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Future(s) of Multidomain Battle

Targeting Hybrid Threats

Understanding Gender Bias

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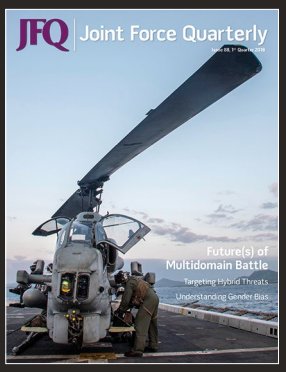
Cover 2 images (top to bottom): World War II veteran Luis Perrone, 94, was part of Army Air Force's 533rd Bomb Squadron from 1942 to 1945, completing 32 bombing missions over western Europe as B-17 Flying Fortress ball turret gunner (U.S. Air Force/Bennie J. Davis III); Navy Airman inspects wiring on EA-18G Growler in hangar bay of USS *Ronald Reagan*, November 16, 2017 (U.S. Navy/Janweb B. Lagazo); East African Response Force Soldier in C-130J Hercules during validation exercise, at Camp Lemonnier, Djibouti, which tested Combined Joint Task Force–Horn of Africa's ability to rapidly deploy forces (U.S. Army Africa/Eric Summers, Jr.)

In This Issue



About the Cover
Marines assigned to Marine Medium Tiltrotor Squadron 262 (Reinforced) conduct pre-takeoff checks on AH-1W Super Cobra helicopter aboard amphibious transport dock USS *Green Bay*, part of Bonhomme Richard Expeditionary Strike Group, with embarked 31st Marine Expeditionary Unit, operating in Indo-Asia-Pacific region, Buckner Bay, April 5, 2017 (U.S. Navy/Chris Williamson)

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U.S. Navy Airmen signal launch of F/A-18E Super Hornet on flight deck aboard Navy's forward-deployed aircraft carrier USS *Ronald Reagan* during Carrier Air Wing Five fly-off in Pacific Ocean in waters south of Japan, November 28, 2017 (U.S. Navy/Kenneth Abbate)

Executive Summary

As a gift for a significant approaching birthday, my golf widow gave me a new set of clubs that were the result of a 5-hour custom fitting at a local professional shop. For years I wrestled with the same issue: how to balance the expense of new equipment with my desire to get lower scores. I am now precisely aware of how average my swing and its results are using technology such as radar ball flight and swing tracking. And I now have the best available tech that is custom-fit to my game. The field results are not yet in, but the data from the fitting was clear that I should expect to achieve better results on the course in the coming year. As a longtime student of military operations, acquisition to support military operations, and the strategies developed for both, I found a number of similarities between my golf world and the military's current issues regarding operations, strategy, and policy, especially as the Defense Department nears breaking the $700 billion mark in annual budgets.

Just as Clausewitz wrote, the nature of war hasn't changed much. It still has political and human dimensions, is a contest of wills, and exists in a world of uncertainty. How one's military meets the challenge of war is dependent on a number of factors, including available funds, the scope of available technology in either the present or the near future, and the physical and mental fitness of the people engaged in combat. Today's military is faced with a range of challenges, which it may or may not be fully prepared to meet.

War exacts a toll over time unlike any other human experience. And meeting the demands of combat takes more than one individual's effort, budget, and ideas to succeed. With the range of challenges the Chairman has identified, including all the other burdens of service on the joint force, we might ask ourselves, "What should we do to prepare for the future while winning the fights we are currently engaged in?" The joint force has to adapt, adjust, acquire, repurpose, retrain, recruit, and perform a whole range of other functions to continue to meet the mission of protecting our Nation, allies, and partners around the world. In some

cases that means new programs and new technology, while in others it requires modifications to existing systems, training, tactics, and procedures. Another challenge we need to consider is how to handle the process of handing down valuable experience as Servicemembers constantly enter and leave the force. Many questions remain to be answered on how best to accomplish these critical tasks. Hopefully, this issue of *JFQ* will provide you with some insights to that end.

In our Forum section, we focus on the strategic level of war with four valuable contributions by well-known *JFQ* authors and new voices. Currently serving as a special assistant to the Secretary of Defense, our very own Frank Hoffman maps a number of futures our joint force may have to confront and what should be done about them. As the idea of multidomain battle gathers momentum across the joint force, Kevin M. Woods and *JFQ* Editorial Board member Thomas C. Greenwood discuss how joint experimentation can greatly improve our fighting effectiveness. Stressing the value of partnership, Thomas Warren Ross returns to *JFQ* to discuss how security cooperation and logistics combine to create success in our efforts to help our friends around the world. These days it seems the Internet has taken over our lives, so you may find what William D. Bryant has to say about warfighting in cyberspace essential to your future success.

The JPME Today section features both a *JFQ*-veteran voice and a new one, each with important considerations. From the U.S. Naval War College, Milan Vego has been writing for a long time on operational art, strategic thinking, and the history of warfare. I think you will find his latest article on American military decisionmaking to be another useful discussion on how our senior leaders develop plans and execute joint operations. After having spent a considerable amount of research and development of her thinking, Elizabeth M. Trobaugh continues our discussion of the ongoing integration of women into combat roles in our military. While her work will not be the final word on this issue, I think she will help all of us understand how far we have to go to level the playing field in a way that improves the effectiveness of the joint force.

In Commentary, General David G. Perkins, commander of the U.S. Army's Training and Doctrine Command, and General James M. Holmes, commander of the U.S. Air Force's Air Combat Command, discuss how Service concepts have been combined to create a joint solution to the multidomain battle the force now faces. Suggesting the U.S. military needs bring its game into the 21st century, Steve F. Kime offers his ideas on how military doctrine should be updated. And Richard B. Davenport advocates for a new force structure to advance our joint psychological warfare capabilities.

Chance A. Smith and Steve W. Rust begin our Features section with an interesting set of ideas on how our geographic combatant commands can update their targeting methods to better confront hybrid threats. Seeing a need to simplify our approaches, Gabriel Almodovar, Daniel P. Allmacher, Morgan P. Ames III, and Chad Davies offer us a different way to look at our integrated air and missile defenses. Helping us operate in a world where the joint force's every move might be available to stream on the Internet, Adam G. Lenfestey, Nathan Rowan, James E. Fagan, and Corey H. Ruckdeschel suggest ways secrecy and surprise can still be achieved. Recent events in Africa underscore the need for the joint force to conduct a range of missions on the continent, and Andrus W. Chaney offers recommendations for achieving success in U.S. Africa Command's security cooperation efforts.

Our Recall section welcomes a team effort that takes us back a long time before the Goldwater-Nichols Act. Kenneth T. Klima, Peter Mazzella, and Patrick B. McLaughlin offer their views on joint planning and center of gravity analysis in the Second Punic War.

We also offer three interesting book reviews along with an expanded Joint Doctrine section. If you read the article about centers of gravity in the Second Punic War, then you are ready for Jacob Barfoed's article on how to see them as more than just a part of winning tactically. I honestly had not heard of the Department of Defense Terminology Program until George E. Katsos sent us an article about this important effort. Getting joint operations right is just the start of the effort needed to be successful in today's world, and Charles W. Robinson helps us see how to win when involved in multinational and coalition operations. Closing out the issue, the Joint Doctrine Update lists the latest developments in joint publications.

The next edition of *Joint Force Quarterly* will feature a number of important articles from the Joint Staff and U.S. Central Command that continue to explore where the joint force is today and where we should be headed. Given the talent we have, I am certain we will find new ways to continue to improve and bring our A game to every place we go. **JFQ**

William T. Eliason
Editor in Chief

Marine provides tactical navigation assistance to pilots in UH-Y Huey helicopter embarked aboard USS *Green Bay*, during amphibious raid rehearsal as part of Talisman Saber 17, Coral Sea, July 8, 2017 (U.S. Navy/Sarah Myers)

The Future Is Plural

Multiple Futures for Tomorrow's Joint Force

By F.G. Hoffman

There is not a single discrete future out there in the time to come. Instead there are almost certainly an unknowable number of possible futures. . . . The past is singular . . . the future, in sharpest contrast, assuredly plural.

—Colin Gray

The formulation of sound strategy is inherently tied to the art of forecasting. Rather than precise predications, any sound strategy has to be founded on embracing uncertainty, assessing risk, and testing hypotheses.[1] This may be particularly true for defense strategies. Multidimensional challenges, like crafting a long-term defense strategy, cannot rely on dartboards or algorithms fed by Big Data. As RAND's Michael Mazarr has perceptively noted, this is not the nature of the big national security challenges. "These are value-based judgment calls or one-off issues," he has concluded,

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"where data and patterns will offer very limited guidance."[2] The central question for senior leaders in defense is improving their assessment of risk in ambiguous contexts.

This article examines the use of scenarios to enhance the development of defense strategy and explores three critical uncertainties that will frame a number of potential futures for U.S. security strategy to demonstrate the utility and application of effective scenario use.

Table. Sources of Uncertainty and Friction in Strategy Formulation and Execution

Activity-Based Intelligence	Bureaucratic Scripts	Domestic Politics	Adversary Actions	Disruptive Technology	Allies and Partners
Diagnosis	X		+	X	+
Formulation	+	X		X	X
Testing or Gaming	X	X		X	
Implementation			X		X
Assessment & Adaptation	X	X			

X = Major source; + = Minor source

A sound strategy process is not, or at least should not be, an exercise in eliminating uncertainty and making smart choices based on a clear-cut prediction. This is not an advisable approach since our grasp of the future is so tenuous. As Colin Gray once advised the North Atlantic Treaty Organization (NATO), any strategy starts with the recognition that its authors will be surprised many times in the future. The key is not to be disabled by the effects of surprise—we should plan with the intent of creating capabilities and consequences that are surprise-tolerant. The goal in prudent defense planning is to avoid optimization for one world, to plan flexibly, adaptively, and inclusively.[3] To posture an institution for the breadth of challenges for which adaptation may be necessary, we have to open up the aperture to potential futures via scenarios posited to test how inclusive or responsive our plans are.

History is not irrelevant when exploring the future. The challenge is to remain engaged with the past but to unshackle leaders from the worst kind of confirmation bias, which assumes that since the future is unknowable, it will be based on what we now know.[4] Instead of searching for the unknowable Black Swan, smart planners should stop avoiding inconvenient trends that disturb organizational preferences with new challenges and orphan missions, which some call Pink Flamingos.[5]

Large institutions, including the Armed Forces, tend to think about the future in linear and evolutionary steps and make implicit assumptions about the next war as merely an extension of the last. This results in strategic and operational surprise. Yet most surprises, as Peter Schwartz has long noted, do not spring forth from unexpected consequences but rather from group denial.[6] Most international shocks were envisioned by someone, warned about, but resolutely ignored. Instead of grasping new contexts or potential circumstances that alter our understanding, we tend to project trends as linear plots. In retrospect, after a strategic shock, we prefer to construct a script about how signals and vague omens were lost in the noise. In reality, the signals were drowned by leaders who turned up the volume on comfortable preferences.

This is where scenario-based planning comes into play, to break out of rigid mental frames and open up a discourse among senior leaders about trends, assumptions, and potential shocks.[7] Scenarios and multiple futures help policymakers foresee possible inflection points and bring uncertainty into account. Scenario-based analysis facilitates the incorporation of critical drivers and trends that might fundamentally change the future environment in significant ways. By identifying key trends and drivers along a plausible alternative path, from the present to different futures, scenarios can "help Pentagon leaders avoid the 'default' picture by which tomorrow looks very much like today."[8]

Scenarios, properly employed, can help reduce some of the critical influences of uncertainty and friction in strategy formulation. In particular, in the diagnosis and formulation phases of strategy development, scenarios can sharpen the diagnosis as well as shape options for tradeoffs in strategy options and formulation. Without scenarios, strategists may pursue bureaucratically favored solutions masked as operative strategies. With scenarios, the same strategy team may have a better feel for how its biases and preferred solutions create risks in different worlds.

As noted, good strategy is ultimately an art that employs forecasting, risk management, and the testing of hypotheses. Good forecasters, including so-called Super Forecasters, are more scrupulous about their personal biases and tend to become more empirical in their assessments to try to avoid a lack of objectivity.[9] This empiricism is a learned skill as is the use of good trend analysis and scenarios. These are the tools that every strategist should embrace.

There are many sources of uncertainty in strategy, and they can occur at different times in the strategy formulation process. They do not have to serve solely as illustrations or explain a future environment.[10] The table depicts a summary of potential sources of uncertainty and friction in the strategy formulation and execution process.[11] The first column details the basic steps in strategy development, to include the need to assess and adapt strategies in action. The first row lays out potential sources of both uncertainty and friction that may impede an objective understanding of the environment, the framing of potential options, and decisionmaking. These include both internal (like bureaucratic resistance or internal scripts) and external (the opponent being the most obvious) sources.[12] Good scenario testing can be an effective counter to that, perhaps by a Red Team, to challenge strategy group think. Red Teaming has recently been emphasized as an important tool in helping decisionmakers better understand the vulnerabilities of a given course

of action.[13] The evaluation of effective strategies, ones that can adequately respond to the world as it is rather than an imaginary or preferred world, is a critical part of the strategy development process. Strategy testing against scenarios helps both the decisionmaker and strategy team by exploring consequences of seemingly favorable strategic plans. There are risks in inaction as well as unintended or unforeseen costs in preferred options. As Michael Mazarr has noted in his study of risk analysis preceding the 2008 financial crisis, "the most profound risk disasters in finance and national security come from insufficient attention to and awareness of the potential risky consequences of intended or favored strategies."[14]

Bureaucracies, including planning cells in institutions like the Department of Defense, tend to make their outlook of the future match up well with their preferred solutions. Scenarios provide a less threatening way to lay out alternative futures in which the bias, preferences, and assumptions underpinning today's strategy may no longer be true. This can help avoid groupthink.[15] Decisionmakers should temper that possibility with astute use of scenarios founded upon the critical assumptions or uncertainties that will impact their enterprise the most.[16]

Some analysts believe that uncertainty gets too much credit and contributes to negative influences in the development of U.S. defense strategy. One analyst goes so far as to claim that defense planners over-privilege uncertainty, which retards difficult choices that can and must be made. Based on an assessment of the quality of the analysis supporting the Defense Department's Quadrennial Defense Review (QDR) in 2010, Mark Fitzsimmons concluded that "*Creative, unbounded speculation* must resolve to choice or else there will be no strategy. Recent history suggests that unchecked skepticism regarding the validity of prediction can marginalize analysis, trade significant cost for ambiguous benefit, *empower parochial interests* in decision-making, and *undermine flexibility*."[17] This reflects an erroneous belief that prediction is necessary to make decisions and tradeoffs. In reality, this is more of a gamble than a strategic method. It surely *undermines flexibility* for responding to what cannot be known with any reliable detail.

While the 2010 QDR may have been perceived as embracing uncertainty (and was overly optimistic about resources), a better case study is the Defense Strategy Guidance of 2012. Every assumption made by the Barack Obama administration and accepted by Secretary of Defense Robert Gates and the Pentagon at that time (Russia, benign; China, not assertive; Sunnis, contented) all proved completely wrong. Crimea, Ukraine, the South China Sea, and the so-called Islamic State's nova certainly ended the notion that narrow prediction was a good bet. It turns out that the *creative speculation* was blind faith in prediction, *unbounded* by any appreciation for what might happen. In this case, employing scenarios might have produced a more informed choice, one that expands rather than *marginalizes analysis.* Forecasting intelligently, as well as understanding the probabilities and potential implications, are more important for long-range strategies than a prediction.

Scenarios help resolve an inherent tension in formulating strategy. Professor Hal Brands of the Paul H. Nitze School of Advanced International Studies observes that strategy is beset with tensions including "between the need for foresight and the fact of uncertainty; between the steadiness and purpose that are necessary to plan ahead, and the agility that is required to adapt on the fly."[18] That tension, between foresight and inherent uncertainty, is the Holy Grail of sound strategy.

But while scenarios provide a good way of evaluating strategies, the scenarios themselves do not generate the strategy. As Richard Danzig has noted, "the propagation of scenarios, however sophisticated, broad ranging or insightful, does not obviate the need for strategies for coping with uncertainty."[19] The scenarios are a mechanism for that since they are plausible contexts a strategy may have to face, and for which responsible policymakers may have to prepare for or hedge against.

Critical Uncertainties

In this article, three critical uncertainties are selected that the author contends will significantly shape the context for the execution of U.S. policy and defense strategy over the next one to two decades.[20] There are many relevant megatrends that will impact our future.[21] Several of these can be bundled together into uncertainties for which there is a plausible path and for which assumptions are perilous. If these three uncertainties are taken out in time to their natural conclusion or a plausible alternative future, existing U.S. national security strategies would have to be adapted, possibly in "ways and means" that we are currently unprepared to recognize or accept.

These uncertainties are geopolitical competition from major rivals, U.S. economic performance, and alliance cohesion and capacity.

Geopolitical Competition from Major Rivals. This driver poses a polarity between a highly collaborative world order largely within the extant rules-based international system that exists today. It may be adapted to better reflect post–Cold War adjustments in national power. At the other end of the uncertainty factor is the existence of a conflict-ridden environment of great power competition.[22] Such a world would be based on the collapse of many norms and values, a possible rejection of international mechanisms to mitigate direct confrontation in the economic or security domains, and the rising potential for direct military conflict inside the established spheres of influence of the major powers. This is a future of substantially higher risk of confrontation in which current force development plans would leave the joint force *outmatched* in key dimensions of future war.

Trend lines in this driver are ominous. Russia's announced defense spending is slated to rise 44 percent over the next 3 years, the largest increase of any state.[23] China's significant economic development and rapid military modernization could conceivably produce circumstances in which great power competition erupts into a war.[24] Already, Chinese military

modernization shows great progress in offsetting U.S. power projection capabilities.[25] Scholars of rising powers and transition periods show that periods marked "by hegemonic decline and the simultaneous emergence of new great powers have been unstable and prone to war."[26] As Harvard's Graham Allison has noted, the emergence of rising powers has resulted in war with existing powers in 12 of 16 cases.[27]

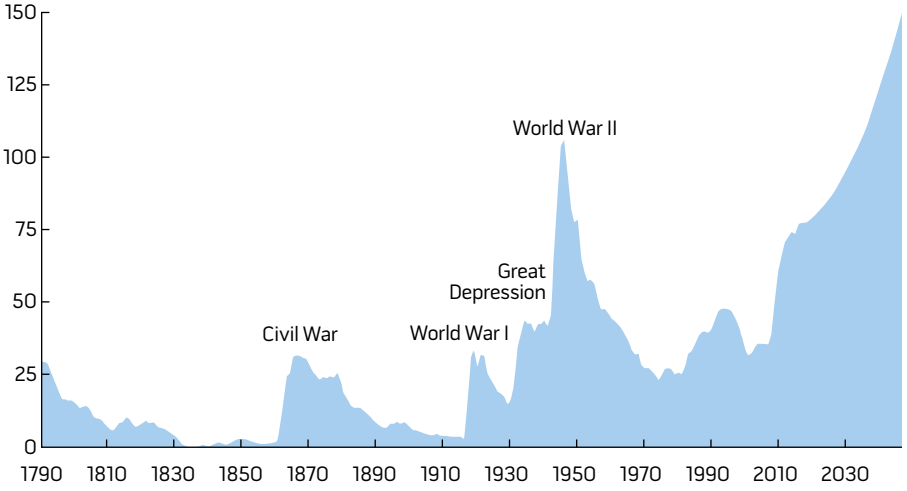
At the upper range of this driver, we could foresee a world in which the world order was in complete disarray, and in which China and Russia would be aligned against the democratic and open liberal order.[28]

U.S. Economic Performance. This driver captures the potential range of U.S. domestic economic performance ranging from high growth rates in excess of 3 percent at one end and flat or slightly declining economic performance at the other. The negative end of this trend would be predicated on continued political polarization in the country, as well as continued gridlock on Federal budget reforms to tame spiraling income security and healthcare costs. Under this scenario, entitlement costs and interest payments by 2030 consume 85 percent of the Federal budget and the Federal debt climbs to 150 percent of gross domestic product (GDP).

The U.S. economy grew by an average of 3.8 percent from 1946 to 1973, while real median household income surged 74 percent (or 2.1 percent a year). But real GDP (accounting for inflation) grew by only an average of 1.7 percent from 2000 to the first half of 2014, a rate around half the historical average. Median income for middle-class Americans was flat for the past 20 years, although a distinct uptick of 5.2 percent growth recently occurred.[29]

Projections for U.S. economic growth are slightly higher in the next few years (1.9 to 2.2 percent). These projections will be influenced by numerous variables including U.S. tax policies, infrastructure investments, potential health policy changes, reform of government entitlement programs, and how well the U.S. economy adapts to numerous technological breakthroughs. However, the biggest challenge facing the future U.S. economy is reflected in its growing debt and interest payments required to pay for this financing of the U.S. Government.

Figure 1. Past, Present, and Future U.S. Debt Levels
Percentage of GDP



The growth and resulting increase in mandatory interest payments is equally significant and may impinge on national economic growth and negatively impact resources for required Federal activity, including national defense. The U.S. public debt was $909 billion in 1980, an amount equal to 33 percent of America's GDP. That number had more than tripled to $3.2 trillion—or 56 percent of GDP—by 1990. Total Federal debt (including debt held by the public and foreign countries and the Federal Reserve Bank) now exceeds $18 trillion and approaches 100 percent of GDP. It will climb over $20 trillion in the next 5 years and is projected to be greater than $24 trillion by fiscal year 2029 under current law. The Congressional Budget Office (CBO) estimates that our interest payments will exceed $700 billion a year in 2027, up from $202 billion in 2009. This would represent a tipping point, as interest costs would exceed funding for the Department of Defense.

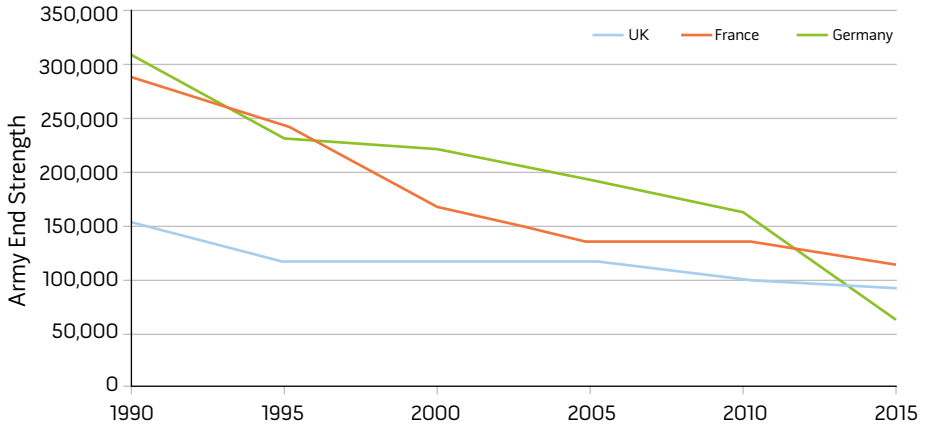
Figure 1 shows the historical track of publicly held Federal debt as a percentage of our gross economic capacity. The figure also shows how major conflicts have resulted in prior debt surges and reflects CBO projections for sharply higher debt levels, largely as a result of the retirement of the Baby Boomer generation.

A scenario of potentially significant risk would be one in which U.S. debt-carrying costs were to increase significantly, which would increase required interest payments. This is why Admiral Mike Mullen, former Chairman of the Joint Chiefs of Staff, once claimed that the greatest threat to U.S. security was Federal debt levels.[30] If interest costs simply returned to their norms—higher than 4 percent—our debt-servicing costs could rise by $4.4 trillion over the next decade.[31] This would be a future in which our current strategy and forward posture would be *unsustainable*.

Alliance Cohesion and Capacity. This driver examines the assumptions and trends related to our current alliance system. That system uses national advantage as a source of access and influence in key regions of the world. The U.S. alliance system is a source of capability that augments the joint force and is a collective mechanism for maintaining international norms and values. The bases in Asia, Europe, and elsewhere that are made available by this network of partners hold immense value to U.S. global power projection and for conventional deterrence.

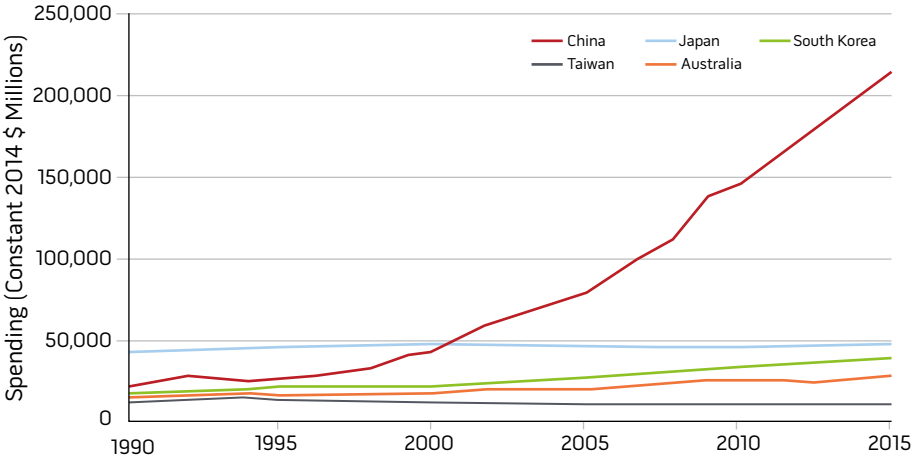
At one end of this factor we might assume a highly cohesive suite of capable

Figure 2. Allied Ground Force Levels



Source: Hal Brands, *Dealing with Allies in Decline: Alliance Management and U.S. Strategy in an Era of Global Power Shifts* (Washington, DC: Center for Strategic and Budgetary Assessments, 2017), 19, available at <http://csbaonline.org/uploads/documents/ALLIES_in_DECLINE_FINAL_b.pdf>.

Figure 3. Asia Defense Spending



Source: Brands, *Dealing with Allies in Decline*, 24.

allies and an extended network of partners that are politically and militarily strong enough to export hard military power beyond their borders. They would have robust conventional capability, enough to contribute to NATO's immediate borders, as an example.

In this world, regional forces would be supported by over 2 percent of their collective GDP and have sufficient modernization funding to stay interoperable with U.S. forces. At the other end of the driver, our allies would be politically weak, demographically challenged by aging populations, and economically frozen by poor productivity levels and tepid trade. At the end of the decade, these countries would be investing 1.25 percent of their GDP to defense spending but have little expeditionary capability at all. These allies might cling to NATO but not contribute anything to its hard power.

Trends are not favorable at present. Europe faces a future that observers believe could fragment its integration via a "perfect storm."[32] Given low economic productivity, aging demographics, and internal security needs, many NATO members have sharply reduced defense spending and could become more domestically oriented against internal security challenges.[33] Prospects for increasing defense spending or collective defense appear to be diminishing.[34] As seen in figure 2, the ground forces of our major partners in Europe have been in decline for some time.

In Asia, some of the same challenges exist. Japan is aging rapidly and its defense spending represents only 5 percent of its national budget, or 1 percent of GDP.[35] Japan's debt is already at 245 percent of its annual GDP. Overall defense spending by current U.S. allies is stable but increasingly irrelevant given the large increases allocated to China's People's Liberation Army. If current trends continue, as regional defense spending suggests in figure 3, Asian security will be overshadowed by China.[36]

Multiple Futures

These significant uncertainties are not the only drivers of the future, but they arguably are the most stressing to the positon the United States would prefer to operate from. Over two decades ago, the U.S. economy was generating a surplus and growing at 3.5 percent annually, our debt was 33 percent of GDP, and NATO stood as history's greatest alliance. We found ourselves in a unique positon, a unipolar moment that turned out to be just a moment in time.[37] The challenge today is to secure the Nation's core interests and obligations in the world as it is, not as we wish it to be.

Of course, there are other trends in the security environment, including global economic integration, technological diffusion, and both global and domestic income equality. All of these are certainly influential, but for the purpose of this intellectual exercise, not as critical to future U.S. defense choices as those we have discussed thus far.

If we were to plot the identified drivers along three axes, it produces a future options space as depicted in figure 4. Each driver has potential signposts or stages that signal evidence of how each bundle of trends is emerging. The intersecting points, the antinodes, of these drivers produce options of potential future worlds we may live in, as depicted

in figure 5. The corners that have been selected represent plausible alternative worlds if trends played out negatively for U.S. interests.

The Base Scenario world is where the three drivers intersect in a best-case world—one in which China and Russia were not competitive with the West, U.S. economic growth was 3 percent, and our allies and partners were highly capable and committed to the current international order. This may be the desired outcome of a potential grand strategy. Less desirably, combinations of the three critical uncertainties produce darker alternatives that are depicted and described below. The development of any robust national security strategy or a U.S. defense strategy should be tested against these worlds.

Indispensable America. This alternative future reflects the potential combination of rising revisionist powers (an entente between China and Russia) and a weakened international order with a much-weakened Western alliance structure that offers little combat capability and fewer bases for U.S. forward-deployed forces.[38] Weaker allies will pose considerable challenges for U.S. security strategy over the next few decades. As Professor Brands has noted:

Regional military balances are shifting adversely as allies decline relative to their regional competitors, making America's traditional responsibility as guarantor of stability and security in Europe and East Asia more difficult to uphold. In the event conflict occurs, the United States will face even greater challenges in defending its increasingly overmatched allies in these regions.[39]

In such a world, a greater burden to sustain a rules-based, liberal order would have to depend on the United States, making it literally "indispensable."[40]

Independent America. This plausible extension of trends depicts a world in which U.S. economic performance has weakened and a greater share of the economic output of the country is spent on domestic needs, especially health care and income security, despite the rising global reach and power of contending peer competitors. With flat defense spending over the ensuing decade, U.S. security investments would be focused on securing the homeland first, with smaller numbers of much more sophisticated global strike systems to provide some conventional deterrence. The emphasis for U.S. national security strategy would be to preserve the Nation's borders and domestic security. American leaders in this scenario would be tired of carrying NATO and its unwillingness to pay for its security and seek a more independent America free of burdensome and entangling coalitions.[41]

Contested Disorder. This future represents an extension of all three uncertainties to some degree. It posits an alternative future of poor U.S. economic performance under 1.5 percent growth, continued political division, and a constant erosion of U.S. security investments. Economic order is distressed due to the eruption of protectionist actions between the world's two largest economies.[42] At the same time, reduced alliance cohesion in Europe and in Asia diminishes U.S. interest and involvement with existing allies and partners. A majority of Americans in middle America do not agree that the cost of U.S. leadership is worth it.[43] NATO may still exist in such a future, but its relevance and capacity are entirely rhetorical. Complicating this world is the continued encroachment of Russia along the periphery of Europe and deep penetration of the Old World's governments and information institutions. Russia manages to continue its modernization.[44] In Asia, China's reach has expanded both in economic terms as every country's major source of trade, economic growth, and investment. China's economy has displaced America's as the growth engine of the future.[45]

Implications

The implications drawn from these different futures is not comforting—bigger enemies, fewer friends with diminished contributions, and a weakened government that has both less influence and a smaller iron fist behind its diplomacy. This is a more multipolar and chaotic world. With few shared values or institutions, it will be harder to manage and will require multiple compromises and sharp tradeoffs.[46]

The implications for the joint warfighting community are significant as well. A detailed analysis is beyond the scope of this article, but overall:

- A large-scale increase in U.S. military force size, as proposed by several key congressional leaders and think tanks, would be unsustainable in Independent America or Contested Disorder.[47] The funding in a large buildup would be compounded by the resulting early outs/buy outs and ship decommissionings.
- A joint force that assumes access to foreign bases and counts on exportable combat power by an aging NATO or Cold War partnership may become a bad bet in Indispensable

Figure 4. Three Critical Uncertainties

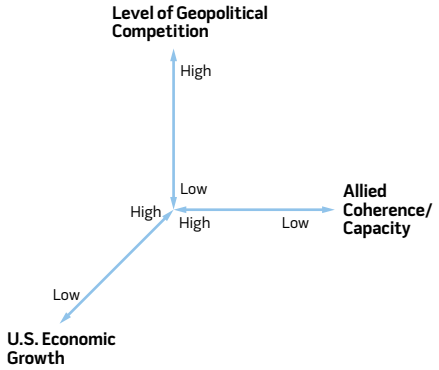
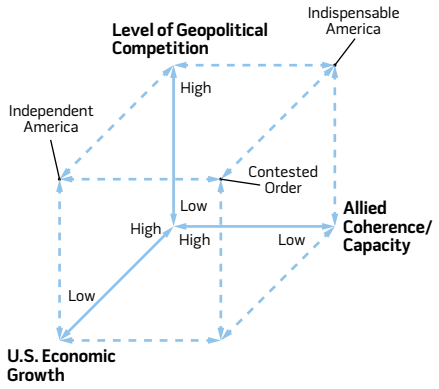


Figure 5. Three Alternative Futures



Marine fires AT-4 missile launcher during Exercise Platinum Eagle 17.2, at Babadag Training Area, Romania, May 3, 2017 (U.S. Marine Corps/Sarah N. Petrock)

America. Since allies and partners constitute a major source of advantage, as the Chairman of the Joint Chiefs has publically emphasized, this strategic advantage may have to be discounted in assessing the future operating environment and military strategy.[48] Certainly, over the last 15 years, despite concerns about burdensharing, the U.S. alliance system has proved to be material to U.S. global reach and power projection. The question for the future is how well the United States manages its alliance architecture and how political, social, and economic forces shape the contributory value of that system. This potential risk could be offset by working to build up partner capacity with existing or even new partners.[49] Should this trend go completely negative, with Great Britain leaving both the European Union and NATO, for example, the United States might have to substantially alter its defense posture and pick up a heavier burden.

