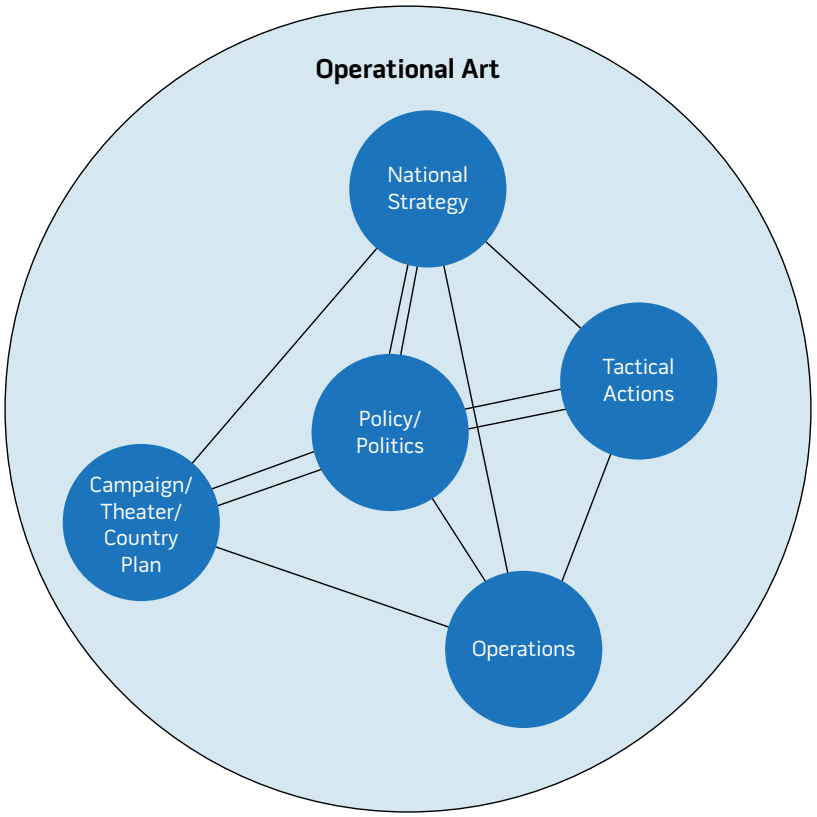
Both JPs place operational art at the operational level. Within these publications we find the seeds of failure planted. Any veteran or student of conflict will understand that warfare is not a linear event. Small occurrences can have major impacts on skirmishes, battles, operations, campaigns, strategies, and political policies. These disruptions are becoming even more pronounced as the information age allows for the transmission of events and ideas to audiences around the world in near-instantaneous time. Professor Harry Yarger points out that "with the advances in transportation and communications there has been a spatial and temporal convergence of strategy, operational art, and tactics. Increasingly . . . events at the tactical level have more immediate and, potentially, greater strategic consequences."[13]

These publications also note that tactical and operational success do not always translate into strategic victory or attaining political goals. The history of human conflict teaches one critical lesson: Battlefield (tactical) success is useless and meaningless if it does not support political ends. Professor Yarger even argues that changes at the strategic level can have simple causes and that when those changes occur, they create a feedback loop that causes changes across the strategic environment.[14] Our models and understanding of the interplay of the three levels of war and how operational art ties them together do not account for these anomalies and thus do not lay the intellectual framework and understanding for best practice operational art.

One of the chief intellectual failures of the current model is that operational art is "binned" under the operational level of war but is shown to traverse the strategic to the tactical level. This allows for two methods of understanding operational art and how it is supposed to serve the commander and his or her staff. Those who see it as a tool of the operational level lose sight of how tactical actions can be linked with strategic effects. This issue is reinforced by the linear model that we use to frame the interplay of the levels of war and warps our mental model to believe that every tactical action must link with an operational design to affect the strategic level—a false assumption. This linear model also leads us to attribute unit or headquarters size to a specific level of war, forcing us to equate force structure to each level versus mission or capability.

To illustrate this point, we need only look at our special operations forces and long-range bomber assets. When a special operations team or B-2 execute a mission, they are executing a tactical action that may have strategic or political effects. When this occurs, there exists a direct link between the tactical and strategic levels, based on mission and capability and not the headquarters size or type. Another example is that of the "strategic corporal," wherein we recognize that the actions of a lone infantryman can have

Figure 3. Operational Art and the Levels of War



profound strategic and political effects. Once again, this tactical action links directly to the strategic and political levels.

The final issue with this model is that it does not represent political concerns or interests, domestically or internationally. National policy gets an honorable mention in the JP 1 model, but political considerations are otherwise not considered or understood. Indeed, the U.S. military does not participate in political discussions or decisions, but their effects are felt throughout the force and through all three levels of war. Rules of engagement, alliances, coalitions, force size, and missions are all affected by politics and political decisions. By failing to acknowledge this level and its immense impact on how wars are conducted, we hamper the civil-military dialogue and delink the political cause for conflict with the actual fighting. As Clausewitz stated, "War, therefore, is an act of policy. . . . Policy . . . will permeate all military operations, and . . . it will have continuous influence on them. . . . The political objective is the goal, war is the means of reaching it, and means can never be considered in isolation from their purpose."[15]

The current model fails in several ways to provide an adequate picture of how human conflict evolves. As conflict continues, policies, goals, and will tend to change. Long wars start under one set of political circumstances and often end under a different set. Policies change, and as a result, strategies to attain those policies must also change. This means that operational designs and tactical actions are affected by political and strategic decisions, with the relationship going both ways. This two-way relationship is not a linear one wherein effects are felt only up and down the chain of command and levels of war. Effects happen at different points, at different times, and with different intensity. Our inability to recognize and account for phenomena leaves us at a major disadvantage.

Soldiers with 101st Division Special Troops Battalion, 101st Airborne Division, watch as two Chinook helicopters fly in to return them to Bagram Airfield, Afghanistan, November 4, 2008 (U.S. Army/Mary L. Gonzalez)

A Nonlinear Model for a Nonlinear Reality

An appropriate model for thinking of the interplay of operational art and the levels of war should be nonlinear and show the complex linkages and connections that exist in reality. Figure 3 attempts to do just that, using a molecular model format common in chemistry to show the bonds and interplay of atoms. These chemical models use sticks and balls to depict the linkages and relationships between atoms and how those linkages bind together to make a single molecule. This same model and mental construct can be adapted to visualize the interplay of the levels of war and how they interact with one another to inform the commander and his or her staff of how to approach a specific problem. Much as individual atoms bond together to form a molecule, these levels of war bond together to form the strategic and operational environment, and how we manage these individual spheres and the whole environment is operational art. In other words, this model gives us a better mental picture and baseline of how to view and apply operational art theory.

This model uses five spheres to indicate the core parts of the model. It does not stratify the levels of war but represents them by showing the various parts of the environment and how they interact with one another. The spheres are sized to represent importance. As with the chemistry models, lines depict the strength of the bond between the spheres, a single line indicating a bond and a double line indicating a stronger bond. This model, set as a 3D construct, allows for decisions, events, and planning to account for the fluid nature of the international environment and how singular events can have multiple and varying effects across the spectrum, which is a key consideration in the proper use of operational art. The larger circle around the molecular structure shows that operational art is the consideration and balance of each sphere in relation to one another. The art is in understanding how events in each sphere affect and change the other spheres.

Policy and politics are central to this model and have the largest sphere. Whereas in our current model policy is subsumed into strategy, in this model it has its own sphere and holds the central location within the model.

This represents the idea that politics is paramount to all international discourse and must play a prominent role in any government or military action on the international stage. Also in this model, policy is bound to all the other four spheres, with strong bonds to all but the operational sphere. Since national policy is the starting point for national and theater strategy, it holds a strong bond to each of those spheres. This aspect of the model is similar to our current models. The drastic point of departure from current thinking is the link between policy and tactical actions. This is a strong bond, representing the fact that individual and small-unit actions are heavily influenced by political decisions. A single line connects policy to operations, showing that a connection does exist between the two, but is balanced by the influence of and connections to strategy and tactics.

The other two spheres, national strategy and operations, link to the other four spheres. This shows that both of these areas are influenced by and have influence on the other spheres, both directly and indirectly. National strategic documents derive from political goals to inform and affect theater campaign plans, operational designs, and acceptable tactical actions within given theaters. Operational design accounts for national strategic goals and campaign plan goals and influences tactical resourcing and decisionmaking.

Campaign plans and tactical actions are the only two spheres that do not have a connection to each other. Both these spheres are connected to policy, national strategy, and operations to indicate that each one has a direct influence or is directly influenced by those spheres but must pass through any of those spheres to affect each other. For example, a tactical success or mistake will not directly affect a campaign plan without first affecting an operational outcome, a national strategic objective, or a political policy. The converse of this is that a campaign plan will not directly affect a tactical plan without first affecting policy, strategy, or operational design. This is not to say that the two do not influence each other but that they do so in an indirect manner.

With this new model in mind, we must once again review our doctrinal definition of *operational art*: "The cognitive approach by commanders and staffs—supported by their skill, knowledge, experience, creativity, and judgment—to develop strategies, campaigns, and operations to organize and employ military forces by integrating ends, ways, and means." Since it calls for a cognitive approach, our model must support the creation of a mental picture of the environment that allows us to understand how actions and effects act and interact. A stratified picture of this environment limits our thinking, but a baseline mental model that represents the dynamic nature of the environment aids our thinking and supports more accurate understanding. The definition also calls for operational artists to develop strategies, campaigns, and operations to organize and employ military forces by integrating ends, ways, and means. By using a nonlinear model, we are able to better visualize the interplay of policies down to tactics, which will aid us in understanding the best ways and means to achieve the desired ends. We can understand how operations and tactical actions do or do not nest with policies and strategic goals, and we can visualize how and why events in the environment affect each level and their desired endstates.

A Test

To test this model, let us look at the Japanese attack on Pearl Harbor Naval Base through a Japanese lens. Using our linear model, we would trace the Japanese air raid as a tactical plan, which supported the operational objectives of securing vital lines of communication by crippling the U.S. Pacific Fleet to enable the capture of U.S. Pacific bases, thereby supporting the Japanese theater strategic aims. These aims included denying the United States the ability to interfere with Japanese military operations in the Pacific and mitigating the U.S. oil embargo by securing the raw materials. By this model, we can trace a logical line of thought and a nesting of tactical actions to strategic goals. We can also see, if we look closely enough, the limitations that this model possesses.

By applying the proposed model, we are able to paint a much more comprehensive picture. Let us start with the Japanese policy (political goal) of securing raw materials. The strategy for this policy could include economic actions to purchase them, diplomatic options to secure access, or military operations to seize them. With the U.S. embargo in effect, Japan decided that economic and diplomatic measures were insufficient. So a national strategy of military action to secure the Southern Resources Area was required. This in turn created a theater strategy to attack Indonesia and Malaysia to physically seize the necessary raw materials. In planning for these operations, however, the strategy deviated by considering the U.S. positions as too risky to bypass. Again, a national strategy had to be created to deal with this issue. Japan could have used either diplomacy or military action to keep the United States from responding. The Japanese decided that military action against the United States best served their policy. As a result, the theater strategy was amended to include an assault on the Philippines, the Mariana Islands, Wake Island, and the Marshall Islands, with a supporting raid against Hawaii. With the theater strategy set, the naval strike force was formed, and the naval operation was planned. Within that operational plan, the tactic of an air raid was chosen, rather than a ground incursion, and Midway Island was bypassed as insignificant.

Conclusion

The current definition of *operational art* still remains valid as written, but it should not be misconstrued with the *operational level of war*. Our doctrinal understanding of the concept should reflect the "how" and not the "what." Operational art, as with any art form, is about creative thinking and innovative problem-solving. To be creative—that is, to be a true artist—one must not only be trained and experienced, but also build a mental model that allows for agility and clarity of thought. By applying this model with the current

Marine with Weapons Company, Battalion Landing Team 2nd Battalion, 5th Marine Regiment, 31st Marine Expeditionary Unit, captures member of opposing force during urban combat training in Okinawa, Japan, February 8, 2014 (U.S. Marine Corps/Andrew Kuppers)

definition, we will achieve clarity of thought and expand our mental boundaries to gain a clearer understanding of the challenges that we face. Operational art works only when those who are applying it can see the environment for what it is and not for how they want it to be.

Our current mental construct of the interplay of the levels of war and operational art prevents us from fully appreciating the complexity of the international strategic environment and sets us up for failure. Without a proper understanding of the nonlinear nature of international discourse and how the various levels of war interact and influence one another, we are unable to properly scope how to conceptually approach complex and complicated international challenges. This prevents us from grasping the interplay of politics and tactics and handicaps us in translating tactical successes into strategic and policy goal accomplishment. By using a linear model, we artificially constrain our thoughts and imagination and fail to accurately model the reality that we face.

The proposed model in this article seeks to accurately depict how the levels of war connect and how operational art can be applied to understand the strategic environment and apply resources and pressure in the appropriate time, manner, and place to achieve our national goals in the most efficient manner. By removing the linear construct and showing the strength of the connections between each sphere, it seeks to show how the whole is built and how each part plays a role. It is also designed to visualize how events in one sphere will influence or be influenced by events in other spheres. By crafting a more flexible nonlinear model, we improve our chances for success in crafting policy, strategy, operational design, and tactical plans to achieve our national goals. **JFQ**

Notes

[1] Joint Publication (JP) 1, *Doctrine of the Armed Forces of the United States* (Washington, DC: The Joint Staff, March 25, 2013, Incorporating Change 1, July 12, 2017), I-8.

[2] Michael D. Krause and R. Cody Phillips, *Historical Perspective of the Operational Art* (Washington, DC: U.S. Army Center of Military History, 2005), 4.

[3] Wilson C. Blythe, Jr., "A History of Operational Art," *Military Review* (November–December 2018), 39.

[4] Krause and Phillips, *Historical Perspective of the Operational Art*, 5.

[5] Ibid.

[6] Blythe, "A History of Operational Art," 39.

[7] Ibid., 40.

[8] Georgii Samoilovich Isserson, *The Evolution of Operational Art* (Fort Leavenworth, KS: Combat Studies Institute Press, 2013), 12.