A smaller and less forward-deployed force would be extremely strained and at greater operational risk if tasked to sustain an open order overshadowed by China's global power in Contested Disorder or even worse by a collective effort by the two major revisionist states. Designated spheres of influence would be accorded immediately to both of the revisionists who would continue to press against former U.S. allies, and eventually extract commercial advantages inimical to U.S. economic interests, employment, and prosperity. A world in which revisionist powers were collaborating and in which the extant international order was eroded and undefended would necessitate a significant shift in U.S. grand strategy and a higher order of defense spending and force buildup. Some argue that the major powers should reach an accommodation, an agreement on a new order. But the conditions for such a concert are rare and more difficult to obtain from revisionist and rising powers.[50]

These scenarios may not come to fruition, but signposts for the variables involved can be identified and tracked. More important, U.S. grand strategy should be tested against these potential worlds and incorporate some actions to increase the chances of our obtaining the base case. Our defense strategy can also be stressed by testing it against these three futures as well, to assess how resilient it is against potential environments that may evolve. A joint force design for a future U.S. military has to consider not only today's canonical war plans but also the breadth of these potential futures in some way.[51]

Strategy is formed around a hypothesis, since all strategy is purposeful and must rely on a causal relationship that expects that discrete decisions and actions

will generate desired effects.[52] The use of scenarios can test that hypothesis to help "future proof" the strategy that is selected.[53]

Obviously, U.S. actions offer a powerful input as to how these scenarios might play out. They are not preordained, and U.S. actions or lack of action will contribute to which future evolves. These scenarios are not predictive, as they are designed principally to illuminate potential futures and to serve as a starting point for strategic discourse by responsible national leaders. They can help clarify the implications of trends, underscore major assumptions, and frame potential options about a world that we might have to adapt to.

Alternative futures help decisionmakers understand potential future contexts and their implications in order to draw out potential issues, enhance hypotheses, and lay out signposts to track which path is emerging. The discourse a leadership team has over multiple futures enhances its decisions, clarifies strategic options (investments, divestments, and hedging), and better prepares for future adaptation. Multiple futures are also helpful in testing the robustness and adaptability of a strategy. Using scenarios, we can test how well the strategy can adapt—and how much risk is assumed—if the assumptions change. If the risk is too high, then the strategy should be modified or contingency plans developed to mitigate the risks and make the strategy more robust.[54]

At the end of the day, strategy and planning are based on well-informed hypotheses, not prediction. Scenarios are a potent tool, properly designed and employed, but they are *not* strategy per se. They are a means to that end, a tool for Pentagon civilian leaders to ensure that tomorrow's military is not entirely built on yesterday's mental models. These models or internal scripts should be acknowledged if not entirely avoided.[55]

Conclusion

The making of strategy has always required an unsparing examination of the future with the paring away of institutional biases and the reduction of systemic blinders, and no small amount of intellectual digging to develop and test reasonable hypotheses.[56] It also requires long-term thinking and imagination. In his opus *Strategy: A History*, Sir Lawrence Freedman observed, "Having a strategy suggests an ability to look up from the short term and the trivial to view the long term and the essential, to address causes rather than symptoms, to see woods rather than trees."[57] This technique forces decisionmakers to see the whole forest and to imagine its growth over time.

We may have to learn to live with strategic surprise, for the complexity of the world we live in is inescapable and the potential for disruption and nonlinear change appears to be rising. But complexity, disruption, and uncertainty are not novel circumstances, nor are they insurmountable challenges to sound strategy. Risk management is a complex strategic task and it is best to confront the systemic biases that can influence critical decisions.[58]

The current Army Chief of Staff has noted, "War tends to slaughter the sacred cows of tradition, of consensus, of group think, and myopia. The next war will be no different."[59] That may be true, but it is a costly way to approach strategy in a dangerous era. To preclude tradition-bound groupthink and consensus-based complacency, we need to better exploit scenario testing against those sacred cows. With proper use of multiple futures, they can be grilled slowly until well done. **JFQ**

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Airman with 6th Force Support Squadron at MacDill Air Force Base participates in 2017 OpenWERX Hackathon, sponsored by U.S. Special Operations Command (U.S. Air Force/Brandon Shapiro)

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SOFWERX hosts Cyber Capability Expo at its newest facility in Tampa, Florida, to identify cyber technologies to meet current and future Special Operations Forces requirements, October 19, 2017 (U.S. Air Force/Barry Loo)

Multidomain Battle

Time for a Campaign of Joint Experimentation

By Kevin M. Woods and Thomas C. Greenwood

The term *multidomain* has reached beyond mainstream military parlance to dominate defense-related discussions, concept papers, and op-eds. While the idea of operating across warfighting domains is hardly original, the rapid growth of capabilities tied to the newly minted space and cyber domains is forcing a re-examination of all previous military concepts and doctrine. This article explores the debate around multidomain battle (MDB). Developing a new warfighting concept (as opposed to a slogan or bumper sticker) is difficult because new concepts need to demonstrate that they are sufficiently better than the status quo at addressing the challenges and opportunities in order to justify the disruptive effects of the change. This, as it should be, is a high bar.

The desks of the Pentagon are littered with "transformative" joint warfighting concepts that have appeared with great fanfare only to fall into obscurity. Despite serving as a vehicle to explore ideas, in the end, concepts like Rapid Decisive Operations and Air-Sea Battle failed to move beyond the nascent stage. Some of this can be attributed to a natural resistance to top-down joint concepts, the difficulty of exploring future concepts while maintaining readiness, the lack of coherent institutional processes for examining concepts across organizational boundaries, and, ultimately, the lack of patience for what can be an intellectual slog. As a result, many such efforts were never sufficiently examined so as to generate compelling evidence to drive more than cosmetic changes across the force.

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This article advocates two approaches to exploring MDB. The first is to link the MDB concept to the existing body of available evidence. The second is to generate new evidence through experimentation. These approaches are offered not because Service concept developers have not already begun this process—as evidenced by the MDB draft concepts and plans for U.S. Army MDB experimentation in 2018 and 2019. Rather, this article argues that in addition to the bottom-up development of what could arguably be deemed a joint concept, there should also be a parallel effort to explore the top-down or explicit joint, theater-level implications of MDB.

The term multidomain itself is most often used as a modifier for a particular application of military force, such as (multidomain) battles, (multidomain) operations, or (cross or multidomain) fires; however, more substantially, MDB promises more fluid, adaptive, and effective operations simultaneously across five domains (land, sea, air, space, and cyber). Although operations are conducted in and occasionally across these five domains, the promise of a concept that makes domain integration the norm and not the exception is a tall order. Extraordinary claims require extraordinary evidence.

The logic of MDB's underlying tenets is widely accepted, but that is not the same as demonstrating the concept's viability. Will the application of a multidomain approach enable the Department of Defense (DOD) to overcome current warfighting challenges? Will it allow the Services to seize new opportunities? Or, instead, will MDB distract the Services from restoring atrophied conventional warfighting capabilities? Perhaps more importantly, can MDB serve as a unifying concept that DOD business processes can be organized around for the development of future concepts and capabilities?

MDB is a future concept (perhaps near-future, but future nonetheless). As such, it "must be stated explicitly in order to be understood, debated and tested to influence the development process."[1] The maturation of a concept is a critical first step in the birth of any capability. Concepts are narrative descriptions of suppositions formulated from historical and contemporary experiences; however, as debatable propositions, they must be validated before they transition from concept to capability. This requires settling the debatable elements. This article thus argues that concepts on the scale of MDB require a campaign of experimentation that provides compelling evidence for the concept by fleshing out its operational and institutional contexts.[2]

The State of the Debate

Proponents of the emerging MDB concept make the case that the joint force must adapt to the times, or, as one author put it, "multi-domain battle . . . doctrine is being developed to address the interconnected, Omni domain battlespace of the 21st Century."[3] One of MDB's strongest proponents, Admiral Harry Harris, commander of U.S. Pacific Command, argues that "MDB conceptualizes bringing jointness further down to the tactical level [by] allowing smaller echelons to communicate and coordinate directly while fighting in a decentralized manner."[4] Regardless of the operating theater and specific mission, tactical-level MDB operations, noted U.S. Army Pacific Commander General Robert Brown, will drive the Services to "change their distinct Service cultures to a culture of inclusion and openness, focusing on a purple (or joint) first mentality."[5] Rhetorically, at least, the emerging MDB concept is progressing from the often stated but little realized goal of Service deconfliction to increasing interdependency and, in the optimistic version of MDB, seamlessly integrated operations across domains.[6]

MDB critics dismiss its significance by arguing that it is old wine in a new bottle.[7] Even proponents agree that the "idea and desire for cross-domain effects is not new" but contend the traditional Service-domain alignments are inadequate for coping with the new security environment.[8] A more fundamental challenge is made by those arguing that the categorization of future war by domain—especially but not limited to the cyber domain—is neither logical nor practical. As one observer notes, "the word [domain] contains some built-in assumptions regarding how we view warfare that can limit our thinking . . . [and] could actually pose an intractable conceptual threat to an integrated joint force."[9]

Joining the critics are the cynics, some of whom see MDB's real purpose as programmatic: a ploy to restore or preserve force structure by returning land power to the tip of the spear in joint operations.[10] Others see the concept as requiring deep institutional reforms that are simply unattainable.[11] As one pessimist argued, "without consistently organizing, training, and equipping as a joint team, the Services will be ill-prepared to provide multi-domain capable forces to combatant commanders, continuing history's trend of falling short of the vision of jointness."[12] The institutional questions loom large here. At one end of the spectrum there are calls to form separate Services for the space and cyber domains.[13] At the other end, one MDB proponent provides fodder for the cynics by arguing that the only way to implement MDB is to create a single force and eliminate the independent Services.[14]

Running parallel to the ongoing MDB debate are distinct theater versions of the concept. Because practice trumps theory in the application of military force, how the MDB concept evolves will be strongly influenced by how the operating theaters find a way to employ its promise.

In the Pacific, where much of the initial energy behind the cross-domain idea began, MDB has been described as:

> *ground-based batteries of anti-aircraft, anti-missile, and anti-ship weapons, supported by long-range sensors and jammers, that can strike targets well out to sea. Islands defended by such Army batteries (or Marine Corps outposts) could serve as unsinkable anvils, with the Navy and the Air Force as the highly mobile hammers.*[15]

In support of developing MDB, the Army has recently established a Multi-Domain Task Force in U.S. Army Pacific to accelerate the process of overcoming the tactical and technical challenges

associated with reincarnating the Army's capability to "sink ships."[16] This bottom-up approach to building a joint capability, as one commentator noted, has the potential to simultaneously work toward joint interoperability, interdependence, and integration. But this may fall short of answering how the Services can organize, train, and equip themselves to sustain the readiness required to operate as an MDB capable force.[17]

Meanwhile in Europe, the Army is offering MDB as a conceptual solution to a different, but in many ways familiar, problem set. The Russian army is no longer the colossus of the Cold War era, but it still presents the challenge of mass. Whereas the Russia's army does not boast a raw-troop-strength advantage over the North Atlantic Treaty Organization (NATO), it is threatening a multidomain equivalence in long-range missiles, rockets, drones, sophisticated cyber attacks, jamming, and an integrated information campaign.[18] The solution, argues the commander of the U.S. Army's Training and Doctrine Command, is to take the multidomain fight to the adversary:

AirLand Battle started developing the concept of "extended battlefield." This concept noted that different commanders had different views of the battlefield in geographical terms. [MDB] *continues the concept of extended battlefield but now with a focus on the extension across domains and time. . . .* [MDB] *endeavors to integrate capabilities in such a way that to counteract one, the enemy must become more vulnerable to another, creating and exploiting temporary windows of advantage.*[19]

This NATO-centric version of the MDB development process explicitly argues that, just as the earlier Soviet threat drove large-scale change in the U.S. military's warfighting doctrines, the new Russian threat will drive long-overdue updates to Army force structure and critical warfighting capabilities, especially in the areas of long-range fires and cyber/electronic warfare.[20]

It is clear, then, that there are multiple lenses through which one can view the emerging MDB concept. Each perspective brings a unique set of operational and institutional contexts to the process of concept development. Having a unique perspective can be a healthy part of a robust debate, but progress requires an agreed-upon set of facts, or, in the case of an emerging concept, a common basis of evidence. The concept development challenge is to generate credible evidence that is relevant to decisionmakers from across the tactical-operational and conceptual-institutional divides.

The Emerging MDB Concept

According to a new Army–Marine Corps white paper, the MDB concept "describes how U.S. and partner forces organize and employ capabilities to project and apply power across domains, environments, and function over time and physical space to contest adversaries in relative 'peace' and, when required, defeat them in 'war.'"[21] The white paper posits three key tenets or "interrelated components of the solution," as they are so labeled in the document.

First, MDB requires appropriate *force posture* for the "calibration of forward presence, expeditionary forces, and integration of partner capabilities to deter the adversary and, when necessary, defeat the enemy's fait accompli campaign." The latter is defined as an enemy campaign that seeks to rapidly achieve military and political objectives before an allied response can be generated. Next, MDB will be executed by *resilient forces* that "can operate semi-independently in the expanded operational area while projecting power into or accessing all domains." Headquarters elements will use a mission command philosophy to integrate operations with advanced capabilities. Finally, *converging* joint force capabilities will "detect and create physical, virtual, and cognitive windows of advantage" during the three phases of an MDB campaign: competition, defeat the enemy in armed conflict, and return to competition. The white paper concludes by offering that the MDB concept

allows U.S. forces to outmaneuver adversaries physically, virtually, and cognitively, applying combined arms in and across all domains. It provides a flexible means to present multiple dilemmas to an enemy by converging capabilities from multiple domains to create windows of advantage enabling friendly forces to seize, retain, and exploit the initiative to defeat enemies and achieve campaign objectives. Employing the ideas in this concept, the Joint Force can credibly deter adversary aggression, defeat actions short of armed conflict, deny the enemy freedom of action, overcome enemy defenses, control terrain, compel outcomes, and consolidate gains for sustainable results.

While these three tenets establish a useful framework for institutional considerations of the concept, they do not capture some of the explicit and tacit implications of MDB's potential utility in a theater or joint campaign. To that end, this article offers the following four attributes, derived from the current MDB concept, as potentially useful in developing a joint campaign of experimentation to better understand the concept and to develop evidence for or against its military utility in the joint force.

First, despite the *battle* suffix, MDB may have more to do with campaigns than tactical actions. The battle aspects required to create windows of advantage are a necessary precondition to creating decisive overmatch.[22] However, various descriptions point to an operational-level concept designed to maneuver friendly forces—and direct their kinetic and nonkinetic fires or effects—simultaneously across five domains.

Second, overmatch in one domain may trigger cross-domain multiplier effects that theater commanders can leverage to bypass, unhinge, and defeat an enemy. This, of course, works in both directions, which is why failing to adequately defend the force across multiple domains may have an outsize impact on war termination.[23]

Third, cyber and space domains may become tomorrow's most valued battlespace given U.S. force dependence on the electromagnetic spectrum and satellite-enabled intelligence and communications. The continued development of

sophisticated cyber weapons and employment means—as well as the direct and indirect weaponization of space—could exacerbate this trend.

Fourth, MDB implies the need to reexamine our approach to joint command and control. The authorities needed by geographic combatant commanders charged with planning, coordinating, integrating, deploying, and employing forces (and their effects) simultaneously across five domains will increasingly challenge the very concept of boundaries and the traditional relationships used to conduct joint campaigns.

The MDB concept remains more aspirational than practical at this point. To overcome the cognitive challenges and bureaucratic inertia described earlier, the concept needs to demonstrate that it is both more than the sum of its parts and sufficiently better than the status quo.

Operational Antecedents: Two Case Studies

Historical case studies aid the concept development process by contextualizing the problem. As critics and proponents alike have noted, "cross-domain" or combined arms operations stretch back into antiquity. The following case studies offer two examples of multidomain operations. Like any case study, some imagination is required to place the perceptions of the past into a future context. These cases provide some insights for how cross-domain capabilities, applied primarily at the tactical level, can have outsize operational implications.

Guadalcanal. The conceptual assumption in MDB is that the joint force commander must leverage the interdependencies occurring between diverse operational activities simultaneously across multiple domains. It is not enough just to manage, coordinate, deconflict, and integrate. In his 1987 article "Thinking About Warfare," Lieutenant General Phillip D. Shutler, USMC (Ret.), used the 1942 South Pacific campaign to highlight the three strategic pathways (primarily air, sea, and undersea) that U.S. forces had to successfully transit during World War II before they could project combat power overseas. Although he labeled the strategic pathways *regimes* instead of *domains*, the underlying concept remains the same.

Shutler observed that once enemy airfield construction on Guadalcanal was completed, Japanese land-based aircraft were capable of attacking U.S. planes stationed 500 miles to the southeast on Espiritu Santo—threatening the supply lines connecting the United States with Australia and New Zealand. Accordingly, the Marines were ordered to seize the airfield on Guadalcanal to deny its use to the Japanese. In other words, U.S. land forces, in effect, were directed to create an antiair warfare shield at Guadalcanal to protect Espiritu Santo. But as the operational campaign progressed, the Marines' (and later the Army's) mission shifted from antiair warfare to enabling U.S. land-based aircraft to support subsequent island-hopping battles to the north and the eventual reduction of the Japanese strongpoint on Rabaul.

Initial success, however, required the United States to prevent Japanese ground forces from reinforcing Guadalcanal. A successful landing would have turned the battle into yet another symmetrical and protracted, single-domain, attritional fight between opposing land forces—both of whom sought to control the airfield. As Shutler noted, accomplishing this required U.S. submarines, surface ships, and naval aviation to establish maritime and aviation "shields" (that is, anti-submarine, anti-surface, antiair defenses) that the Japanese had to penetrate before their ground reinforcements could reach Guadalcanal.[24]

During the critical phases of the campaign, Japanese forces were unable to effectively penetrate the "multidomain" defensive shields, and the Marines were able to preserve their tactical overmatch ashore on Guadalcanal (approximately 11,000 Marines against 2,000 entrenched Japanese, many of whom were civilian laborers). The tipping point occurred on November 14, 1942, when U.S. naval forces attacked and sank seven Japanese troop transports that were carrying approximately 7,000 embarked Japanese troops trying to reinforce Guadalcanal.[25] Although the Japanese did partially penetrate the U.S. shields during the campaign, they were unable to do so with sufficient combat power to alter the battle's outcome.

Once U.S. air operations began at Guadalcanal's Henderson Field, a multiplier effect occurred because the Japanese fleet was largely restricted to conducting night operations. This was due in part to additive U.S. airpower projected from ashore and concomitant flexibility gained from an untethered U.S. fleet that could inflict serious losses on Japanese shipping during daylight hours. This reduced Japanese flexibility and freedom of maneuver with implications well beyond the tactical area of operations and marked the start of the U.S. island-hopping campaign.

Like many similar operations in the Pacific theater, Guadalcanal had only marginal tactical utility as an island except for its value to the air domain. The airfield was the operational lynchpin that was denied to the enemy by adroit integration of multidomain activities on the land, sea, and in the air. This further enabled U.S. land-based airpower to support the drive from the Solomon Islands northward into the Central Pacific and eventually to the Japanese homeland.[26]

Falkland Islands. Almost 40 years after Guadalcanal, we can observe the same multiplier effect in a more modern campaign—the 1982 Battle of the Falklands—that revolved around a centuries-old territorial dispute between the United Kingdom and Argentina over the Falkland (Malvinas) Islands.[27] Like the U.S. fleet in the Solomon's Campaign, the United Kingdom established maritime and antiair shields around the Falklands in order to isolate the objective area, protect Royal Navy/Marines amphibious operations, and deny Buenos Aires the ability to reinforce its forces.

Multidomain actions in the Falklands campaign were numerous, and the multiplier effects these actions had on the campaign's outcome were significant. The sinking of the 13,500-ton Argentine cruiser *General Belgrano* (armed with 15 6-inch guns and 8 5-inch guns) by three conventional torpedoes fired from the

Airman aboard KC-135 Stratotanker participates in Red Flag 16-3, one of four Red Flag exercises that focuses on multidomain operations in air, space, and cyberspace, at Nellis Air Force Base, Nevada, July 18, 2016 (U.S. Air Force/David Salanitri)

British nuclear submarine *Conqueror* took the lives of 323 Argentine sailors (slightly more than half of their total casualties suffered during the war). But more importantly, this action had a cross-domain effect that forced the Argentine surface navy to remain inside its territorial waters for the duration of the campaign.[28] Additionally, the sinking of the *Belgrano* dramatically relieved naval surface pressure on Great Britain's fleet operating in the Falkland littorals, which in turn allowed Royal Navy vessels on picket duty more time to visually detect Argentine aircraft being launched from the mainland and alert the British Task Force.[29]

The multiplier effect continued when British special operations forces, supported by naval gunfire, conducted an amphibious raid on Pebble Island to further reduce the Argentine air threat. The raid destroyed 11 forward-based Argentine aircraft. While Argentine helicopters and light aircraft were subsequently dispersed around the islands, the raid forced Argentina to withdraw most of its high-performance aircraft 400 miles back to the mainland.[30] Thus, Argentine aircraft were required to fight at their maximum operating radius, which greatly reduced their time on station (Argentina had only limited aerial refueling capability). This was a major advantage for Great Britain's amphibious fleet and embarked ground forces, who were worried they would not have air superiority during the amphibious landing.

Dismissing the Falklands as nothing more than a creative use of limited assets under extreme conditions risks overlooking key multidomain insights that contributed to operational success. If the notion of achieving dominance in one or more warfighting domains is a thing of the past, then learning to leverage a broader but perhaps relatively less robust toolkit is necessary. To modify a quotation often attributed to Winston Churchill, "Gentlemen we are out of overwhelming resources; Now we must think."[31]

It might be easy to dismiss military case studies of the previous century as irrelevant to the challenges faced when looking forward into the current one. But it is worth considering how these multiple domains were integrated in the first place. The process (including technical, conceptual, and instructional efforts) of integrating new-fangled flying machines into the traditional warfighting domains of the land and sea began decades before a mature concept. It was not a straight line or a preordained outcome. The associated technologies and tactical concepts were leavened by decades of peacetime "experimentation" and wartime adaptation. The resulting capabilities for presenting an adversary with multiple,

simultaneous dilemmas across domains changed the way the United States fights at both the tactical and operational levels of war.

Developing Evidence

The second source of evidence with which to examine the viability of the MDB concept is to look at it from operational perspectives and across a range of contexts. To do this, DOD should subject the MDB concept and its supporting tenets to a rigorous campaign of joint experimentation—even as the specific capabilities are still being developed. *Joint experimentation* in this context is an inclusive phrase meant to indicate the exploration of ideas, assumptions, and crucial elements of nascent MDB capabilities. To be clear, joint experimentation covers a wide range of activities (from structured seminars, virtual and constructive environments, to field events) and should be seen as complementary or undertaken in parallel with the development of specific capabilities or tactical employment concepts.

We employ the term *campaign* in association with joint experimentation to indicate that no single event can generate the quality or variety of necessary data. Moreover, only an experimentation campaign utilizing iterative activities with learning feedback loops (including workshops, wargames, constructive and virtual simulation, and live field events) can generate sufficient evidence to genuinely assess what it will take to realize, adapt, or abandon the MDB idea.

In terms of military experimentation, no single method has ever worked. The complex nature of military problems, and especially ones with interactions across five domains, argues for diverse forms of "discovery experimentation" to introduce novel systems, concepts, organizational structures, and technologies into settings where their use can be observed and Red Teamed.[32] The results of such a comprehensive assessment will help identify MDB similarities and differences between the theaters, and will inform future doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy initiatives that must be addressed before MDB can become a deployable set of capabilities.

One of the most complex challenges in debates about future joint concepts is not the concept per se; it is the nature of *jointness* as practiced in a post–U.S. Joint Forces Command (USJFCOM) environment. Without digressing too far into the history of USJFCOM's role in joint concept development and experimentation, it is worth contrasting the contexts. Formed in 1999, USJFCOM developed a generally top-down approach to joint concept development and experimentation. While this approach had some advantages, it often resulted in excessively large experiments, with the Services playing a limited or marginally productive role. When USJFCOM was disestablished in 2011, joint concept development reverted to the Joint Staff J7, whose time and resources for experimentation was more limited.[33] More recently, Service or multi-Service–led efforts to develop and experiment with new joint concepts are increasing. This can be seen as a bottom-up, collaborative effort. While this approach has many practical advantages over the top-down approach, it is not without challenges—a key one being that the longer joint stakeholders (that is, combatant commands and prospective joint force commanders) remain spectators to the Service-dominated joint experimentation process, the less likely MDB's theater-wide and strategic-level implications will be subjected to a full examination by the customer.

Under Joint Staff policy for concept development, experimentation begins *after* concept development. This may be adequate for narrow concepts or mission/domain capabilities where one Service has the lead. But this approach seems ill-suited for complex and multifaceted warfighting concepts such as MDB. As the two case studies indicate, cross-domain overmatch and multiplier effects are often discovered and subsequently leveraged in the course of operations. Early discovery experimentation with some level of joint analysis and sponsorship is essential. Not only will such early experiments increase the capacity to do joint experimentation, but they can also help co-develop Service concepts within a joint context.

As noted at the outset of this article, the MDB debate at this stage is a useful set of thought experiments, but it is not producing tangible evidence. Such evidence would shift the debate from a primarily subjective one to a more balanced and objective conversation. However, the recent history of joint concept development and the very nature of institutional jointness as practiced in DOD are not encouraging. According to the Joint Staff, joint concepts are assessed "using various analytical methods; the joint concept community evaluates both developing and approved concepts to determine whether they are feasible and promote informed decisions on developing new joint capabilities."[34]

One potentially more lucrative approach would be to embark on a series of parallel joint discovery experiments designed to identify the specific characteristics, demands, and challenges associated with assessing the feasibility of MDB transcending theater-specific applications to serve as a more universal warfighting concept. Such a joint discovery experiment has historically been at the heart of military experimentation.[35]

The objective of discovery experiments is to learn, so it is useful to begin with a set of well-defined conceptual and operational conditions. One does not seek a well-defined "concept," rather a statement of the military problem and a clear understanding of the initial military context. The discovery experimentation approach, supported by an initial data collection plan, is designed to tinker with the variables, modify the conditions, and challenge the assumptions and constraints in a way that dynamically helps refine a nascent concept and identify the kinds of capabilities worth considering. This notion of progressive learning through experimentation generates feedback that enables concept framing, definition, and refinement to occur dynamically.

The ability to use experimentation to explore the utility of emerging technologies and concepts is a force multiplier. Technology cannot be optimized until

its impact on warfighting concepts and doctrine is fully appreciated. According to the National Academy of Sciences in a study done for the Navy:

By simulating future systems, [military commanders] *can also learn how those systems will work in simulated combat environments and how to use forces equipped with such proposed systems. By such means they can explore new ideas and concepts for the use of variously composed and equipped forces against diverse anticipated threats, and they can learn how to integrate such forces on a large scale in the joint and combined force environment.*[36]

One major challenge in calling for more joint experimentation is the large gap between the operating environment envisioned in the MDB concept and the availability of validated models and simulations. Earlier efforts to support joint analyses (both constructive and human-in-the-loop) with custom designed joint models "amounted to a costly failure with little or no resulting joint analysis capability gain for the Department."[37] Nevertheless, progress in MDB will require some capability to integrate space, cyber, and electromagnetic effects into models designed to explore the interaction of new capabilities and human decisionmaking. Any effort to explore MDB in a joint context must include an effort to integrate existing Service modeling and simulation tools (in the same bottom-up approach discussed here). This will help the Services to operate across new domains in support of specific joint priorities instead of attempting to create a standalone, top-down modeling and simulation solution.

Discovery experimentation is not a free-for-all, but a deliberately crafted and planned approach for addressing an issue long before it becomes a pressing problem. It allows operators to interact with new or potential concepts and capabilities to explore their military utility—something that is not often supported through traditional studies or hypothesis-based experiments. It requires careful attention to the specification and collection of data that will provide solid evidence for the conclusions reached by conducting experiments. If all these constraints are observed, discovery experimentation could be a valuable tool and a useful "way of weeding out ideas that simply do not work, forcing the community to ask rigorous questions about the benefits being sought and the dynamics involved in implementing the idea, or specifying the limiting conditions."[38]

It is time to subject the MDB concept to discovery experimentation. To modify slightly Sir Michael Howard's admonition about future doctrine, it is the "task of military science in the age of peace to prevent new capabilities from being too badly wrong" when the next war starts.[39] **JFQ**

Notes

[1] John F. Schmitt, *A Practical Guide for Developing and Writing Military Concepts*, Defense Adaptive Red Team Working Paper #02-4 (McLean, VA: Hicks & Associates, December 2002), 4, available at <www.au.af.mil/au/awc/awcgate/writing/dart_paper_writing_mil_concepts.pdf>.