[9] Aleksandr A. Svechin, *Strategy*, ed. Kent D. Lee (Minneapolis, MN: East View Information Services, 1992), 269.

[10] JP 1, *Doctrine of the Armed Forces of the United States*, I-7.

[11] JP 3-0, *Joint Operations* (Washington, DC: The Joint Staff, January 17, 2017, Incorporating Change 1, October 22, 2018), I-12.

[12] Ibid., I-13.

[13] Harry R. Yarger, *Strategy and the National Security Professional* (Westport, CT: Praeger Security International, 2008), 23.

[14] Ibid., 31.

[15] Carl von Clausewitz, *On War*, ed. and trans. Michael E. Howard and Peter Paret (Princeton: Princeton University Press, 1989), 86–87.

Marines assigned to Battery R, 5th Battalion, 11th Marine Regiment, launch High Mobility Artillery Rocket System from Guided Multiple Launch Rocket System during Operation Steel Knight, aboard Marine Corps Air Ground Combat Center, Twentynine Palms, California, December 7, 2017 (U.S. Marine Corps/William Chockey)

Multidomain Ready

How Integrated Air and Missile Defense Is Leading the Way

By Jonathan C. Stafford

The U.S. military's dominance in the traditional domains of land, sea, and air has been a key advantage that has greatly helped ground forces succeed in recent conflicts. However, strategic competitors have begun to challenge U.S. dominance in these domains with advanced surface-to-air missiles, antiship cruise missiles, tactical ballistic missiles (TBMs), antisatellite weapons, mobile sea mines, drones, electronic warfare, and cyber/electronic warfare. Along with these new technologies, new tactics, such as the use of Russian paramilitaries in Ukraine[1] and of Chinese fishing boats to enforce territorial claims in the South China Sea,[2] have further challenged U.S. military dominance.

These new capabilities and tactics have not gone unnoticed by senior U.S. military leaders. General David Perkins, former commander of U.S. Army Training and Doctrine Command, stated, "Since the rout of Iraqi forces in [Operation] *Desert Storm* 25 years ago, potential foes have found ways to counter how the U.S. military wages war within an air/land concept. They are fracturing our way of war by using other domains. . . . We can't do it with two domains; air and land are not enough."[3]

General Robert Brown, commander of U.S. Army Pacific, has noted that in the Pacific area of operations, adversaries have developed technology and tactics that have led to a loss of U.S. dominance in the sea and air. To regain dominance, Brown advocates for integrating operations in multiple domains: "We in the Army can no longer simply focus on the land, leaving the air and sea to other Services. All U.S. forces must change their distinct Service cultures to a culture of inclusion and openness, focusing on a purple (or joint) first mentality."[4] The former commander of the U.S. Indo-Pacific Command (USINDOPACOM), Admiral Harry Harris, reemphasized Brown's point, stating that "the Army's got to be able to sink ships, neutralize satellites, shoot down missiles and deny the enemy the ability to command and control its forces."[5]

These calls from senior military leaders to focus on additional domains and increase openness to joint operations are being described as multidomain operations (MDO).[6] The Army defines *MDO*

Lieutenant Colonel Jonathan C. Stafford, USA, is the Military Science Department Chair at Eastern Washington University.

Soldiers enrolled in Basic Leadership Course, instructed by 7th Army Training Command noncommissioned officers, conduct field training exercise at Yavoriv Combat Training Center in Yavoriv, Ukraine, July 11, 2018 (U.S. Army/Derrick Garner)

as "a joint combined arms concept for the 21st century" that "places greater emphasis on space, cyberspace, as well as other contested areas such as the electromagnetic spectrum, the information environment, and the cognitive dimension of warfare."[7]

Building on the Air-Sea Battle concept established in 2013, MDO advocates for contesting the five domains of land, sea, air, space, and cyber, as well as the electromagnetic and information subdomains. MDO also advocates for conducting operations more jointly to increase operational advantages across all five domains.[8] Joint doctrine is beginning to reflect this focus on MDO. Joint Publication (JP) 3-0, *Joint Operations*, views the strategic environment as "increasingly trans-regional, multi-domain, and multi-functional in nature."[9]

Changes in doctrine and organization have been recommended to emphasize increasing joint operations and focusing on multiple domains. This article argues that integrated air and missile defense (IAMD) operations are already executing MDO by focusing on the five overarching concepts. The lessons learned from these concepts should help inform the development of MDO.

Complementary Capabilities

IAMD features some of the U.S. military's most complex technology; its capabilities stretch across all domains. For the Army, the primary capability for IAMD is the combat-proven Patriot system. The Patriot has been the workhorse for air defense operations for nearly 40 years, providing point defense to designated critical assets.[10] It most recently supported U.S. combat operations during Operation *Iraqi Freedom*, where it was credited with intercepting nine of nine short-range ballistic missiles.[11] Patriot batteries continue to be deployed around the world in support of combatant commanders.

The Patriot's success has caused adversaries to develop and proliferate more advanced and longer range ballistic missile technology. These more advanced missiles fly through the space domain above the capability of the Patriot to intercept. In response, the Army's newest ballistic missile defense (BMD) system, the Terminal High Altitude Area Defense (THAAD), has been fielded with the capability to provide area defense against medium- and intermediate-range TBMs.[12] THAAD is able to intercept these threats by employing a powerful ground-mobile X-band radar called the AN/TPY-2 (Army Navy/Transportable Radar Surveillance). Once incoming TBMs are acquired by the AN/TPY-2, the radar helps guide interceptors fired from THAAD launchers to intercept the incoming threats either above or below the Earth's atmosphere. Since the start of the THAAD test program in 2006, it has achieved a perfect intercept record (15 for 15).[13]

The flexibility of the AN/TPY-2 radar also gives it the ability to influence the maritime domain. The radar can be

configured in a standalone surveillance mode without the rest of the THAAD components to provide cueing data to other missile defense assets. For example, the cueing data allows the Navy's Aegis BMD system to conduct launch-on-remote exoatmospheric engagements of enemy TBMs over the maritime domain with the Standard Missile–3 (SM-3).[14] This capability increases the area defense capability of the SM-3 against medium- and intermediate-range missiles.

THAAD, Aegis, and the AN/TPY-2 radar are not the only assets that have stretched missile defense operations across multiple domains. Army National Guard personnel in Alaska and Colorado operate the Ground-Based Midcourse Defense system that has the capability to defend Alaska, Hawaii, and the U.S. mainland against a limited intercontinental ballistic missile (ICBM) attack from North Korea or Iran. The system does this by firing interceptors from Alaska and California to conduct exoatmospheric engagements against ICBMs by using data provided by land-, maritime-, and space-based sensors operated by each Service. Combined, these joint missile defense systems complement each other and provide a capability to defend against all ranges of missile threats across multiple domains. As the U.S. military looks to expand MDO capabilities, each Service will need to develop or innovatively use existing systems to access and provide complementary cross-domain effects as well.

Interoperable Data Network

For future multidomain operations, a common and reliable data network will need to be shared among the Services. Missile defense systems already excel at using data provided from joint assets that stretch across domains. An example of an ongoing multidomain operation executed by joint BMD assets is the defense of the U.S. territory of Guam.[15] The early warning of a North Korean missile launch toward Guam would be provided by space-based sensors from the Air Force's Defense Support Program and Space-Based Infrared Surveillance satellites.[16] These satellites pick up the infrared heat of the missile during boost phase. The next system to track the TBM would be land-based, Army-operated AN/TPY-2 radars in Japan. Besides the AN/TPY-2 radars, if deployed, tracking data can also be provided from the maritime domain by U.S. Navy Aegis BMD ships and the Sea-Based X-Band (SBX) radar.[17] The SBX is the world's largest X-band radar and can track an object the size of a baseball flying over San Francisco from New York Harbor.[18] All these joint sensors provide cueing data to Aegis or THAAD units to help successfully intercept any TBM attack against Guam.[19]

These joint missile defense assets are able to execute their mission to defend Guam only because they all use the Link-16 data network.[20] Link-16 is an encrypted, jam-resistant, tactical digital data link network that can transmit and receive messages. Link-16 is used by the United States, the North Atlantic Treaty Organization, and other nations to share data among missile defense assets, ships, and ground forces. Integrating Link-16 data requires a robust command and control (C2) interface for effective battle management. For joint missile defense operations, the primary C2 system is the Command and Control, Battle Management, and Communications (C2BMC) program, which integrates and synchronizes missile defense sensors and weapons systems to optimize performance and provide a common operating picture (COP) that enables commanders at the strategic level (including the President, Secretary of Defense, and combatant commanders) to collectively see a ballistic missile launch develop to aid decisionmaking. C2BMC also assists staff officers with planning operational-level missile defense operations to achieve strategic- and regional-level objectives. It gives Soldiers at the tactical level operating the AN/TPY-2 radars the ability to view and manage missile defense operations as well.[21] The ability of C2BMC to provide effects from the strategic to tactical levels is made possible by Link-16.

Link-16 also could be used to create cross-domain effects. An example of this potential was demonstrated during Northern Edge 2015 in Alaska. During the exercise, an F-18 Hornet passed Link-16, targeting data of an enemy ship to a High-Mobility Artillery Rocket System (HIMARS).[22] The concept was further advanced during the 2018 Rim of the Pacific exercise when targeting data was not only passed to a HIMARS unit but also used to strike a target ship. The success of these exercises shows that expanding the use of Link-16 for future multidomain operations has enormous potential to optimize cross-domain effects. However, a system that provides a COP usable from the strategic to the tactical level, such as missile defense currently has with C2BMC, is needed to command and control, plan, and synchronize these cross-domain effects.

Cross-Service Authorities

As the U.S. military builds increased MDO capabilities, it must have proper authorities in place to ensure those effects are coordinated across Services. For missile defense operations, these authorities have already been established in joint doctrine. According to JP 3-01, *Countering Air and Missile Threats*, theater missile defense units fall under the joint force air component commander (JFACC), who is usually dual-hatted as the area air defense commander (AADC).

The commanding general for the supporting Army Air and Missile Defense Command (AAMDC) serves as the deputy area air defense commander (DAADC) for the AADC. The DAADC is responsible for integrating joint and multinational missile defense capabilities; developing defense designs; and advising on rules of engagement, air defense warnings, and other control measures on behalf of the AADC.[23] The AADC can then delegate down authorities as required. For IAMD operations, delegation of engagement authorities is critical because the flight time of ballistic and cruise missiles is measured in minutes, which requires quick decisionmaking to intercept. The delegation of authorities becomes even more complex when Army air defense units are defending assets with Aegis BMD ships.

This is why engagement authorities are often delegated to either a senior air

Sailors and Coast Guard Pacific Law Enforcement Detachment Team personnel approach Chinese fishing vessel during Oceania Maritime Security Initiative mission with USS *Sampson*, Pacific Ocean, November 29, 2016 (U.S. Navy/Bryan Jackson)

defense officer (SADO) or an air defense artillery fire control officer (ADAFCO). The SADO, who is typically an Air Force or Navy officer, and the ADAFCO, who is an Army officer, coordinate joint fires to ensure IAMD units are not firing at the same incoming ballistic missile that an Aegis ship is engaging, and vice versa. This tactical-level concern of preventing over-engagement can quickly produce strategic-level consequences if priority-defended assets such as airbases or aircraft carriers are suddenly vulnerable to missile attack due to the lack of interceptors. Another important function of the SADO and ADAFCO is to help control airspace in order to reduce the chance of fratricide within the air domain. The two fratricides by Patriot batteries during Operation *Iraqi Freedom* in 2003 are evidence of why tight control of multidomain effects is necessary.[24] Today, the SADO and ADAFCO play a key role in preventing fratricides within the air domain.

Based on the lessons learned from missile defense, for future MDO, joint doctrine will need to address authorities in order to better coordinate and optimize the employment of multidomain effects across the Services. For example, if the Army is providing effects with HIMARS batteries into the sea domain, control measures will need to be developed that coordinate those effects to prevent any potential over-engagement or fratricide with other joint assets that could lead to strategic-level consequences.

Joint Planning Framework

Conducting multidomain operations will require complex joint planning to optimize physical and cognitive maneuver and create the windows of localized advantage across all domains that the MDO concept envisions. Conducting missile defense operations today provides a perfect example of the complexities of multidomain operations. Some of the complexities missile defense planners must plan for include integrating with the ground and maritime schemes of maneuver, deconflicting airspace, coordinating defensive counter-air lanes, nominating targets, requesting space and cyber effects, and coordinating fires between joint missile defense assets. Additionally, depending on the situation, missile defense planners may have to coordinate with outside organizations, such as the Missile Defense Agency or the Joint Functional Component Command for Integrated Missile Defense, for technical assistance with maximizing defense designs and defending data networks.

These complexities required a framework to properly plan integrated air and missile defense operations. The publication of JP 3-01 provided the needed framework that missile defense planners use to coordinate across Services. For deliberate planning, joint doctrine specifies the use of the Area Air Defense Plan (AADP), the baseline document that integrates active and passive air defense measures, C2 procedures, and supporting mission aspects that provide a comprehensive approach to defending against air and ballistic missile

threats. The AADP is developed by the JFACC, who coordinates its completion with the rest of the joint force.[25]

For crisis action planning, the Joint Theater Air and Missile Defense (JTAMD) process is often used.[26] The process is not yet established in joint doctrine, but it provides the AADC with a means to coordinate, integrate, and synchronize all available IAMD capabilities. The process begins with a working group of skilled planners from the joint force air, land, and maritime component commanders, the Marine liaison element, the AAMDC staff, and Air and Space Operations Center (AOC) personnel. The group develops courses of action and recommendations to the DAADC for approval. The DAADC reviews the recommendations from the group and either accepts them, recommends changes to the courses of action, or rejects them and instructs the group to reconvene and come up with a better solution based on additional guidance. Once the DAADC approves the courses of action, they are presented to the AADC for approval.

Future multidomain operations will likewise need a formalized framework to conduct both deliberate and crisis action planning across Services. An MDO plan based on the current AADP process should be considered to conduct deliberate planning. For crisis action planning, the JTAMD process has been successful in coordinating missile defense operations across Services and could be a model for planning MDO from the strategic to operational levels as well.

Allied Integration

Conducting MDO is extremely complex and challenging. The complexities of MDO only become greater when allies are included. As modern threats continue to expand, the Department of Defense made clear in the 2018 National Defense Strategy that allied integration must be a priority in order to share the growing global security burden.[27] The proliferation of ballistic and cruise missile threats is an example of the growing global security burden because it has caused a greater demand for U.S. missile defense assets. In response, missile defense planners are relying more on allied systems to increase capacity to defend multiple domains against growing ballistic and cruise missile threats.

Arguably, the most important aspect of allied integration is interoperability. System interoperability allows data to be exchanged between U.S. and allied missile defense systems. An example of the effectiveness of system interoperability is past trilateral link exercises conducted between Japanese *Kongo*-class Aegis ships, Korean destroyer experimental ships, and U.S. Navy Aegis ships.[28] During the link exercises, the ships demonstrated the capability to pass Link-16 missile track data to each other. Foreseeing the increased need for allied interoperability in the multidomain battlefield, the National Defense Strategy specifies the need for accelerating foreign partner modernization.[29] An example of increased modernization is that the Republic of Korea (ROK) military is upgrading its Patriot air defense batteries to the more modern Patriot Advanced Capability–3 (PAC-3) configuration and has asked to purchase the most advanced Patriot interceptor, Missile Segment Enhanced.[30] Another example is that the Japanese military has already fielded PAC-3, has multiple Aegis BMD ships, and is planning to purchase two U.S. Aegis Ashore batteries to further strengthen its missile defenses.[31]

The purchase of American hardware is critical in allowing these allied nations to be interoperable with U.S. missile defense forces. However, integration into the planning process is important as well. For air defenders, the success of the JTAMD process has caused it to become a preferred method to plan and coordinate with allies. In the USINDOPACOM theater of operations, regional allies are integrated into the JTAMD process for both real-world and exercise events. The process has allowed these allies to influence and provide concurrence on the recommendations presented before final AADC approval.

Besides integration into the planning process, allies need to be integrated into the current operations process as well. A good example of this integration is the Combined Air and Missile Defense Operations and Coordination Center (CAMDOCC) inside the 607th Air Operations Center at Osan Airbase in the ROK.[32] In the CAMDOCC, Soldiers from the 94th Army Air and Missile Command sit side by side with their ROK air force counterparts coordinating IAMD operations and managing a combined COP. The close coordination in the CAMDOCC ensures that IAMD operations are optimized and that rapid information-sharing expedites the multilateral JTAMD planning and decisionmaking process.

There has been much success in allied integration with IAMD operations, with much more work to do. Future multidomain operations will require units from all the Services to become interoperable and integrate their planning and operations processes with U.S. allies as well. Successful allied integration will synchronize operations, better coordinate fires, increase training opportunities, and ultimately provide an advantage to multidomain warfighters that no strategic competitor can match.

The joint community has embraced integrated air and missile defense, and it is time for the joint community to embrace multidomain operations as well. It is a critical time in the Nation's military history—as the U.S. military was preoccupied with nearly two decades of war in the Middle East, strategic competitors were busy developing asymmetric capabilities to challenge U.S. military dominance. The success of IAMD has shown that a multidomain strategy in response to these threats can work. The joint response to the North Korean missile launches in 2017 is an example of this. During this time, Aegis BMD ships, THAAD, Patriot, joint radars, and allied IAMD assets were activated to track the missile launches and defend critical assets. All these assets spread out across the vast distances of the Pacific theater were successfully integrated and command and controlled by joint personnel located at the 613th Air and Space Operations Center at Hickam Field, Hawaii. All these assets working together produced the

strategic effect of reassuring American citizens and our allies in the region of the Nation's commitment to defend them and signaled to North Korea that the U.S. military was well prepared to respond to any miscalculation.

The former Pacific Air Forces commander and current U.S. Northern Command commander, General Terrance J. O'Shaughnessy, summarized the success of the joint response: "Pretty much anything we do out here, we do as joint partners and we do completely integrated in that fashion. If you walk into our AOC right now, you don't just see Airmen. You see Airmen, Soldiers, Sailors, Marines, working together every day."[33]

The MDO concept needs to advance to where one day Soldiers, Marines, Sailors, and Airmen are fully integrated and providing cross-domain effects to the level described by O'Shaughnessy for integrated missile defense. Getting there is going to take a commitment from all the Services to embrace MDO. This culture change will not be easy and will take time, but the time to start is now because there is too much at stake to delay. Basing future MDO concepts on the lessons learned from IAMD operations is a good place to start. **JFQ**

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Troops and crewmen aboard Coast Guard–manned LCVP as it approaches Normandy beach on D-Day, June 6, 1944 (National Archives and Records Administration/U.S. Coast Guard Collection)

Behind Enemy Plans

A Process-Tracing Analysis of Germany's Operational Approach to a Western Invasion

By Bradley Podliska, Karin Hecox, and Oliver Sagun

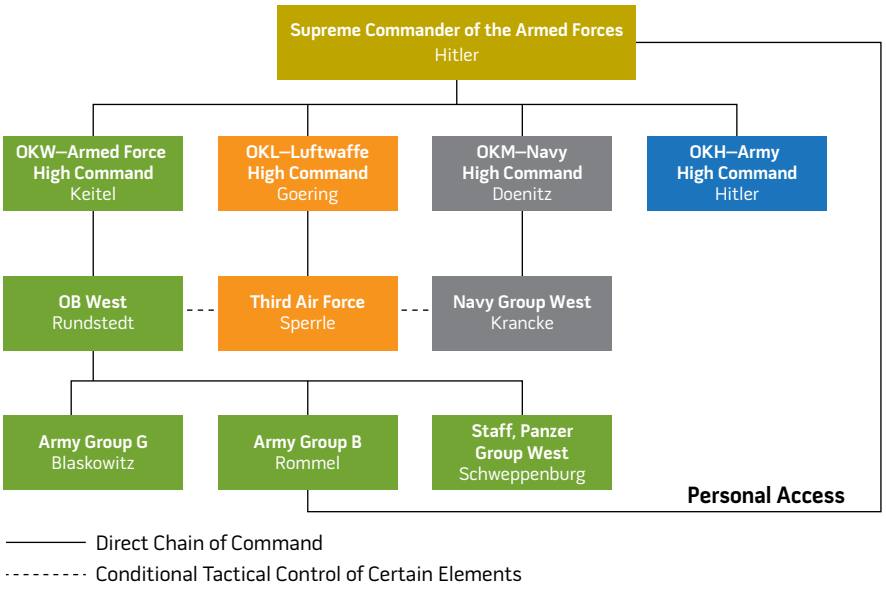
No plan survives contact with the enemy.

—Field Marshal Count Helmuth von Moltke the Elder

Sixty-four years after Moltke's observation, two mid-level German commanders, faced with the herculean task of changing the course of history on an early June 1944 morning, failed in their duties. In using

Dr. Bradley Podliska is an Assistant Professor of Military and Security Studies at the Air Command and Staff College. Major Karin Hecox, USMC, is the Deputy Branch Chief, Operations Division, J32 Intelligence, Reconnaissance Operations, Joint Staff. Major Oliver Sagun, USAF, is Division Chief, C4 Systems and Support, Headquarters, United States Forces Japan.

Figure 1. German Chain of Command



structured and qualitative analysis to examine German strategy and operations in the events leading up to and on D-Day, the loss can be traced to Admiral Theodor Krancke, commander of Naval Group West, and Field Marshal Hugo Sperrle, commander of Luftwaffe Third Air Fleet. Infighting, conflicting authorities, and lack of warfighting capabilities clearly hampered German command and control of operations on the Normandy coast. The Germans did have a plan, however, and Krancke and Sperrle proved to be the weak links: Both failed to execute when facing an Allied invasion on the Western Front.

This failure is counter to the mythological story of D-Day. The Allies, with overwhelming force and an overabundance of courage, executed a brilliant assault plan and won the longest day. As the story goes, the Allied invasion was so superior and heroic that nothing the Germans did mattered; the good guys were bound to win.[1] At least superficially, this story fails to go beyond some notable facts. Adolf Hitler micromanaged tactical actions, and given his late wake-up on June 6, the Allies took full advantage.[2] The personal feuds and fights over power, especially the one between Field Marshal Gerd von Rundstedt, Oberbefehlshaber West (Supreme Commander West, or OB West), and Field Marshal Erwin Rommel, Army Group B, contributed to the German failure at Normandy.[3]

More specifically, the research remains problematic because it fails to answer basic questions: Did the Germans have a plan in place to defeat an Allied Western invasion? If so, did Hitler and his commanders follow the plan? To put it simply, who lost D-Day? These questions are independent of Allied plans and actions and cover the events leading up to and on the day of the invasion.

By organizing German plans into elements to create a cognitive map or operational approach, historians may better understand the German defeat.[4] An operational approach is "a broad description of the mission, operational concepts, tasks, and actions required to accomplish the mission."[5] Specifically, it is the plan of how Hitler and his generals sought to defeat a Western invasion. Constructing a German operational approach post hoc will also help future joint planners better understand a commander's role and responsibilities in executing an operational plan.[6]

The German operational plan can be analyzed with process-tracing, a popular qualitative method for performing within-case analysis. Process-tracing evaluates causal links and describes a phenomenon (in this case, German defense of its Western theater) in a sequential manner.[7] One such process-tracing test is the hoop test. For a hoop test, a fact must be able to "jump through a hoop" in order to be considered true. The hoop, in this case, is an element of operational design assigned to an individual German leader or general (see figure 1). In other words, a German commander is eliminated as being at fault for the D-Day loss if the commander did in fact conduct his responsibilities as assigned in planning.[8]

German War Strategy

Understanding Germany's war strategy, operational environment, and problems is crucial to contextualizing Hitler and his commanders for the hoop test.[9] Hitler, adhering to his *Mein Kampf* objective of *lebensraum* (living space) in the East, first secured his eastern flank by invading Poland, next conquered Western Europe, and then began his campaign to defeat Russia.[10] The Russian invasion stalled, and by autumn 1942, the Germans changed their strategy to focus on a global war, not a theater war. Several new factors were at play: First, Hitler realized the Eastern Front had become a quagmire. Second, the Allies opened a second front in North Africa. Third, the Germans reached their zenith of manpower (losses could not be made up).[11] By summer 1943, the German situation worsened. Tunisia in North Africa fell. Grand Admiral Karl Doenitz lost the U-boat Atlantic campaign, and a German operation to halt Russian advances failed. Moreover, the Allies invaded Italy and began a relentless air-bombing campaign over Germany.[12] By the fall, with manpower and resources becoming scarce, the Oberkommando der Wehrmacht (Armed Forces High Command, or OKW) issued a directive requiring all changes in strength to be approved.[13]

The Operational Environment in 1944

In defending about 1,000 miles of the Atlantic Wall, the Germans assessed

Troops wade ashore from LCVP landing craft, off Omaha Beach, June 6, 1944 (National Archives and Records Administration/U.S. Army Signal Corps Collection)

defense of the coastal environment based on forces available, evaluation of the threat, and terrain. In consultation with the navy, OB West assessed sectors for suitability of troop landing, and defensive obstacles were placed accordingly.[14] Both the OKW and OB West expected the Allies to land at a port.[15] The Oberkommando der Marine (Navy High Command, or OKM) stated that an attack would occur at high tide.[16] The Germans expected to be able to move and resupply troops rapidly to the invasion area via rail.[17]

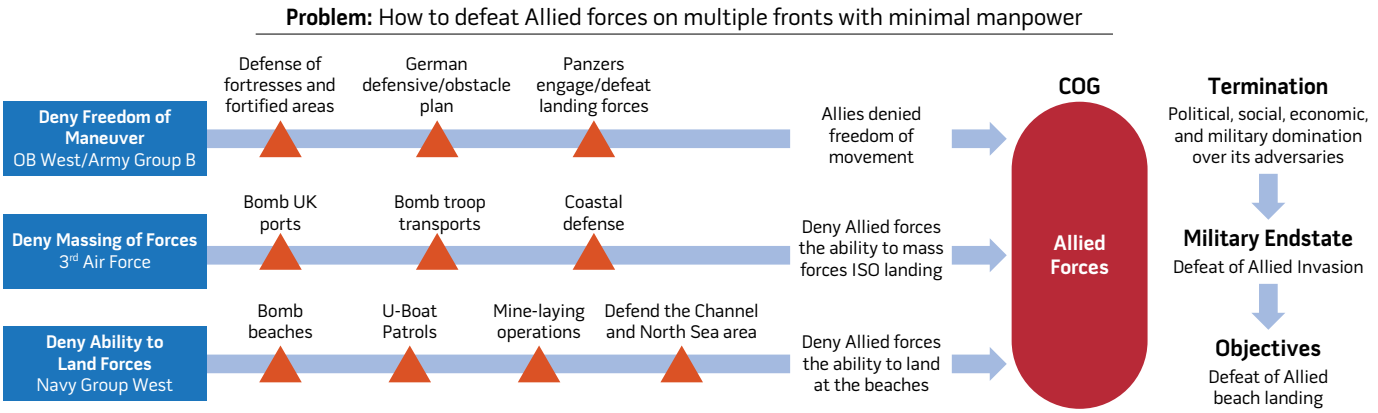
Defining the Problem

The problem Germany faced in 1944 was how to defeat enemy forces on multiple fronts. For the Western invasion, German estimates varied widely from 10 Allied divisions to as many as 70 divisions. Germany expected the Allies to have a tank superiority ratio of 10 to 1.[18] From April to May 1944, the Fremde Heere West (Foreign Armies West) reported the number of Allied divisions as 75 to 90 divisions (a misinformed count due to double agents and bureaucratic rivalry). The extreme estimates led Hitler to believe there would be a diversionary attack first, followed by the main attack.[19]