[2] An *experiment campaign* consists of "a set of experiments, complementary analyses, and synthesis activities . . . conceived, orchestrated, and harvested" in order to better understand the complex issues associated with a warfighting concept. See David S. Alberts and Richard E. Hayes, *Campaigns of Experimentation: Pathways to Transformation* (Washington, DC: Department of Defense, 2005), 4.

[3] Amos C. Fox, "Multi-Domain Battle: A Perspective on the Salient Features of an Emerging Operational Doctrine," *Small Wars Journal*, May 21, 2017.

[4] Senate Armed Services Committee, Statement of Admiral Harry B. Harris, Jr., USN, Commander, U.S. Pacific Command, on U.S. Pacific Command Posture, April 27, 2017, 19.

[5] Robert B. Brown, "The Indo-Asia Pacific and the Multi-Domain Battle Concept," March 20, 2017, available at <www.army.mil/article/184551/the_indo_asia_pacific_and_the_multi_domain_battle_concept>.

[6] For example, see Joint Staff–issued concept papers *Capstone Concept for Joint Operations* (CCJO) (Washington, DC: The Joint Staff, 2012), *Joint Operational Access Concept* (Washington, DC: The Joint Staff, 2012), and *Joint Concept for Rapid Aggregation* (Washington, DC: The Joint Staff, 2015).

[7] Richard Hart Sinnreich, "Multi-Domain Battle: Old Wine in a New Bottle," *The Lawton Constitution*, October 30, 2016.

[8] Brown.

[9] Erik Heftye, "Multi-Domain Confusion: All Domains Are Not Created Equal," *Real Clear Defense*, May 26, 2017, available at <www.realcleardefense.com/articles/2017/05/26/multi-domain_confusion_all_domains_are_not_created_equal_111463.html>. For an early related argument, see Martin C. Libicki, "Cyberspace Is Not a Warfighting Domain," *I/S: A Journal of Law and Policy for the Information Society* 8, no. 2 (2012).

[10] Mike Pietrucha, "No End in Sight to the Army's Dependence on Airpower," *War on the Rocks*, December 13, 2016, available at <https://warontherocks.com/2016/12/no-end-in-sight-to-the-armys-dependence-on-airpower/>.

[11] A.J. Shattuck, "The Pipe Dream of (Effective) Multi-Domain Battle," Modern War Institute at West Point, March 28, 2017, available at <https://mwi.usma.edu/pipe-dream-effective-multi-domain-battle/>.

[12] Mike Benitez, "Multi-Domain Battle: Does It End the Never-Ending Quest for Joint Readiness?" *Over the Horizon*, May 2, 2017, available at <https://overthehorizonmdos.com/2017/05/02/mdb-joint-readiness/>.

[13] See James Stavridis and David Weinstein, "Time for a U.S. Cyber Force," U.S. Naval Institute *Proceedings* 140, no. 1 (January 2014). The House Armed Services Committee mark of the 2018 National Defense Authorization Act calls for the creation of a separate Space Corps.

[14] Michael C. Davies, "Multi-domain Battle and the Masks of War," *Small Wars Journal*, May 11, 2017, available at <http://smallwarsjournal.com/blog/multi-domain-battle-and-the-masks-of-war-why-it's-time-to-eliminate-the-independent-services>.

[15] Sydney J. Freedberg, Jr., "Army Must Be Ready for Multi-Domain Battle in Pacific 'Tomorrow,'" *Breaking Defense*, January 31, 2017, available at <https://breakingdefense.com/2017/01/army-must-ready-for-multi-domain-battle-in-pacific-tomorrow/>.

[16] Megan Eckstein, "Army Set to Sink Ship in 2018 as PACOM Operationalizes Multi-Domain Battle Concept," *USNI News*, May 30, 2017. The Army had a standing mission to "sink ships" in the form of the Coast Artillery Corps from 1901 to 1950.

[17] Benitez.

[18] Sydney J. Freedberg, Jr., "Army's Multi-Domain Battle Gains Traction Across Services: The Face of Future War," *Breaking Defense*, March 13, 2017, available at <https://breakingdefense.com/2017/03/armys-multi-domain-battle-gains-traction-across-services/>.

[19] David G. Perkins, "Multi-Domain Battle: Joint Combined Arms Concept for the 21st Century," Association of the United States Army, November 2016, available at <www.ausa.org/articles/multi-domain-battle-joint-combined-arms-concept-21st-century>. The notion of extended battle dates to General Don Starry and the development of the AirLand Battle

Concept in the early 1980s. See Don Starry, "Extending the Battlefield," *Military Review* 61, no. 3 (March 1981), 31–50.

[20] J.P. Clark, "In Defense of a Big Idea for Joint Warfighting" *War on the Rocks*, December 22, 2016, available at <https://warontherocks.com/2016/12/in-defense-of-a-big-idea-for-joint-warfighting/>. Kevin Benson, "Extending the Second Offset and Multi-Domain Battle," *Real Clear Defense*, November 29, 2016, available at <www.realcleardefense.com/articles/2016/11/30/extending_the_second_offset_and_multi-domain_battle_110411.html>.

[21] U.S. Army–Marine Corps White Paper, "Multi-Doman Battle: Evolution of Combined Arms for the 21st Century," September 30, 2017, available at <www.tradoc.army.mil/multidomainbattle/docs/DRAFT_MD-Bconcept.pdf>. The Air Force is developing a related Multi-Domain Operations concept that combines Air Force theater contributions into a unified air-space-cyberspace capability set in support of the joint force. See "Multi-Domain Command and Control: The Air Force Perspective with Brigadier General B. Chance Saltzman" (Part 1 of 2), *Over the Horizon*, April 3, 2017, available at <https://overthehorizonmdos.com/2017/04/03/multi-domain-command-and-control-the-air-force-perspective-with-brigadier-general-b-chance-saltzman-part-1-of-2/>. Saltzman makes the distinction with traditional combined arms by arguing, "[combined arms] is using the assets you have, in some cases from different functions or different domains. Whether it's artillery, armor, infantry, aviation, those are the traditional arms we're talking because a lot of times we talk about combined arms in terms of the Army sense of things."

[22] *Overmatch* is defined as "the application of capabilities or unique tactics either directly or indirectly, with the intent to prevent or mitigate opposing forces from using their current or projected equipment or tactics." See U.S. Army–Marine Corps White Paper, 13, 17, 55, 61, 73.

[23] In the context of a specific campaign, all domains are not of equal value. Even opponents in the same battle may, for a host of reasons, not share the same view of a domain's value.

[24] Phillip D. Shutler, "Thinking About Warfare," *Marine Corps Gazette*, November 1987, 20, 23–25.

[25] J.J. Edson, "The Asymmetrical Ace," *Marine Corps Gazette*, April 1988, 51.

[26] Guadalcanal was a pivotal battle in the larger Solomon's campaign but a closely contested fight to the bitter end. The United States suffered a terrible naval defeat in the Battle of Savo Island, August 8–9, 1942, which reduced Allied heavy cruiser strength in the Pacific by more than 33 percent and compelled Navy transport and supply ships to depart the objective area prematurely. Command relationships between senior Marine Corps and Navy commanders were also overly complex, which led to unnecessary friction. For a more detailed account, see Jeter A. Isley and Philip A. Crowl, *The U.S. Marines and Amphibious War: Its Theory and Its Practice in the Pacific* (Princeton: Princeton University Press, 1951), 130, 153–162.

[27] The proximate cause, however, was a textbook case of two serious and mutually reinforcing misjudgments. These misjudgments, as one scholar put it, stemmed from "the belief in London that Argentina would not invade the Falkland Islands and the expectation in Buenos Aires that Britain would accommodate itself to a military takeover of the islands." See Richard Ned Nebow, "Miscalculation in the South Atlantic: The Origins of the Falkland War," *Journal of Strategic Studies* 6, no. 1 (1983), 5.

[28] Sandy Woodward, *One Hundred Days: The Memoirs of the Falklands Battle Group Commander* (Annapolis, MD: U.S. Naval Institute Press, 1992), 246.

[29] In an effort to isolate the islands and limit the scope of the campaign, Great Britain declared a 200-mile radius Total Exclusion Zone around the Falkland Islands. This declaration had the tacit effect of making the Argentinian home waters a bastion for the Argentine navy.

[30] Sir Lawrence Freedman, *The Official History of the Falklands, Volume II: War and Diplomacy* (New York: Routledge, 2005), 431. Freedman wrote, "This was a remarkably successful raid, depriving the garrison of a number of aircraft and undermining morale, by demonstrating the capacity of special forces to mount operations on the Islands against units that were detached from the main forces." That said, Argentine aircraft remaining in the Falklands after the raid were assessed to be three Shyvan light transports, two navy Tracker early warning aircraft, nine Pucara counterinsurgency aircraft, four Chinooks, three Puma, and one Agusta 109. Although none of these aircraft threatened the overall outcome of the campaign, they remained a major concern throughout it.

[31] The most common original Churchill version is "Gentlemen, we have run out of money: Now we must think." Some evidence suggests Churchill borrowed the phrase from famed physicist Sir Ernest Rutherford.

[32] The other two major types of experiments are hypothesis tests and demonstrations. Both could play a role in narrow aspects of the campaign but could not serve as a description of the overall experimentation effort.

[33] *Joint operating concepts* (JOCs) "broadly describe how the joint force may execute military operations within a specific mission area in accordance with defense strategic guidance and the CCJO. Collectively, JOCs describe joint capabilities required to operate across the range of military operations and encourage further examination through wargaming, joint training, and a variety of studies, experimentation, and analyses." See Chairman of the Joint Chiefs of Staff Instruction 3010.02E, *Guidance for Developing and Implementing Joint Concepts* (Washington, DC: The Joint Staff, August 17, 2016), A-10.

[34] Ibid., A-1.

[35] Examples include the Navy's Fleet Problem series in the 1920s and 1930s that integrated fledgling naval airpower into fleet operations, Brigadier General Billy Mitchell's Project B experiments on the use of airpower against shipping, or the Marine Corps' Fleet Landing Exercises in the 1930s leading to the validation of Major Earl Hancock "Pete" Ellis's amphibious concepts. See Williamson Murray, *Experimentation in the Period Between the Two World Wars: Lessons for the Twenty-First Century* (Alexandria, VA: Institute for Defense Analyses, November 2000).

[36] National Research Council, *The Role of Experimentation in Building Future Naval Forces* (Washington, DC: National Academies Press, 2004), available at <www.nap.edu/catalog/11125/the-role-of-experimentation-in-building-future-naval-forces>.

[37] The failure of the Joint Warfare System, Joint Simulation System, and Joint Modeling and Simulation System programs stemmed from not only the efforts' complex and high-risk technical natures but also some of the same integration and development issues that challenge the development of joint capabilities. For a summary of the issues and lessons, see Robert Lutz et al., *Factors Influencing Modeling and Simulation to Inform OSD Acquisition Decisions* (Alexandria, VA: Institute for Defense Analyses and Johns Hopkins University, April 2017).

[38] The authors are indebted to our colleague Dr. Sue Numrich for input on discovery experimentation. See also David S. Alberts, ed., *Code of Best Practice: Experimentation* (Washington, DC: Department of Defense, July 2002), 21.

[39] Michael Howard, "Military Science in an Age of Peace," *RUSI Journal* 119, no. 1 (1974), 2.

Iraqi soldier speaks with commanding officer of 407th Brigade Support Battalion, 2nd Brigade Combat Team, 82nd Airborne Division, deployed in support of CJTF–Operation *Inherent Resolve*, near Qayyarah West Airfield, Iraq, July 23, 2017 (U.S. Army/Rachel Diehm)

The Power of Partnership

Security Cooperation and Globally Integrated Logistics

By Thomas Warren Ross

Anyone who has ever been involved with efforts to build the military capacity of U.S. partner countries has stories. There were the Iraqi soldiers, thoroughly equipped and armed by the United States, who nevertheless found themselves short on ammunition, machine guns, and artillery as they fought—and lost—a decisive battle to defend Mosul against the so-called Islamic State (IS).[1] Then there were the elite Malian commandos who had been trained and equipped to undertake counterterrorism missions by U.S. special operations forces for years, only to wither before ragtag Tuareg and al Qaeda in the Islamic Maghreb fighters because they lacked mobility and were not dependably resupplied.[2] And, of course, stories are numerous from dozens of countries where U.S. personnel have watched as millions of dollars' worth of military equipment fell into rust or disrepair because of a logistics system unable to integrate and maintain the new assistance.

U.S. efforts in Afghanistan epitomize these struggles. As the independent Center for Naval Analyses (CNA) assessment of the Afghan National Security Forces (ANSF) in 2014 noted, the "ANSF's ability to maintain its vehicles and aircraft is the most essential factor in the ANSF's ability to be—and remain—a mobile force."[3] Yet its military has faced

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a constant battle against malfunctioning and damaged equipment, and its inability to maintain and repair such equipment has sharply limited its operational proficiency. The *Washington Post* reported that one battalion, for example, fighting in one of the more violent and contested regions in Afghanistan, included a company with 75 percent of its armored vehicles unusable; some battalions were forced to wait 3 years to get needed spare parts or replacements due to bureaucratic inefficiency.[4] The 2014 CNA analysis found major shortcomings across the logistics system, including shortfalls in spare parts inventories, challenges in forecasting and ordering parts, challenges with inventory distribution, lack of trained personnel, and insufficient contracting mechanisms.[5]

When we examine the history of U.S. and international support for the ANSF, these systemic logistics failures should come as no surprise. Relatively little was invested in developing logistics systems for the first decade of the war effort, even as billions of dollars of equipment flowed into the country. By 2011, a Department of Defense (DOD) Inspector General report noted that the "Coalition has only recently been able to focus on fielding [Afghan National Army] enabling organizations, to include logistics/maintenance units and supporting structure/infrastructure."[6] Likewise, advisory efforts at the ministerial level to develop national logistics systems have been slow to begin, underresourced, and subject to constant shifts in strategic direction.

These stories generally end with the same takeaway: the United States can spend all the money in the world to train and equip partner military units, but this money will be wasted if those partners lack logistics systems to support new capabilities. In many cases, the failure of U.S. security assistance to ensure that key partners accounted for logistics gaps has contributed to strategic failures such as the takeover of much of Sunni-dominated Iraq by IS or the transformation of northern Mali into the world's largest terrorist safe haven. Yet it is not only partner military operations that are undermined by inadequate logistics—it is also our own operations. Put another way, greater U.S. investment in fostering effective logistics systems among our partners could pay tremendous dividends in helping the U.S. military continue to project power and maintain battlefield superiority around the world. It is every bit as much about us and our ability to fight as it is about our partners.

The lessons drawn from these tales of security cooperation gone wrong lead to a simple but powerful premise: logistics ought to be substantially integrated into security cooperation efforts, and security cooperation ought to be thoughtfully integrated into the discipline of logistics. While this premise may seem obvious, it is too often overlooked or misunderstood. Forging a deeper collaboration between the two disciplines requires a firm understanding of how this collaboration can concretely enhance U.S. military operations and objectives, along with a roadmap for achieving this partnership. This article considers both these factors. This partnership, should it take root, offers the potential to dramatically improve the ability of the U.S. military to work with and through partner counterparts, while also creating innovative new avenues for solving some of our more vexing logistics challenges.

Enhancing U.S. Military Logistics

The strategic challenges facing military logistics planners are daunting, perhaps as daunting as any time in recent memory. As the *2015 Joint Concept for Logistics 2.0* (JCL) suggests, the "tension between increasingly demanding logistics requirements and constrained and degraded logistics resources within the context of globally integrated operations creates a dilemma that will be the essential challenge joint logistics will have to overcome for the foreseeable future."[7]

Logistics requirements are increasingly demanding because the U.S. military is being asked to perform more diverse and complex operations with increasingly sophisticated technology, often simultaneously in geographically dispersed areas. Yet logistics support for such operations is challenged by both under-investment in logistics at home and increasing investment in antiaccess/area-denial (A2/AD) and cyber threats that can effectively disable logistics systems by adversaries abroad. For the JCL, the answer to this challenge is "globally integrated logistics"—that is, the "capability to allocate and adjudicate logistics support on a global scale to maximize effectiveness and responsiveness, and to reconcile competing demands for limited logistics resources based on strategic priorities."[8] The JCL elaborates on this concept by suggesting elements such as a transportation system that can move equipment quickly within and between theaters, a worldwide network of logistics nodes, and prepositioned capabilities and stocks. A key (albeit somewhat understated) implication for the JCL is that we will—and we must—work through partners to realize this vision. Globally integrated logistics means multilateral solutions.

It is only in coordination with partners that we can achieve globally distributed logistics stocks, capabilities, and infrastructure; partners provide access to and often security for such arrangements. Moreover, partners have the potential to substitute for prepositioned U.S. capabilities in some cases and can contribute to far more rapid, agile, and dependable intra- and inter-theater transportation systems. In key cases, partners can address critical logistics challenges confronting U.S. contingency plans by providing alternative overland transportation routes with the support of indigenous transportation companies, enable dependable U.S. access to key ports and air bases through improvement of their management and security of such facilities, and develop capabilities that can undermine adversary A2/AD strategies. Finally, globally integrated logistics will be effective only to the extent it accounts for partners in operations, given that U.S. military operations will take place almost exclusively through multilateral coalitions. When partners can ensure interoperability with U.S. forces—meaning that their logistics units can support U.S. fighting units, and vice versa—coalition

Deployed in support of CJTF–Operation *Inherent Resolve,* Soldier talks with truck crew before movement to advise and assist patrol base in neighborhood liberated from Islamic State, Mosul, Iraq, June 8, 2017 (U.S. Army/Jason Hull)

operations become far more effective and create far fewer headaches.

Security cooperation offers the primary tool for combatant commands to engage partners in support of globally integrated logistics. In many cases, such engagement means building the military capacity of partners to carry out specific roles or missions, as well as to enhance interoperability. It also means undertaking bilateral or multilateral exercises in which logistics elements feature prominently; exercising key concepts can help improve interoperability, identify challenges with operational concepts, and help partners understand the importance of investing in their own logistics systems, processes, and policies. And it often means engaging with partners to build support for, achieve, and implement agreements for access, prepositioning, or other opportunities to enhance the globally distributed U.S. logistics posture. Investments in key partners must be strategic and sustained over time. However, the returns can be tremendous: a network of capable partners actively participating in operating an agile, globally distributed, multilateral logistics system, and all for a small fraction of the cost to the United States of operating such a system itself.

Security cooperation has a range of uses beyond attending to requirements for supporting globally integrated logistics; capacity-building initiatives seek to help partners develop capabilities to fight alongside the United States in coalition operations, carry out counterterrorism or counterproliferation operations, deepen military professionalism and institutional governance, or contribute to a shared intelligence picture in relation to shared threats. As suggested above, these initiatives can also benefit from a deeper collaboration with the logistics community. Each of these mission areas—like nearly all military missions—depends on effective, sustainable logistics, and the failure to help partners adapt their logistics systems to support new capabilities often spells doom for those capabilities. Integrating logistics focus and expertise into capacity-building efforts can help partners more effectively absorb, deploy, and sustain capabilities that can make concrete and lasting contributions to U.S. national security.

Current Efforts

So how do we get there? How can we forge a deeper collaboration between the security cooperation and logistics communities, resulting in more effective capacity-building and more flexible, integrated, and distributed logistics networks?

Over the past few years, an important effort has emerged in the Pentagon to bring these communities together

and bring high-level emphasis to this challenge. In late 2014, during my tenure as Deputy Assistant Secretary of Defense for Security Cooperation, the Vice Director of the Joint Staff J4 (then Major General Lee Levy, USAF) and I launched what has become known as the Logistics Capacity-Building Advisory Group (LogCAG) to bring together a diverse group of stakeholders to tackle the challenge of deepening cross-pollination between security cooperation and logistics practitioners. Almost immediately, the group drew senior-level participants from the Acquisition, Technology, and Logistics Undersecretariat, Joint Staff J5, Defense Security Cooperation Agency, U.S. Transportation Command (USTRANSCOM), and several other key stakeholders. Over the past few years, thanks to the remarkable leadership of three successive J4 vice directors (Levy, Major General John Broadmeadow, USMC, and Brigadier General Tracy King, USMC), it has advanced an innovative agenda of efforts to institutionalize logistics security cooperation—that is, the application of security cooperation in support of both U.S. and partner logistics requirements.

One of the early successes of the LogCAG has been the development and piloting of a new model for engaging with partners to build logistics capacity. The model, the Vertically Integrated Logistics Approach (VILA), is founded on the acknowledgment that effective logistics is built on complex, intertwined institutional systems that span from the tactical to the strategic level, and that an intervention at one point in this complex web is unlikely to produce lasting improvement. Rather, what is needed is an approach that assesses logistics systems holistically, from the strategic to the tactical level, and designs interventions at multiple points throughout the system to produce mutually reinforcing, institutionalized change. While still developing, that is exactly what this approach aims to do.

The VILA model was first piloted in coordination with the North Atlantic Treaty Organization (NATO), U.S. European Command (USEUCOM), the nation of Georgia's national guard, key U.S. Office of the Secretary of Defense (OSD) offices, and several other stakeholders in Georgia. Georgian logistics systems have been taxed by that nation's participation in coalition operations in Afghanistan and elsewhere while it simultaneously prepared for and engaged in defensive operations at home; the initial assessment through the VILA pilot identified a range of opportunities to enhance the efficiency and durability of Georgia's logistics systems. That assessment has now fed into a range of programs designed to seize these opportunities.

The VILA model is steadily evolving, moving from a single effort in Georgia to now being applied in U.S. Africa Command, U.S. Southern Command (USSOUTHCOM), and elsewhere in USEUCOM. As the model evolves, there is great potential for it to be applied more broadly around the world. Indeed, the Defense Security Cooperation Agency, in coordination with the LogCAG, is taking initial steps to transition VILA from a pilot to a full-fledged security cooperation program available to security cooperation offices and combatant commands whenever there is an identified requirement to engage with key partners in building their logistics capacity.

The LogCAG has also driven progress on several other logistics security cooperation initiatives. It has overseen the transition from the Logistics Exchange (LOGEX)—a long-running USEUCOM program engaging mid-career logisticians from NATO partners in real-world scenarios to enhance logistics capacity and interoperability—to the Logistics Development (LOGDEV). LOGDEV will adapt the LOGEX model and support similar logistician engagements around the world. LOGEX has a proven track record of success, and it is one of strikingly few programs bringing together senior logisticians to build capacity and interoperability; through LOGDEV, this proven model will be available to each combatant command. Furthermore, LOGDEV's global expansion promises opportunity for synergy with the VILA program, along with several other security cooperation programs, such as the National Guard State Partnership Program. It will offer an opportunity for partners to transition from focused capacity-building through VILA into exercising key concepts in real-world scenarios through LOGDEV, and then to continue to build capacity and interoperability through follow-on engagements with state partners or other activities.

In addition to LOGDEV, the LogCAG has fostered the development of several logistics interoperability forums across different combatant commands. The flagship forum, the joint OSD- and USEUCOM-hosted Logistics Interoperability Symposium, brings together logisticians and senior leaders from dozens of partner nations, along with a variety of senior U.S. and NATO stakeholders, to discuss logistics interoperability challenges. The Africa Logistics Forum was launched a few years ago to facilitate similar conversations in the African context, while USSOUTHCOM is currently planning its first partner-focused logistics forum.

Finally, the LogCAG has sought to enhance the DOD infrastructure for supporting logistics security cooperation. Part of this effort has focused on promoting greater collaboration between J4 and J5 communities, both at combatant commands and within the Pentagon. Part of it entails examining authorities available to DOD to ensure they are sufficient to support envisioned activities; wide-ranging reforms to security cooperation authorities in the fiscal year 2017 National Defense Authorization Act have largely closed prior gaps in authorities. And a third part has emphasized improving education for security cooperation officers and for logisticians, ensuring enough familiarity across disciplines to support the practical collaboration between security cooperation and logistics communities that is vital to success.

These efforts have generated a range of new opportunities for changing the way both logistics and security cooperation communities think about their missions. They tie in with a number of other important efforts, such as the USTRANSCOM Turbo Transition exercise, a senior logistics-focused event involving a growing number of partner

logisticians, or the increasing inclusion of logistics elements in other bilateral and multilateral exercises. Yet ultimately, they represent only a light scratch of the surface of what is possible. For a true collaboration to take root, these efforts must continue—and expand. Leaders in both communities must steer this growing momentum toward taking on larger challenges, in search of larger rewards.

Tying It All Together

Achieving the full benefit of integrating logistics and security cooperation will require moving from individual pilot efforts dispersed across different stakeholders and different partners toward a more integrated, more robust approach to collaboration.

To begin with, existing efforts must be woven together into a more connected, mutually reinforcing approach. Planners should consider how partner-focused logistics symposiums in different regions could promote global collaboration and contribute to global logistics networks. In addition, they should examine how such symposiums could generate participation in and suggest areas of focus for multilateral logistics exercises, how they could support planning for VILA and LOGDEV engagements, and how they might identify opportunities for multilateral logistics frameworks—in short, how they could spark more practical capacity-building and interoperability efforts with key partners. Likewise, activities through VILA, LOGDEV, and other efforts should feed into both multilateral conferences and broader U.S. planning efforts.

Integrating current efforts is important; however, to truly integrate the logistics and security cooperation communities, collaboration must be institutionalized, embedded in the processes and structures both communities use to develop strategies, make decisions, allocate resources, and prepare personnel. Without such systemic change, efforts like those promoted by the LogCAG are likely to remain essentially ad hoc and of limited utility. To institutionalize collaboration between the security cooperation and logistics communities, three steps are essential.

First, logisticians must be included not only in planning, particularly security cooperation planning, but also in the development of contingency and posture plans. Too often, plans are developed with little regard for logistics concerns, leading to plans that are either unlikely to be successful or far more complicated—and costly—than they need to be. Security cooperation plans and contingency plans are generally developed by combatant commands out of J5 directorates, with individuals from the J4 directorates only included in reviewing near-final products; similarly, opportunities abound for greater inclusion of USTRANSCOM logisticians in such planning. Including logisticians in the initial stages of plan development could help security cooperation planners identify and address key opportunities to engage partners on logistics requirements in support of U.S. operations, or it could help to identify key partner logistics needs in support of broader capacity-building activities. Likewise, logisticians could help contingency planners ensure that plans are fully executable. More important, collaboration between all three groups could help combatant commands identify where there are logistics-related risks to contingency plans and where and how we might engage partners to mitigate those risks in advance of conflict. That is the kind of collaboration that could produce the greatest rewards: working with partners to buy down logistics risk in advance of contingencies could save lives and ultimately enhance our military's ability to win wars.

Second, DOD ought to consider how it could transition to teaching our partners to fish, rather than simply fishing for them. The Defense Security Cooperation Agency advertises a "full-spectrum approach" to delivering capacity to partners, meaning that it will not only provide partners with a piece of equipment but also support to the recipient nation regarding personnel operating the equipment, maintenance of the equipment, and other support services. This full-spectrum approach is a relatively recent evolution and sharply differentiates the United States from other providers of defense systems, such as Russia or China, which tend to transfer equipment without any such support. Yet the full-spectrum approach ultimately only provides partners with spare parts and contracted maintenance support, often terminating after 3 years unless the partner chooses to re-up. Because the United States provides maintenance and repairs, this model does not incentivize partners to develop their own maintenance systems, develop dependable supply chains or inventory management, or even take particularly good care of their equipment. We ought to consider a full-spectrum approach that helps partners improve their own logistics systems, rather than continuing to foster such dependency on the United States.

There is a rationale to the current model. As the logic goes, the sale of a weapons system begins a long-term relationship that is stoked by the ongoing cooperation around the maintenance and repair of those systems; in other words, contracted maintenance leads to a mutual dependency that undergirds a tightening of broader bilateral relations. This logic deserves qualification in two ways, however. First, a customer or recipient of U.S. technology will be, at least to a degree, dependent on U.S. military and contractor personnel for the operation of that technology regardless of whether they have a sophisticated, independent logistics system or contract their entire maintenance system to U.S. companies. The technology would still need to be acquired, updated, and serviced by qualified experts, generally from the originator of the system. Thus, contract-based maintenance offers only marginal, if any, benefit to deepening bilateral relations in comparison to a logistics capacity-building approach. It is the partner's acquisition of the weapons system itself that drives the relationship. Second, while it is unrealistic to expect that the United States could help partners improve their logistics standards to U.S. standards, even modest improvements could pay significant dividends. For example, let us say the United States determines it must foot the bill entirely for the maintenance of a certain capability provided to a partner

military. If that partner has the basic capacity to monitor and track requirements for routine maintenance, it would enable the United States to provide such maintenance in a timely and preventive way.

The third intervention necessary to institutionalize collaboration between logistics and security cooperation communities is a systemic approach to cross-pollination of ideas through training and education. For logisticians and security cooperation planners to truly collaborate, they must be able to speak each other's language, understand each other's problems and priorities, and understand how each discipline can contribute to the other. Exposing security cooperation planners and logisticians to each other's discipline during routine training could begin to open conversations between these communities that will continue in the field. One critical need is the integration of key logistics concepts and frameworks for logistics-focused security cooperation into training received by security cooperation officers before they deploy to their assignments at U.S. Embassies. These officers cannot be transformed into expert or even amateur logisticians during a 2- or 3-week multidimensional training program, but they could be exposed to analytical frameworks that allow them to identify opportunities for logistics-focused security cooperation in the field, and to resources to which they could return when such opportunities arise. Similarly, logisticians should be exposed to security cooperation concepts and planning processes during their routine training courses. Finally, an examination of best practices, case studies, and lessons learned in the collaboration of logistics and security cooperation communities is sorely needed. As logistics-focused security cooperation increasingly takes hold in the field, successes and failures must be documented and analyzed to help new generations of planners understand how to replicate positive outcomes.

Many have become complacent in the belief that the U.S. military is the world's premier fighting force, unequaled by any adversary. Yet as General Martin Dempsey, then Chairman of the Joint Chiefs of Staff, wrote in preface to the 2015 National Military Strategy:

Global disorder has significantly increased while some of our comparative military advantage has begun to erode. We now face multiple, simultaneous security challenges from traditional state actors and transregional networks of sub-state groups—all taking advantage of rapid technological change. Future conflicts will come more rapidly, last longer, and take place on a much more technically challenging battlefield.[9]

Thus, we cannot afford to be complacent; our military's continued superiority depends on our ability to innovate, adapt, and evolve.

One of the hidden ingredients behind the U.S. military's enduring global superiority has long been its unequaled logistics system, which enables it to initiate and sustain complex joint military operations rapidly and effectively in any corner of the world. Here, as in other elements of U.S. military superiority, continued innovation is vital. In the last two decades, U.S. strategy has increasingly called for the U.S. military to fight in coalitions, as part of a network of committed partners; that strategic shift demands a new approach to logistics that can integrate partners, support coalitions, and maintain the flexibility and diversity of options required to offset the challenges to which General Dempsey alluded. Such innovation is under way at the Pentagon, as leaders explore new frontiers in working with partners to create multilateral, flexible, networked logistics systems for the new strategic environment. This collaboration—the combined force of the logistics and security cooperation communities—offers an exciting vision for not only how we can realize the vision of "globally integrated logistics," but also how we can secure more tangible, powerful security contributions from our partners. Such significant benefits require a relatively modest investment—an investment more of attention and cooperation than of financial resources, making this partnership a true value proposition. **JFQ**

Notes

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Parachute bundle with Joint Precision Air Drop system, using GPS navigation, drops from C-130J Hercules to remote Forward Operating Base, November 27, 2011 (U.S. Air Force/Tyler Placie)

Surfing the Chaos

Warfighting in a Contested Cyberspace Environment

By William D. Bryant

On a crisp fall day in mid-October 1805, two fleets met to decide the fate of Europe at the Battle of Trafalgar.[1] The combined fleets of the French and Spanish navies were larger, with heavier and more powerful ships, and their commander, Admiral Villeneuve, had even correctly deduced the battle strategy of his opponent. Contrary to the accepted naval practice of lining up parallel so that respective admirals could maintain control, Admiral Lord Nelson divided his smaller force into two columns directed perpendicularly against the enemy fleet. This produced a chaotic but decisive battle. And even though Nelson was killed, his more aggressive and self-synchronizing forces defeated the French and Spanish fleet on a scale not matched until modern times.