To counter this threat, Germany prepared 10 Panzer divisions and 50 infantry divisions to defend against an invasion.[20] These units were organized under a German command and control structure that was disjointed, convoluted, and contradictory.[21] Directly under Hitler was the OKW, the OKM, the Oberkommando der Luftwaffe (Luftwaffe High Command, or OKL), and the Oberkommando des Heere (Army High Command). OB West fell under OKW, and, on paper, had the subordinate units of Army Group B, Army Group G, and Panzer Group West.[22]

Rommel was responsible for the defense of Normandy, where he had the Seventh Army with the 84th Corps being the forward corps. In total, the Seventh Army had 14 infantry divisions, 1 Panzer division, and 47 heavy guns. The 716th Division—comprising mainly old men, teenagers, convalescents, and ethnic Germans from occupied territories—covered the British beaches. The 352nd Infantry Division and 726th Regiment covered Omaha Beach. The 352nd Division consisted of 12,734 veterans with modern weapons (for example, 105-millimeter [mm] and 150mm artillery pieces). The 709th Infantry Division covered Utah Beach and the Cherbourg port.[23] The Luftwaffe Third Air Fleet, under Sperrle, reported directly to OKL,

Figure 2. German Operational Approach



under Reichsmarshal Hermann Goering. It operated in a "cooperative" relationship with OB West.[24] Planes employed in coastal defense were under the control of OB West. Otherwise, OB West had to request the services of Third Air Fleet,[25] which consisted of the 2nd, 9th, and 10th Flying Corps, 2nd Air Division, 2nd Fighter Corps, and 122nd Reconnaissance Group.[26] Sperrle had 319 operational aircraft under his command at the time of the Allied invasion.[27] Notably, a majority of the German fighter aircraft and reserves, some 600, were stationed in Germany for defense of the homeland.[28]

Navy Group West, under Krancke, reported directly to OKM, under Doenitz. As with Third Air Fleet, only naval elements involved in coastal defense were under the control of OB West. Naval artillery, deployed on land, remained under navy control, unless a land invasion was occurring.[29] Navy Group West assets included the 5th Torpedo Flotilla, the 15th Patrol Boat Flotilla, the 5th Schnellboot (S-Boat, or, by the Allied name, E-Boat) Flotilla, and the 9th S-Boat Flotilla, which in total consisted of 20 to 30 E-boats, 6 torpedo boats, 20 minesweepers, 3 to 4 destroyers, and 4 to 5 U-boats in the English Channel area.[30]

A Process-Tracing Analysis of Germany's Operational Approach to a Western Invasion

Hitler and his commanders' plan to defeat the anticipated invasion can be organized into elements of operational design (see figure 2). Elements are used to assess an individual German leader or general. The elements of operational design are taken from Joint Publication (JP) 5-0, *Joint Planning*, and include:

- center of gravity (COG)—a source of power that provides strength, freedom of action, or will to act
- lines of operations (LOO)—actions or activities on nodes or decisive points designed to achieve an objective
- decisive points—geographic points, events, or factors that allow a commander to achieve an advantage
- objectives—what militarily must be accomplished to achieve an endstate
- military endstate—the point at which the military instrument of power is no longer needed to achieve national objectives
- termination—the conditions that must exist at the end of military operations.[31]

Hitler's Actions Regarding the Termination Criteria and Military Endstate. For Germany, Hitler was clearly responsible for setting the termination criteria and for approving, if not crafting, the military endstate. In U.S. joint doctrine, the President sets the termination criteria of every operation, according to JP 5-0.[32] For a hoop test to be accepted, Hitler must have failed to set the termination criteria or approve a military endstate. In terms of German operations in the West, the termination criteria were political, social, economic, and military domination over its adversaries. The military endstate was the defeat of an Allied invasion.[33]

Hitler believed that the Allies, if defeated on the beach, would not make another invasion attempt. He could then focus on defeating Russian forces.[34] As such, he made his strategy clear with Fuhrer Directive 51, dated November 3, 1943. The directive ordered commanders to upgrade coastal defenses and mass Panzer divisions.[35] Furthermore, on December 20, during a situation update meeting, Hitler made clear, "I have studied most of the [reports] now. There's no doubt that the attack in the West will come in the spring; it is beyond all doubt. . . . If they attack in the West, [then] this attack will decide the war."[36]

Hitler also took extensive steps to turn the war bureaucracy toward these objectives. First, he concentrated his power.[37] On March 23, 1943, he issued an order stating that higher commands could not prevent subordinate units from reporting directly to him.[38] Rommel, for example, appealed to Hitler to place the army and labor forces under him for the purpose of defending against a Western invasion. Hitler denied his request.[39] Second, and despite claims to the contrary, Hitler moved forces to the West. For example, in March 1944, Hitler ordered the Panzer Lehr (Teach) Division to be removed from the West and used in Hungary. However, the division was sent back to France in May.[40] Hitler also ordered light antiaircraft weapons to France, even at the expense of protecting the

Soldiers relax outside French café, in Sainte-Mère-Eglise, France, June 6, 1944 (National Archives and Records Administration/National Museum of the U.S. Navy)

German homeland.[41] Most important, Hitler ordered forces comprising troops from Eastern European countries (for example, Russia, Latvia, Lithuania) to be moved to the West. In total, 72 battalions were deployed in France by early 1944.[42] Third, at the beginning of April 1944, Hitler believed the attack would come at Normandy.[43]

Hitler anticipated the Allied attack, and he was focused intensively on the Western invasion and how to stop it. In fact, Hitler's intuition was confirmed on the afternoon of June 5 from intelligence reporting of radio intercepts that the invasion would occur on June 6.[44] Thus, Hitler performed his planned duties on D-Day.

Doenitz's Actions Regarding the Military Endstate, Objective, COG, LOO, and Decisive Point. Doenitz was responsible for helping craft the military endstate, identify the enemy operational COG, prepare the LOO, and determine the decisive points.[45] In addition to the already stated military endstate, the objective was the defeat of an Allied landing, and the agreed-upon Allied operational COG was fielded forces, in particular those landing on the coast.[46] The LOOs involved the establishment of the Atlantic Wall and joint operations. The most important decisive point was the invasion landing site. If Doenitz carried out these assigned elements, the hoop test is rejected.

By spring 1944, the German navy was greatly diminished, but in anticipation of a cross-channel invasion, OKM deployed its largest and deadliest E-boats (a fast attack craft), the S-38/100 class, along with minesweepers to the West to defend the channel invasion area.[47] Moreover, OKM planned to send out 40 U-boats at the time of the invasion.[48] Fearing an invasion, it placed no less than 34 E-boats in Cherbourg and in Boulogne, bracketing the future invasion area.[49] The deployment effectively placed any Allied landing in "deadly peril."[50] It also had radar to help direct forces when the Allies were detected crossing the channel.[51]

Doenitz, like Hitler, focused on stopping a Western invasion. The deployment

of the preponderance of naval forces in the anticipated attack area, which could have potentially defeated an invasion, demonstrates that Doenitz fulfilled the military endstate, objective, COG, LOO, and decisive point requirements.

Goering's Actions Regarding the Military Endstate, Objective, COG, LOO, Decisive Point, and Ordering Operations. Goering, like Doenitz, was responsible for helping craft the military endstate, identify the enemy operational COG, prepare the LOO, and determine the decisive points.[52] Goering, however, was able to order operations. This additional duty, while giving him more power and authority, also means that Goering has a greater chance of passing the hoop test of failing to have carried out his responsibilities.

Goering understood the urgency of repelling the invasion, and he planned to recall all German fighters defending the homeland and send them to the invasion sector. At the commencement of an invasion, Goering would send out a coded message: "Threatening Danger West." Moreover, Goering ordered that 50 percent of all units be kept in readiness status to conduct low-level attacks to support the army in defensive measures.[53]

Goering, like Hitler and Doenitz, focused on stopping a Western invasion. The readiness order and the plan to defeat a landing demonstrate that Goering fulfilled the military endstate, objective, COG, LOO, and decisive point requirements. Goering failed, however, to place additional forces in the West in anticipation of an invasion. Moreover, he retained operational authority, and he believed June 5 reports that an imminent invasion was a feint. Therefore, Goering did not issue "Threatening Danger West" until June 7 and thus partially failed to carry out his responsibilities.[54]

Field Marshal Wilhelm Keitel's Actions Regarding the Military Endstate, Objective, COG, LOO, and Decisive Point. Keitel, like Doenitz and Goering, helped craft the military endstate, identify the enemy operational COG, prepare the LOO, and determine the decisive points.[55] Keitel was not a popular general, but he did have Hitler's trust, serving as "the funnel through which Hitler's orders passed and which received reports, complaints, and questions."[56] As OKW chief, Keitel did not have any command authority, but he did have the authority to issue directives, prepare operational plans, and coordinate joint operations.[57] This lack of command authority makes it more difficult to pin a specific failure on Keitel in accepting the hoop test.

First, regarding the endstate and objective, OKW took extensive steps to defeat an Allied landing. Beginning in 1942, OKW (and OB West) designated high-priority harbors as "fortresses" and lower priority harbors as "fortified areas." Between these harbors was a system of strongpoints, which consisted of batteries protected by infantry.[58] Then, in coordination with Rommel, OKW (and OB West) established a beach defensive system. The Germans, relying on conscripted labor under Organization Todt, poured concrete for bunkers and put in place a multilayered defensive belt, which consisted of Belgian Gates festooned with mines, Hemmenbalk tripod-shaped ramps, Czech hedgehogs, and 2,000 stakes with mines.[59] In terms of operational defense, the Germans flooded wide swaths of area to make the terrain impassable.[60] In terms of tactical defense and to prevent Allied access to road networks, beach draws were closed off with obstacles, mines, and gun emplacements.[61]

Second, regarding the Allied operational COG, on January 28, 1944, OKW briefed Hitler that the Allies had 488 combat vehicle landing ships, a sufficient number to land 25 divisions in each wave.[62] The critical vulnerability of the fielded forces was the troops, still in naval transport from the United Kingdom to the beaches of Normandy.

Third, OKW established plans that laid the groundwork for LOOs. In its planning, it ordered that if an attack occurred in southern France or in Brittany, German bombers were to bomb English ports, as weather permitted, and fighters were to be kept on call and launched to assault the landing forces.[63] German ground forces were to defend the fortresses at all costs, and then remaining forces were to withdraw to a defensive line running from the Seine River above Paris southwest to Switzerland. If an attack occurred in Normandy or along the channel coast, defensive tactics were to be used to throw the invaders back into the sea. Failing this, defeated forces were to withdraw behind the Seine.[64]

Fourth, regarding the decisive point, OKW determined in 1943 that the Fifteenth Army sector, an area from Belgium south to Rouen, France, would be the decisive point in the expected invasion.[65]

Finally, OKW served as an arbiter of disputes and established its authority as necessary.[66] For example, the Germans believed the Panzers were key to repelling the Allied invaders, and on this Rundstedt and Rommel were in disagreement. Rundstedt was clear that the invasion needed to be stopped on D-Day, not D-Day plus one. He was skeptical that he had the resources to defeat the invasion; thus, he believed keeping reserves out of reach of naval artillery and aerial bombardment was key. These reserve forces would then be sent to destroy the Allies on the beach.[67] Alternatively, Rommel shared the view of OKW that forces, including mobile artillery and Panzer tanks, should be placed as close to the shore as possible. Rommel went so far as to send almost daily requests to OB West for tactical changes.[68] Both generals appealed to OKW, and OKW effectively divided up the Panzer divisions between the two generals. Rommel was given control of three divisions, and the remaining were kept under the Panzer Group West Commander General Leo Geyr von Schweppenburg, who reported directly to Rundstedt.[69]

As a second example, OKW made the decision to disaggregate Eastern troop units and integrate them into German regiments rather than deploy them as independent units. A "Commander of the Volunteer Units under the Commander-in-Chief West (OB West)" was created for coordination of these troops, adding to the bureaucratic confusion.[70] As a third example, Army Group B Chief of Staff General Hans Speidel specifically requested an operational directive on April

1, 1944, and Hitler and OKW Chief of Staff General Alfred Jodl rejected his request on the grounds that OB West and Army Group B bore the mission for defeating the Allies on the beach.[71]

Keitel, like his peers and in his role as a de facto chief of Hitler's personal staff, focused on stopping a Western invasion. The plan for how to defeat an invasion such as bombing English ports, defending fortresses, and defeating the landing invasion at all costs fulfilled the military endstate, objective, COG, LOO, and decisive point requirements, exonerating Keitel of responsibility.

Rundstedt's Actions Regarding the LOO. In JP 5-0, commanders are responsible for executing actions, such as planned use of LOOs, in order to attain the objective and military endstate.[72] As such, Rundstedt would have been responsible for executing his assigned LOO, denying Allied freedom of maneuver. Like Keitel, Rundstedt was limited in the troops he actually commanded, which also lowers the threshold for rejecting the hoop test for him.

Rundstedt was initially distracted. He believed an attack would occur in the Pas de Calais area.[73] Moreover, he got into a political squabble with Rommel. Fearing Rommel had too much power, Rundstedt sought to divide and diminish Rommel's area of responsibility and received OKW approval in April 1944 for the creation of Army Group G, consisting of the 1st and 19th armies, with an area of responsibility of southern France. Rundstedt named a trusted confidant, Johannes Blaskowitz, as commander.[74]

However, Rundstedt attempted to execute his LOO. At 2:30 a.m. on June 6, Rundstedt ordered the 12th SS Panzer Division and the Panzer Lehr Division out of operational reserves and into action under the command of Rommel. OKW rescinded the order at about 6:30 a.m., stopping these forces when cloud cover still obscured their movement.[75]

Rundstedt took action and attempted to carry out his LOO. His political fight with Rommel, especially about how to place Panzer divisions, did not negatively impact the LOO or decisive point. Rundstedt bears no culpability because his plan was OKW approved and was consistent with the approach to deny the Allies to land and establish a beachhead.

Krancke's Actions Regarding the LOO. Krancke, as an operational commander, would also have been responsible for executing his assigned LOO, denying the Allied ability to land forces. This is a narrowly focused LOO and requires specific action by Krancke. Together, this increases the probability that a hoop test is accepted.

Krancke did not conduct reconnaissance patrols in the days prior to D-Day due to weather. Furthermore, he restricted mine-laying operations to port.[76] Krancke did not believe the Allies would attempt a landing and wanted to give his men a break, so he issued orders the night prior to D-Day to lower war readiness from condition two to condition three.[77] Furthermore, sailors, using position-finding radar, located surface ships during the early hours of June 6 but did not send out an invasion alert until hours later.[78]

The 15 E-boats of the 5th S-Boat and 9th S-Boat flotillas did depart at 4:30 a.m. out of Cherbourg, but lacking any information on the invasion fleet, the E-boats searched north despite the fact that the invasion fleet was south and east. Given the late launch of the E-boats, which were designed to work in the stealth of the night, their efficacy against the invasion fleet is doubtful.[79] However, 15 E-boats, if launched based on radar findings and in the darkness of night, could have potentially wreaked havoc on the invasion fleet in a manner similar to the April 1944 Lyme Bay disaster.[80]

Krancke failed to carry out the LOO of denying the Allies the ability to land at the beach. This failure was based on inaction. Despite the fact that he could not rely on his radar, Krancke issued a stand-down order for his boats. As such, Krancke failed to carry out his responsibilities per the planned operational approach.

Sperrle's Actions Regarding the LOO. Sperrle, like Krancke, would also have been responsible for executing a specific LOO. For a hoop test to be accepted, Sperrle must have failed to take action to deny an Allied massing of forces in Western Europe. In this LOO, Sperrle's responsibilities involved all air activities in defending the beaches, including reconnaissance, acting on intelligence, and bombing the landing transports and forces.[81]

Sperrle, like Krancke, grounded his force due to weather.[82] On D-Day, Sperrle had a limited force of 80 serviceable fighters (out of 319), but he still did not take the initiative and employ these forces.[83] Three bombers were ordered to bomb Allied troop transports, but the order was inexplicably rescinded at 9 a.m.[84] Strafing runs were ordered on Gold, Juno, and Sword beaches after 9:30 a.m., too late to impact the troop transports.[85]

Like Krancke, Sperrle failed to carry out the LOO of denying the Allies the ability to land at the beach. This failure was also one of inaction. Sperrle issued a stand-down order for planes, and he failed to launch planes at the first sign of an invasion. As such, Sperrle failed to carry out his responsibilities per the operational approach.

Rommel's Actions Regarding the LOO. As an operational commander, Rommel, like Krancke and Sperrle, would also have been responsible for executing a specific LOO. With his infantry and Panzer divisions, Rommel was to lead the main effort of German operations in denying the Allies freedom of maneuver. If Rommel failed to execute in this effort, a hoop test is accepted.

Rommel was responsible for the overall defense of Normandy, but the command structure did not lend itself to unity of effort. Rommel's ability to execute his LOO was limited, as he could not make an independent move. This remained a concern for Rommel leading up to the invasion.[86] Like Rundstedt, Rommel believed an attack would occur in the Pas de Calais area.[87] Rommel visited his wife on June 6 and was not available to issue orders for 14 hours.[88] The 21st Panzer Division, as a rare exception, was directly under Rommel's control. But its commander, General Edgar Feuchtinger, did not receive orders to move his division until 10 hours after

the start of the invasion. Once Rommel took control, he ordered Feuchtinger to attack, but Feuchtinger, apparently receiving contradictory orders from Rundstedt, did not attack.[89]

Rommel took action and attempted to carry out his LOO. His political fight with Rundstedt, especially about how to place Panzer divisions, did not negatively impact the LOO or decisive point. Moreover, he did what he could; Feuchtinger's failure to take action cannot be blamed on Rommel.

Conclusion

Examined through the lens of the joint planning process, the German strategy and plans to defeat an Allied Western invasion demonstrate that the popular arguments—blaming Hitler or Rommel or bad luck—do not hold up to a hoop test analysis. The results of the hoop test demonstrate that individuals failed to execute their assigned responsibilities in thwarting the D-Day invasion. Specifically, Krancke and Sperrle failed to execute their LOOs. Goering also failed to complete all his duties. Unlike Keitel, Goering asserted control over forces, but he failed to issue a directive—even, as in the case of Keitel, an incorrect one.

The German chain of command was disorganized and contradictory, and the commanders seemed unwilling to take the initiative or think critically once the invasion commenced. All of the incompetence and bad decisions were made in spite of Hitler's order that subordinates could report directly to him. A thorough understanding of this disorganization and contradiction and its effect on German D-Day operations would help explain German failures, including the inaction of Krancke and Sperrle. Research generally focuses on Hitler and the high command, but a second area would be a more nuanced examination of exactly what Krancke and Sperrle were doing on June 6. A third area would be to determine what possibly could have happened if Krancke and Sperrle did not cancel reconnaissance operations, if the Cherbourg E-boats went south and east, and if a daring attack was executed (for example, the April 1944 Lyme Bay attack).

This article answers the question of who lost D-Day. Despite the common narrative that the Allies prevailed over an inferior enemy, this article finds that the Germans did take significant measures to defeat an Allied invasion. This research also shows that the dynamics of infighting and conflict of authorities in mid-level leadership are critical elements in understanding strategic plan implementation. Commanders do not operate in a vacuum, and as found in this case, mid-level leaders did not follow instructions and plans. German pre-invasion efforts were all for naught. This not only makes the adage of Moltke the Elder relevant, but it also makes the advice of Dwight Eisenhower profound: "Plans are useless, but planning is indispensable."[90] JFQ

Notes

[1] Robert Kershaw, *Landing on the Edge of Eternity: Twenty-Four Hours at Omaha Beach* (New York: Pegasus Books, 2018), xxv–xxvi; Mary Kathryn Barbier, *D-Day Deception: Operation Fortitude and the Normandy Invasion* (Westport, CT: Praeger Security International, 2007), 195. Notably, Kershaw points out that the Germans had a formidable force on D-Day within the Normandy theater. In particular, the Germans had 14 infantry divisions, a Panzer division, and 47 heavy guns to fight an invasion force of 6 amphibious divisions and 3 airborne divisions. In total, Germany could bring 58 to 60 divisions from around France to repel the 37 divisions of invaders. See Kershaw, *Landing on the Edge of Eternity*, 34, 67.

[2] Stephen E. Ambrose, *D-Day: June 6, 1944: The Climactic Battle of World War II* (New York: Simon & Schuster, 1994), 481–482; Barbier, *D-Day Deception*, 165–167.

[3] David C. Isby, *Fighting the Invasion: The German Army at D-Day* (New York: Skyhorse Publishing, 2016), 47–50.

[4] To be clear, the Germans did not think in terms of the modern U.S. doctrine of operational approach. Nonetheless, as a teaching and learning aid, professional military education instruction structures historical operations and battles, such as Operation *Torch*, into an operational approach as part of its curriculum.

[5] *DOD Dictionary of Military and Associated Terms* (Washington, DC: The Joint Staff, June 2020), 159, available at <www.jcs.mil/Portals/36/Documents/Doctrine/pubs/dictionary.pdf>.

[6] There are 13 elements of operational design, but not all 13 elements need to be used. See Joint Publication (JP) 5-0, *Joint Planning* (Washington, DC: The Joint Staff, June 16, 2017), IV-19, available at <www.jcs.mil/Portals/36/Documents/Doctrine/pubs/jp5_0_20171606.pdf>.

[7] David Collier, "Understanding Process Tracing," *PS: Political Science and Politics* 44, no. 4 (2011), 823–830.

[8] Ibid., 826–827. A hoop test is a qualitative, sequential analysis of an event. In its scope, it must account for commanders who still followed the plan, but engaged in unique or creative tactical reactions to battlefield conditions.

[9] See JP 5-0, *Joint Planning*, IV-16.

[10] Geoffrey P. Megargee, *Inside Hitler's High Command* (Lawrence: University Press of Kansas, 2000), 67.

[11] Ibid., 189–193.

[12] Ibid., 198.

[13] Ibid., 206–207. The OKW (Oberkommando der Wehrmacht), despite consistent bureaucratic infighting that hampered operations, released an optimistic forecast that Germany "will win" the war.

[14] The navy concluded that the Normandy coast, due to its reefs, was not likely an invasion target. Thus, no defensive obstacles were placed there. Rommel, arriving in winter 1943, immediately ordered construction of defensive obstacles. See Isby, *Fighting the Invasion*, 40; Bodo Zimmermann et al., *OB West (Atlantic Wall to Siegfried Line), A Study in Command: MS #B-308 GENLT Zimmermann, MS #B-672 GENMAJ von Buttlar, MS #B-718 GENLT Speidel, MS #B-633 GENFLDM von Rundstedt, MS #B-344 GEN INF Blumentritt* (Washington, DC: European Command Historical Division, 1945), 21.

[15] Kershaw, *Landing on the Edge of Eternity*, 4; Isby, *Fighting the Invasion*, 82.

[16] B.H. Liddell Hart, *The German Generals Talk* (New York: William Morrow & Co., 1948), 242.

[17] However, 3 weeks prior to D-Day, the Allies began a bombing campaign that eliminated 75 percent of the rail system within 150 miles of Normandy. Normandy had been effectively isolated. See Barbier, *D-Day Deception*, 178.

[18] Isby, *Fighting the Invasion*, 78, 82.

[19] OKW maintained control over several military intelligence agencies, including the Amt Ausland/Abwehr (Office of Foreign and Counterintelligence). Admiral Wilhelm Canaris was chief of the Abwehr. Canaris did not believe the Germans had the forces to win the war, and the Abwehr, based on double agents, submitted unreliable reports. Canaris cared only about supplying reports consistently to Keitel and was considered a poor organizer. Hitler lost trust in Canaris and disbanded the Abwehr in early 1944. See Barbier, *D-Day Deception*, 158–160; Megargee, *Inside Hitler's High Command*, 105, 175; Walter Warlimont, *Inside Hitler's Headquarters: 1939–45* (New York: F.A. Praeger, 1964), 409.

[20] Isby, *Fighting the Invasion*, 64.

[21] Ibid., 19–20.

[22] Rommel and Army Group B were subordinate to OB West only on paper. Rommel consistently appealed to Hitler directly for operational decision approvals. See Isby, *Fighting the Invasion*, 20, 48.

[23] Kershaw, *Landing on the Edge of Eternity*, 3–9.

[24] Zimmermann et al., *OB West*, 9.

[25] Ibid.

[26] Richard Townshend Bickers, *Air War Normandy* (London: L. Coopers, 1994), 88.

[27] Richard Brett-Smith, *Hitler's Generals* (San Rafael, CA: Presidio Press, 1976), 125.

[28] Bickers, *Air War Normandy*, 89.

[29] Zimmermann et al., *OB West*, 9; Isby, *Fighting the Invasion*, 19.

[30] Isby, *Fighting the Invasion*, 86; James F. Tent, *E-Boat Alert: Defending the Normandy Invasion Fleet* (Annapolis, MD: Naval Institute Press, 1996), 112.

[31] See JP 5-0, *Joint Planning*, IV-19–IV-40. For a variation on center of gravity (COG), the German military used the term *Schwerpunkt* (weight of main effort).

[32] Ibid., IV-19.

[33] Helmut Heiber and David M. Glantz, *Hitler and His Generals: Military Conferences 1942–1945: The First Complete Stenographic Record of the Military Situation Conferences, from Stalingrad to Berlin* (London: Greenhill, 2002), 311, 314, 918; Isby, *Fighting the Invasion*, 71; Megargee, *Inside Hitler's High Command*, 207.

[34] Heiber and Glantz, *Hitler and His Generals*, 314; Isby, *Fighting the Invasion*, 92.

[35] Friedrich Ruge, *Rommel in Normandy: Reminiscences* (San Rafael, CA: Presidio Press, 1979), 4.

[36] Hitler was likely reviewing reports on the Tehran and Cairo conferences, which finalized the plans for Operation *Overlord*. See Heiber and Glantz, *Hitler and His Generals*, 311, 314, 918.

[37] Megargee, *Inside Hitler's High Command*, 63.

[38] Ibid., 203.

[39] Isby, *Fighting the Invasion*, 42. A consequence of this was that commanders, fearing betrayal and severe consequences for failure, began to underestimate their strength and overestimate enemy capabilities. See Megargee, *Inside Hitler's High Command*, 204.

[40] Heiber and Glantz, *Hitler and His Generals*, 959.

[41] Ibid., 963; Isby, *Fighting the Invasion*, 88.

[42] These troops were reported to have fought well at D-Day. See Heiber and Glantz, *Hitler and His Generals*, 438, 970.

[43] Ibid., 965; Liddell Hart, *The German Generals Talk*, 236–237.

[44] Isby, *Fighting the Invasion*, 91.

[45] JP 5-0, *Joint Planning*, IV-19–IV-40.

[46] Zimmermann et al., *OB West*, 41.

[47] Isby, *Fighting the Invasion*, 69; Tent, *E-Boat Alert*, 51.

[48] Only 10 to 15 U-boats went out after the invasion. See Isby, *Fighting the Invasion*, 40.

[49] Tent, *E-Boat Alert*, 58.

[50] Ibid.

[51] Isby, *Fighting the Invasion*, 69.

[52] JP 5-0, *Joint Planning*, IV-19–IV-40.

[53] Bickers, *Air War Normandy*, 87.

[54] Ibid., 88–89.

[55] JP 5-0, *Joint Planning*, IV-19–IV-40.

[56] Brett-Smith, *Hitler's Generals*, 189.

[57] Megargee, *Inside Hitler's High Command*, 65, 78, 195–196, 198.

[58] Zimmermann et al., *OB West*, 22–23.

[59] Kershaw, *Landing on the Edge of Eternity*, 128–129.

[60] Zimmermann et al., *OB West*, 53.

[61] Kershaw, *Landing on the Edge of Eternity*, 5.

[62] In fact, the Allies could land only a third of this number; the Germans were falling for Operation *Fortitude*, a deception campaign designed to make the Pas de Calais seem to be the intended target. See Heiber and Glantz, *Hitler and His Generals*, 953, 965.