What can a battle from the age of sail and wooden ships possibly teach us about modern warfare? In a cyber-contested environment and facing a competent foe, the side that embraces the chaos, confusion, and lack of control on the modern battlefield is more likely to emerge victorious, much like Nelson's force. To win

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in the new cyber-contested battles of the future, a combatant must still command, but let go of control and surf the chaos.

Future Warfare

In the strategic community, conventional wisdom holds that capable nation-states will fight future wars not only in the traditional land, maritime, air, and space domains but also in cyberspace. Analysts also often argue that the United States will be at a disadvantage in this type of warfare because it has a higher reliance on cyberspace-enabled systems.[2] Combatants will fight future wars in all domains, but the United States is not naturally at a disadvantage when cyberspace conflict is included in warfare. While it is true that U.S. forces are heavily dependent on cyberspace, potential foes are every bit as dependent on their cyberspace-enabled systems, which in some cases are more modern and sophisticated than those used by U.S. forces. It is important to look at potential near-peer foes of the United States as they actually are, not how they were 30 years ago. Accordingly, it is key to understand that both sides will be dealing with a contested cyberspace domain full of deliberate misinformation and sabotaged systems. In this environment, victory will most likely go to the side best able to function effectively with high levels of fog and friction. In this type of setting, the United States and other nations with strong cultures of openness, innovation, and adaptability have some key advantages that will be hard to replicate in less free societies. A key element of any cyber-contested environment is the level of fog and friction experienced by the combatants.

Despite the hopes that some analysts once placed on improved information in warfare, fog and friction will greatly increase in a contested cyberspace environment. The concept of fog and friction refers to the uncertainty and cumulative small mishaps that make outcomes in warfare difficult to predict.[3] Theorists from the time of Sun Tzu have explored ways to decrease fog and friction through improved intelligence or better command and control.[4] Some theorists around the turn of the millennium thought that ubiquitous semi-autonomous and smart command and control systems would largely dissipate fog and friction.[5] That prediction turned out to be incorrect due to unexpected advances on the offensive side of cyberspace and the other domains, which made it far easier to penetrate operational battle networks. When some sensors and command and control systems give false information, fog and friction greatly increase as commanders stop trusting the information they receive and are hesitant to act on it.[6] This is deeply uncomfortable for command staffs who work hard to reduce fog and friction, so they can carefully orchestrate a plan that leads to a clear victory. However, the vision of a frictionless cybernetic war machine that flawlessly executes some grand design was illusory long before attackers in cyberspace could easily insert false information and take down command and control systems at will.[7] To make matters more complex, command and control systems are not the only cyber-enabled systems that will come under attack in a cyber-contested environment.

Warfighting in and through Cyberspace

Cyberspace attacks will affect warfighting in different ways depending on the type of system under attack. The different types of systems can be broken down into information technology (IT), operational technology (OT), and platforms.[8] Traditional IT systems include the Department of Defense (DOD) Non-Secure Internet Protocol Router and Secure Internet Protocol Router networks as well as IT-based weapons systems such as the Air Operations Center and numerous other personnel and logistics systems. Operational technology refers to computer-controlled physical processes such as industrial control systems or other types of control systems such as building automation or heating, venting, and air conditioning.[9] This category is a relatively new one in military circles but has achieved wide acceptance in the civilian world. The final category is platforms, which are self-contained cyber-physical systems. An F-18 fighter or Abrams tank falls into this category. If we open the panels and look inside an F-18, we will find a large number of boxes full of electronic components connected by wires. While these boxes are mostly running specialized software and are generally not using the Transmission Control Protocol/Internet Protocol, they still comprise a network and are part of the cyberspace domain.[10] Thus, these cyber-physical systems are hybrids with physical and cyberspace components that combine to make a coherent whole. Using these three categories, what will warfare that includes modern cyberspace forces look like?

IT systems are the most obvious and familiar targets of cyber attack in a conflict. Combatants should expect creative enemies to penetrate their IT systems and introduce some amount of false information. Adding even small amounts of false information can be extremely effective, as it makes adversaries question all their information.[11] What would it look like for a warfighter if 10 percent of the orders received through command and control systems were false and the enemy altered 5 percent of intelligence reports? Major effects on the ability of units to maneuver and function will occur at even low percentages, as a handful of false messages will call into question the validity of all other messages as well.[12] A young, aggressive infantry lieutenant may think the unit can "fix bayonets" and take the hill anyway, but where did the bayonets come from? Most logistical systems will be easy targets compared to command and control or intelligence systems, as they generally rely on the Internet backbone and unsecure communication links. It is worth mentioning again how completely dependent the U.S. military has become on complex cyber-enabled logistical systems to enable warfighting in all the physical domains. While we understand our reliance on IT, we do not yet clearly grasp our reliance on OT.

Adversary attacks can be devastating because operational technology is highly vulnerable, yet it provides the infrastructure that modern militaries

operate on. While once considered largely untouchable, OT systems have already come under attack numerous times. The heart of Stuxnet was an attack on programmable logic controllers, which are a subset of OT.[13] The Ukrainian power grid has also come under attack several times, which shows that attackers can use OT to put pressure directly on the civilian population, much like the early days of strategic bombing.[14] OT can be the "soft underbelly" of military operations. For example, an enemy that wanted to attack a command center could use a sophisticated social engineering attack with multiple vectors intended to jump across air gaps—or it could connect to the relatively unprotected building automation system and turn up the heat in the data center and cause computer hardware to fail. Much of OT is largely unprotected, since engineers connected it for convenience and efficiency with little thought of security or mission impact. There is increasing recognition of the importance of protecting OT, but securing it will be difficult—partially because key elements of OT are often outside military control. Major OT systems on which the military relies, such as civilian power grids, are normally defended (or not) based on business decisions instead of national security concerns. Attacks on OT can cripple a combatant by removing critical support infrastructure or by directly targeting weapons systems.

An adversary can directly attack platforms through cyberspace to hamstring military forces.[15] Platforms and weapons systems now exist in the physical and cyber worlds simultaneously and are thus significantly vulnerable to cyber attack. Some military planners have been slow to recognize the danger, since they think weapons systems such as airplanes and ships are isolated and secure from cyberspace threats because they are air gapped, or physically disconnected, from the Internet.[16] Engineers also often refer to these types of systems as *standalone*. However, warfighters routinely connect these systems to maintenance devices that are conduits to the wider cyberspace world, and they are thus vulnerable to attacks through those systems. In addition, any antenna with a processor behind it is a potential entry point for an adversary. Automobile hacking has shown both these avenues of attack to be feasible and practical.[17]

Responding to Cyber Attacks

All three types of systems—IT, OT, and platforms—will be under continuous attack from cyberspace in a contested cyberspace environment, but defenders have several ways to prepare for and fight successfully in this arena. One option is to focus exclusively on keeping the enemy out of important systems; joint forces will want to exclude enemies from their systems and networks as much as possible. However, recent history shows that using IT-based defenses alone is ineffective when under attack from less-capable adversaries than nation-states, so it is unlikely that this approach would work against more capable adversaries. The best solution to the problem of warfighting in a contested cyberspace environment is not a frontal assault on misinformation and uncertainty. The answer instead lies in an indirect approach that attacks the problem from a different angle and builds a force that can thrive and maneuver in a chaotic and uncertain environment.[18]

Authors who depict warfare in a contested cyberspace environment often seem to forget that the United States also has highly capable cyberspace forces that will presumably be attacking enemy IT, OT, and platform systems in accordance with appropriate authorities and the laws of war. The enemy will be dealing with all the same issues of compromised command and control, intelligence, infrastructure, and weapons systems. So if both high commands will be essentially blind, deaf, and dumb, will it come down to simple mass and who can throw the biggest battalions into the fray? On the contrary, victory will go to the side best able to observe, orient, decide, and act at the tactical edge in the absence of detailed instructions or a complete picture of the situation.[19] Building a joint force able to accomplish that will require significant changes in education, training, exercises, organizational structures, and planning.

Education

Education is a critical component of a force able to execute on the tactical edge because it provides a foundation of how to think and respond to any number of situations, whether the warfighter has encountered them before. Carl von Clausewitz himself was a major proponent of education and theory for young officers, not because education provided answers to tactical problems but because it helped to guide and stimulate development.[20] There is no need for more time spent on education in the career path of a U.S. military officer—the current sequence of professional schools is sufficient.

What our force needs instead is a greater emphasis on developing the types of agile and self-synchronizing individuals who can thrive at the tactical edge when an enemy successfully attacks our command and control systems. We need to adjust our curriculum to place greater emphasis on creative maneuver and find innovative ways to achieve commander's intent in a contested cyberspace environment where much of the equipment is not functioning correctly, many communications systems are unavailable, and the enemy has compromised some of the command and control links that appear to be functioning.

Training

In addition to knowing how to think, which comes from education, agile forces must learn specific skills to cope with a cyber-contested environment through improved training. To be effective, training must be realistic and focused on those skills needed in an environment where many systems will be under attack. For example, modern fighter aircraft are capable of updating their navigation systems using a number of methods, only some of which rely on the global positioning system (GPS), but operators rarely practice these capabilities because GPS is so much more accurate and easier to use. In a cyber-contested environment, a pilot's

Servicemember from 3rd Infantry Division (left), trainer, and Servicemember of division's 2nd Battalion, 69th Armor Regiment, 3rd Armored Brigade Combat Team, observe spectrum of frequencies used in Red Team exercise (U.S. Army/Aaron Knowles)

theoretical ability to update an aircraft's position using ground references is of little use if the pilot is not trained or proficient, and that proficiency will only come from focused training and repeated practice.

It is important to note that there are only a finite number of minutes in any given day to accomplish training, and every training event has an opportunity cost of a training event that the individual or team did not accomplish instead. Training for fighting in a cyber-contested environment means that forces will train less with everything working, and more with backup and degraded systems. This type of training regime will greatly increase the joint force's ability to fight in a cyber-contested environment, but it comes at the cost of proficiency and capability when the enemy does not contest the environment and all systems are working as intended. Commanders must strike the right balance based on expected mission sets and adversaries, but there is some minimum level of competency in both environments that all forces should reach. Today, few forces deliberately train for a cyber-contested environment at all, so more training will be needed for this type of warfare. Training is an important building block that provides needed skills, but that training will only truly take root when the force also exercises it on a large scale.

Exercises

Agile forces ready to execute on the tactical edge need to put all the education and training together in large-scale exercises so they are familiar with operating and self-synchronizing in chaotic environments. Smaller exercises are useful in a building block program, but, much like Red Flag, maximum learning will come from large-scale, complex exercises.[21] The rules of exercises should clearly reward innovation and agility, and referees should grade forces against not how closely they adhered to the plan, but how effective they were at executing the commander's intent when everything went wrong. It is critical that these exercises be difficult and full of surprises, much like the enemy. If friendly forces end up winning every exercise, the scenario is too easy. In exercises, adversary forces should routinely defeat friendly forces, which will force a higher level of learning than is generally accomplished when the exercise invariably has the joint force winning on the last day, no matter how badly friendly forces bungled things. Commanders should replace individuals who handle their forces poorly and who are not able to operate effectively in a contested environment before lives are lost in

F/A-18C Hornet, assigned to Sharpshooters of Marine Fighter Attack Training Squadron, flies over flight deck of aircraft carrier USS *George H.W. Bush* in Atlantic Ocean, January 24, 2013 (U.S. Navy/Kevin J. Steinberg)

combat. Once agile forces are developed, DOD must support them with appropriate organizational structures.

Organizational Support

DOD needs to couple an agile and resilient force with a strong organizational structure and incentives for maximum effectiveness. Personnel systems must reward agile and resilient behavior in promotions and increased responsibility if other young leaders are going to focus their own efforts in that direction. Too often, military personnel systems reward a particular behavior such as agility of thought, but what they actually reward is precisely following a set of rules and norms that are comfortable for the organization. Senior leaders will have to go beyond talking about the importance of agility or taking risk and failing, and start promoting those people who do so instead of those who follow the safer path.

As leaders are cultivated to be agile and innovative, DOD needs to provide them with an environment that enables success. The joint force will accomplish a large part of this requirement by setting the conditions through changing from directive to emergent planning, which is a different type of planning than the military typically does.[22] Today's planning focuses on detailed scenario-driven plans that lay out precise schedules and timelines not that different from the Schlieffen Plan of World War I. Commander's intent is part of the process, but it is only one step in a long series that produces documents running many thousands of pages no one reads, except a few experts reading about their small sliver of an operation. In a contested cyberspace environment, the detailed plans will be worse than useless and will do great harm if commanders attempt to follow them in a radically changed context from the planning assumptions. Planning is helpful even if the actual plans are not, as it forces staffs and maneuver forces to think through problems to grasp the commander's intent and general scheme of maneuver. These elements provide the key to success.

The joint force has made great strides in recent years to embrace mission-type orders, and DOD is now discussing the need to acknowledge and plan for commanders who are still in command but cannot directly control their forces due to a contested cyberspace environment.[23] This distributed command provides field commanders with the overall commander's intent to keep them focused in the right direction, and the structure that allows them to self-synchronize into the largest and most effective warfighting elements possible in given circumstances. Meanwhile, the theater-level commander, who has had direct control over units in the conflicts of the last few decades, will at best be able to provide broad guidance

updates while pushing resources and reinforcements to particular geographic areas and continuing to fight for as effective a command and control as can be achieved.[24]

Conclusion

These strategies will help set the conditions for victory on a modern cyber-contested battlefield. Fortunately for the United States, we have the raw material available to us to execute at the tactical edge. Our population is flush with potential young warfighters who want to be innovative and agile and are comfortable with a pace of change and maneuver that was quite challenging for earlier generations brought up in more controlled hierarchical structures. Many potential adversaries do not have the same raw material because their societies are still far more command driven and less agile than ours. This will provide an important edge that our potential adversaries cannot easily replicate.

The commander who, like Admiral Nelson, educates, trains, equips, and exercises his forces to execute on the tactical edge and provides clear commander's intent while eschewing direct control is much more likely to find victory than the one who insists on attempting to control forces directly in a carefully synchronized plan. Detailed control will be impossible in a cyber-contested environment facing a competent foe anyway, and attempting to achieve it will do great harm because forces will be unable to maneuver or self-synchronize in the absence of direction from headquarters. The U.S. military has access to a new generation of joint warriors who, through a combination of education, training, organizational changes, emergent planning, and new command structures, can defeat the Nation's enemies and achieve national objectives even when our operational battle networks are under attack and degraded. We must now prepare the force and teach our commanders to command in new ways, let go of control, and surf the chaos. **JFQ**

Notes

[1] The details on Trafalgar in this paragraph are found in John Keegan, *The Price of Admiralty: The Evolution of Naval Warfare* (New York: Penguin Books, 1988).

[2] For a modern fictional version of what a conflict might look like with cyberspace attacks, see P.W. Singer and August Cole, *Ghost Fleet: A Novel of the Next World War* (New York: First Mariner Books, 2016). While I do not take issue with any of the types of attacks they discuss, I do find the idea that an enemy could achieve that level of surprise when tens of thousands of people knew about the attack ahead of time rather incredible. Instead, I posit that cyber attacks would be flying in both directions and both sides would be dealing with them at the same time.

[3] Carl von Clausewitz, *On War*, ed. and trans. Michael Howard and Peter Paret (Princeton: Princeton University Press, 1976).

[4] Sun Tzu, *The Art of War*, trans. Samuel B. Griffith (London: Oxford University Press, 1971).

[5] John Arquilla, "The Strategic Implications of Information Dominance," *Strategic Review* 22, no. 3 (1994), 25.

[6] A good example of this can be seen in the results of "Eligible Receiver" in Fred Kaplan, *Dark Territory: The Secret History of Cyber War* (New York: Simon and Schuster, 2016).

[7] Antoine Bousquet, *The Scientific Way of Warfare* (New York: Columbia University Press, 2009), 222.

[8] William Young at Air University developed this typology as part of his work on determining key cyberspace terrain.

[9] "Operational Technology (OT)," Gartner IT Glossary, available at <www.gartner.com/it-glossary/operational-technology-ot>.

[10] Many of the same principles and models such as the Open Systems Interconnection (OSI) seven-layer model still apply, but the protocols and standards are different. For a discussion of the OSI model, see Shon Harris, *All in One CISSP Exam Guide*, 6th ed. (New York: McGraw Hill, 2013), 517–520.

[11] Martin C. Libicki, *Conquest in Cyberspace: National Security and Information Warfare* (New York: Cambridge University Press, 2007), 50.

[12] Kaplan.

[13] For an in-depth analysis of Stuxnet, see Kim Zetter, *Countdown to Zero Day: Stuxnet and the Launch of the World's First Digital Weapon* (New York: Broadway Books, 2015).

[14] Robert M. Lee, Michael J. Assante, and Tim Conway, *Analysis of the Cyber Attack on the Ukrainian Power Grid* (Washington, DC: SANS Industrial Control Systems, 2016), 20.

[15] For some fictional examples of what might be possible, see Singer and Cole.

[16] Stuxnet provides a real-world example of a cyber weapon crossing an air gap and illustrates the connected nature of "supposedly closed system[s]." See Peter W. Singer and Allan Friedman, *Cybersecurity and Cyberwar: What Everyone Needs to Know* (New York: Oxford University Press, 2014), 63. Also see Martin C. Libicki, "Cyberspace Is Not a Warfighting Domain," *I/S: A Journal of Law and Policy* 8, no. 2 (2012), 323–324.

[17] Stephen Checkoway et al., "Comprehensive Experimental Analyses of Automotive Attack Surfaces," USENIX Security Conference, August 10–12, 2011, 3–5.

[18] B.H. Liddell Hart, *Strategy*, 2nd ed. (New York: Penguin Books, 1967), 5.

[19] There are many excellent discussions of John Boyd's Observe, Orient, Decide, Act (OODA) loop. For further information, see David S. Fadok, "John Boyd and John Warden: Air Power's Quest for Strategic Paralysis," in *The Paths of Heaven: The Evolution of Airpower Theory*, ed. Phillip S. Meilinger (Maxwell Air Force Base, AL: Air University Press, 1997), 366.

[20] Clausewitz, 141.

[21] Earl H. Tilford, Jr., *Crosswinds: The Air Force's Setup in Vietnam* (College Station: Texas A&M University Press, 1993), 201.

[22] Simon Reay Atkinson and James Moffat, *The Agile Organization: From Informal Networks to Complex Effects and Agility* (Washington, DC: Department of Defense Command and Control Research Program [CCRP], 2005), 130.

[23] Gilmary Michael Hostage III and Larry R. Broadwell, Jr., "Resilient Command and Control: The Need for Distributed Control," *Joint Force Quarterly* 68 (1st Quarter 2014), 39.

[24] David S. Alberts and Richard E. Hayes, *Power to the Edge: Command . . . Control . . . in the Information Age* (Washington, DC: DOD CCRP, 2003), 5.

Explosive Ordnance Disposal Technician conducts post-mission analysis on sonar imagery that IVER unmanned underwater vehicle collected during Exercise Clear Horizon, Republic of Korea, November 2, 2017 (U.S. Navy/Daniel Rolston)

The Bureaucratization of the U.S. Military Decisionmaking Process

By Milan Vego

In forming the plan of a campaign, it is requisite to foresee everything the enemy may do, and to be prepared with the necessary means to counteract it.

—Napoleon Bonaparte, *Military Maxim II*

Making a decision is one of the most important responsibilities of a military commander at any level of command and is especially critical in combat. Traditionally, combat decisions are made by using the commander's estimate of the situation. The term *estimate* highlights the central role that the commander has in the entire decisionmaking process; the commander, and nobody else, should be solely responsible for making a decision. Hence, the commander must be deeply involved in each step of the estimate process. Making a decision is largely an art and not a science. The

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Table 1. Estimate Formats for U.S. Services and Joint Force

Service	Army	Marine Corps	Navy	Air Force	Joint Doctrine
Document	FM 6-0	MCWP 5-10	NWP 5-01	AFMAN 10-40 V2	JP 3-0
Steps	▪ Receipt of Mission ▪ Mission Analysis ▪ Course of Action (COA) Development ▪ COA Analysis (Wargame) ▪ COA Comparison ▪ COA Approval ▪ Orders Production, Dissemination, and Transition	▪ Problem Framing ▪ COA Development ▪ COA Wargame ▪ COA Comparison and Decision ▪ Orders Development ▪ Transition	▪ Mission Analysis ▪ COA Development ▪ COA Analysis (Wargame) ▪ COA Comparison and Decision ▪ Plan or Order Development ▪ Transition	▪ Mission ▪ Situation and COAs ▪ Analysis of Opposing COAs ▪ Comparison of Own COAs ▪ Decision ▪ Concept of Operations	▪ Planning Initiation ▪ Mission Analysis ▪ COA Development ▪ COA Analysis and Wargaming ▪ COA Comparison ▪ COA Approval ▪ Plan or Order Development

commander's experience and judgment are the most critical factors in making a sound decision.

The Problem

The decisionmaking process as described in U.S. doctrinal documents violates some key tenets of German-style mission command (*Auftragstaktik*). Among other things, the mission statement consists of essential tasks and purpose(s) instead of being identical to the objective. The commander's intent should be far more important than the mission, but it is not. The commander's intent is too wordy. It includes elements that do not belong there. It also resembles a long list of tasks or even concept of operations (CONOPS). Since the early 1990s, the trend has been to progressively clutter each step of the estimate with poorly related or even unrelated considerations. This, in turn, has made the decisionmaking process cumbersome, rigid, and time-consuming.

Perhaps the single biggest problem is that the commander's estimate has become de facto an integral part of the planning process. But it should *not* be. Many elements of planning and staff functions/actions have been meshed with decisionmaking. The result is the blurring or even eliminating distinctions between decisionmaking and planning. Also (and despite the statements in various Service doctrinal documents), the role and importance of a commander in the decisionmaking process have been greatly reduced. Throughout the decisionmaking process, the staff prepares briefings for the commander for almost every step of the estimate. If a commander is fully involved in the decisionmaking process, however, there would be no need for any of these briefings. Another negative trend is an overemphasis on so-called risk management in almost all the steps of the estimate—apparently, caution is more valued than boldness in action.

Commander's Estimate

Traditionally, the main method in making a decision is the commander's estimate of the situation. In generic terms, the commander's estimate is described as a logical process of reasoning by which a commander considers all the factors affecting a military situation to determine a course of action to accomplish a given mission. The estimate involves a thorough study of all the conditions affecting a given situation.[1] No relevant factors should be omitted or, worse, willfully ignored. Hasty and superficial considerations should be avoided.[2] All the steps should follow in a logical sequence. Each step should incrementally lead to a decision that, without these steps, could be arrived at only by accident.[3] And each step must be justified by that which precedes it.[4] Afterward, the decision is used as the basis for drafting plans/orders, followed by its execution.[5] Yet the process in itself will not necessarily result in the best or even a sound decision.[6]

Format vs. Process

A standardized format is highly useful in ensuring that a certain logical process of reasoning is applied in conducting the estimate of the situation.[7] The potential danger is that commanders and staffs might become prisoners of the format. There is also often a great temptation to steadily expand scope and the amount of information in the estimate. All this could be avoided if commanders and staffs are focused on the mental process and making a quick and good decision. The format of the estimate should be flexible so that commanders can modify or adapt the form to their particular needs. The relative importance of the elements of the situation should be easily recognized so that the commander is focused on the essential elements of the situation.[8] Rigidly applying the estimate's format will invariably lead to a faulty application of the process and may well result in an unsound decision. Clarity of thinking also suffers when more time and effort are spent on formalities rather than on the essence of the estimate.[9]

In conducting the commander's estimate, what matters most is the mental process itself, not the format used. The commander must weigh all factors bearing on the situation and then arrive at a sound decision in the quickest time possible.[10] The soundness of the estimate ultimately rests on the commander's earnest thought, mental ability, character, and experience.[11]

Estimate Formats in the U.S. Military

In the U.S. military, each Service uses a different format for conducting estimates. They have many similarities with

Table 2. Estimate Formats and Solution

Service	U.S. Air Force	German Wehrmacht*	Suggested Solution
Document	JP 3-30	1937	
Steps	▪ Operational Description ▪ Purpose of the Operation ▪ References ▪ Description of Military Operations ▪ Narrative a. Mission b. Situation and Course of Action (COA) c. Analysis of Opposing COA d. Comparison of Friendly COA e. Recommended COA ▪ Remarks	▪ Own Mission ▪ Considerations of Own Situation ▪ Assessment of the Enemy Situation ▪ Conclusions ▪ Decision	▪ Mission Analysis ▪ Enemy Options ▪ Friendly Options ▪ Operating Area Estimate ▪ Analysis of the Opposing Options ▪ Comparison of Friendly Options ▪ Decision

*Helmuth Greiner and Joachim Degener, *Taktik im Rahmen des verstärkten Infanterie-Bataillons*, 2nd ed. (Berlin: Verlag "Offene Worte," 1937), 25–28.

each other but also many differences. A new version of the same document is issued after only 1 or 2 years after the last version was published. Within each Service, several documents address some aspects of the decisionmaking process. Often, they describe the same issue in very different ways. This, in turn, makes it difficult to know what the commonly accepted view on some aspect of the decisionmaking process is within a given Service. There seems to be less emphasis on warfighting, which is exemplified by the extensive use of the term *adversary* or the *threat* instead of simply *enemy*. If one wants to kill you, is the enemy not a political opponent or adversary? Current decisionmaking documents in the Army, Marine Corps, and Navy encompass six or seven major steps (table 1).[12] Each step consists, in turn, of a relatively large number of substeps. In contrast, estimate formats prior to the 1990s were much simpler and more straightforward.[13] The Air Force apparently uses older Army methods of conducting the estimate.[14] The Joint Air Estimate, which reflects the Air Force's views, includes five steps of the traditional estimate (table 2). Like the Army, the format in the latest version of the Joint Publication (JP) 3-0, *Joint Operations*, cites seven major steps (table 1).[15]

In the Army and Navy, Mission Analysis is the first and most critical step of the decisionmaking process. The Army's Military Decisionmaking Process (MDMP) Handbook and Field Manual (FM) 6-0, *Commander and Staff Organization and Operations*, cites not fewer than 18 substeps as part of mission analysis.[16] Obviously, this number is too large. Instead of consisting of relatively few substeps directly related to the derivation of the mission, substeps include several planning and administrative matters (for example, substep 9: Develop Initial Information Collection Plan; substep 10: Update Plan for the Use of Available Time; substep 14: Present the Mission Analysis Briefing). The commander's intent, one of the most critical parts of the Mission Analysis, is barely mentioned. It is listed as substep 15.[17] It is almost an afterthought.

Perhaps the most illogical inclusion is the intelligence preparation of the battlefield (IPB) as part of the mission analysis in the latest version of the Army's MDMP Handbook, issued in 2015. Intelligence estimate, however, should be one of the *staff's estimates*, not an integral part of the mission analysis. Once the commander receives the mission from the higher commander, intelligence should focus its efforts to provide all information pertaining to accomplishing the mission. The MDMP Handbook stipulates that IPB should include a "description of the operational environment's effects [by identifying] constraints on potential friendly [courses of actions] COAs, [developing] detailed threat COA models," and so forth.[18] It also explains that the intelligence staff, in collaboration with other staffs, develops initial priority intelligence requirements, a list of high-value targets and unrefined event templates. IPB should also "provide an understanding of the threat's center of gravity, which then can be exploited by friendly forces."[19] However, the IPB should only collect and evaluate information on enemy forces and the operating area. Clearly, a list of high-value targets is not related to decisionmaking but planning. It is the commander and staff's responsibility to identify the enemy's (and friendly) center of gravity. That critically important responsibility should not be delegated to the intelligence staff.

Several other substeps in the Army's Mission Analysis (for example, Review of Available Assets, Identify Resources Shortfalls) seem premature. Shortfalls in forces are not known until the decision is made and CONOPS is fully developed. Likewise, the Risk Management step is already one of the tests (for acceptability) for each friendly option.[20] The Developing Initial Themes and Messages substep belongs to planning, not decisionmaking. The mission analysis briefing is aimed to inform the commander of the results of the staff's analysis of the situation.[21] Yet one must ask why such a brief is necessary if the commander is in fact deeply involved in the entire process and not a bystander. There is possibly no greater responsibility for a commander but to make decisions on the employment of subordinate combat forces. Mission analysis in Navy Warfare Publication (NWP) 5-01, *Navy*

Soldier, assigned to 2nd Cavalry Regiment, adjusts aim of M777 towed 155mm howitzer, while conducting simulated call for fire missions during Saber Junction 17, at Hohenfels Training Area, Germany, May 3, 2017 (U.S. Army/Zachery Perkins)

Planning, consists of many substeps, but not all are directly related to decisionmaking. For example, the Determining Critical Factors and a Friendly Center of Gravity substep properly belongs to the estimate of enemy situation; also, decisive points play a role in determining methods of how to defeat the enemy's center of gravity. Yet it is a stretch to include it in mission analysis. As in the case of the MDMP Handbook, mission analysis in NWP 5-01 includes a substep on initial risk assessment.[22]

In contrast to the Army and Navy, the Marine Corps adopted "design" as an integral part of its decisionmaking process. It even went so far to use the phrase *problem framing* instead of the more traditional *mission analysis*. This decision is hard to understand; the purpose of design is very different from the decisionmaking process. Marine Corps Warfighting Publication (MCWP) 5-10, *Marine Corps Planning Process*, claims that design is "appropriate to problem solving at strategic, operational, and tactical levels. Its purpose is to achieve a greater understanding of the environment and the nature of the problem in order to identify the appropriate conceptual solution."[23] Despite these claims, design deals with understanding all aspects of the situation at the respective levels of war. It can provide only *understanding* of the strategic, operational, or tactical situation and thereby create a framework within which the decisionmaking process would take place.

Mission analysis in MCWP 5-10 includes six substeps. Some belong to traditional mission analysis while others pertain to design (for example, Civil Consideration, Difference Between Existing and Desired Conditions, Information Environment).[24] Problem framing is actually an unnatural mix of design elements and those related to decisionmaking. Among other things, it includes commander's orientation, understanding the environment, analysis of task (specified, implied, essential), analysis of center of gravity, developing assumptions, determining limitations, developing the mission statement, and presenting problem framing briefs.[25] Its results are a commander's course of action guidance and issuing a warning order.[26] Again, an analysis of the center of gravity should not be part of the mission analysis.