[63] Isby, *Fighting the Invasion*, 83–84. The combined air offensive concentrated on bombing submarine construction yards, transportation systems, manufacturing plants, oil refineries, and other war-producing industries. As such, Luftwaffe fighter operations shifted to protect the homeland. See Albert Norman, *Operation Overlord: The Allied Invasion of Western Europe* (Harrisburg, PA: Military Service Publishing, 1952), 141.

[64] Isby, *Fighting the Invasion*, 65.

[65] Zimmermann et al., *OB West*, 33, 36.

[66] Keitel made a series of decisions that, at best, demonstrated a lack of competence. OKW did not change its 1939–1941 decision model that assumed unhindered troop movements, despite the reports of subordinate commanders that the Allies gained air superiority. See Isby, *Fighting the Invasion*, 35. On June 6, 1944, OKW disapproved of the movement of seven divisions from the Fifteenth Army to Normandy. See Zimmermann et al., *OB West*, 85–87.

[67] Ibid., 34–35, 50–51.

[68] OKW consistently supported Rommel's requests. See Zimmermann et al., *OB West*, 49–50; Isby, *Fighting the Invasion*, 66. Rundstedt also disagreed with Rommel in flooding wide areas of the countryside, believing it was too hard on the local population. On this matter, OKW stepped in to side with Rommel. See Zimmermann et al., *OB West*, 53.

[69] Brett-Smith, *Hitler's Generals*, 34.

[70] Heiber and Glantz, *Hitler and His Generals*, 970.

[71] Isby, *Fighting the Invasion*, 37.

[72] JP 5-0, *Joint Planning*, IV-28.

[73] Normandy was listed as the third most likely invasion target, after the Fifteenth Army English Channel sector and the Fifteenth Army Seine estuary sector. See Zimmermann et al., *OB West*, 37; Isby, *Fighting the Invasion*, 26, 63.

[74] Zimmermann et al., *OB West*, 57–58.

[75] Ibid., 72, 75; Isby, *Fighting the Invasion*, 29.

[76] Kershaw, *Landing on the Edge of Eternity*, 42, 74–75.

[77] Tent, *E-Boat Alert*, 108.

[78] Ibid., 109.

[79] Ibid., 113.

[80] In the Lyme Bay disaster, 9 E-boats destroyed 2 landing ship tanks and killed 789 servicemen. See ibid., 9–22.

[81] Isby, *Fighting the Invasion*, 83–84.

[82] Kershaw, *Landing on the Edge of Eternity*, 42, 74–75.

[83] Bickers, *Air War Normandy*, 89. On D-Day, the Allies had an air strength ratio of 25 to 1. See Isby, *Fighting the Invasion*, 28.

[84] Kershaw, *Landing on the Edge of Eternity*, 219.

[85] Ibid., 259.

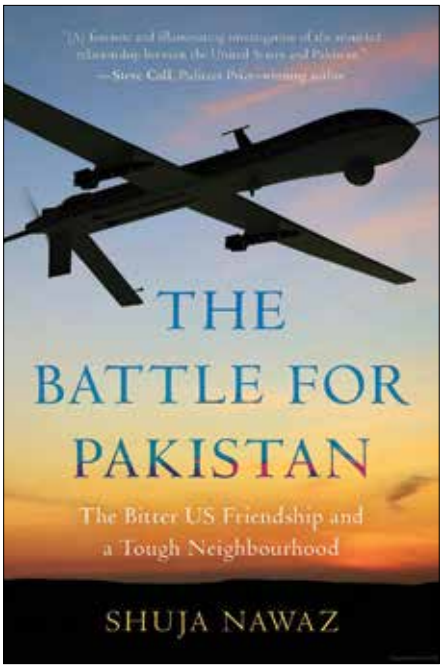
[86] Ruge, *Rommel in Normandy*, x, 109, 119, 123, 124.

[87] Isby, *Fighting the Invasion*, 26, 63.

[88] Brett-Smith, *Hitler's Generals*, 268.

[89] Ibid., 269.

[90] Richard Nixon, *Six Crises* (Garden City, NY: Doubleday, 1962), 235.



The Battle for Pakistan: The Bitter U.S. Friendship and a Tough Neighbourhood
By Shuja Nawaz
Rowman & Littlefield, 2020
387 pp. $29.00 (Paperback)
ISBN: 978-1538142042

Reviewed by Gerald J. Krieger

History may not repeat itself, but it often rhymes." "This famous and oft-attributed warning of Mark Twain is taken up by Shuja Nawaz, a leading South Asia political and strategic analyst, in his latest book, *The Battle for Pakistan*. Nawaz is a prolific author serving as a distinguished fellow in the South Asia Center at the Atlantic Council. His latest book provides a detailed examination of the relationship between Pakistan and the United States from 2007 to 2019 and offers readers insights into navigating the future of the relationship. The author explores watershed moments, providing unique context and conversations that took place behind the scenes to clarify the 70-year-old relationship that sometimes resembles a Hollywood drama. His interviews with Pakistani military and political leaders, as well as American diplomats, offer unique insights for joint force planners by capturing the nuances of a complex relationship, allowing readers to peer behind the veil of Pakistani politics and critically examine missteps and misperceptions by both countries in the hope of forging a more cooperative future.

Conflict is inevitable in the "Arc of Instability" that runs from Indonesia to Turkey, and Nawaz suggests that anyone who claims to be an "expert" on Pakistan should set off alarm bells. Most so-called experts, according to Nawaz, fail to understand the embedded tribal dynamics of the country, many of which are exacerbated by its complex geography and tough local neighborhood. Nawaz's insider perspective, however, helps readers understand Pakistan's politics and grasp the real motivations behind its behavior. Nawaz's research is impeccable and his interviews insightful, though the book would have benefited from a summary of the relationship that served as a springboard for Pakistan's aggressive campaign against militants and the assault on the "Red Mosque" in Islamabad in July 2007. Nawaz might also have better framed his argument by providing a chapter for historical context on the origins of the relationship that soured at Pakistan's birth in 1947, when its leaders looked to America for support and were largely rebuffed. Nevertheless, readers shall find an engaging and comprehensive examination of the contemporary relationship between the United States and Pakistan.

The Battle for Pakistan is divided into 13 chapters that trace the contours of the U.S.-Pakistan relationship from 2007 to 2019. After brief scene-setting to capture the challenges of governing remote areas of Pakistan, the end of military rule under General Pervez Musharraf provides the true launch point of the book as the country erupted with antigovernment and anti-American protests. Musharraf's structured democracy was supported by the United States in a bid to garner support for the invasion of Afghanistan. Nawaz details the gradual erosion of the relationship through successive U.S. administrations. He suggests that American leaders were coconspirators in the demise of Pakistan's civilian authorities by superempowering Pakistani military leadership and isolating the civilian government—a lesson that should generate useful discussion among future stewards of the relationship.

Nawaz also highlights the transformation of the Pakistani military from a conventional force to one that was equipped and trained for counterinsurgency. Nawaz is correct to note that the transformation of the Pakistani military was an often-underappreciated source of friction in the affiliation. While Americans expected the Pakistani military to quickly hunt down and capture terrorists in remote regions, it took time for Pakistan to adapt to counterinsurgency warfare, which the United States often perceived as a reluctance to engage. Nawaz reminds readers, however, that elements of the Pakistani military, such as the Frontier Corps, did seek and engage insurgents, suffering more casualties than the combined International Security Assistance Force (ISAF) in Afghanistan.

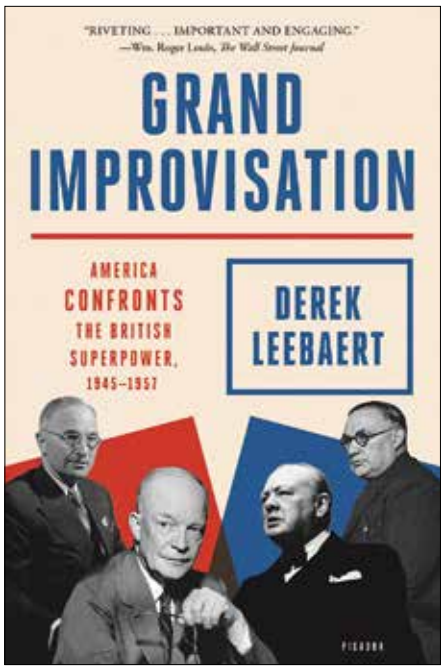
The Battle for Pakistan also examines the deterioration of the U.S.-Pakistan relationship in the aftermath of the killing of Osama bin Laden. The Pakistani military's complex relationship with Islamic extremist groups was exposed when bin Laden was killed by U.S. special operations forces in Abbottabad, only a mile from the Pakistan Military Academy. The story is not only fascinating but Nawaz also captures the event from new perspectives with details from retired Inter-Services Intelligence officer Eqbal Saeed Khan, who was instrumental in assisting U.S. efforts to track and locate bin Laden's compound. Moreover, Nawaz serves as a useful guide to understanding the schizophrenic response of the Pakistani military amid overwhelming public condemnation of the United States for the operation.

As Nawaz points out, however, part of the troubled U.S.-Pakistan relationship rests with perpetual amnesia among Americans regarding the two nations' joint history. Nawaz does useful work recalling the depth of this history—and

the U.S.-Pakistani support of the Mujahadeen in Afghanistan against the occupation by the former Soviet Union (1978–1989) is a notable example. A failure to recall and understand this history often results in short-sighted policy. This situation is exacerbated by the average ISAF command tenure in Afghanistan, with 18 general officers over 17 years. This frequent turnover makes nuanced policy creation difficult while perpetuating a relationship that is always unfamiliar. U.S. aid tied to expectations of immediate results in Pakistan, for example, is unrealistic and imprudent.

The Battle for Pakistan is required reading for joint force planners and students of the region who seek lessons on mistaken assumptions and skewed perceptions. As U.S. domestic policy takes priority, Chinese investments in Pakistan ramp up, and the U.S. military footprint in the region is minimized, the time has never been more critical for a revision of the U.S. approach to Pakistan as a key regional partner. U.S. policymakers and military practitioners must find a way to learn from a turbulent past to forge a new cooperative relationship. In Pakistan, history has rhymed enough. America needs to find a new note when it comes to foreign policy there. **JFQ**

Colonel Gerald J. Krieger, USA, is a Professor and Advisor of Senior Leader Development and Strategic Studies for the Kingdom of Saudi Arabia at the Near East South Asia Center for Strategic Studies.



Grand Improvisation: America Confronts the British Superpower, 1945–1957

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Reviewed by Daniel Marston

Grand Improvisation is an engaging and well-researched dive into U.S. and British statecraft during the often overlooked power transition between the two nations following World War II. Derek Leebaert immediately sets out to challenge the common historical narrative that "the British Empire was too weak and too dispirited to continue as a global imperial power; thus, a confidently prosperous, well-armed America assumed leadership of the West." Furthermore, he makes the case that "America's biggest postwar difficulty—perhaps more than the Soviet threat—was the inability to say no to the British Empire. In effect, serious people in Washington believed that 'no acceptable foreign policy' was available to the United States if it was not aligned with its sprawling, problematic ally." He continues, "History's largest empire [British] was battling to maintain its standing."

It is immediately apparent, in challenging the myths surrounding the birth of the modern global order, that the book's greatest strength is the interweaving of diplomatic, economic, intelligence, and strategic history; the arguments are superbly organized and integrated throughout each chapter, and the thoroughness of the research is apparent. The discussion around NSC (National Security Council) 75 in particular highlights the close integration of the various themes running through the book in a clear and concise historical narrative.

Another strong aspect of Leebaert's work was the presentation of instrumental characters of the era. While some readers of *JFQ* may be aware of the U.S. personalities, the author also introduces several key British figures, including Ernest Bevin and Malcolm MacDonald, who may not be as well known. He also introduces some overlooked Americans, such as John Snyder, President Harry Truman's Secretary of the Treasury, who worked closely with the British but has been overshadowed by larger personalities in popular history. In the heavily "militarized" climate of contemporary strategic debate, *JFQ* readers will find value in the examination of the many civilian personalities on both sides of the Atlantic who worked closely with their military counterparts to make difficult decisions about crisis situations and policy debates.

A key focus of *Grand Improvisation* is the "role of personalities." While both the British and Americans had various organizations dealing with economic and strategic decisionmaking, Leebaert's research highlights how key personalities, not just of the prime minister or President, may shift decisionmaking. The book does an admirable job of analyzing the effect of various ministers and secretaries on decisionmaking, as well as the collaborations and tensions inherent to working with their opposite numbers across the Atlantic. This theme is an important one for future policymakers to consider because it illustrates not only how a given policy may be shaped more

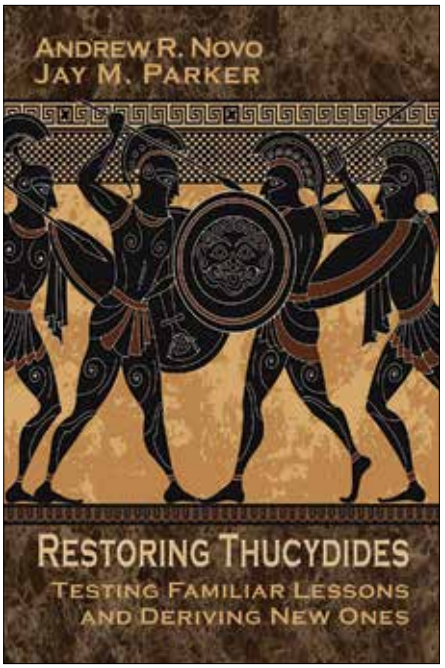
by personalities than by mechanisms of the state but also how debate and disagreement are a natural and potentially productive form of discourse between allies.

The meshing of key factors relevant to time and geography is another strength of Leebaert's work. The core discussion of crises across the Atlantic, Middle East, Asia, and Africa is interwoven with the themes of diplomatic, strategic, and economic history. Each subchapter is organized in a fashion that truly reinforces and builds on the previous arguments and evidence, resulting in a compelling prism through which to view this moment of historical competition and transition among Great Powers.