The first step in the Joint Air Estimate is a model of simplicity. It consists of only the joint force commander (JFC) mission statement and deduced Joint Force Air Component Commander (JFACC) mission statement.[27]

Each Service has a different approach in describing the meaning and content of the commander's intent. This critically important part of the estimate does not have high priority in U.S. doctrine and practice. In German-style mission

Republic of Korea tanks with 1st Tank Battalion, 1st Marine Division, head off firing line in formation during Korea Marine Exercise Program 17-6, at SuSong Ri Range, Pohang, Republic of Korea, March 23, 2017 (U.S. Marine Corps/Anthony Morales)

command, the intent was more important than the mission. It was virtually sacrosanct. The intent provided a framework within which a subordinate commander could act in the spirit of the mission issued by the higher commander.[28]

Although the term *intent* is extensively used by the U.S. military, its true meaning and purpose are not always properly understood. In its simplest terms, the commander's intent is a concise description of the military conditions or the *effect* the commander wants to see *after* the mission is accomplished. The intent should inform subordinate commanders of what needs to be done to achieve success, even if the initially issued orders become obsolete because of unexpected changes.[29] Generally, the broader the commander's intent, the greater the room for freedom of action for the subordinate commanders.

A properly formulated commander's intent should only express the (military) endstate. It should not include, as the Army's FM 6-0 (2014) did, the purpose (or so-called operational content of the mission) and key tasks.[30] Adding a long list of key tasks to already existing essential and specified tasks only unnecessarily complicates mission execution. The key tasks are usually larger in number than essential tasks. Moreover, some or most of them might either duplicate or be directly contrary to essential tasks. The commander should not include in the intent the methods (the how) by which subordinate commanders should accomplish their assigned missions. Both key tasks and methods would greatly limit subordinate commanders' abilities to act creatively and exercise initiative. Moreover, they clearly violate the purpose of the commander's intent. The latest version of FM 6-0 has a three-paragraph-long description of the commander's intent. Among other things, it states that the intent is "clear and concise expression of the purpose of the operation and the desired military end state that supports mission command."[31] Apparently, the key tasks were dropped.

The intent should not include elements of CONOPS. The intent should reflect the commander's firm belief in the success of the mission. Hence, the intent should not include a discussion of risk that the commander is ready to accept (or not ready to accept).

NWP 5-01 stipulates that the commander's intent should consist of a purpose, method, and endstate.[32] Yet properly understood, the intent should consist *solely* of a military endstate. In NWP 5-01, including the purpose and method is redundant. The purpose of the contemplated action is already known and should not be repeated. The method is described as the commander's explanation of the offensive form of maneuver, the alternative defense, or other actions to be used by the force as a whole.[33] Yet this should be clearly seen or implied in the commander's CONOPS.

The Marine Corps seems to have a different understanding of commander's intent than the other Services. For example, the 2014 version of MCWP 5-1

(now MCWP 5-10) explains that the "Commander's intent is the commander's personal expression of the purpose of the operation. It must be clear, concise, and easily understood. It *may* [emphasis added] also include end state or conditions that, when satisfied, accomplish the purpose."[34] MCWP 5-1 correctly notes that the

commander's intent helps subordinates understand the larger context of their actions and guides them in absence of orders. It allows subordinates to exercise judgment and initiative—when the task assigned is no longer appropriate given the current situation—in a way that is consistent with the higher commander's aims. This freedom of action, within the framework of the commander's intent, creates tempo during planning and execution.[35]

A major error here is equating intent with the mission's purpose, that is, with the objective. Only the military endstate can provide that broader framework within which a subordinate commander can have sufficient freedom to act and exercise initiative. The mission itself is inherently much narrower than the properly formulated commander's intent. It is also incorrect to state that the intent "may" instead of "must" include the endstate. For some reason, the section "Commander's Initial Intent and Guidance" is omitted in the current version of the same document (MCWP 5-10).

In the Joint Air Estimate, the intent is part of the second step, Situation and Courses of Action. It consists of the JFC's intent and JFACC's intent statements, respectively. This step also includes air component objectives and "effects required for their achievement."[36]

The most recent version of JP 3-0 (dated January 17, 2017) defines *intent* as the "commander's clear and concise expression of what the force must do and the conditions the force must establish to accomplish the mission. It includes the purpose, end state and associated risk." It also states that the commander's intent supports mission command and allows subordinates the greatest possible freedom of action.[37] The latest version of JP 5-0 (dated June 16, 2017) specifies that the commander's initial intent should "describe the purpose of the operations, desired strategic end state, military end state, and operational risks associated with campaign or operation." Moreover, it includes "where the commander will and will not accept risk during the operation." It also states that intent may include "operational objectives, method, and effects guidance."[38]

Clearly, the latest version of JP 5-0 further compounds the problem of the proper understanding of the commander's intent. For example, it is a major error to include a desired strategic endstate as part of the operational commander's intent. A properly understood desired strategic endstate encompasses political, diplomatic, military, economic, social, ethnic, religious, and other nonmilitary conditions that the highest political-military leadership wants to see in a part of the theater at the end of hostilities. It is not part of the operational commander's intent but of strategic guidance formulated and issued by the highest political-military leadership. The operational commander's intent should contain simply only a military endstate and nothing else. Both JP 3-0 and JP 5-0 include risks as part of the operational commander's intent. This cannot but further stifle the initiative on the part of a subordinate commander. It is also contrary to the very purpose of the commander's intent.

The commander should be *solely* responsible for formulating and articulating his intent. However, he should consult with his chief of staff and other staff members before issuing his intent to subordinate commanders.[39] Yet the Army's FM 6-0 (2014) assigns the responsibility for briefing the current mission and commander's intent to the chief of staff or executive officer.[40]

In articulating intent, the commander should seek input from these subordinate commanders to ensure their full understanding. The intent statement can be written or issued orally. The higher the command echelon, the more likely that the commander's intent will be provided in writing or in message format. It should:

- be written in the first-person singular and use compelling language
- fully reflect the personality of the commander
- be read quickly and with full understanding
- be concise so subordinate commanders can remember it[41]
- be no longer than four or five sentences[42]
- be written in clear and precise language[43]
- be issued to subordinate commanders *two levels down*.[44]

The subordinate commander's intent, in turn, must support the intent of the higher commander. In the U.S. military, the intent is inserted as subparagraph 3a of an operation plan/order. However, if the true mission command is applied, the intent should follow paragraph 1 (Situation) and ahead of paragraph 2 (Mission).

None of the Service decisionmaking process documents makes a clear distinction between the processes of estimating the enemy and friendly situation and developing, respectively, the enemy and friendly COAs. The emphasis is clearly on developing friendly COAs, which is reflected in the titles of the individual steps for the estimate. For example, the MDMP Handbook contemplates eight substeps in the COA Development step. This includes Assessing Relative Combat Power, Generating Options, Arraying Forces, Developing Broad Concepts, Assigning Headquarters, Developing COA Narratives and Sketches, Conducting COA Briefings, and Selecting or Modifying COAs for Continued Analysis.[45]

One of eight substeps in the Army's COA Development is to develop a broad concept aimed at describing how friendly forces would accomplish the mission within the commander's intent. However, this step has little resemblance to the traditional way of describing friendly COAs. It is more like a CONOPS. Among other things, it includes:

- purpose of the operation
- statement where the commander would accept the risk
- identification of critical friendly events and transitions between phases (if the operation is phased)
- designation of reserve, including its location and composition
- information collection activities
- essential stability tasks
- identification of maneuver options that may be developed during an operation
- assignment of subordinate area of operations, scheme of fires, themes, messages (and means of delivery), military deception operations, key control measures, and designation of the operational framework (deep-close-security, main and supporting effort, or decisive-shaping-sustaining, and designation of the decisive operation, along with its task and purpose, linked to how it supports the higher headquarters' concept).[46]

If this template is literally followed, it is difficult to see how to make a clear distinction which friendly COA would offer higher chances of mission accomplishment than the other. Similarly, the step Developing COA Narratives and Sketches is so complex that it defies logic. Among other things, each friendly COA requires a narrative unit, subordinate unit boundaries, line of departure or line of contact, information collection graphics, assembly area, battle positions, strong point, engagements area and objectives, fire support coordination and airspace coordinating measures, main effort, location of command posts or template locations, and population concentration.[47] This in essence is a mini-plan, not a description of a friendly COA. This step of the estimate also envisages a COA briefing.[48]

The NWP 5-01 step COA Development includes analyzing relative combat power, generating COA options, testing for validity, recommending command and control relationships, preparing COA sketches and narratives, and preparing COA briefings.[49] COA sketches include unit or command boundaries; unit deployment/employment; control graphics; sequencing of events; designation of the main supporting, shaping, and sustaining efforts; and adversary known or expected locations.[50]

MCWP 5-10 stipulates that during COA Development, planners use the products carried forward from problem framing to generate options or COAs that satisfy the mission in accordance with the commander's intent and guidance.[51] This step includes substeps such as Establishing Battlespace Frameworks, Arraying Forces, Assigning Purpose and Tasks, Integrating Actions Across Time and Space, Determining Control Measures, and Considering the Adversary's Most Dangerous/Most Likely COAs for Every Friendly COAs. This step also includes COA graphics and narratives, task organization, synchronization matrix, and supporting concepts (such as intelligence, fires, or logistics in the order or plan).[52] In a Marine Corps' textbook on the decisionmaking process, the initial COA includes forms of maneuver, type of attack, designation of main attack, requirements for supporting efforts, scheme of maneuver, sequencing essential task accomplishment, task organization, use of reserve, and rules of engagement.[53]

The MCWP 5-10 section "Commander's Wargaming Guidance and Evaluation Criteria" greatly expands the traditional evolution criteria for friendly COAs (feasibility, suitability, adequacy, acceptability). It includes a list of some 19 criteria including limitations on casualties, defeat of the adversary's center of gravity (COG), information operations, opportunity of maneuver, speed, risk, phasing, balance between mass and dispersion, weighting the main effort, timing of the operation and reserve, logistical supportability, force protection, political considerations, and impact on local population/issues.[54] Clearly, this large number of criteria makes their true value highly problematic.

In the Joint Air Estimate, COAs are part of the step Situation and Courses of Action. Each COA must include information on required combat; intelligence, surveillance, and reconnaissance; and support forces, respectively, and personal recovery capabilities.[55]

The MDMP Handbook and FM 6-0 envisage eight substeps in the COA Analysis. The focus is on wargaming. The supposed purpose of this step is to enable commanders and staffs to identify difficulties or coordination problems and also probable consequences of planned actions for each friendly COA. It is also meant to identify potential execution problems, decisions that must be made, and requirements for contingency planning COA analysis (wargaming).[56] It requires that each critical event is wargamed by using an action-reaction-counterreaction model of friendly and enemy forces interaction. This should help the commander to synchronize warfighting functions. In addition, the commander would be able to anticipate operational events, determine conditions and resources required for success, determine when and where to apply force capabilities, identify coordination needed to produce synchronized results, and determine the most flexible COA.[57] MCWP 5-10 stipulates that the main purpose of the COA War Game step of the estimate is to "improve the operation plan." Wargaming is conducted in terms of action-reaction-counterreaction.[58]

The COA Analysis step in NWP 5-01 also includes many planning elements such as synchronizing warfighting functions and determining decision points and branches.[59] Like actions of the main forces, warfighting functions are wargamed in terms of action-reaction-counterreaction.[60] However, all this clearly belongs to planning. It should be obvious that so-called warfighting functions (intelligence, fires, sustainment, command and control, protection, movement, and maneuver) cannot be synchronized until the entire plan/order is prepared. But most fundamentally the problem is that this should not be part of wargaming at all.[61] NWP 5-01 also includes part of the COA Analysis testing validity of measures of effectiveness and measures of performance and further refines assessment plan development.[62]

The Army tends to use more than the other Services' various quantifiable

Air Force Combat Controller, part of 23rd Special Tactics Squadron, watches Jordanian UH-60 helicopter approach during Eager Lion 2017, annual U.S. Central Command exercise, Amman, Jordan, May 11, 2017 (U.S. Navy/Christopher Lange)

methods in assessing the combat potential of both friendly and enemy forces (for example, relative combat potential, historical minimum planning ratios, and measures of effectiveness).[63] Yet there is a great danger in overemphasizing the importance of these methods. Any force includes a multitude of intangible elements, and they are difficult if not impossible to quantify in any meaningful way. The tactical commander should not allow mathematical computations to drive his analysis.[64] The commander and staff must fully consider human factors, such as the enemy's intentions, will to fight, morale, and discipline.[65] Despite many claims to the contrary, quantifiable methods are of limited usefulness. It is inherently difficult and uncertain to properly assess and anticipate the results of the highly dynamic interactions between the physical and human elements of the situation.

COA Analysis should not include any planning elements (for example, synchronization matrix, task organization, timelines) because they are not directly related to making a decision. Moreover, task organization and synchronization are based on the sequencing of actions by friendly forces, and they are not definitely known until a decision is made and CONOPS is fully developed.

In contrast to other Services, the Joint Air Estimate step Analysis of the Opposing Courses of Action seems pretty simple. It requires highlighting the "adversary" capabilities and intent (if known) that may have "significant impact on friendly COAs."[66] The last step of the estimate in MCWP 5-10 and NWP 5-01 is the COA Comparison and Decision. In this step of MCWP 5-10, it is the commander's responsibility to evaluate each friendly COA and compare it with the others. A COA believed to be the best to accomplish the mission is then selected as the basis for the decision.[67]

In NWP 5-01, the COA Comparison and Decision step includes substeps such as Providing Staff Estimates, Applying Risk Mitigation, Comparing Friendly COAs, Summarizing Advantages and Disadvantages, Reviewing COAs, Testing for Validity, Conducing the COA Decision Briefing, Stating the Commander's Decision, Preparing the Synchronization Matrix, and Developing the CONOPS.[68]

In the comparison of friendly COAs of the Joint Air Estimate, the commander is required to submit to the JFC only the conclusions and a short rationale

Landing craft air cushion vehicle lands on beach, in tandem with Australian counterparts, as part of large-scale amphibious assault during Talisman Saber 17, Townshend Island, Australia, July 13, 2017 (U.S. Navy/Sarah Villegas)

for the favored air COA. Also, the JFC has to discuss relative advantages and disadvantages of the alternative air COAs in case this could assist the JFC in reaching a decision.[69]

The MDMP Handbook explains that the COA Comparison step is aimed to evaluate each friendly COA independently from each other and against set criteria approved by the commander and staff and to identify strengths and weaknesses. It includes two substeps: Analysis of Advantages and Disadvantages and Comparison of COAs. Those COAs offering the highest chances of success are retained for further development into a plan or order.[70] In this step, the MDMP Handbook and NWP 5-01 include so-called decision matrix, while MCWP 5-10 does not.

For some reason, the MDMP Handbook calls the last step in the estimate COA Approval instead of Decision. After the decision briefing, the commander selects the COA that offers the best chances of accomplishing the mission. If the commander rejects all COAs, the staff has to start COA Development again. After the best COA is selected, the commander issues the final planning guidance. The staff then issues warning orders to subordinate headquarters.[71] The last step in the Joint Air Estimate is Recommended COA in which the JFACC recommends the best COA to JFC.[72]

Common to all three Services is that none of their currently used decisionmaking process documents clearly highlights the paramount importance of the decision. This is, after all, the main reasons for conducting the estimate of the situation. Hence, the estimate should end with the Decision as a separate step. Also, Decision and its constituent parts, and CONOPS in particular, should be described in some detail.

A Possible Solution

The Services need to reevaluate and then make drastic changes in both doctrine and the decisionmaking process. Perhaps there is nothing more important than making sound decisions in combat. That responsibility cannot be delegated to anyone else. It must be, as the term clearly implies, *solely* the responsibility of the commander. Hence, the old name "the commander's estimate of the situation and the decision" should be restored. The commander's personal involvement is driven by the time available for the estimate, his or her personal preferences, and the experience and accessibility of the staff. Yet ideally, the commander *alone* (but with inputs of the staff) should write the estimate of the situation and the decision.

The commander's estimate should be restored to its previous importance in the U.S. decisionmaking process. Conceptually, the commander's estimate is simple and should be easily understood. It does not mean that making a sound decision is easy. It is not. The commander must not only be well educated but also have experience and good judgment in making decisions. Both the process and format used by Services are ill-suited for quick decisionmaking. It requires a lot of people and time to conduct the estimate. The ultimate purpose of the estimate is lost because so many planning and administrative steps are included in the format.

The commander's estimate must stand alone. This means that it must be decoupled from the planning. Each step of the estimate must be literally purged

from all elements that are unrelated to the decision. Staff functions/actions during the decisionmaking process should be described in an appendix to the decisionmaking manual. The *decision* must be clearly highlighted throughout the process; it must also stand as a separate and the very last step in the estimate of the situation.

The number of steps in the estimate is not as important as making sure that all the aspects of the situation are properly assessed. The steps in the commander's estimate might differ depending on the level of command and whether predominantly ground, naval, or air forces are employed. Perhaps most importantly, format must not dominate the decisionmaking process. The aim should always be to conduct a quick estimate ending with a good, but not necessarily best, decision. Full involvement of the commander should drastically reduce the number of various briefings. They require involvement of many members of the staff and are time consuming. Ideally, the number of briefings for a tactical commander should be zero.

In generic terms, the commander's estimate might encompass the following main steps:

- Mission Analysis
- Enemy's Options
- Friendly Options
- Estimate of the Operating Area
- Analyses of Opposing Options
- Comparison of Friendly Options
- Decision (see figure).

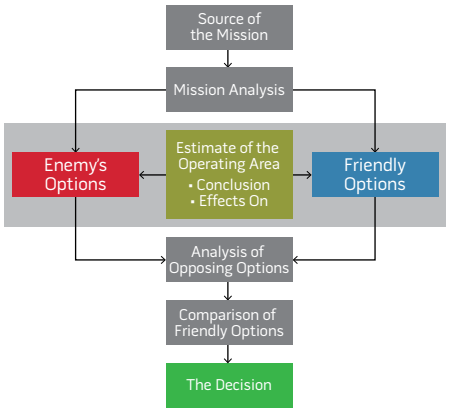
The mission statements used today by the U.S. military do not reflect true mission command but at best a semicentralized command and control. In contrast to longstanding practices, the U.S. military should emulate the German model; that is, the mission statement is *identical to the objective* to be accomplished. This would not only simplify writing the mission but also greatly reduce the time for the mission analysis. But most importantly, a subordinate commander would be solely responsible to deduce tasks that have to be carried out to accomplish a given objective. This would also show that the higher commander trusts his subordinate commanders and would further enhance the need for their professional education and training. The higher commander always has the opportunity to review the tasks derived by subordinate commanders and either approve or reject them.

The Mission Analysis step of the estimate should contain relatively few substeps. Each substep should be directly related to the decision. If the mission equals the objective, then a subordinate commander only needs to derive tasks. There would be no need to identify specified, implied tasks and essential tasks. Besides the mission, key elements in the mission analysis is obviously the commander's intent, planning assumptions, and limitations (constraints and restraints) in the employment of friendly forces. If the estimate is conducted quickly, as it should be, then planning guidance and warning orders should not be issued until the decision is made.

In general, making a combat decision would require from commanders and their staffs sound estimates of enemy and friendly situations. The focus should be on these enemy or friendly forces that would be engaged in the course of mission accomplishment. The end result of these estimates should be enemies and friendly options; respectively, the term *option* rather than *course of action* should be used. A course of action implies that the commander knows for certain what the enemy commander's intentions are. While the friendly commander is more in control of his own actions, he is really weighing various options in the course of the estimate. The option offering the best chances of accomplishing the mission could be called the friendly course of action, but it is not identified until the very end of the estimate process.

Enemy and friendly options should be expressed clearly and succinctly. Each option should include deployment of a force as a whole, followed by the possible actions against enemy forces, answering the questions *who* (Service/functional component or force element), *what* (type of action), and *where* (location of action). At this step in the estimate process, it should not include *when* (the time) or *how* the particular task should be carried out. The timeline should be part of only the CONOPS. Each enemy and friendly option should be presented both as a narrative and on a map/chart. The higher the level of war, the broader the terms in which an option should be described and depicted.

Figure. Commander's Estimate and the Decision (in generic terms)



Instead of the phrase *COA Analysis*, the phrase *Analysis of the Opposing Options* should be used. This step should be the heart of the estimate. It is the first time that friendly and enemy options interact in a dynamic setting. The commander and staff should first reexamine the mission to make sure that it is still valid. Instead of the action-reaction-counterreaction method, perhaps the simpler and more effective method is to array each friendly option against each enemy option. If the outcome of an interaction is negative (mission failure), then a given option must be revised and played against the same enemy option. Some quantifiable methods can be used in assessing combat potential of the opposing forces for each interaction. However, such methods should never be allowed to drive the analysis. It is the commander's experience and judgment that are critical in assessing probable outcome of each interaction. The commander should then judge whether a given outcome of an interaction accomplishes the mission. Friendly options with the largest number of positive outcomes should be retained for the next step of the estimate.

Marines with 3rd Marine Division, III Marine Expeditionary Force, post security on patrol during Forest Light 15-1, at the Oyanohara Training Area in Yamato, Kumamoto prefecture, Japan, December 9, 2017 (U.S. Marine Corps/Warren Peace)

In the step Comparison of Friendly Options, the focus should be exclusively on evaluating advantages and disadvantages of each friendly option. Identified disadvantages must be remedied and thereby improve the chances of success of individual friendly options. Each friendly option should be then tested for feasibility and acceptability. After weighing the relative merits of each friendly option, the commander should select the best and second-best friendly options. Afterward, these should be converted into the best and second-best courses of action.

The commander should present both the best and second-best courses of action to the higher commander. He should point out what could be accomplished under the circumstances and, if necessary, request additional forces or more time. It is then the responsibility of the higher commander to approve, modify, or reject the subordinate commander's best courses of action.

The Decision is the final and most important step in the commander's estimate of the situation. The decision is the true purpose of the commander's estimate, not the so-called production of plans and orders. It should always stand alone as a separate step. The commander should make a decision based on his knowledge and experience. Again, the responsibility for making a decision rests *solely* with the commander.[73]

A written decision should contain the decision statement, final commander's intent, and CONOPS for both the best and second-best courses of action. The decision statement should express in broad terms what the force as a whole has to do, where, and why. It should be expressed in the first person. It should be written clearly, concisely, and in commonly accepted and understood doctrinal terms. The commander should review the initial intent and change or modify it to be fully aligned with his decision and also the higher commander's intent. The main purpose of a CONOPS is to further clarify the commander's restated mission and intent. Among other things, a CONOPS should be simple, avoid patterns and stereotyped schemes, be novel and thereby ensure surprise and speed of execution, include deception, and ensure smooth cooperation among diverse forces of one or more Services. A CONOPS should explain in some detail where, why, and when each force functional/Service component or force element would be employed and contain sufficient detail to allow the planners to draft operation plans and orders—but not too many details, which might limit flexibility during the subsequent planning process.

The single most important responsibility of the commander in combat is to make decisions for combat employment of subordinate forces. Making a decision at any level of command is an art rather than a science. Hence, each commander should be free as possible to find the best method of conducting estimates and making a decision. This means the commander should modify, alter, or even abandon various substeps in the estimate format if they do not contribute to a decision. What matters most is not the method (how a commander reached the decision) but whether that decision was made in a timely manner and ensured mission success.

All the Services should drastically reduce the number of substeps in each step of the estimate. The trend toward adding more and more substeps must be reversed. Decisionmaking should be based on a simple and easily understood process, which should be fully reflected in all manuals on decisionmaking; otherwise, they would be of little or no use to commanders and staffs in the field. The Services should also drastically deemphasize their literal obsession with risk management or risk mitigation in the decisionmaking process. This only further reinforces the unhealthy zero-error tolerance in the U.S. military. And the latter is a glaring contradiction to the very purpose of the mission command. **JFQ**

Notes

[1] Frank H. Schofield, "The Estimate of the Situation," lecture delivered at the Summer Conference, U.S. Naval War College, Newport, RI, June 1912 (1913 edition), box 1901–1914, Record Group (RG) 4: Publications 1915–1977, Naval Historical Collection, U.S. Naval War College, Newport, RI, 2; Roger S. Fitch, *Estimating Tactical Situations and Composing Field Orders* (Fort Leavenworth, KS: U.S. Army Command and General Staff College, 1909), 1; Bruce Condell and David T. Zabecki, eds., *On the German Art of War: Truppenfuehrung* (Boulder, CO: Lynne Rienner, 2001), 28.

[2] Department of Operations, *The Estimate of the Situation with the Order Form*, rev. ed. (Newport, RI: U.S. Naval War College, June 1926), 1.

[3] Condell and Zabecki, 28.

[4] G.B. Wright, *The Estimate of the Situation*, July 21, 1933, folder 1663, box 55, RG 4: Publications 1915–1977, Naval Historical Collection, U.S. Naval War College, Newport, RI, 3.

[5] "Notes on the Applicatory System of Solving War Problems, with Examples Showing the Adaptation of the System to Naval Problems," U.S. Naval Institute *Proceedings* 38, no. 3 (September 1912), 1015.

[6] Wright, 5.

[7] Ibid.

[8] Ibid., 2.

[9] Department of Operations, *Sound Military Decision (including the Estimate of the Situation and the Formulation of Directives)* (Newport, RI: U.S. Naval War College, 1936), 20.

[10] George H. Miller, "Logical Thinking in Military Situations," U.S. Naval Institute *Proceedings* 74, no. 3 (March 1948), 1.

[11] Department of Operations, *Sound Military Decision*, 20.

[12] Center for Army Lessons Learned (CALL), *Military Decisionmaking Process*, Handbook No. 15-06 (Fort Leavenworth, KS: U.S. Army Command and General Staff College, March 2015), 8; Navy Warfare Publication (NWP) 5-01, *Navy Planning* (Washington, DC: Department of the Navy, Office of the Chief of Naval Operations, December 2013), 1-4.

[13] For example, the U.S. Army's Field Manual (FM) 101-5, *Staff Organization and Operations*, issued in 1932, consisted of five steps (Mission, Opposing Forces, Enemy Situation, Own Situation, and Decision). The same document issued in 1984 also had five major steps (Mission, Situation and COA, Analysis of COA, Comparison of COA, and Decision). See Rex R. Michel, *Historical Development of the Estimate of the Situation* (Fort Leavenworth, KS: Field Unit, Systems Research Laboratory, October 1990), 5.

[14] Joseph Anderson and Nathan K. Slate, "The Case for a Joint Decisionmaking Process," *Military Review*, September–October 2003, 12.

[15] Joint Publication (JP) 3-0, *Joint Operations* (Washington, DC: The Joint Staff, January 17, 2017), II-6.

[16] CALL, 11; FM 6-0 C1, *Commander and Staff Organization and Operations* (Washington, DC: Headquarters Department of the Army, May 11, 2015), 9-7.

[17] CALL, 12, 23; FM 6-0, 9-7.

[18] CALL, 13.

[19] Ibid., 14.

[20] Ibid., 18.

[21] Ibid., 22.

[22] NWP 5-01, 2-1–2-14.

[23] Marine Corps Warfighting Publication (MCWP) 5-10 (formerly 5-1), *Marine Corps Planning Process* (Washington, DC: Headquarters United States Marine Corps, Department of the Navy, May 2, 2015), 1-3.

[24] Ibid., 2-3.

[25] Ibid., 2-2.

[26] Ibid., 2-8–2-9.

[27] JP 3-30, *Command and Control of Joint Air Operations* (Washington, DC: The Joint Staff, February 10, 2014), B-1.

[28] John F. Natal, "Forward Command: The Wehrmacht's Approach to Command and Control in World War II," *Armor*, November–December 1991, 28.

[29] Lawrence G. Shattuck, "Communicating Intent and Imparting Presence," *Military Review* 80, no. 2 (March–April 2000), 67; Edward J. Filbert, "Command, Control and the Commander's Intent," *Military Review* 67, no. 8 (August 1987), 56.

[30] FM 6-0, 9-14.

[31] Ibid.

[32] Ibid.

[33] Ibid.

[34] MCWP 5-1, *Marine Corps Planning Process* (Washington, DC: Headquarters United States Marine Corps, Department of the Navy, August 24, 2010), 2-3.

[35] Ibid.

[36] JP 3-30, B-1–B-2.

[37] JP 3-0, II-7.

[38] JP 5-0, *Joint Planning* (Washington, DC: The Joint Staff, June 16, 2017), IV-18–IV-19.

[39] Walter N. Anderson, "Commander's Intent—Theory and Practice," *Armor*, May–June 1998, 47.

[40] FM 6-0, 1-11.

[41] Filiberti, 55; R.W. Glenn, "The Commander's Intent: Keep It Short," *Military Review* 67, no. 8 (August 1987), 52–53.

[42] FM 6-0, 9-14.

[43] Anderson, 47.

[44] Glenn, 52–53.

[45] CALL, 28; FM 6-0, 9–16.

[46] CALL, 32.

[47] Ibid., 34.

[48] Ibid., 36.

[49] NWP 5-01, 3-1–3-9.

[50] Ibid., 3-8.

[51] MCWP 5-10, 3-1.

[52] Ibid., 3-3–3-4.

[53] *Student Guide Expeditionary Warfare Staff Planning*, J-2G-0048 (San Diego: Expeditionary Warfare Training Group Pacific, August 2014), 57.

[54] MCWP 5-10, 3-4–3-5.

[55] JP 3-30, B-2.

[56] CALL, 39.

[57] Ibid., 40.

[58] MCWP 5-10, 4-1.

[59] NWP 5-01, 4-15–4-16.

[60] Ibid., 3-16.

[61] The list of these functions (actually, combat support—for tactical actions or operational support for major operations/campaigns) is faulty; only intelligence, information operations, fires, logistics, and protection should be listed as combat support.

[62] NWP 5-01, 4-21.

[63] Norman M. Wade, *The Battle Staff*, 2nd rev. ed. (Savannah, GA: Lightning Press, 2005), 2–28.

[64] FM 101-5, *Staff Organization and Operations* (Washington, DC: Headquarters Department of the Army, May 31, 1997), 3-30.

[65] Ibid., 2-28.

[66] JP 3-30, B-2.

[67] MCWP 5-10 (May 2, 2016), 5-1–5-2.

[68] NWP 5-01, 5-2–5-5.

[69] JP 3-30, B-2–B-3.

[70] CALL, 59.

[71] CALL, 63.

[72] JP 3-30, B-3.

[73] Department of Operations, *Sound Military Decision*, 3.

Army team at Defense Language Institute Foreign Language Center wins Commandant's Cup relay race at Presidio's Price Fitness Center Field, Monterey, California, June 15, 2016 (U.S. Army/Steven L. Shepard)

Women, Regardless

Understanding Gender Bias in U.S. Military Integration

By Elizabeth M. Trobaugh

Women have been part of the U.S. military and its campaigns since the American Revolution. With the advent of the Women's Army Corps in 1943, women could officially enlist for military service. During this time, female enlistees faced unofficial slander campaigns that sharply reversed enlistment. Over the last 70 years, women's roles in the Army have morphed as fast as—or in some cases faster—than society has changed. Many of these changes have been good. For instance, many women have succeeded and excelled in newly accessible jobs, specialties, and skills. However, women still face stereotypes about who they are and how capably they perform their duties. These attitudes and beliefs threaten the integrity of the Armed Forces as well as their mission.