One small quibble is the lack of a formal bibliography. While the notes are detailed and add another layer of context, the author must have consulted a considerable number of sources. The fact that these works have not been identified is a drawback for any serious reader interested in learning more about this period. I would recommend *JFQ* readers seek out and read some of the works Leebaert uses as counterarguments and evaluate how they stand up to his criticisms. Doing so will allow the reader to identify the strengths and deficiencies that are inherent in any book, as well as reinforce the reality that history is "gray," rather than black and white. Excellent sources for an in-depth historical analysis include the *British Documents on the End of Empire Project*, as well as the archives of Presidents Harry S. Truman and Dwight D. Eisenhower in the Office of the Historian at the Department of State. In its totality, I suspect readers will walk away from *Grand Improvisation* with a much richer understanding of a complex moment in history, one fraught with immense geostrategic change that strategists on both sides of the Atlantic struggled to adapt to.

Grand Improvisation challenges the notion of an acquiescent British global power giving way to a confident United States with a clear schematic of a new global order on the drawing board. What Leebaert does so successfully is challenge this myth with solid historical research, revealing the cogs of a relationship in transition—a transition in which U.S. strategists lacked a coherent grand strategy and British leadership fought to retain strategic independence. Challenging our common understanding about the early days of the modern liberal international order and the personalities attempting to navigate it allows us to assess and interpret the present more clearly as the global order again shifts between Great Powers. With that in mind, joint force officers, national security strategists, and historians should take a close look at *Grand Improvisation*. **JFQ**

Professor Daniel Marston is the Director of the Secretary of Defense Strategic Thinkers Program in the Paul H. Nitze School of Advanced International Studies at The Johns Hopkins University.



Restoring Thucydides: Testing Familiar Lessons and Deriving New Ones

By Andrew R. Novo and Jay M. Parker
Cambria Press, 2020
218 pp. $39.99 (Paperback)
ISBN: 978-1621964742

Reviewed by Robert D. Spessert

Thucydides's *The History of the Peloponnesian War* offers national security pundits a plethora of persuasive "dead man quotes." However, they and their audiences have rarely digested, and infrequently understood, the context and history surrounding the phrases they employ. Professors Andrew Novo and Jay Parker of the National Defense University provide an insightful remedy for students of history and strategy in *Restoring Thucydides*.

The authors adeptly address the use and abuse of *The History*, claiming it is "mis-read, under-read, or unread." They assert that students of Thucydides should consider the text as a whole, know the historical context, and perceive the consequences of the Peloponnesian War in the years following Thucydides's

death. *Restoring Thucydides* reveals that the application of this additional evidence permits distinguishing between necessary and sufficient causes, understanding the importance of domestic politics and its influence on foreign affairs, and challenging deterministic "conventional wisdom."

Early chapters concisely capture the historical narrative of the Peloponnesian War and address the "polarity" trap. At the heart of the book, a chapter titled "Power and Fear" examines Thucydides's most popularized ideas, such as that the war arose because of "the growth of Athenian power and the fear this caused in Sparta." Later chapters discern how allies and shifting alliances affect Great Power competition and explore the internal and external politics of the various city-states as well as offering context for the Melian Dialogue and the Sicilian expedition. Novo and Parker conclude by expounding on the dynamics of Great Power competition in the search for security and reflect on the defeat of Athens, which changed the Hellenic balance of power and permitted new challengers to usurp Sparta.

Restoring Thucydides refutes the conventional wisdom that Athens and Sparta existed in a bipolar system and that this structure created conditions in which war was inevitable. Sparta, with the largest territory in Greece, was powerful and attracted allies, but its demographics, economics, and government precluded it from becoming hegemonic. Three other entities at this time also had the ability to project power: Athens, with the largest navy; Corinth, which had the second largest navy; and the Persian Empire, with a population and land mass that surpassed Athens and Sparta combined but had failed twice to conquer Greece. Two major city-states remained neutral at the start of the war: Argos, a historical foe of Sparta; and Syracuse, which encompassed the second largest territory in the Greek world. Accordingly, the Hellenic world was actually multipolar. While Athens and Sparta displayed some hegemonic characteristics, other powerful actors populated the region and influenced the balance of power. They entered alliances, switched loyalties, and remained neutral. Persia, for instance, sought to support one to weaken the other. Novo and Parker, consequently, reject the theory that determinants within a bipolar structure made war between Athens and Sparta inevitable.

Another key and often overlooked aspect the authors underscore is the depiction in *The History* of leaders who considered the domestic operational environment, as they made security decisions and pursued the acquisition or retention of power, glory, wealth, and fame, whether for themselves, their families, or their factions. His depiction of speeches, debates, and deliberations emphasize that leaders had choices and retained agency. While *The History* focuses on state-versus-state conflict, its pages also provide evidence of internal politics, domestic strife, and civil war. Novo and Parker dial in on how these clashes shaped and propelled numerous wartime decisions that ran the spectrum from whether to support allies, initiate conflict, promote or accept peace offers, recognize treaty violations, and submit to demands. For example, in the Melian Dialogue, the oligarchs on Melos refused to permit the Athenian emissaries to present their proposal to the public. Unstated in the dialogue is that the autocrats likely sought to retain their position of power and wealth and, therefore, denied the populace an opportunity to hear Athenian demands. Perhaps they presumed the people would accept them, resulting in a loss of power. Assumptions about whether Athens would use force or if Sparta would intercede may have arisen from the desire to retain their power.

This book is a noteworthy addition to the field studying Thucydides's work. The 1954 Penguin Classic edition of *The History of the Peloponnesian War* runs 648 pages and uses unfamiliar syntax and uncommon names for people and places. Novo and Parker provide extensive context to this original text, challenge classic "lessons," and offer numerous other insights. It is also a worthy complement to those who have read Graham Allison's *Destined for War* and offers greater dimension to the strategist's favorite construct, the "Thucydides Trap."

Restoring Thucydides serves two distinct audiences. First, it is an asset to students of history and strategy who seek a more robust understanding of the Peloponnesian War and its applicability to modern geopolitical issues. Second, this outstanding book offers those involved in national security revelations about individual agency, domestic politics, the international security environment, and strategy. It also arms readers with the evidence and background to accept or challenge how others employ the oft-quoted maxims of Thucydides.

The History of the Peloponnesian War captivates those who seek to understand contemporary geopolitical struggles. Rather than rereading the original, joint force operators, planners, practitioners, and strategists will find an exceptionally valuable and educational alternative in *Restoring Thucydides.* **JFQ**

Robert D. Spessert, JD, is an Assistant Professor in the Department of Joint, Interagency, and Multinational Operations at the U.S. Army's Command and General Staff School satellite at Fort Gordon, Georgia.

Naval Aircrewman (Helicopter) 2nd Class Jansen Schamp, assigned to Dragon Whales of Helicopter Sea Combat Squadron 28, reassures family after rescue from Pine Forrest Elementary School shelter, once flood waters from Hurricane Harvey reached its grounds, Vidor, Texas, August 31, 2017 (U.S. Navy/Christopher Lindahl)

Military Health System Preparedness in Humanitarian Action

By Paul L. Reed and Thomas D. Kirsch

The Department of Defense (DOD) will continue to have a more prominent and active role in support of disaster relief operations due to the increasing frequency and severity of disasters worldwide. The late summer and fall of 2017 brought one of the most devastating seasons of disaster due to a series of massive storms in the United States. Hurricanes Harvey, Irma, and Maria resulted in widespread and complex destruction affecting hundreds of thousands of lives from Texas to the Caribbean. The response efforts were far-reaching and involved a spectrum of local, state, territorial, and Federal agencies as well as nongovernmental organizations, and the scope of the crises required the response of the U.S. military. In its capacity as a supporting agent to the civil authorities overseeing the predominantly domestic response, the U.S. military contributed thousands of personnel for months, many of whom were engaged in direct clinical care and medical evacuation of patients or supporting health systems' recovery efforts. This need for defense support to civil authority (DSCA) in domestic disasters is occurring in increasingly complex

Paul L. Reed is Deputy Director of the National Center for Disaster Medicine and Public Health (NCDMPH). Thomas D. Kirsch is Director of NCDMPH.

circumstances, along with analogous humanitarian assistance and disaster relief activities overseas.

The 2017 hurricane season was not an anomaly but part of a trend of increasingly frequent disasters on our country and the world. The past 5 years alone have yielded domestic and international disasters and humanitarian crises of increasing scale that have been born of conflict, migration, and emerging infectious diseases, as well as the more familiar geologic and climatic events. Today, DOD is called on to assist in the largest public health crisis the world has known since the influenza pandemic in the early part of the 20th century. There could not be a situation better defining the requirement for an "all hands on deck" approach to health engagement in the context of an all-encompassing humanitarian crisis than the current coronavirus disease 2019 (COVID-19) pandemic response.

Each of these disasters—from Syrian and Yemeni wars, to Ebola, Zika, and coronavirus outbreaks, to the earthquake in Nepal and the hurricanes in the United States and Caribbean—has resulted in human suffering manifesting in large part in terms of medical and public health needs. The joint community of responders, including U.S. and foreign militaries, is continuously struggling with how best to be prepared for and respond to these health needs in a crisis.

Readiness of defense forces encompasses a broader set of missions than ever before in the history of militaries. The complexity of military operations across the spectrum is enormous, as are the expectations for individual readiness to ensure mission success. Commensurate with the demand for a broad expansion of military professionalism is the implicit requirement for disaster expertise within the military medical corps, such that personnel are well trained and experienced to deliver capabilities to meet the medical and public health needs in all-hazards disaster situations. The requirement is implicit because within DOD policy and doctrine there is little explicit reference to standards for manning, training, and equipping personnel to meet the mission of humanitarian assistance and disaster relief (HA/DR) health engagement. In an article published in 2016 in *Joint Force Quarterly* (*JFQ*), Frank C. DiGiovanni—who was then the director of force training in the Office of the Assistant Secretary of Defense for Readiness—articulated well that "there has been progress made to provide training opportunities for U.S. forces on HA/DR topics. However, this training is neither institutionalized nor standardized across DOD and more needs to be done."[1]

Precedents in myriad domestic and international operations have offered innumerable lessons learned, theoretically affording more effective defense support to civil authorities and inculcation of U.S. military operations into international humanitarian efforts. Experiences in HA/DR overseas missions—such as Operation *Unified Response* (earthquake in Haiti, 2010), Operation *Tomodachi* (earthquake and tsunami in Japan, 2011), Operation *United Assistance* (Ebola epidemic in West Africa, 2014), as well as responses to domestic disaster events such as the 2017 hurricanes (Texas, Florida, Puerto Rico, and U.S. Virgin Islands) and the current COVID-19 pandemic—have demonstrated a wide-ranging potential demand on military public health and medical personnel.[2] This demand establishes a tacit requirement across functional areas of expertise for military organizations and professionals, from commanders to logisticians, from planners to engineers and air crews and beyond. Implications for the military health sector are perhaps even more imperative, particularly given the medical and public health needs for expanding and ongoing issues of displaced persons, complex crises, and the potential for the next large-scale infectious disease outbreak.[3] DOD policy, doctrine, and operational standards have evolved to enable more effective preplanned domestic DSCA and foreign disaster relief operations.[4] Although policies and doctrine have matured, progress has been limited in standardizing competencies and training to ensure their consistent adoption across DOD. This is particularly true for military medical personnel and the medical/public health competencies they require to participate in HA/DR operations. Such competencies have been defined in the disaster medicine literature for civilian disaster/humanitarian planners, managers, and responders, though they are not codified in DOD doctrine.[5]

HA/DR preparedness (or, in DOD parlance, "readiness") for the U.S. military and DOD has far-reaching implications, but there are many gaps across this spectrum of capabilities. Some of these gaps have been addressed in consideration of professional development, particularly regarding senior leaders.[6] Currently, however, there is not a formal path for military medical personnel toward professional development in the area of disaster medicine and public health skills.

The National Center for Disaster Medicine and Public Health (NCDMPH), an interagency organization housed at the Uniformed Services University, conducted a study to more specifically assess what current education and training opportunities within DOD might meet presumptive medical and public health competencies for personnel involved in disaster preparedness and response, as may or may not be defined in DOD policy, doctrine, and real-world precedents. NCDMPH documented and categorized the variety of education and training opportunities that have relevance to medical and public health topics in disasters to help inform future efforts intended to systematically address personnel requirements in this mission set for DOD. Ultimately, the findings of the survey of education and training opportunities demonstrated that there is an abundance of chemical, biological, radiological, nuclear, and explosives content relative to all other HA/DR focus areas; that DOD largely focuses education and training on developing military leaders across the continuum from individual unit–level leadership to executive-level commanders; and that available trainings are mostly Service-specific and do not reflect a greater strategy or unity of effort despite the extent to which joint military operations are the rule in HA/DR and DSCA operations.[7]

Naval Aircrewman (Helicopter) 2nd Class Logan Parkinson, rear center, prepares passengers inside MH-60S Sea Hawk from Helicopter Sea Combat Squadron 22, attached to USS *Wasp*, for evacuation from the island of Dominica following landfall of Hurricane Maria, September 24, 2017 (U.S. Navy/Taylor King)

The Military Health System: Integral to Joint Force HA/DR Operations

DOD has established itself as a conspicuous and responsible organization in support of domestic and international HA/DR. Decades of evolving U.S. whole-of-government strategy building toward more accurate, timely, and effective disaster response have led to mature DOD policy defining roles and responsibilities across the Services and various other subordinate agencies of the department.[8] However, the following points warrant further strategic- and policy-level considerations within the Military Health System (MHS):

- The ever-increasing health implications of all types of disasters, including complex crises and the dire considerations acknowledged in a pandemic infectious disease outbreak now being realized, emphasize the importance of effective preparedness and response capabilities within the military health sector.
- This requirement, though not codified in DOD doctrine and in the absence of a systematic approach to professional development, is being increasingly realized for U.S. military medical personnel, no more so than today.
- The U.S. military and DOD should assess MHS requirements for medical and public health response to large-scale disasters and develop a concomitant set of recommendations for joint force development.

Dialogue and debate continue around future implications for MHS to include the question of a large-scale application of military medical practitioners toward direct care of civilians in the context of an overwhelming pandemic. The 2019 U.S. Government Global Health Security Strategy explicitly states:

For an emergency response, [DOD will] *provide assistance and support in coordination with [the U.S. Agency for International Development's Office of U.S. Foreign Disaster Assistance] or* [Health and Human Services'] *Assistant Secretary for Preparedness and Response. In general, this involves providing unique response capabilities, such as logistics, transport, security, and medical evacuation and treatment, when critical capacity gaps cannot otherwise be easily filled by other departments and agencies.*[9]

Despite the maturation of overarching DOD DSCA and HA/DR strategy

and policy, as well as the breadth of real-world experience realized by tactical- and operational-level actors, DOD doctrine has not yet defined clear, universal standards for education and training of HA/DR personnel in this space. DiGiovanni, in his 2016 *JFQ* article, entreated for standardization of qualifications for humanitarian assistance and disaster relief and a systematic approach toward a skills identifier for forces. He acknowledged then that "training for Phase 0 activities and disaster relief remains limited and fragmentary."[10] That remains true for the MHS today despite the ongoing realities.

Military doctrine does not consistently define HA/DR competencies or the prioritization of training in a systematic way in order to develop the military medical and public health workforce. Rather, training and education in these relevant topics are more often directed toward enhancing force health protection considerations or merely applied toward select individual specialty qualifiers, such as public health emergency officers.[11] This deters any effort to establish a sustainable and comprehensive cadre of HA/DR experts in MHS. Yet the nature of real-world opportunities for U.S. military personnel to engage in disaster response, especially large-scale international humanitarian assistance operations, demands a large number of well-trained personnel at various levels (policy, strategy, operational, and tactical). Personnel across a wide range of functional areas are also required, not the least of whom are those professionals in the public health and medical fields. It is naive to assume that even well-educated, trained, and field-experienced military health professionals would have the knowledge, skills, and abilities to translate their capabilities to a disaster scenario, either domestically or internationally. The effective delivery of disaster medicine and public health services necessitates specialized understanding of the nuanced approach to such environments.

A recent survey of extant education and training opportunities in DOD yields evidence of clear deficiencies in such areas as sufficient joint training inclusive of varying implementing roles and adequate coverage of topics dealing with core public health and medical HA/DR competencies. DOD would benefit from creating a comprehensive view of health and medical HA/DR training requirements so that they could be applied to force development. Doing so would improve the preparedness of DOD's public health and medical workforce for the growing role they will likely play in HA/DR missions.

Conclusion

The world is experiencing an increase in the frequency and severity of disasters due to ever more complex human and environmental factors. We currently face the greatest public health threat recent generations around the world have ever known. This reality demands that the joint community of responders evolves and matures to address the effects on the health of the world's citizens. DOD will continue to have an important role in HA/DR operations domestically and globally, including medical and public health response capabilities, as it is being called on today. We are likely to continue to have unanticipated events that will challenge the military health sector in predictable and unpredictable ways. Extant education and training opportunities for relevant HA/DR curricula within DOD would not prima facie address such likely personnel requirements.

A Joint Staff–recommended change in 2011 regarding doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy, derived from a capabilities-based assessment focusing on Joint Force Health Protection Emerging Mission Sets, acknowledged the requirement for "both wide scale and specific training for MHS personnel."[12] However, there was no specific reference to disaster medicine and public health competencies. Subsequently, little if any effort has been directed toward a systematic approach to define the competencies necessary for the MHS or the curricula to achieve them. To ensure that U.S. forces are adequately prepared for these missions, a capabilities-based analysis specifically addressing HA/DR requirements for the U.S. MHS that leverages established competencies for disaster medicine and public health should be undertaken. From that, education and training could be devised to address gaps in knowledge, skills, and abilities. This would ensure that when our nation, or the world, turns to DOD for help in responding to a large-scale HA/DR incident, as it is today, the department is ready to respond in order to save lives. **JFQ**

Notes

[1] Frank C. DiGiovanni, "A Way Ahead for DOD Disaster Preparedness," *Joint Force Quarterly* 82 (3rd Quarter 2016), 47–53.

[2] Alistair D.B. Cook, Maxim Shrestha, and Zin Bo Htet, *International Response to 2015 Nepal Earthquake Lessons and Observations*, NTS Report No. 5 (Singapore: Centre for Non Traditional Security Studies, October 2016), available at <www.rsis.edu.sg/wp-content/uploads/2016/10/NTS_Report_5_Nepal_final_revised_Oct.pdf>; E. Liang Liu et al., "Dallas MegaShelter Medical Operations Response to Hurricane Harvey," *Disaster Medicine and Public Health Preparedness* 13, no. 1 (February 2019), 90–93; James M. Shultz et al., "Risks, Health Consequences, and Response Challenges for Small-Island–Based Populations: Observations from the 2017 Atlantic Hurricane Season," *Disaster Medicine and Public Health Preparedness* 13, no. 1 (February 2019), 5–17; Lori Upton et al., "Health Care Coalitions as Response Organizations: Houston After Hurricane Harvey," *Disaster Medicine and Public Health Preparedness* 11, no. 6 (December 2017), 637–639; Daniel C. Wiggins, "A Case Study of the United States Military's Response to the 2014 Ebola Epidemic" (MMAS thesis, U.S. Army Command and General Staff College, 2016), available at <https://apps.dtic.mil/dtic/tr/fulltext/u2/1020383.pdf>.

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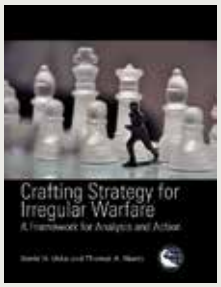
Crafting Strategy for Irregular Warfare: A Framework for Analysis and Action

By David H. Ucko and Thomas A. Marks



The 2018 National Defense Strategy calls to downgrade terrorism as a national security priority in favor of "inter-state strategic competition." Many interpreted the statement as signifying a return to "conventional combat," yet a closer reading suggests that even state-based competition is likely to be "irregular." The effort to understand this approach has generated new jargon—"hybrid war," "the gray zone"—yet the United States and the West in general struggle to overcome their entrenched presumptions about war. Such confusion constitutes an upstream source of analytical friction with implications for how strategy is conceived and implemented. This paper presents an analytical framework to assess and respond to irregular threats. Though terminological precision and analytical frameworks are no panacea for the malaise facing Western strategy, it is an indispensable starting point for all that must follow.

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JP 5-0, *Joint Planning*

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[6] *Department of Defense Support to Foreign Disaster Relief (Handbook for JTF Commanders and Below)* (Washington, DC: DOD, 2011).

[7] Paul Reed, Jaimie Laib, Kandra Strauss-Riggs, and Thomas D. Kirsch, "Humanitarian Assistance and Disaster Relief Competencies and Training Pertinent to the Military Health System," *Journal of Military Learning* (April 2020), 19–35, available at <www.armyupress.army.mil/Journals/Journal-of-Military-Learning/Journal-of-Military-Learning-Archives/April-2020/Reed-Mil-Health-System/>.

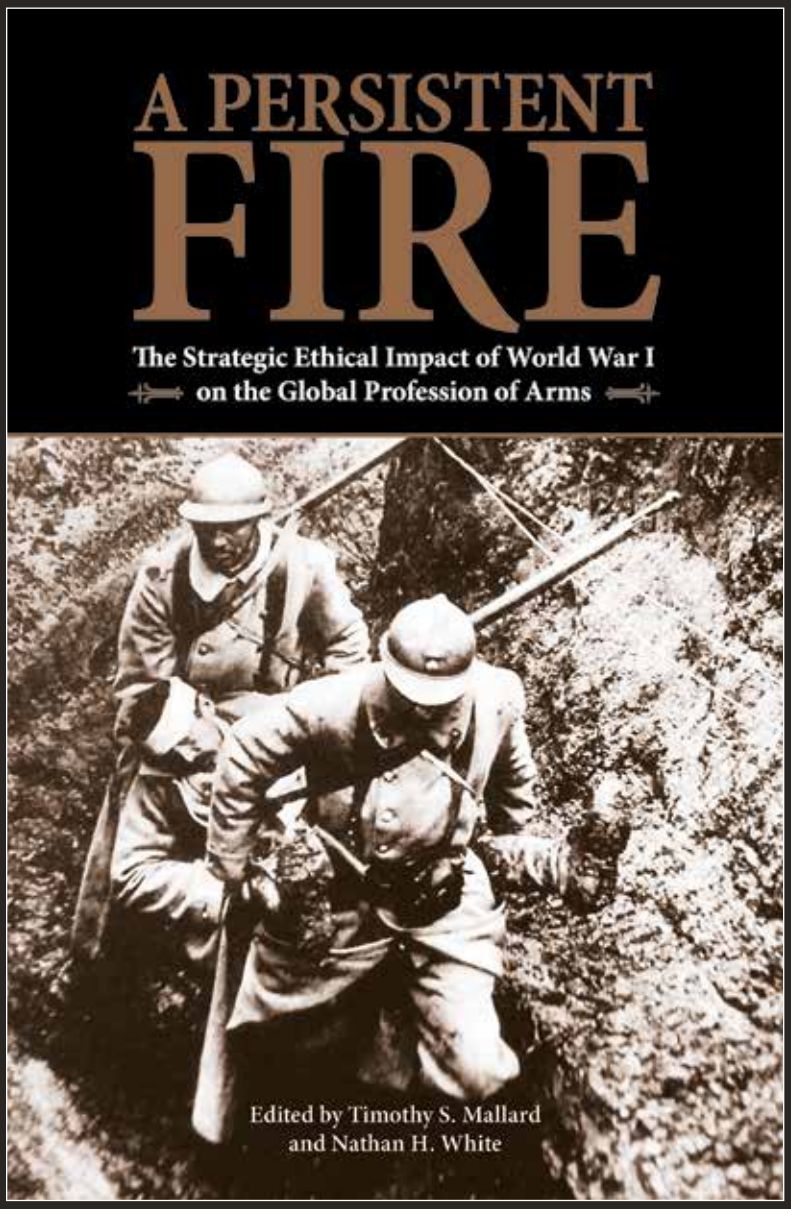
[8] DOD Directive 5100.46, 1–11; DODI 2000.21, 1–13.

[9] *United States Government Global Health Security Strategy* (Washington, DC: The White House, 2019), 1–32, available at <www.hsdl.org/?view&did=825023>.

[10] DiGiovanni, "A Way Ahead for DOD Disaster Preparedness," 47–53.

[11] Air Force Instruction 10-2519, *Public Health Emergencies and Incidents of Public Health Concern* (Washington, DC: Headquarters Department of the Air Force, June 26, 2015), 1–3, available at <https://fas.org/irp/doddir/usaf/afi10-2519.pdf>; DODI 6200.03, 1–42; Department of the Navy, Bureau of Medicine and Surgery Instruction 6200.17A, *Public Health Emergency Officers* (Washington, DC: Headquarters Department of the Navy, March 7, 2011); Army Regulation 525–27, *Army Emergency Management Program* (Washington, DC: Headquarters Department of the Army, March 29, 2019), 1–31, available at <https://armypubs.army.mil/epubs/DR_pubs/DR_a/pdf/web/ARN4163_AR525-27_FINAL.pdf>.

[12] *Joint DOTMLPF Change Recommendation for Joint Force Health Protection Emerging Mission Sets* (Washington, DC: The Joint Staff, 2011), 1–100.



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Edited by Timothy S. Mallard and Nathan H. White
2020 • 412 pp.

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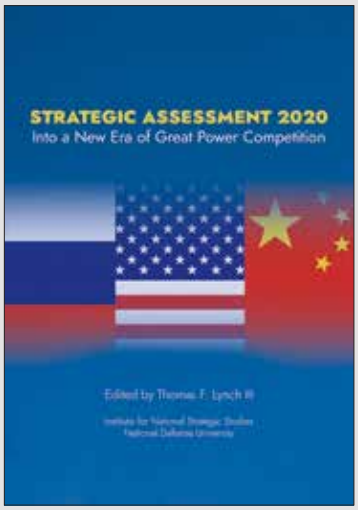

Coming Soon from NDU Press

Strategic Assessment 2020: Into a New Era of Great Power Competition

Edited by Thomas F. Lynch III

Great Power competition is a framework for understanding interstate relations that dominated geopolitics for centuries prior to World War II. Past GPC eras have featured multiple powerful states jockeying for relative status and position. After lying dormant during a two-decade period of post–Cold War globalization and American international primacy, the dynamics of GPC returned to international relations and security studies in earnest during the late 2010s.

Strategic Assessment 2020 provides an expert and nuanced understanding of the most important emerging dimensions of GPC between the three Great Powers in 2020: the United States, China, and Russia. It establishes that the United States stands atop the triumvirate, with China a rising competitor and Russia vying for top-level prestige while facing clear signs of decline. The Sino-American competitive dyad is likely to be the dominant Great Power rivalry into the future. Chapters focus on the critical activities among these Great Powers and develop major implications for other state actors, nonstate actors, and global institutions.

Authors include scholars from the National Defense University and the Institute for National Strategic Studies who have been directly engaged as thought leaders and policymaking pioneers grappling with the strategic contours of the new era of GPC. Chapters and combinations of chapters will be not only useful for students of national security, international relations, and foreign affairs in an academic setting, but also of great value to policy practitioners.

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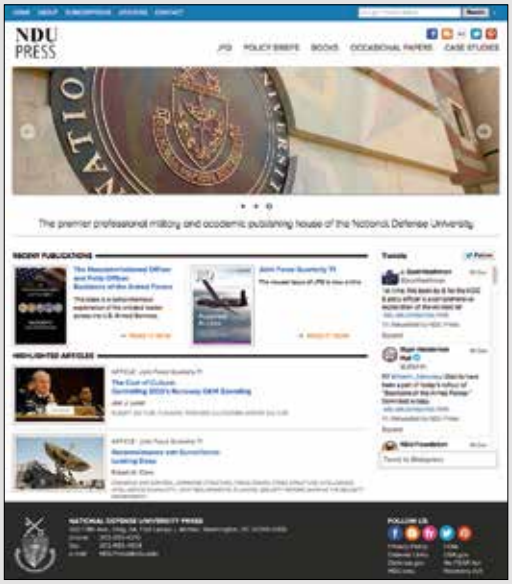

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