The war on terror and the U.S. military's use of counterinsurgency ushered in a new era of warfighting: there are no frontlines, and everyone must be prepared to fight. Regardless of whether society *thinks* women should be in combat, the reality is they already have been in the fight. Yet the current combat arms culture has been slow to adjust as

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evidenced by the ongoing commentary about what women can and cannot do in the military. As Marine Corps Commandant General Robert B. Neller noted in his testimony to the Senate Armed Services Committee, we can no longer go to war without women.[1]

Therefore, as former Secretary of Defense Ashton Carter announced in 2015, women will be (and subsequently have been) integrated into previously closed combat jobs and training. To promote the former Secretary's proposal, there also needs to be a change of culture within the Army (the Service in which my own experiences are rooted), as well as in the broader military, to ensure the success of women entering combat arms. Policymakers often do not notice adverse attitudes toward women serving in combat arms capacities. Although leaders may be aware of sexism when it takes the form of blatant comments, they may be less aware of more subtle forms of sexism that manifest as reduced training standards for women. Whichever the case, women may have to go above and beyond the standard to prove themselves and may routinely have their work overlooked until there is an immediate benefit. These commonplace events are indications of pervasive stereotypes that prevent women from doing their jobs effectively and accomplishing the mission.

Current Research

In 2015, the U.S. Army Training and Doctrine Command Analysis Center published its *Gender Integration Study*.[2] The research team conducting the study looked to the U.S. Army Sergeants Major Academy and to the senior noncommissioned officer corps to help identify risks that may come with female integration into combat arms. Furthermore, the research team conducted a feasibility assessment to evaluate the risks associated with integrating women into previously closed military occupational specialties (MOSs). The research team contacted 4 Brigade Combat Teams and interviewed 35 command teams for the assessment. Additionally, the study engaged with senior Army leaders at high levels for additional guidance and feedback. The results from the study stated:

The Army should proceed with integrating women into previously closed combat arms MOS/units. To successfully integrate, the Army must address the following barriers: inconsistent enforcement of existing standards and perceptions of double standards; incidents of unprofessional behavior and indiscipline; fear of sexual harassment and assault; cultural stereotypes; and ignorance of current Army policy.[3]

The data presented in this article underscore much of what was explored in the *Gender Integration Survey*. Similar conclusions were extrapolated from many of the same concerns presented from research participants. Male Soldiers are afraid of lowered physical standards, increased sexual assault and harassment, reduced readiness, and destruction of the masculine culture of brotherhood. However, much of what is discussed here goes beyond the thoughts and attitudes about women integrating into jobs in previously closed MOSs. This article explores women's thoughts about their own abilities, Soldiers' experiences with training women to perform physically demanding tasks compared with what they thought women could achieve, and how men think they would react to the presence of women.

Investigating Gender Bias

Gender stereotypes and institutional bias within the military come as no surprise to anyone, least of all women, in the military. However, how to pinpoint these incidences as they occur and to formulate solutions seems to befuddle leaders at all levels. Researchers have distinguished between two forms of sexism: hostile and benevolent.[4] Whereas hostile sexism is more obviously negative, benevolent sexism is often disguised as positive, portraying women as needing and deserving greater care and protection. Both forms deem women as less capable and competent, justifying lower expectations of them and limiting their roles. These beliefs are apparent in a variety of male-dominated professions, including the science, technology, engineering, and mathematics professions as well as the military.[5]

Drawing from my own experiences in the Army, I devised an online survey as part of an independent study for Soldiers to evaluate the areas where gender biases may prevent women from succeeding in Army culture. This survey aimed to assess where stereotypes may exist within Army training environments as well as attitudes toward female integration into previously closed jobs and schools. Army culture may be a permissive environment for attitudes that women do not belong. For this reason, the survey also aimed to address some of the institutional gender biases plaguing the Army and hopefully to inform the broader military community of such biases. Out of these findings come proposed policy recommendations to course-correct as the joint force begins to "gender integrate" all jobs within the Services.

The online survey asked female respondents about their training in warrior-type tasks. *Warrior-type training*, for our purposes, is defined in the survey as having the skills required to be successful on the battlefield or frontlines—for example, basic rifle marksmanship or patrolling. The online survey asked women across all officer and enlisted ranks—and across all MOSs available to women in 2015—about the quality of training received, if they struggled, why they might have struggled, if they received additional help, and if they would like to join combat arms jobs or training. The point was to identify each woman's view of her own abilities in this crucial area and to determine if she felt supported in training. Next, both male and female Soldiers were asked if they had trained women in the Army. The survey also asked respondents to think of one instance of training women in a warrior task. Furthermore, it looked at warrior-type training among men and women in order to establish whether women were or are receiving the same training and whether they were held to the same standards as male Soldiers. The survey asked respondents if they had trained women

Georgia Army National Guard's 648th Maneuver Enhancement Brigade Soldier participates in Best Warrior Competition's obstacle course event, Fort Stewart, March 9, 2017 (U.S. Army/James Braswell)

in a warrior-type task, what the quality of that training was, and, ultimately, what may have prevented women from doing better. The goal of this section was to identify attitudes toward women and their abilities in training among both male and female Soldiers, across military ranks, and across military skills.

The online survey then sought to evaluate the attitudes about women integrating into combat arms and combat arms training. It posed questions about the difficulty of such warrior tasks and the ability to perform them. These sections also asked respondents to evaluate their beliefs and attitudes about the biggest effect of integrating women into combat arms. The data collected in this section can easily be compared to data about how women were actually trained and performed during that training.

The survey also sought to discover whether women were failing en masse in warrior-type skills training. If anecdotal evidence showed that women were not failing to meet the standard, why are gender-based stereotypes so pervasive when it comes to female integration? If women were failing en masse, what was the root cause? Two outcomes could be extrapolated from questions about culture. First, trainers either have been allowing women to pass at a lower standard by turning a blind eye to their failures or were refusing to push women to retrain if they failed (I refer to this as the "if she fails, therefore she can't" syndrome). The second conclusion is its reverse. In this scenario, women were held to a harsher standard as a means to prove their capability above and beyond male standards.

Confirming the Bias

In the first section of the survey (women only), 70 percent of respondents stated that they received adequate training in warrior-type tasks in basic training or officer basic. Yet 70 percent of respondents also stated they could have used additional training in a warrior-type task. Discouragingly, nearly 53 percent responded "no" when asked if their chain of command would support additional training if they (the respondents) needed more training. The three answers most frequently cited for why female respondents may have failed a warrior-type task were, in order, "need of additional training or familiarization," "never failed or anticipated failing," and "lack of time and/or resources to properly train to meet the standards."

The survey showed female Soldiers had a generally positive view of their abilities. They were willing to and capable of completing the warrior-type tasks. Moreover, respondents noted they were not perfect and would have liked more

training in some areas, but their chains of command would not support additional training. Not unsurprisingly, many women are still eager to prove themselves in combat arms jobs and training, but more often than not, they would like more training before even trying to enter combat arms.

The next section of the survey asked both male and female respondents if they had trained women in a warrior-type task. Results indicated that 72 percent of those who trained women in warrior tasks reported that they trained women the same as they trained men. Furthermore, nearly 72 percent of respondents reported that the women they trained met the standard. The data are clear in showing that most female trainees were trained about the same as their male counterparts. Yet both male and female respondents cited lack of familiarization with the task as the most prevalent deficiency that prevented female trainees from doing better. Male respondents indicated a lack of physical strength as the second most prevalent deficiency, while female respondents indicated a lack of motivation.

The last section of the survey asked both men and women what they thought about women integrating into combat arms jobs and training. This section aimed to evaluate the culture surrounding integrating women into previously closed sectors. Contrary to previous sections in the survey, wherein a lack of familiarization with the task was the most cited challenge, physical strength was the highest ranked challenge for female Soldiers who may integrate into combat arms jobs, and training was cited among men, enlisted Soldiers, combat arms, and noncombat arms jobs. A dichotomy arose in the survey: despite respondents having *experienced* women in training pass the standard in warrior-type tasks, they *thought* women were less physically capable of passing warrior-type tasks. Unlike their counterparts, however, female (regardless of rank) and male officers ranked "attitudes toward women in training" as the biggest obstacle to female integration. The officers surveyed support female integration, with 86 percent of officer respondents believing women were capable of meeting standards. However, among male officers, enlisted, and across all job demographics, negative effects of female integration were ranked highest in a list of possible results. "Logistical problems" were ranked the highest among those demographics, while female respondents ranked "increased readiness due to increased training of force" as the highest effect of integrating women into all jobs.

Even though respondents experienced women meeting the standards in their training, the section regarding thoughts and attitudes toward gender integration showed that 40 percent of male respondents believed standards would change to accommodate women. This response to integration, regardless of experience, suggests that women were not being fully trained as well as men or that there was bias among respondents about the abilities of women. Respondents may not have conducted training to standard, and they might have allowed women to "pass" even when they had not actually done so. Perhaps retraining was cumbersome, or they had to meet a quota for unit readiness.

Respondents experienced women in training passing the standard, and they indicated that "lack of familiarization" prevented them from doing better. Yet the idea of integrating women into combat arms and jobs seemed to evoke negativity about female ability. Male respondents cited "lack of physical strength" as the biggest obstacle to women entering combat arms. Combat arms jobs and training are a compilation of warrior tasks performed in succession. The endurance required may account for why respondents thought women would perform at a lower standard. However, with successful female integration into artillery, the inauguration of women into the infantry, as well as women passing Ranger training, women are demonstrating they can and will succeed. Additionally, it is unfair to state the standard would be lowered for women wanting to join the infantry if women have not been afforded the same training as men. As this survey demonstrates, women may not be receiving the same training.

Respondent Comments

To get a better sense of opinions, the survey asked respondents to provide comments or feedback. Respondents who had trained women were asked to provide comments on several questions, though not all questions. For instance, one question was, "During this same event, what were the female trainees' most significant deficiencies that might have prevented them from doing well in training?" Some responses included:

- "Lack of perseverance while under duress."
- "Many MOS in the Army seem to have a lower standard for women. It's almost as though they don't expect as much of them because they feel it's a waste of time. It is absolutely not true and saddens me thinking of all the lost potential."
- "Stereotype that they 'couldn't do it' led to them being trained to a lesser standard."

Written responses varied concerning thoughts and feelings about integrating women. When asked, "Do you agree or disagree with the following statement: If the Army decides to integrate females into combat arms and combat arms–related training, the standards will be lowered to accommodate females," some responses included:

- "There are two standards. The Army standard, and the female standard. Until the female standard is removed, females will never be equal to males."
- "Standards aren't the problem. [There are] plenty of strong women, the problem lies within the change in men around women. The biological and unpreventable reactions between males and females of the same species [do] not equate to a good cohesive unit. If you want to make a combat unit ineffective, assign women to it."
- "Political demands will result in a degradation of standards to meet quotas and to prevent fallout from the imminent failure of a high majority of females with the current male infantry standards."

Another question was, "If the Army decides to integrate females into combat arms and combat arms–related training, do you think that those females who succeed in meeting standards will have (mark all that apply) 1. Received special treatment; 2. Met standard; 3. Been allowed to pass at a lower standard?" One person commented:

Physiologically, women are composed differently than men and many cannot perform the same physical tasks as men. It is apparent even with the APFT [Army Physical Fitness Test] *grading scale where the men and women scoring scales drastically differ. Since this is such a big push by the Army to integrate women into combat arms, they will do whatever* [is] *necessary to integrate as rapidly as the public wants them to regardless of the level a woman is at in comparison to her male counterparts within combat arms branches.*

Two contrasting responses to the question, "Do you think that females are capable of meeting standards in combat arms units and training?" are telling:

- "Can't speak for entirety of combat arms, but if you're asking if I could see a female in the ranks with the pipe swinging meat eaters of a Ranger Battalion, hell no. Can't see them carrying around a mortar tube living the gruntiest [*sic*] dirtiest life in the military possible either. Physically capable is indifferent to me. I have literally watched a group of professionals completely change for the worse, become petty and show offish because 1 attractive female was attached to the platoon. If you want to make [a] combat unit ineffective, assign some women to it."
- "I believe individual women certainly are [capable of meeting standards]. Once again, so long as we limit accessions to those individual women, the force should be okay. I am also far from confident we have the political and organizational will to pre-emptively weed out those [who] won't [meet standards]."

The common thread throughout these comments is an acknowledgment by Soldiers that there is an institutional difference created in the APFT. Furthermore, the differences in the test for men and women lend themselves to Soldiers believing that women are incapable even when they witnessed women meeting the standard in training. Many other comments expanded on the gender-based bias with sweeping generalizations about physical ability. Women were viewed by respondents as weaker either because their institutional standards are so much lower or because they perceive women to be physically weaker. That leads to an important question: If women pass, will male Soldiers in the military accept that women met or exceeded the same standard as men, or will women be forever viewed as having been accommodated in order to meet some political agenda? These comments also highlight male Soldiers' beliefs that they will react inappropriately around women. The very presence of women seems to elicit the belief that men themselves will become foolish, while readiness and cohesion suffer. The professionalism of men remains a concern as women integrate into these previously closed jobs.

Furthermore, other comments spoke to the culture of the combat arms being too hostile to women or demonstrated a respondent's hostility. One person commented:

As far as combat arms units go, there would be an extremely negative effect within units which are traditionally male. The things that go on there, the bonds, would be damaged. SHARPs [the Army's Sexual Harassment/Assault Response and Prevention program] *stuff would be through the roof. I would almost rather die before changing my demeanor within my unit. Standards need to be met and maintained, but we should all strive to exceed the standard.*

This comment, and others like it, reveal deep-seated attitudes that need to change within military culture to allow women to serve free of bias and stereotypes. Because the mission requires women to be on the battlefield, new policies could be implemented to help ease the transition of women into combat arms and break down gender-based stereotypes in order to improve readiness. One positive step Army Chief of Staff General Mark Milley already implemented subsequent to the first three women passing Ranger training was to mask the names and number of women entering.[6] However, more can be done to bolster an environment primed for fair gender integration.

Practical Policies

The *Gender Integration Study* provides a complex, detailed assessment of issues and attitudes facing the Army as it moves to gender-integrate the force completely. Yet many of the policy recommendations going forward are lacking in substance and practical application. Leaders at the highest levels can publish policy and issue statements in an attempt to mitigate many of the issues discussed in the study. However, without follow-through and practical guidance for all levels down to the platoon or development of a way to measure effectiveness, the policies will continue to fall flat. Stating that commands must create an equal opportunity environment and prevent sexual harassment and assault is not enough. Leaders at all levels must have practical tools to encourage a climate of tolerance while maintaining readiness.

U.S. Army Field Manual (FM) 7-22, *Army Physical Readiness Training*, can be improved. The easiest way is to include pictures of women demonstrating physical tasks.[7] There are currently no images of women in FM 7-22 beyond how to measure a woman's body for her body mass index. Young Soldiers who need to seek guidance in the regulation regarding physical fitness will see pictures of both sexes completing tasks. Furthermore, showing women completing tasks with their male counterparts will make the institutional statement that women are capable.

The physical fitness manual should again read, as it did in 1980, "Just because women are different does not

Soldier qualifies with M4 rifle during New York Army National Guard Best Warrior Competition at Camp Smith Training Site, March 30, 2017 (U.S. Army National Guard/Harley Jelis)

mean they are incapable of achieving satisfactory levels of performance."[8] This sentence instills the belief that women are capable and are expected to perform alongside their male counterparts. The importance of this statement will reverberate through not only combat arms but also all training as well. This form of legitimacy puts all female Soldiers on notice that they are expected to meet required standards. These standards apply whether trainers or the women themselves believe they are capable of meeting such standards. The Army as a whole would benefit from the institution of the Service and its leadership putting both in writing and in pictures its confidence in its female Soldiers.

Additionally, in Army Regulation 600-20, *Command Policy*, the Department of the Army outlines in chapter 6, paragraph 1, that "Commanders are responsible for sustaining a positive EO [Equal Opportunity] climate within their units . . . Create and sustain effective units by eliminating discriminatory behaviors or practices that undermine teamwork, mutual respect, loyalty, and shared sacrifice of the men and women of America's Army."[9] The rest of the chapter goes on to discuss in vague and legalistic terms an equal opportunity command climate. This chapter does little to influence the culture inside the Army or protect unfair treatment of minorities, including women.

The 1949 Army Pamphlet 21-41, *Personal Conduct for the Soldier*, did more for equal opportunity than the current regulation. It brought good order and conduct to the force. It raised the expectation that the Soldier was going to do what was right because "what was right" was in a manual in the Soldier's pocket as an inspectable item. The pamphlet outlined conduct on and off duty, on and off post. The regulation stated, "Beware of the man who speaks disrespectfully of women. Your sister or one of your friends may be his next victim," and stated of female Servicemembers, "In the Army you will frequently see members of the Women's Army Corps. Accord them the same respect and courtesies you extend male(s). . . . They are doing a fine job and have established an excellent record in the Army."[10] Something similar could be outlined, such as:

Beware of the Soldier who speaks disrespectfully of others. He or she is not to be trusted. Your friends or family may be his or her next victim. You will often see members of the Army who are different from you. You are a professional and will treat all officers and noncommissioned officers with the respect due to them and their rank, regardless of how you feel about them.

The pamphlet could outline how to treat members of the opposite sex in subsequent chapters in order to further illustrate the importance of respect.

Lastly, the changing character of war reinforces the high level of physical readiness Servicemembers must achieve. Anyone, anywhere, and at any time can be engaged by the enemy regardless of gender, MOS, or age. It is imperative to maintain high physical standards. Because the current standard is so low for

Soldier learns survival skills during Exercise Kowari, designed to enhance U.S, Australian, and Chinese friendship and trust through trilateral cooperation in the Indo-Asia-Pacific region, Northern Territory, Australia, August 30, 2016 (U.S. Marine Corps/Osvaldo L. Ortega III)

women, many female Soldiers are often discounted as weaker, even when they can meet the same standard as men. Female Soldiers between the ages of 17 and 21 are required to do 19 push-ups and run 2 miles in 18:54 to pass, while male Soldiers in the same age group are asked to do 42 push-ups and run 2 miles in 15:54. There is no difference for sit-ups. The differences noted above serve as the basis for institutional bias. Since the Army policy requires women to do only fewer than half the push-ups males are required to do, the message conveys that women are half as capable as men.

It would benefit the Army to close or eliminate the gap altogether. The low standard for push-ups and run time for 17- to 21-year-old women is not only insulting, but it also serves to reinforce that women are not as capable as their male counterparts. Many women may find it difficult to run faster or do more push-ups, but they should be brought up to a higher standard because war demands it. Implementing a single standard for all 17- to 21-year-olds should adequately test the baseline for a passing rate no matter the gender, such as 16:30 for 2 miles, 30 push-ups, and 53 sit-ups.

Since these examples lower the standard for men, a fear may develop among Soldiers that a broad standard may hurt the combat arms skills where physical fitness is paramount to the job. Therefore, it would be better not only to have one standard for a baseline (not based on gender), but also to apply minimally acceptable standards for each job skill, as Army leaders have discussed in recent years.[11] For instance, if a score of 60 percent in each event on the APFT is passing, then a Soldier must meet an 85 percent requirement to stay within combat arms jobs, a 75 percent requirement to stay in combat support, and a 70 percent pass rate within Service support. Thus, the 60 percent would be maintained for Soldiers with professional jobs, such as lawyers, doctors, and chaplains.

A benefit to restructuring the APFT is that it gender neutralizes the standard. Everyone must pass the same APFT to enter the Army, but their jobs will demand more of them with job-specific minimally acceptable standards. This model takes "male" and "female" out of the standard and replaces it with "Soldier" in combat arms, "Soldier" in combat support, and "Soldier" in service support. It incentivizes staying fit because Soldiers who love their jobs will work to maintain their job-specific standards out of fear they could be involuntarily reclassified to another job for poor physical performance. Furthermore, this kind of APFT standard emphasizes quality at a time when the Army must sacrifice quantity. Each job classification demands an appropriate level of fitness and will ensure the best Soldiers remain in the correct jobs.

A job skill differentiating standard might unintentionally create hierarchy

among combat arms, combat support, and service support. Promotions might be affected to favor combat arms Soldiers. The bias might arise that since combat arms Soldiers would have to do more physically, they must be better Soldiers. An answer to this unintended consequence is to place more emphasis on education in the combat support and service support jobs. These jobs require organizational skills, technical expertise, and administrative management ability. The Army should invest in the Soldiers who perform these essential functions that require more brainpower than physical ability. Providing education would be a way to afford service support and combat support Soldiers the same promotion opportunities as their combat arms counterparts.

Instead of arguing whether we should integrate women into the force, the better question would be to ask how we can better prepare all Soldiers for upcoming global strategic challenges. The changing face of battle includes the fact that women are part of the success equation. If war is going to include winning hearts and minds, that will include the hearts and minds of women. Development is severely hindered when women are not included. Therefore, women in the military will continue to be on the battlefield. As such, they should be as battlefield-ready as their male counterparts. Furthermore, we should expect *more* of our male and female Soldiers, not less. The fact that women are different from men does not make them incapable of meeting satisfactory levels of fitness. Female Soldiers have to be able to pull the trigger, traverse the battlefield, and deal with casualties no differently from their male counterparts. In addition, the Army can expect its male Soldiers to act with decency and respect toward their fellow Soldiers, regardless of gender. **JFQ**

Notes

[1] U.S. Senate Armed Services Committee, "Testimony of U.S. Marine Corps Commandant Robert B. Neller," March 14, 2017.

[2] Lynette Arnhart et al., *Gender Integration Study* (Fort Leavenworth, KS: U.S. Army Training and Doctrine Command Analysis Center, April 21, 2015).

[3] Ibid., 11.

[4] Peter Glick and Susan T. Fiske, "The Ambivalent Sexism Inventory: Differentiating Hostile and Benevolent Sexism," *Journal of Personality and Social Psychology* 70, no. 3 (March 1996), 491–512.

[5] Ernesto Reuben, Paola Sapienza, and Luigi Zingales, "How Stereotypes Impair Women's Careers in Science," *Proceedings of the National Academy of Sciences* 111, no. 12 (January 2014), 4403–4408.

[6] Michelle Tan, "First Official Integrated Ranger School Underway, Army Won't Talk About the Women," *Army Times*, November 3, 2015.

[7] U.S. Army Field Manual (FM) 7-22, *Army Physical Readiness Training* (Washington, DC: Headquarters Department of the Army, October 26, 2012).

[8] U.S. Army FM 21-20, *Physical Fitness Training* (Washington, DC: Headquarters Department of the Army, 1980).

[9] U.S. Army Regulation 600-20, *Army Command Policy* (Washington, DC: Headquarters Department of the Army, 2014), chapter 6, paragraph 1.

[10] U.S. Army Pamphlet 21-41, *Personal Conduct for the Soldier* (Washington, DC: Headquarters Department of the Army, 1949).

[11] Kevin Lilly and Michelle Tan, "Army's New Fitness Tests: New Details Emerge from Leadership," *Army Times*, February 18, 2016.

U.S. Air Force CV-22 Osprey participates in U.S. Special Operations Command Exercise Emerald Warrior, Avon Park, Florida, March 7, 2017 (U.S. Air Force/Keifer Bowes)

Multidomain Battle

Converging Concepts Toward a Joint Solution

By David G. Perkins and James M. Holmes

The mission of the Department of Defense (DOD) is to provide the military forces needed to deter war and to protect the security of the Nation. To accomplish this mission, the various Services within DOD—individually and collectively—must be trained and ready today, while simultaneously preparing for evolving threats in the future. Historically, each Service (the Army, Marine Corps, Navy, Air Force, and Coast Guard) has pursued separate and unique conceptual approaches to the dual requirements of deterrence and protection. These differences have been based largely on each Service's primary operational domain—the limitations and opportunities presented by operating on land, on the sea, and in the air. We would then try to synchronize a series of federated solutions, developed somewhat in isolation to deal with the problems posed in a specific domain, into a joint solution. But as advancements in cyber and the electromagnetic spectrum, robotics, artificial intelligence, nanotechnology, biotechnology, three-dimensional printing, and a host of others continue to accelerate and proliferate across multiple domains, and as our potential adversaries adjust their strategies by utilizing these advancements asymmetrically in order to counter our strengths, we can no longer develop domain-specific solutions that require time and effort to synchronize and federate.

The purpose of this article then is to describe what the U.S. Army Training and Doctrine Command (TRADOC) and Air Combat Command (ACC) are doing to provide input to the Army and Air Force, collaboratively, *to integrate and converge* their individual land and air domain capabilities in order to create the merged multidomain capabilities that will be required for success in future combat.

Multidomain Battle: A New Concept for a New World

Our potential adversaries have studied our battlefield successes since the First Gulf War. It is now clear that they have learned three macro lessons. First, do not

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let the United States and its allies gain access to the area of operations. Once established, we have the operational advantage and can provide overwhelming logistic, firepower, and command and control (C2) support. Second, try to fracture our operational framework by isolating the air domain from the land domain in order to defeat air and land forces in sequence. Third, fix us and do not allow our forces to maneuver and bring all of our elements of combat power (including leadership) to bear in order to gain a position of advantage.

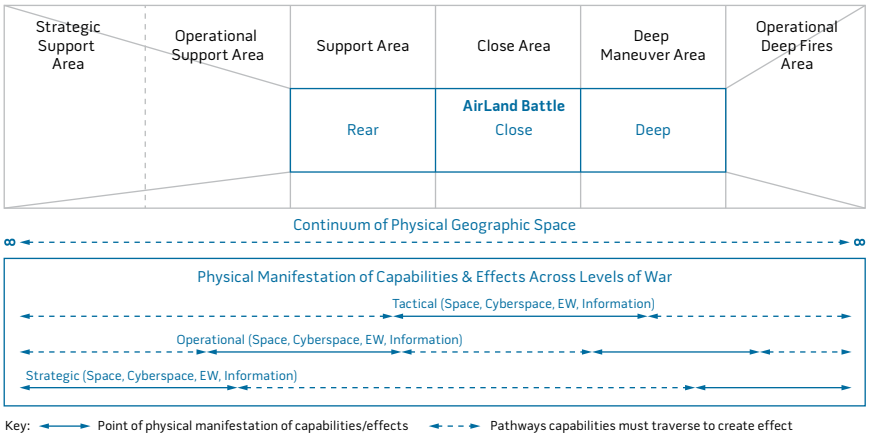
In the future, we can expect all domains to be contested. Future adversaries will possess significant integrated defense capabilities, integrated air defenses, and long-range fires, as well as sophisticated intelligence, surveillance, and reconnaissance (ISR); offensive and defensive information; electronic warfare; and cyber capabilities. It will no longer be possible to maintain total domain dominance in all domains all the time.

Multidomain battle (MDB) is a concept designed to address this changing world. We must be able to get past our adversary's integrated defensive capabilities, avoid domain isolation and fracturing, and preserve our freedom of action. We must be able to penetrate their defenses at a time and place of our choosing, in more than one domain, by opening windows of domain superiority to allow maneuver inside our adversary's integrated defense. The rate and speed of current and future world events will not allow us the time to synchronize federated solutions. In order to present the enemy with multiple dilemmas, we must converge and integrate our solutions and approaches before the battle starts. We must also become sensor-shooter agnostic in all our platforms, and we must develop a common operating picture.

The Army Operational and Battlefield Framework

The Army's mission is to fight and win the Nation's wars by providing prompt, sustained land dominance across the full range of military operations. An operational framework is a cognitive tool used to assist commanders and staffs in clearly visualizing and describing the application of combat power in time, space, and purpose (see figure 1). It then provides an organizing construct for the commander to apply resources and capabilities. The framework also guides the Army in developing capabilities and echelons of command to apply combat power and achieve given purposes as well as develop doctrine to execute the concept. The Army's operational and battlefield framework is, by the reality and physics of the land domain, generally geographically focused and employed in multiple echelons.

Figure 1. Army Battlefield Framework



The Army's objective with this concept is to define problems as multidomain and multifunctional from the start and to develop converged and integrated solutions that do not allow any domain to go uncontested.

The ACC Proposed Air Force Operational Framework

The mission of the Air Force is to fly, fight, and win—in air, space, and cyberspace. With this in mind, and with the inherent flexibility provided by the range and speed of air, space, and cyber power, the ACC construct for visualizing and describing operations in time and space has developed differently from the Army's (see figure 2). One key difference between the two constructs is that while the Army's is based on physical location of friendly and enemy assets and systems, ACC's is typically focused more on the functions conducted by friendly and enemy assets and systems. Focusing on the functions conducted by friendly and enemy forces allows coordinated employment and integration of air, space, and cyber effects in the battlespace to protect or exploit friendly functions while degrading or defeating enemy functions across geographic boundaries to create and exploit enemy vulnerabilities and achieve a continuing advantage. These efforts are typically centralized and planned within the single echelon of an Air Operations Center and led by the Combined Forces Air Component Commander.

The Air Force and Army share a common belief in the first order principles of defining problems as multidomain and multifunctional from the start, maintaining a high operational tempo driving the adversary to be reactive and denying sanctuaries from which an adversary can safely operate.

Impacts of the Differing Frameworks

The Army's multi-echelon framework is designed to create freedom of action, generate rapid tempo, and optimize the use of available combat power. Capabilities that could not be used effectively or that would encumber lower echelons are retained at higher levels in order to allow lower echelons to focus on the extremely demanding lethal and physical aspects of close and deep operations. Higher echelon

Figure 2. ACC Battlespace Construct

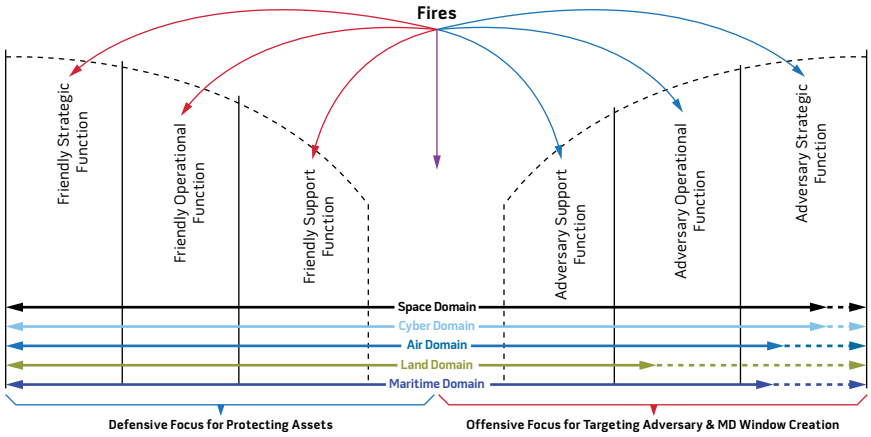
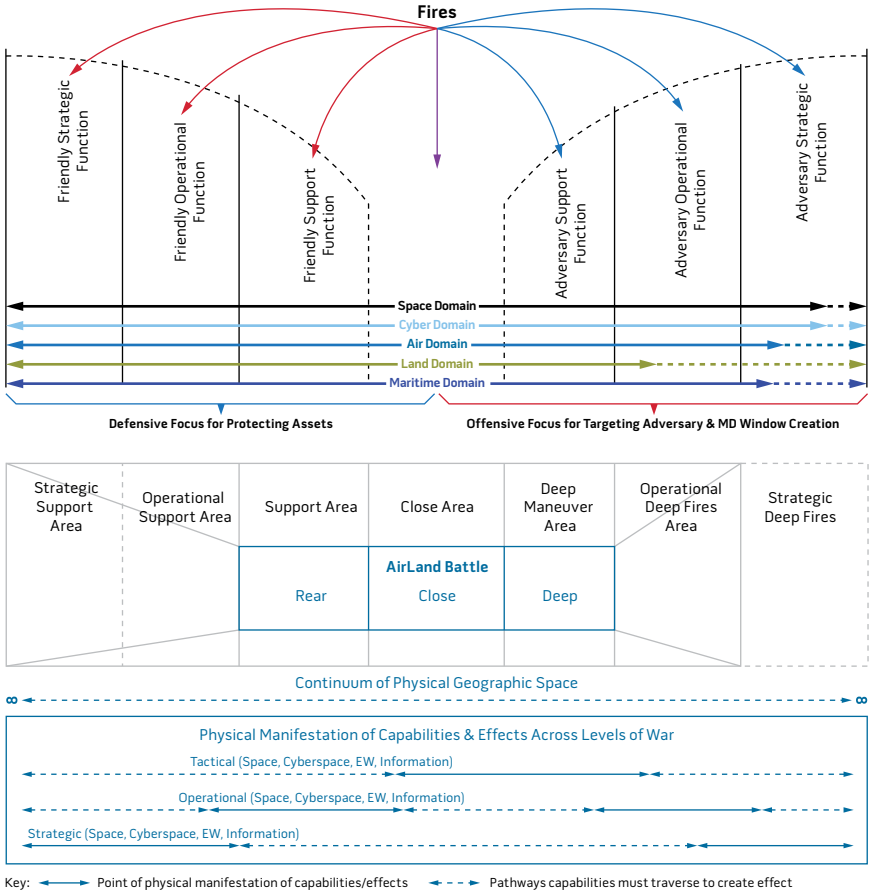


Figure 3. Army–Air Force Battlefield Framework



headquarters create the conditions for subordinate echelons to succeed.

Mission command is a principle of unified land operations that blends the art of command and the science of control. It relies on cohesive teams built through mutual trust, a shared understanding of the commander's intent, the exercise of disciplined initiative, mission-type orders, and the acceptance of prudent risk. The focus of C2 becomes the purpose of the operation rather than the details of execution.

The Air Force's single-echelon framework strives for the same results as the Army's multi-echelon approach of rapid tempo. However, due to the inherent reach, speed, and flexibility of air, space, and cyber assets, the Air Force has the ability to disperse forces for protection while still maintaining the ability to mass forces in execution to achieve coordinated and integrated effects. These factors create the need for a more centralized C2 structure for rapid planning of integrated missions. From the plan, orders that provide effects throughout all functions of the adversary's system are delivered to the vastly dispersed friendly forces.

These frameworks have worked separately over the past 30 years. Recent advancements by peer adversaries across the globe, including exquisite ISR capabilities, ubiquitous long-range fires, and sophisticated integrated defenses, drive a requirement for the Services to adopt a new framework to achieve a continuing advantage in a contested, degraded, and operationally limited environment.

Army–Air Force Framework Convergence and Integration

Victory in future combat will be determined by how successfully commanders can understand, visualize, and describe the battlefield to their subordinate commands, thus allowing for more rapid decisionmaking to exploit the initiative and create positions of relative advantage.

In the coming year, the Army and Air Force will be conducting a series of experiments and initiatives to help determine the essential components of MDB C2. Between the Services there is a common understanding of the future operational environment, the macro-level problems that must be addressed, and the capability gaps that currently exist. Potential solutions require us to ask questions differently, to ask different questions, and in many cases to change our definitions. For example, the Services are discovering that interoperability of information does not mean having the same hardware or even the same processes or frameworks—rather it means a shared appreciation of C2 as a weapon system, a common sense of which data are critical, and how to protect and leverage that data to gain and

Soldier with Alpha Company, 3rd Battalion, 172nd Infantry Regiment, 86th Infantry Brigade Combat Team (Mountain), Vermont Army National Guard, prepares assault during annual training at Fort Drum, New York, June 24, 2015 (U.S. Air National Guard/Sarah Mattison)

maintain positions of relative advantage. Frameworks will tend to merge—not as an either/or binary choice—but as a realization that effective cross-domain operations on the land and sea, in the air, as well as cyber and electromagnetic domains will require a merged framework and a common operating picture.

The Army and Air Force currently have somewhat differing perspectives on mission command versus C2 and on a battlefield framework that is oriented on forces and geography versus one that is oriented on function and time. But these perspectives are not mutually exclusive. In fact, there is significant room for convergence and integration between the two (see figure 3).

The only noncommon area between these two frameworks is the Air Force's Adversary Strategic area. This area could easily be accommodated into the Army's existing framework with the addition of Strategic Deep Fires—an area over the horizon beyond the range of land-based systems, thus requiring cross-domain fires from the sea, air, and space.

The Army and Air Force have been here before. The two Services had a shared understanding of the problem set coming out of the Vietnam War and the need to develop a new warfighting doctrine. AirLand Battle Doctrine, developed during the 1970s and 1980s, was the result of rigorous experimentation and intellectual debate that resulted in a shared understanding of the new battlespace.

Conclusion

TRADOC and ACC are working collaboratively today to blend their warfighting concepts into a joint doctrine for the future. We recognize that we must address our mindset across DOD by changing our cultures to one of inclusion and openness—true jointness. We must shift from a model of interdependence to one of integration, which includes flexible C2 designs, better integrated communications systems, and development of tailorable and scalable units, and, in key areas, policies that enable adaptability and innovation. We must address technology by repurposing current technology to do more and provide greater capability, improving future acquisitions across DOD, and, most important, developing sensor-to-shooter webs.

In the future fight, we cannot depend on disparate solutions developed in functional Service stovepipes. Future commanders will have a profound breadth and depth of information and access to capabilities providing cross-domain effects, maneuver, and fires. Combat capabilities conceived and procured as disparate packages will be torn apart by peer adversaries, no matter how well they are put together on a future battlefield. Now is the time to establish the framework by which we can build the future force as a converged and integrated solution. We are developing a framework based on an informed concept, associated capabilities, and a clear articulation of requirements, thus setting the conditions to transform the military to fight and win in the increasingly complex operational environment of the future. JFQ

U.S. Air National Guard C-130J Hercules aircraft equipped with Modular Airborne Fire Fighting System drops line of fire retardant on Thomas Fire in hills above city of Santa Barbara, California, December 13, 2017 (U.S. Air National Guard/Nieko Carzis)

A 21st-Century Military Doctrine for America

By Steve F. Kime

We need to start thinking about a military doctrine that is appropriate to the realities the United States faces in the 21st century. This should prove to be a painful process because it will be forced by unpleasant realities and will involve changes to long-held and entrenched ideas about who we are and how we use military power to express U.S. concepts and values on domestic and international stages. It may take two or three decades to arrive at where we need to be, but we must start thinking about it now.

The United States emerged from World War II as a superpower with the doctrinal luxury of not having to come to grips with the limits of our military power for many decades. During that time, our open-ended approach to the construction and use of force has led the Nation astray and taught us some difficult lessons. Reality has begun to reveal the limits that we have been reluctant to recognize.

Realities

The new environment for nuclear strategy includes the erosion of intercontinental nuclear power, basic changes to past thinking about nuclear escalation, and increased possibilities for the use of force at all levels of conflict, nuclear and nonnuclear.

A communications and technical revolution has altered the entire context

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for international relations, including the spectrum of potential and actual conflict and the options for building appropriate forces for the kinds of conflict that are likely.

The luxury of separating foreign and domestic threats has ended, and the Nation faces a pressing need to rediscover the geopolitical facts of life. We have forgotten the "militia" focus of our ground forces, but a new awareness of domestic vulnerabilities, especially at our borders, is beginning to rekindle thinking about the core purpose of the Army.

An American concept of war has evolved that is deeply embedded in public opinion and unlikely to change. It accepts a "sledgehammer" approach to clear threats to the Nation but does not tolerate dabbling in unclear threats and incremental foreign military entanglements.[1] Americans will support quick, decisive strikes on a clear enemy but will not support a lingering contest that descends into a quagmire that saps the economy and costs precious American lives. More contained applications of military force, done in coalition with other countries and with clearly understood goals, are more tolerable, but they have limited staying power.

The economic reality is that America, in its post-industrial phase, cannot afford to patrol the world as a policeman and, perhaps more important, cannot afford the kinds of extended conflict and maintenance of extended military presence abroad that we have supported in recent decades. This economic reality is accompanied by social and cultural change in the direction of softer power that has already had effect. The U.S. world police are no longer on the beat. Nation-building, exporting democracy, and stopping falling dominoes are already things of the past.

A politico-military reality is this: posturing forces and policies to do what we are not actually prepared to start and finish is dangerous and extremely expensive. The cost in loss of American credibility on the international stage is enormous. Our failures in Vietnam, Afghanistan, and Iraq will be in the calculations of our friends and enemies for decades. Claims that "we could have won" cannot be taken seriously, and continued posturing to be able to try it again is not credible to astute observers. Americans, informed by a 24-hour news cycle and twice burned by military overreach, realize that it is folly for a nation to confuse its friends, its enemies, and itself. It is insanity and hubris to think that, with leadership, policymakers can lead the population to conflict that would almost surely be unsustainable over the long term and add trillions of dollars to the national debt. The American people have been there and done that. They will not go back.

A Word to Reality Deniers

Some will argue that the price is high and that unfriendly forces will fill any vacuum. Those who argue this are serious people with serious concerns that contain an element of truth and must not be dismissed.

There is no doubt that a reduced U.S. police role has left a vacuum. The price in a given region may indeed be high, the need for America to shore up its coalitions may be strong, and the necessity to endure regimes we loathe may be distasteful. The laudable American instinct to export our democratic values and great good fortune will suffer.

But accepting these realities is not the end of the world, just the end of a world we dominate every day in every way. Those who would dispute the effect of these realities and oppose attempts to modernize our doctrine to meet them might complain that they imply domestic policy isolationism and American foreign policy tentativeness. In making such an assertion, however, they would be wrong. A realistic, common sense military doctrine compatible with the will of the American people does not have to relinquish the U.S. leadership role in international affairs. There is plenty to do both at home and abroad.

There is some consolation, however: American example and measured military action will continue to count. Ronald Reagan's "Shining City Upon a Hill" has been our most successful contribution to the future of democracy. How we handle our domestic structure and security, combined with a sober approach to threats abroad in careful coordination with like-minded allies, can be an effective approach to hard power.

The military force component of 21st-century U.S. posture must be a more focused one and a different one, but not a weak one. Domestically, security of the homeland is active, effective security. This U.S. foreign policy would result in a change in military doctrine, and it would be decidedly neither passive nor pacifist.

Where direct threats to national security are concerned, the military part of American policy would be about sledgehammers, not scalpels. Even smaller, more "surgical" actions would be done with overwhelming force. While our doctrine should not seek to use force, we need to deal with a timeless reality: the best way to avoid a fight at any level of conflict is to be able to decide the issue with force, if necessary. The most credible American projection force is not a spinoff of a world war–like force that can threaten to invade and occupy; it is a highly mobile power, appropriate to the situations where it is intended to be applied and visible to all, a force that can hit fast and hard, be done with it, and leave.

Where more subtle or indirect threats of force are involved, or where regional issues demand multinational presence, U.S. policy must lean heavily on diplomacy and international coalitions and steer clear of unilateral projections of military power. Every friendly world power knows that such coalitions work best with American leadership and with credible force to back it up. Friendly powers must be made aware that the United States will lead only if all actors carry their fair share of the political and military burden. U.S. politicians must understand and support a vigorous foreign service totally in tune with our doctrine.

The response to those who would still insist that America must continue to be the world police is not satisfying, but it is clear. The Nation must:

- support an active, forward diplomacy backed up with visible and limited but capable military presence.

- be prepared to live with less-than-satisfying outcomes, unpleasant partners, and ugly opponents.
- accept that building nations abroad in our own image is a chimera that has been exposed. If the American way is to be imitated abroad, it will be because it is admired, not because it is cajoled, bought, or sold. Trillions of dollars and thousands of lives have been wasted in feckless efforts to export our unique way of life, and the American people are fed up with it.
- understand that the Shining City Upon a Hill needs to shore up its domestic security and viability. This should be seen as an international reality and not as isolationism.

Doctrinal Priorities and Directions

A realistic military doctrine requires a basic reordering of resources dedicated to our military posture. Significant resources will continue to be needed for limited but decisive projection forces and for beefed-up and reorganized domestic security forces. Doctrinal priorities must be shifted in these directions and away from maintaining ground forces capable of deploying thousands of miles away and dominating distant battlefields for long periods of time.

Military budgets may suffer as the Nation, adjusting to the post-industrial and changing global economic power balances, finds that it cannot maintain a defense budget larger than several other major countries combined. It is essential that our economic and political decisionmakers think decades ahead about the role of the United States as they adjust doctrine, defense budgets, and postures. There will probably be enough resources for a thoughtful future military, but not enough to keep rebuilding the past.

Debates over inculcation of high technology and size of forces will tend to be settled in favor of the former as realities weigh in. Such debates will influence forces in varying ways.

We face intense debates between technological development of naval power and the need for numbers of ships to bolster maritime presence. Runaway costs and the state of the economy aggravate the tension between technology and numbers of ships. We must seek balance here and not fail to see where the future will take the Navy. We need to keep an eye both to the need for presence abroad and the requirement for a modern Navy clearly second to none. We are, in spite of the great changes that modern technology introduced into geopolitics and space, a maritime nation. The Navy's role in a refocused U.S. military doctrine is crucial. If the sledgehammer is needed, the Navy and quick-strike elite forces will deliver the key blows. In some regional situations where U.S. interests are clearly threatened enough to warrant congressional approval to act, such forces will deliver the fastest, surest strikes with the most visible effect. If U.S. support of a combined international projection of force is required by a determined coalition and supported by Congress, the whole world would expect the crucial element to be U.S. maritime power.

Maritime visibility and presence with unequaled strike capacity that fits the refocused doctrine are key. This means having enough carrier strike force to be the sledgehammer if needed for rapid, limited, independent U.S. action or the core of a joint international operation of larger scope, if appropriate. This means increased resources for this facet of American military power because it is most likely to be brought to bear and most likely to deter potential adversaries in the first place. This also means attention to the changing technical facets of limited warfare, such as antiaccess/area-denial challenges to projection forces.

We must tailor our forces for what we are actually prepared to do: smash a clearly identified and targeted enemy with overwhelming force in short order or provide standoff support of a somewhat longer commitment by an international coalition in which U.S. Marines are involved. At the same time, we must be careful not to get drawn into fantasies about "war at sea." Naval forces can deter and, if necessary, determine the outcome of localized conflicts, but major conflict in this century is not likely to be settled at sea. Even a clash at sea with China, a prospect that will continue to require deployed forces in Asia, may be deterred there and even may start there, but would not end there. This is not good news for those who have tailored their doctrinal thinking in terms of war-winning and world war scenarios. Nor is it good news for those who, in spite of their denials, see limited wars as spinoffs or subsets of the great wars of the past that require massive military outlays to prepare for extended major conflict.

The truth is that conflict between major powers, short of Armageddon, is extended political, economic, and military competition without the territorial implications of the past. Superpower military status focuses this long-term major power competition but does not necessarily determine outcomes. Especially regarding competition with China, U.S. doctrine must see decades ahead and integrate political, social, and economic factors with military ones. Limited, carefully tailored projection forces, combined with strategic intercontinental ones aimed at the long haul, are key in this vision.

Force Implications

The implications for nonprojection U.S. forces are profound. Realities require an American force structure different from what we were used to maintaining in the second half of the 20th century. Given the realities that have emerged, resources must be shifted to match the will of the people to use force, the contingencies in which force makes sense, and the resources that can realistically be devoted to the military.

No nation is better positioned geographically and economically to defend itself. Reagan was correct: the Shining City Upon the Hill is what America is really about and how we can best be the model for the world. Our very existence is the best answer to those who choose not to be like us. This is what American exceptionalism really means. Protecting the Shining City is what our Army should be about.

In spite of the considerable innovation that has taken place in military

Department of Homeland Security delivers food and water to isolated Puerto Rico residents after Hurricane Maria destroyed infrastructure around Utuado, Puerto Rico, October 12, 2017 (U.S. Air Force/Joshua L. DeMotts)

affairs, our basic doctrinal outlook has not changed much, especially regarding ground warfare. Two world wars distorted the nature of the Army, and it is time to get back to a basic fact: we are a Reserve and National Guard nation. The purpose of the Army is to defend the homeland. The posture, operations, and deployment of our Army should be aimed at our borders and our internal security.

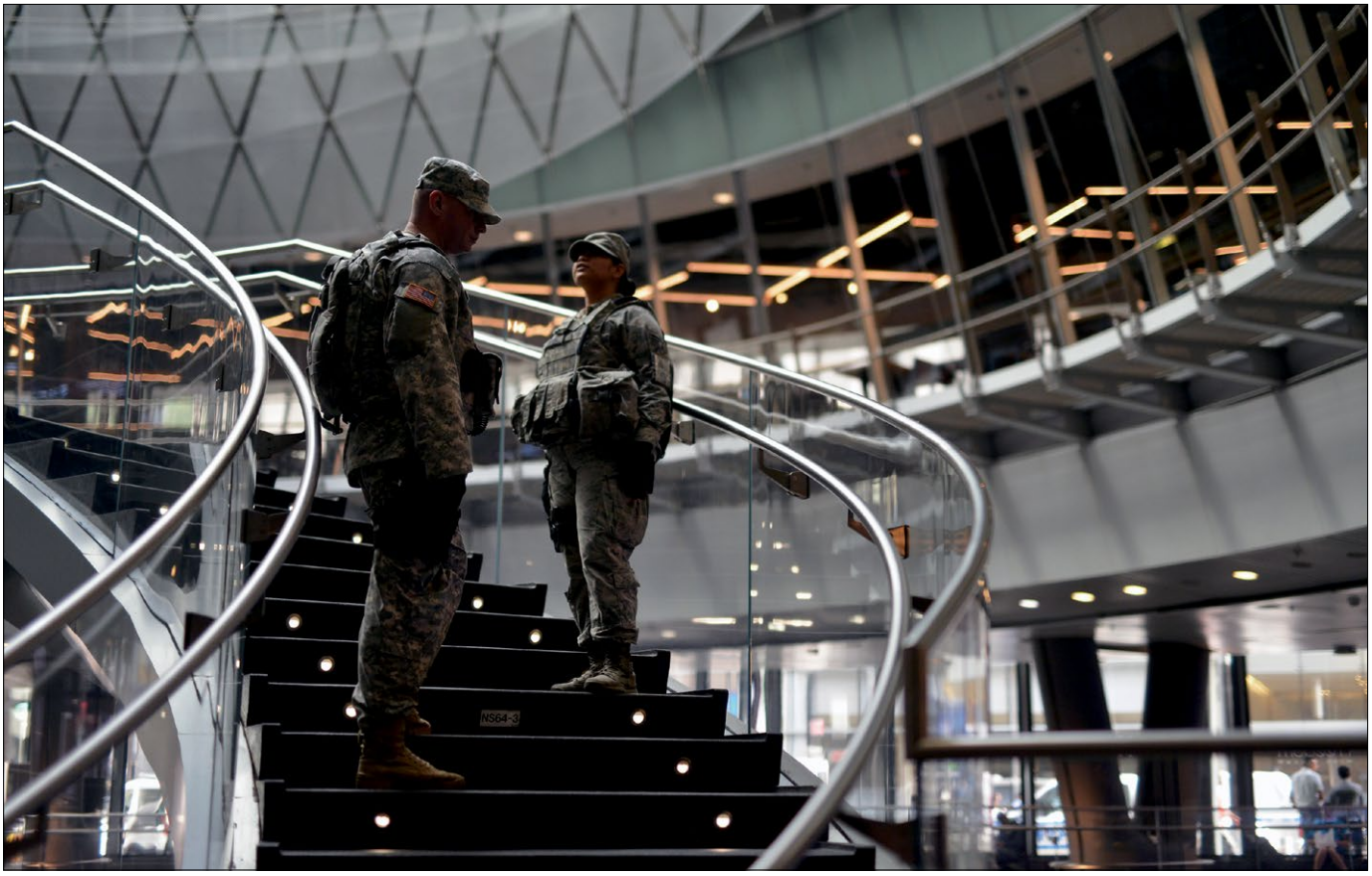
The Army should maintain the armed core of fighters and trainers who might be needed if it is ever necessary to call on the states and the people to provide a massive force. It is *not* the function of the Army to maintain forces for "boots on the ground" in foreign interventions. Maintaining the force for "the well-regulated militia necessary to the security of a free State" is the Army's basic responsibility, supported by the states.

Because the changes required are fundamental, it would be naïve to think they could happen without heated resistance and debate, but it is time for America to come to grips with the fact that it is the U.S.-Mexico border, not the North Korea–South Korea border, that we must guard. For half a century, we have not even tried to correct the Korean abnormality as we harbored the illusion that world war postures were normal for America. Reality contradicts such illusions.

If America ever has to put troops on the ground in massive numbers, it will require all of us to weigh in, not just a few volunteers. The volunteer Army must evolve more highly integrated training and posture relationships among Reserve, Guard, and Active units. The Selective Service needs to be serious about the reality, though remote, of mobilization, and it must adjust to the gender revolution.

The requirement to deploy U.S. forces on the ground, short of a need to mobilize a mass Army, has changed but not disappeared. We have always needed an elite force that can be decisive in necessary and small uses of force. The Marine Corps is the core ground element of U.S. projection forces. The Marine Corps may be judged to be at about the right size to be capable of the kind of robust, decisive action it can be called on to do, but adjustments for coalition warfare and more modern deployment techniques are in order. America only needs one Marine Corps. Some sacred organizational and cultural oxen should be gored: "Elite" forces in the Army and Navy should be transferred to the Marine Corps where they properly belong in a 21st-century military doctrine.

Airpower needs rethinking. It will continue to be important both as a strategic hammer in the triad and as a precision instrument in coalition warfare. U.S.-based Air Force assets will be relevant throughout the spectrum of conflict. The size of the forces can be reduced, but their quality must be enhanced to fit



Members of Joint Task Force Empire Shield ramp up operations at Fulton Street Subway Station on September 21, 2016, following bombings in Manhattan and New Jersey (U.S. Air National Guard/Christopher S. Muncy)

a realistic idea of how and when projections of airpower will actually be needed in addition to beefed-up aircraft carrier deployments. The debate between advocates of new technology and proponents of numbers of aircraft must tilt, unlike the case with Navy construction, clearly toward technology. Foreign-based Air Force fighter capabilities would be deemphasized and might not fit at all into refocused U.S. doctrine.

Our strategic deterrent in submarines will be a vital element of American military doctrine for the foreseeable future, but we must come to grips with the economic costs and the changed nature and relevance of nuclear intercontinental deterrence. Fewer ballistic missile submarines can do the job. Similarly, the attack submarine force must adjust to new realities. We must keep pace with the strategic submarine threat from China and Russia, and some submarine support of Navy projection forces is needed, but the nuclear submarine force must focus on quality rather than quantity. Thus, some serious consideration of cheaper, nonnuclear submarines in presence and support missions is in order.

Presence requires more than aircraft carriers. Numbers of ships and the ability to keep large numbers deployed without ruining ships and destroying morale with unreasonable operations tempo are all important. A shift to a maritime-oriented forward military presence in a new approach to U.S. military doctrine must recognize that resources must be devoted to the presence mission. Numbers count.

We have the core of a maritime defense force, but new realities require shifts in focus and orientation. The Coast Guard needs refocusing and probably some buildup to cope with 21st-century realities. Increased "militarization" of the Coast Guard is probably needed. We must reject the schizophrenic notion that the Coast Guard is not really a military force. More Navy–Coast Guard integration is needed, and tighter coordination between a revamped Army and Coast Guard is in order.

Nuclear forces must be updated to reflect a second nuclear age increasingly different from the old "balance of terror" days. This need is far too complex to explain in detail here, but some likely changes are a modified triad with fewer intercontinental strategic weapons, updated, and with concentration on the most invulnerable weaponry. We also need a new focus on highly mobile, tactical, nuclear weaponry that would be credible in both deterrence and warfighting in an environment where uses, and threats of use, of nuclear weapons at lower nuclear levels of escalation are increasingly more likely. We must guard against surprise at the tactical nuclear level.

As the full implications of the need to integrate internal defense with foreign projections of force in our thinking become clear, a serious, refocused military doctrine will cause some badly needed reconfiguration between the Departments

of Defense and Homeland Security. It may be that the evolution and growth of major institutions—the National Security Agency's internal role and functions of Homeland Security, for instance—were mistaken. They must be rethought in terms of a serious military doctrine. We may find that, as in 1947, a comprehensive new approach to national security organization is needed to execute a new doctrine. It is also time to correct the legal relationships between "domestic" and "foreign" armed forces that have become skewed over time. The entire body of law regarding the Posse Comitatus Act needs thorough review and revision in light of the reality that domestic and foreign military functions can no longer be cleanly separated.

A Realistic Timeline

Clearly, the context for the exercise of American leadership has changed. Also changed is the relationship of nuclear and conventional forces at all levels of conflict, the technical and communications environments, and the interplay between domestic and foreign military challenges. It is a changed world both at home and abroad. New realities demand new approaches to the missions, construction, and operation of U.S. military forces.

Political realism is, of course, at odds with these stark realities. Perceptive leaders and military innovators see and grasp the realities, but it is unrealistic to hope that America will adjust quickly to them. Despite the growing awareness that our current military posture is out of sync with the times, no politician and no military officer could successfully confront the powerful array of vested interests in the status quo and suggest the kind of military revolution that reality requires.

The realities themselves will have to weigh in, and eventually they will. We may approach mid-century before they do. It may not yet be clear enough that politico-economic decisionmakers must deal with it, but we are on the cusp of the day when reality will force a revolution in military doctrine. The doctrine suggested here constitutes a revolution, and revolutions take time. The arc of change might be irregular because revolutions can happen incrementally and by fits and starts. Let there be no illusions about how difficult this revolution will be, but let us not fail to see the curve and get ahead of it. **JFQ**

Detective with Asheville Police Department Bomb Squad places X-ray detection device in simulated hazardous area during regional domestic operations and homeland security/defense exercise Operation *Vigilant Catamount*, at Fontana Dam, North Carolina, June 12, 2017 (National Guard/Wayne Becton)

Note

[1] Steve F. Kime, "Return to the American Way of War," U.S. Naval Institute *Proceedings* 137, no. 5 (May 2011).

Army Reserve Soldiers with U.S. Army Civil Affairs and Psychological Operations Command (Airborne) board CASA 212 aircraft during night airborne operation at Camp Mackall Airfield, North Carolina, March 12, 2013 (U.S. Army/Jacquelyn R. Slaughter)

The Need for an Innovative Joint Psychological Warfare Force Structure

By Richard B. Davenport

Twenty-first-century warfare—where hearts, minds, and opinion are, perhaps, more important than kinetic force projection—is guided by a new and vital dimension, namely the belief that whose story wins may be more important than whose army wins. This is especially true if one avoids kinetic engagement altogether.

—**Stefan Halper,** *China: The Three Warfares*

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It has been over 30 years since the first Department of Defense (DOD) Psychological Operations (PSYOP) Master Plan was published in 1985, advocating for a permanent joint psychological warfare element. Such an element could provide "DOD-wide psychological operations with strategic focus and the capability to orchestrate and coordinate the military PSYOP effort in conjunction with other U.S. Government agencies."[1] Since then, the

authors of numerous other documents and members of working groups such as Unified Quest 2015 and 2016 have all advocated for some type of strategic influence command that could specifically align, synchronize, harmonize, unify, integrate, improve, counter, collaborate, direct, and deconflict all forms of influence and persuasion efforts among all elements of diplomacy, informational, military, and economic (DIME), and joint, interorganizational, and multinational organizations (JIMs).[2] However, even with all of these voices and efforts spanning many decades, such an organization has not come to fruition.

Today, the current operational environment and information environment have fragmented and decentralized, causing ethnic, racial, religious, national, and tribal differences to increase and fostering complex hybrid warfare types of conflicts and scenarios all over the globe.[3] To this mix we must factor in the growing and effective psychological warfare capabilities of the likes of China, which has a "Strategic Support Force . . . elevated to an equal footing with China's other military services, the army, navy, air force"; Russia, which has "built up its muscle by forming a new branch of the military—information warfare troops"; and the so-called Islamic State (IS), which employs sophisticated propaganda efforts. Given these developments, there has never been a greater historical need and better opportunity to create this strategic joint influence organization and subsequent total joint influence force structure.[4]

This article lays out the evolution of psychological warfare (PSYWAR) as an organization and demonstrates the need to create three strategic influence organizations: a new Joint Influence Warfare Element (JIWE) to operate at the National Security Council, DOD, and Department of State levels; a subunified Joint Influence Warfare Command (JIWC) to operate at the DOD and Joint Chiefs of Staff (JCS) levels; and Theater Director of Influence (TDI) organizations to operate at the geographic combatant command (GCCMD) levels.[5]

Struggle and Evolution of Unified Strategic PSYWAR

American PSYWAR has a long and storied history that can be traced back to the Revolutionary War, when Colonial forces threw strips of paper (containing promises of more money, food, land, and freedom) tied to rocks at Redcoats to induce surrenders.[6] Today, DOD influence efforts are taking place in Syria and Iraq supporting Operation *Inherent Resolve*, with various technological dissemination platforms and messages being used to reach select foreign target audiences. The current PSYOP force structure dates to World War II, when PSYWAR was first officially institutionalized and formalized with the 1942 formation of the Psychological Warfare Branch, Allied Force Headquarters (PWB/AFHQ), which was led by the "father" of U.S. PSYWAR, Major General Robert A. McClure. The PWB/AFHQ supported PSYWAR efforts in North Africa, Sicily, Italy, and southern France; in 1944, the Psychological Warfare Division, Supreme Headquarters Allied European Forces, was created by General Dwight D. Eisenhower to conduct PSYWAR in the European theater.[7] Some of today's PSYOP units can trace their lineage to those original organizations. However, today's DOD influence force structure, specifically at the strategic level, has issues that need to be addressed and corrected.

Strategic influence has always been a problematic reality not only for DOD but also for the U.S. Government as a whole. In 1953, the U.S. Government under President Eisenhower established the United States Information Agency (USIA). The agency was highly successful for decades during the Cold War until it was officially shut down in 1999. It had a massive $2 billion annual budget focused on the ability "to streamline the U.S. government's overseas information programs, and make them more effective" in speaking to the values and truths about the United States and countering the propaganda coming from Soviet active measures in about 150 different countries.[8]

The disestablishment of the USIA in 1999 created a void in the U.S. Government efforts for global strategic messaging that allowed adversarial states and nonstates the opportunity to dominate the narrative in multiple regions. This conceded global strategic space was then only contested through disorganized U.S. counternarratives that had no true unity of effort or synchronization. What made this problematic for DOD was that there was no strategic military organization that could act as a backstop or complementary function to conduct strategic influence planning and global synchronization. Some of these realities date back to the 1980s when the first major overhaul of U.S. military PSYOP took place.

The first modern-day overhaul and restructuring of the PSYWAR organization started during the Ronald Reagan era. An official directive came from the 1984 Presidential order that directed Secretary of Defense Caspar Weinberger to rebuild military PSYOP capabilities. This was followed by the development of the 1985 DOD PSYOP Master Plan, which Secretary Weinberger approved. One of the key findings by the Service authors of the PSYOP Master Plan was that subordination of PSYOP to special operations forces (SOF) was believed to detract from the recognition of the overall applicability of PSYOP in times of peace, crisis, and war. However, at that time PSYOP as an organization was a part of the 1st Special Operations Command at Fort Bragg, North Carolina. In 1987, General Jim Lindsay, USA, the first commander of the U.S. Special Operations Command (USSOCOM), lobbied to overturn Secretary Weinberger's decision on separation of PSYOP from SOF, as did the Army staff and Joint Staff. This decision was due to the loss of all Active component (AC) and Reserve component (RC) PSYOP units and all the congressional money for PSYOP, which would have made it more difficult to justify a four-star command. Secretary Weinberger then reversed his decision and assigned Army and Air Force AC and RC PSYOP units to USSOCOM.[9] One could argue that since that decision, DOD has not had

Soldier with 303rd Psychological Operations Company and Marine with Marine Aerial Refueler Transport Squadron 252 watch leaflets fall over southern Afghanistan, August 28, 2013, in support of operations to defeat insurgency influence in area (U.S. Marine Corps/Demetrius Munnerlyn)

a true strategic influence command to plan, develop, manage, synchronize, and deconflict all influence activities. This has fostered a disorganized DOD-wide influence force structure with no true unity of influence command and with inadequate operational procedures for addressing transregional influence activities in the operational environment.[10]

Since 1987, Army PSYOP has fallen under USSOCOM and the U.S. Army Special Operations Command (USASOC). Part of the command structure at that time involved one AC and two RC PSYOP groups—the AC 4th PSYOP Group and the RC 2nd and 7th PSYOP Group, which fell under the U.S. Army Civil Affairs and Psychological Operations Command (USACAPOC), subordinate to USASOC. From a unity of command perspective, this was not a bad solution in that all of AC and RC PSYOP fell under one unified command structure. However, this changed with the events of September 11, 2001, and all the subsequent deployments to Iraq and Afghanistan. Due to issues with long mobilizations of the RC PSYOP forces, in 2006 Deputy Secretary of Defense Gordon England signed a memorandum that reassigned RC PSYOP units from USSOCOM to the U.S. Army Reserve Command.[11] This made the 4th PSYOP Group support primarily AC SOF. It also made both 2nd and 7th PSYOP Groups support AC general purpose forces, which was problematic because of a lack of year-round training support to AC forces on Active duty. Finally, it broke up true unity of command for all of PSYOP. Other dysfunctional influence efforts were coming from the information operations (IO) force structure.

Another byproduct of September 11 was the continued growth and solidification of the IO force. During the late 1990s, IO was a nascent idea where officers were selected to fill field support team positions at the corps and division levels. However, these positions were rarely filled, and the idea of synchronizing information-related capabilities was not well organized or managed by any one organization throughout DOD. In the late 1990s, the Army G3 reached out to the U.S. Army John F. Kennedy Special Warfare Center and School (SWCS), which at that time was the overall proponent for SOF, to see if SOF would want to take control of synchronizing information-related capabilities and filling the role of field support teams at corps and divisions. SWCS rejected the idea, and the Army G3 began formalizing the IO organization as well as creating a functional area for IO officers. Today, the IO force structure falls under U.S. Army Cyber Command. The ultimate issue has been a lack of true unity of command that could provide the leadership, vision, guidance, management, and synchronization of all influence efforts across not

only the Army but also joint, DOD, and interagency elements.

The first idea for a strategic joint-level organization that could plan, coordinate, and synchronize influence operations began with the 1985 and 1990 DOD PSYOP Master Plans, which advocated for the creation of a Joint PSYOP Center. There were several key features and recommended functions. The plan would:

- preferably be subordinated directly to the Chairman of the Joint Chiefs of Staff
- act as the organizational and institutional front for PSYOP within DOD
- be located in the National Capital Region
- function as the key element for interagency coordination and cooperation
- have representation from Department of State, Intelligence Community, U.S. Information Agency, Voice of America, and Board for International Broadcasting
- be responsible for long-range strategic PSYOP plans
- be responsible for the planning, coordination, and direction of the DOD portion of national PSYOP activities.[12]

However, this type of joint influence organization as originally conceived would not come to fruition until 2004, when the Joint Psychological Support Element (JPSE) was established. But decisions were made to keep the organization under the command and control of USSOCOM and not the JCS. Additionally, the JPSE (which was renamed the Joint Military Information Support Command [JMISC] in 2009) did perform some of those key functions as articulated in the 1985 DOD PSYOP Master Plan, but the joint organization lasted only 7 years and was disestablished in 2011. It did not have an opportunity for continued growth and therefore was unable to reach its full strategic potential. Part of the decision to disband the JMISC was to form a new command at Fort Bragg, the Military Information Support Operations Command (MISOC), to conduct and manage worldwide influence as well as have better command and control of all of AC and RC PSYOP forces.

One aspect of the worldwide influence vision for the formation of the MISOC was to move the RC 2nd and 7th PSYOP Groups from the USACAPOC to the MISOC for better unity of command for influence. However, this was a short-lived experience; in 2014, USASOC reorganized the MISOC into the U.S. 1st Special Forces Command with the 4th and 8th PSYOP Groups under its command and control structure, and with the 2nd and 7th PSYOP Groups remaining under USACAPOC. All these decisions led to another strategic influence gap for DOD and no true unifying type of command for all things influence. Adding to these issues was the lack of accomplishments coming from the strategically focused Global Engagement Center (GEC).

In 2015, Major General Christopher Haas, USA, the USSOCOM Director of Force Management and Development, testified before the House Armed Services Committee on Russian and IS propaganda. Congress had recognized that our adversaries were successful in the art and science of influence and were asking the U.S. military why we were falling behind in countering those efforts. In Crimea, the Russians had been overwhelmingly successful in conducting hybrid warfare, which as its primary effort was the use of propaganda and disinformation to achieve its ends.[13] On the other side of the coin was the rise of IS and its sophisticated and professional use of propaganda. In 2016, the Department of State responded to these congressional observations by rebranding its Center for Strategic Counterterrorism Communications as the GEC.

From 2010 to 2015, State had been unsuccessful in its online social media operations to counter IS global propaganda efforts. One reason for its lack of success against the warlike nonstate actor is that State is primarily staffed by civil servants who are trained to conduct diplomacy, not warfare. Additionally, Senator Rob Portman (R-OH) and Senator Chris Murphy (D-CT) introduced the Countering Information Warfare Act of 2016, which advocated for the creation of the Center for Information Analysis and Response.[14] This bill was signed by President Barack Obama in December 2016 and became a part of the fiscal year 2017 National Defense Authorization Act.

These global organizations, however, do not have a unifying vision. On the one hand, the GEC approach to counterinfluence is using primarily Web 2.0 platforms. On the other hand, the future Center for Information Analysis and Response will handle both Russian and Chinese propaganda efforts using various other platforms and means to influence. The result will be no true unified joint influence organization that can synchronize and deconflict all the DOD influencing efforts with those coming from interorganizational and multinational influencing entities. Additionally, having so many interorganizational entities for influence and a disorganized joint influence force creates a complex approach to managing influence efforts and therefore results in a lack of critical mass for influence against adversarial states and nonstate actors.[15] Due to the identified strategic influence gaps and lack of a unified influence command structure for the entire joint force, the recommendations in the following section provide innovative solutions to fix the DOD and joint strategic influencing force structure gap.

Solutions for an Innovative Structure

To fill the strategic influence gap, DOD should consider the creation of a Joint Influence Warfare Element, a Joint Influence Warfare Command, and five to six regionally aligned Theater Director of Influence organizations. Additionally, a newly formed U.S. Army PSYWAR Command and all three Service influence organizations and entities would fall under the command and control of the JIWC. These organizational changes would ensure that all joint influence organizations maintain their unique culture and identity at all levels of war and across all domains and spaces—physical space and cyberspace.

JIWE would provide the highest level of strategic influence representation at the National Security Council, DOD,

and State Department levels. It would carry out specific influence strategy-making responsibilities with an effort on ensuring interagency, specifically State (also the GEC and Broadcasting Board of Governors), newly formed Center for Information Analysis and Response, and Central Intelligence Agency deconfliction and synchronization. Greater synchronization of a national narrative would be of the utmost importance at this level.

JIWC would be a subunified strategic influence command that falls directly under U.S. Strategic Command with direct coordination with DOD, JCS, and JIWE, and where all joint Service influence organizations fall under its command and control. The organization would act as a joint global influence synchronizer and provide the ability to primarily coordinate and deconflict strategic influence with national messaging efforts to include perception and narrative management. JIWC would also provide strategic advice and strategy options on whole-of-government and unified action global programs. All influence messaging efforts would be better synchronized between all organizations to include the GCCMDs, interagency, intergovernmental, and multinational entities. It would make greater efforts to diffuse crises, reduce confrontations, and counter all forms of propaganda, whether state-run or nonstate influence efforts, through Web 2.0 platforms. Additionally, greater synchronization and deconfliction with contractors who are influencing within various regions would take place. JIWC would be staffed with civilian personnel who have expertise in media and data analysis and in research and survey analysis, to include polling experts. The organization would have streamlined program approval mechanisms in place that would provide for efficient and timely approved influence programs for the entire joint force.

TDI would be collocated at the theater level and support both the GCCMD and the Theater Special Operations Command (TSOC). It would be designed to be regionally aligned where it could support the conventional Regionally Aligned Forces or Security Force Assistance Brigades and SOF within the region. Each TDI would have transregional authorities and would coordinate for regional PSYWAR assets and dissemination and tactical assets, and would possess a theater Strategic Studies Detachment/Cultural Intelligence Element cell. The organization would also possess a hybrid Army AC and RC PSYWAR element as well as other joint Service influence representatives, giving it a true joint influence capability. Additionally, there would be a mix of interorganizational personnel, Army civilians, and contractors who would provide various types of support. TDI would have the capability to deploy from out of the GCCMD/TSOC location and be able to form a JIM influence task force if need be.

Conclusion

This article has articulated the need to create an innovative unified joint PSYWAR force structure that can adequately conduct strategic and operational influence. The gap in capabilities has been evolving since the conclusion of World War II and the Korean War. Few successful strategic influence organizations exist outside of DOD and the JCS with the exception of the USIA. However, that organization was disestablished in 1999 and has yet to be properly reestablished in some way in order to fit 21st-century warfare realities. The State Department created the Center for Strategic Counterterrorism Communications in 2010, but after years of failed influence operations, it was rebranded the GEC in 2016. Then there was the disestablishment of the JMISC in 2011 and the MISOC in 2014. Throughout all these attempts and evolutions, DOD has never had a subunified influence command to coordinate the proper aligning, synchronizing, harmonizing, unifying, integrating, improving, countering, collaborating, directing, and deconflicting of all forms of influence and persuasion efforts among all elements of DIME and JIMs. The suggestion to fill that void is to create a new joint influence force structure consisting of the Joint Influence Warfare Element, Joint Influence Warfare Command, and Theater Director of Influence organizations. If these recommended changes are made, the joint influence force will be in a much better unified position to support and defend the Nation's strategic interests against all propaganda efforts coming from the likes of adversarial states and nonstate actors well into the foreseeable future. **JFQ**

Notes

[1] *Department of Defense Psychological Operations Master Plan* (Washington, DC: Department of Defense [DOD], 1990), 10, available at <www.DOD.gov/pubs/foi/Reading_Room/Other/349.pdf>.

[2] Documents advocating the need for some type of strategic Psychological Operations (PSYOP) Command that could properly synchronize all our influence and persuasion efforts include *Psychological Operations into the 21st Century: A Critical Assessment* (Fort Bragg, NC: U.S. Army John F. Kennedy Special Warfare Center and School, 1997), 31–32; Presidential Decision Directive 68, *International Public Information*, April 30, 1999; *Report of the Defense Science Board Task Force on the Creation and Dissemination of All Forms of Information in Support of PSYOP in Time of Military Conflict* (Washington, DC: DOD, May 2000), 15–18; Dave Acevedo, *PSYOP: Coordinating Worldwide Psychological Operations—Is There a National Requirement for a Strategic Psychological Operations Organization?* (n.c.: BiblioScholar, 2012).

[3] *Global Trends: Paradox of Progress* (Washington, DC: Director of National Intelligence, 2017), 26–27, 43–44, 59, 61, 110, available at <www.dni.gov/index.php/global-trends/letter-nic-chairman>; Mathew Burrows and Robert Manning, eds., *Global System on the Brink: Pathways toward a New Normal* (Washington, DC: Atlantic Council, 2015), 1, 4, 15, 19, available at <www.atlanticcouncil.org/images/publications/Global_ System_ on_the_Brink.pdf>; Robert Kagan, "Backing into World War III: America Must Check the Assertive, Rising Powers of Russia and China Before It's Too Late," *Foreign Policy*, February 6, 2017, available at <http://foreignpolicy.com/2017/02/06/backing-into-world-war-iii-russia-china-trump-obama/>; *The National Military Strategy of the United States of America 2015* (Washington, DC: The Joint Staff, 2015), 4, available at <www.jcs.mil/Portals/36/Documents/Publications/2015_National_Military_Strategy.pdf>; Michael Miller, "Hybrid Warfare: Preparing for Future Conflict," Air War College, 2015, 7–14, available at <www.au.af.mil/au/awc/awcgate/awc/2015_miller.pdf>; and Brad Allenby and Joel Garreau, "Weaponized Narrative Is the New Battlespace," *Defense One*,

January 3, 2017, available at <www.defenseone.com/ideas/2017/01/weaponized-narrative-new-battlespace/134284/>.

[4] There have been numerous publications on the rise and effectiveness of U.S. adversarial influence capabilities, such as Bill Gertz, *iWar, War and Peace in the Information Age* (New York: Threshold Editions Publishing, 2017), 281; Stefan Halper, *China: The Three Warfares* (Washington, DC: DOD, 2013), available at <https://cryptome.org/2014/06/prc-three-wars.pdf>; Valery Gerasimov, "The Value of Science Is in the Foresight, New Challenges Demand Rethinking Forms and Methods of Carrying out Combat Operations," *Military Review* (January–February 2016), available at <http://usacac.army.mil/CACOMMAND%20AND%20CONTROL%20/MilitaryReview/Archives/English/MilitaryReview_20160228_art008.pdf>; Vladimir Isachenkov, "Russia Military Acknowledges New Branch: Info Warfare Troops," Associated Press, February 22, 2017, available at <http://bigstory.ap.org/article/8b7532462dd0495d9f756c9ae7d2ff3c/russian-military-continues-massive-upgrade>; Charlie Winter, *The Virtual "Caliphate": Understanding Islamic State's Propaganda Strategy* (London: Quilliam, July 2016), available at <www.stratcomcoe.org/charlie-winter-virtual-caliphate-understanding-islamic-states-propaganda-strategy>.

[5] Harold D. Lasswell, "Political and Psychological Warfare," and Roland I. Perusse, Psychological Warfare Reappraised," in *A Psychological Warfare Casebook*, ed. William E. Daugherty and Morris Janowitz (Baltimore: Johns Hopkins University Press, 1958), 13, 17, 23, 26. One of the first definitions for *U.S. PSYWAR* that was agreed upon by the Services was "the employment of any non-lethal means designed to affect the morale and behavior of any group for a specific military purpose." Additionally, the Army defined *PSYWAR* as "the planned use by a nation in time of war or declared emergency of propaganda measures designed to influence the opinions, emotions, attitudes and behavior of enemy, neutral or friendly foreign groups in such a way as to support the accomplishment of its national policies and aims." Lastly, Paul M.A. Linebarger defined *PSYWAR* as "the use of propaganda against an enemy, together with such other operational measures of a military, economic, or political nature as may be required to supplement propaganda." Halper states that *psychological warfare*:

seeks to influence and/or disrupt an opponent's decision-making capability, to create doubts, foment anti-leadership sentiments, to deceive opponents and to attempt to diminish the will to fight among opponents. It employs diplomatic pressure, rumor, false narratives and harassment to express displeasure, assert hegemony and convey threats. China's economy is utilized to particular effect: China threatens sale of U.S. debt; pressures U.S. businesses invested in China's market; employs boycotts; restricts critical exports (rare minerals); restricts imports; threatens predatory practices to expand market share, etc.

What could be considered a subset of PSYWAR is *media warfare* (also known as public opinion warfare), a "constant, on-going activity aimed at long-term influence of perceptions and attitudes." It leverages all instruments that inform and influence public opinion including films, television programs, books, the Internet, and the global media network (particularly Xinhua and CCTV) and is undertaken nationally by the People's Liberation Army and locally by the People's Armed Police and is directed against domestic populations in target countries. Media warfare aims to preserve friendly morale, generate public support at home and abroad, weaken an enemy's will to fight, and alter an enemy's situational assessment. It is used to gain "dominance over the venue for implementing psychological and legal warfare." Today, *PSYOP* or *military information support operations* (MISO) are defined as "planned operations to convey selected information and indicators to foreign audiences to influence their emotions, motives, objective reasoning, and ultimately the behavior of foreign governments, organizations, groups, and individuals." See Joint Publication (JP) 3-13, *Information Operations* (Washington, DC: The Joint Staff, 2014), II-9, II-10. The problem with PSYOP is the word *operations*, which are a subset of some type of overall strategy or war. A campaign even has operations or battles. PSYOP is a subservient term to something larger. PSYWAR puts it at a much higher level and also takes on a more serious connotation. The use of the term MISO is also problematic. The PSYOP community is the only DOD organization designed to influence and persuade. Information is not about an aggressive approach to influence; it is about informing. When we send B2 bombers to the Republic of Korea or aircraft carriers to the Mediterranean, are we trying to inform decisionmakers or influence them? Moving strategic and operational assets is an aggressive action to influence, just as PSYWAR is an overall aggressive approach to influence. Lastly is the use of the word *support* in the term MISO. This is problematic as well because it gives the impression that influence is subservient to other organizations. However, there are some cases when PSYWAR is the main effort and other organizations are the supporting effort. Ultimately, terminology for influence and persuasion against U.S. adversaries has always been a contentious issue among U.S. officials and senior leaders. We have gone from the term *propaganda*, which was used in World War I, to PSYWAR in World War II, to PSYOP during the Cold War, and now MISO during the war on terror, and yet they have all been relatively defined the same.

[6] Daugherty and Janowitz, 60.

[7] U.S. Army Special Operations Forces, *Psychological Operations, A Historical Primer* (Fort Bragg, NC: 3rd PSYOP Battalion, 2014), 12–14.

[8] Gertz, 20.

[9] Alfred H. Paddock, Jr., "No More Tactical Information Detachments: U.S. Military Psychological Operations in Transition," in *Psychological Operations: Principles and Case Studies*, ed. Frank Goldstein and Benjamin Findley, Jr. (Maxwell Air Force Base, AL: Air University Press, 1996), 37–41.

[10] JP 3-0, *Joint Operations* (Washington, DC: The Joint Staff, 2016), A2–A3, states, "Unity of command means that all forces operate under a single commander with the requisite authority to direct all forces employed in pursuit of a common purpose. During multinational operations and interagency coordination, unity of command may not be possible, but the requirement for unity of effort becomes paramount."

[11] Alfred H. Paddock, Jr., "The 2006 'Divorce' of U.S. Army Reserve and Active Component Psychological Operations Units: A Re-Examination," *Small Wars Journal*, March 2, 2012, available at <http://smallwarsjournal.com/jrnl/art/the-2006-%E2%80%9Cdivorce%E2%80%9D-of-us-army-reserve-and-active-component-psychological-operations-units>.

[12] *Department of Defense Psychological Operations Master Plan*, 10.

[13] Neil MacFarquhar, "A Powerful Russian Weapon: The Spread of False Stories," *New York Times*, August 28, 2016, available at <www.nytimes.com/2016/08/29/world/europe/russia-sweden-disinformation.html?_r=0>.

[14] Bob Portman, "President Signs Portman-Murphy Counter-Propaganda Bill into Law," December 23, 2016, available at <www.portman.senate.gov/public/index.cfm/2016/12/president-signs-portman-murphy-counter-propaganda-bill-into-law>.

[15] JP 3-0 states:

simplicity is to increase the probability that plans and operations will be executed as intended by preparing clear, uncomplicated plans and concise orders. . . . mass is to concentrate the effects of combat power at the most advantageous place and time to produce decisive results. In order to achieve mass, appropriate joint force capabilities are integrated and synchronized where they will have a decisive effect in a short period of time. Mass often must be sustained to have the desired effect. Massing effects of combat power, rather than concentrating forces, can enable even numerically inferior forces to produce decisive results and minimize human losses and waste of resources.

Currently, influence efforts are not simplistic because they are being done by many organizations with no unity of effort, therefore creating issues with massing influence efforts against various adversaries, state and nonstate.

Dutch crew chief with 322nd Squadron (left) looks over flight records with U.S. Air Force Exchange Pilot at Leeuwarden Air Base, Netherlands, during NATO air forces' Frisian Flag training exercise, March 27, 2017 (U.S. Air Force/Brian Ferguson)

Geographic Component Network Analysis

A Methodology for Deliberately Targeting a Hybrid Adversary

By Chance A. Smith and Steve W. Rust

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In late September 2014, nearly 3 months to the day after the so-called Islamic State (IS) declared the establishment of its caliphate, President Barack Obama noted that IS represented a hybrid threat, calling the group "a terror network with territorial ambitions and some of the strategy and tactics of an army."[1] Since then, copious pages of academic publications have been devoted to analyses of the group's organizational structure, ideological appeal, centers of gravity, and holistic strategies to counter its rapid progress in securing and governing vast swaths of territory in Iraq and Syria. Curiously, this discussion has included little regarding the proper method to

systematically analyze and deliberately target IS entities at the operational and tactical levels of war.

Targeting, a fundamental task of the joint fires function, is best conducted through the use of systematic analysis to determine logical networks of targets that are of high value to the adversary commander.[2] A well-developed targeting strategy is a vital component of any successful military campaign. Unfortunately, the hybrid blend of quasi-state and insurgent group that defines IS, coupled with a perceived demand from senior political and military leaders for more targetable entities, has fostered an accelerated, "dyliberate" targeting process in Operation *Inherent Resolve* (OIR) and resulted in a lack of systematic analysis focused on adversary centers of gravity. The term *dyliberate targeting* refers to a hybrid of the deliberate targeting cycle and dynamic targeting operations. This current process promotes the submission of single facility targets with reporting of IS activity, resulting in scattered, nonsequential kinetic strikes on whichever targets are approved to the joint target list. This type of strategy precludes the development or employment of measures of effectiveness (MOEs), vital indicators of a military's progress in having an intended effect against an adversary.[3] Additionally, this whack-a-mole approach to target development and approval results in strikes that occur often before adversary networks or their significance are fully understood, resulting in their incomplete disruption and allowing the adversary to reconstitute its undisturbed capabilities in short order and within close geographic proximity to previous strikes.

Hybrid warfare is not a new occurrence in military history. However, each hybrid threat exhibits itself uniquely. As such, we must seek novel ways to systematically analyze and target the various hybrid adversaries we face on the battlefield. In the case of IS, implementation and structured application of an analytic methodology focused on defining the group's component systems within a geographically bounded area will prove instrumental in the development and employment of a targeting strategy that more fully characterizes the adversary's military networks, degrades their operational centers of gravity, and aids in achieving the joint force commander's objectives in a more efficient, doctrinally sound manner. This method, which we refer to as *geographic component network analysis* (GCNA), incorporates the structure and terminology of both the target system analysis (TSA) and counterterrorism analytic framework (CTAF) models, but narrows the scope of analysis to a more manageable and meaningful defined geographic area. This in turn shrinks the timeline necessary to develop an operationally relevant analytic understanding of the adversary from months (typically associated with a traditional TSA) to weeks. Furthermore, it incorporates an inductive analytical approach that is more conducive to understanding an adaptive, cell-like adversary than traditional deductive approaches.

Challenges and Necessity of Hybrid Network Analysis

Early airpower advocate and Italian general Giulio Douhet noted in 1921 that "the choice of enemy targets . . . is the most delicate operation of aerial warfare."[4] Starting in World War I, military planners and strategists began developing and employing methodologies to target adversary centers of gravity to achieve strategic, operational, and tactical objectives. These methodologies were contingent upon in-depth preconflict planning efforts designed to formulate an understanding of a state adversary's capabilities and vulnerabilities and were employed with varying levels of success throughout the Gulf War.[5]

A post-9/11 paradigm shift in targeting strategy was ushered in with U.S. involvement in counterinsurgency campaigns in Afghanistan and Iraq. The deliberate targeting methodologies used in previous conflicts lacked utility against the nonstate, asymmetric threats posed by the Taliban and al Qaeda in Iraq, among others. The success of efforts to target these adversaries was largely contingent upon a time-constrained, tightly managed dynamic targeting cycle aimed at eliminating targets as soon as they were discovered on the battlefield. The dynamic targeting cycle perfected during these conflicts allowed for pinpoint lethal strikes to occur in a rapid manner against time-sensitive targets. Strikes occurred daily, all across the area of operations and in high numbers.

Though this type of targeting strategy would ultimately prove effective in aiding efforts to disrupt insurgent networks, it had a secondary effect of conditioning military leaders to think of targeting as a process that occurred in a matter of hours or days instead of weeks or months. It created an unrealistic expectation of the number of targets necessary to degrade an adversary under a more traditional, deliberate targeting approach. Even so, a distinction existed between the deliberate and dynamic targeting cycles and which cycle should predominantly be used to counter both the state and the nonstate actor, respectively. The hybrid nature of IS as a vast insurgent group with state-like qualities has blurred this distinction and, in the process, confounded attempts to analyze, understand, and target the group in a systematic fashion.

The flexible and adaptive structure of IS, which allows it to rapidly toggle efforts among offensive, defensive, and sustainment operations in geographically defined areas it controls or seeks to control, is a distinct hybrid characteristic of the group.[6] An ability to create a governance component to enforce order and maximize influence in IS territory is both representative of the group's adaptability and also a clear sign that IS is something more than a textbook insurgency.[7] It is precisely this hybrid characteristic—"the combined ability to wage war and build state capacity"[8]—that enables the core strength of IS and distinguishes it from many other insurgent organizations. Ultimately, any effective targeting strategy designed to counter IS must be informed by an understanding of how it fits the profile of a hybrid threat, and the framework used to analyze the adversary must account for both its state and nonstate characteristics.[9]

Current targeting doctrine provides two primary analytic frameworks for

performing systematic analysis of an adversary: TSA and CTAF.[10] Unfortunately, neither of these frameworks is designed for exclusive use against a hybrid adversary. The CTAF model is informative inasmuch as the nine target systems it provides are all applicable to understanding the flexible, adaptive networks IS presents at the operational level in the towns it occupies and exerts governance over. It is important to note, however, that there is no consensus on the target systems that the CTAF model identifies for nonstate actors. Additionally, it fails to provide a clear scope for the geographic area it should be applied to, which is an important consideration for a hybrid adversary capable of governing numerous cities with unique command structures and operational footprints in each area of control.

Likewise, the more traditional TSA framework is too broad in its scope to be particularly informative at the operational level of warfare against an adaptive hybrid adversary. Admittedly, TSA has proved successful in the counter-IS campaign as a method of systematically analyzing and targeting the group's oil infrastructure, resulting in huge losses in its annual revenue.[11] The efficacy of TSA in this example stemmed from its application against a closed system aligned along function instead of geography. IS oil operations maintain a consistent structure across the group's area of control. Additionally, it is nearly impossible to present an adaptive, flexible posture in one's petroleum industry; bulky, cumbersome oil machinery cannot be quickly shuttled from location to location in the same way that small arms or improvised explosive device components can. Thus, intelligence analysts and targeteers were able to perform deliberate analysis against a fixed system without time constraint to select the highest value oil targets and eliminate them accordingly.

As seen in the example above, traditional TSA can be extremely effective in degrading the traditional target systems under a hybrid enemy's control with the aid of deductive analysis. However, this methodology lacks broad applicability against the majority of open, adaptive networks that IS employs in the major strongholds it occupies across Iraq and Syria. TSA, reliant upon deductive analysis to reach its conclusions, requires a predetermined understanding of the adversary's military framework. The adaptive modus operandi of IS largely negates the utility of this analytic framework. Its command structures are established yet flexible. Governance, revenue, and weapons facilities are often established in former civilian or government facilities in an unpredictable manner to benefit from their protected status. Most important, the component systems these facilities comprise vary in their configuration among IS strongholds. Performing a traditional TSA of the IS command, control, communications, computers, and intelligence system will aid a planner's strategic understanding of the adversary but will likely have limited utility in understanding criticality or vulnerability of individual targets in a specific town or province under the group's control. Similarly, understanding how IS operates at a city level generally will prove inadequate, since the adversary presents a different footprint in each area it occupies. Instead, separate analyses should be focused on each major stronghold IS possesses, with the intent being to understand the critical capabilities, requirements, and vulnerabilities of the predominant component systems that exist in each geographic area. It is precisely this understanding that GCNA seeks to enable.

GCNA: The Process

As with the joint targeting cycle as a whole, the process of GCNA hinges on understanding the commander's objectives for a given operation. It is critical that these objectives are clearly defined and understood by the components developing GCNA and performing intermediate target development. Joint Publication 3-60, *Joint Targeting*, makes it clear that "objectives are the basis for developing the desired effects and scope of target development."[12] After these objectives have been conveyed, the intelligence analysts and targeteers who will conduct deliberate analysis need to begin a robust dialogue with authorities at the intelligence, operations, and strategy divisions (at a minimum) within their respective component or at the joint force to ensure a tight synchronization between the directorates and promote unity of effort. Additionally, an output of this discussion should be a clear understanding on the part of the targeteer on which geographic areas and component systems to focus targeting efforts.

As the name implies, defining the bounds of the geographic area in which to analyze the adversary is a critical step in conducting GCNA. In our experience, focusing one's analytic efforts at the city level has been most effective against the Islamic State. In the case of analyzing IS, individual GCNA efforts focused on al Qaim, Rutba, al Ubaidi, al Shirqat, and Baa'j all yielded some measure of success in being able to discern distinct adversary networks. Widening the scope and focusing on Anbar or Ninewah provinces instead would likely not have yielded the same degree of analytical insight due to the different operational footprints of the adversary within each city.

Once the geographic bounds of analysis have been determined, formulating an understanding of the adversary and the battlespace they occupy should then follow. GCNA analysts should scour available intelligence products, including dynamic threat assessments, joint intelligence preparation of the operating environment, and any available TSA. GCNA, with its focus on breaking down an adversary into discrete geographic component systems, must still be informed by a strategic understanding of the adversary and its target systems across the entire area of operations. It is vital when delivering a network of targets to senior planners, intelligence directors, and validation authorities that the significance of a given geographic component system can be understood in the strategic context of the adversary's military operations. Civilian, historic, and geographic context is also vital at this stage. Understanding the preexisting civilian infrastructure in an area and its historical, cultural, or religious value are all factors in understanding how the

Airman assigned to 72nd Expeditionary Air Support Operations Squadron, deployed in support of Combined Joint Task Force—Operation *Inherent Resolve*, scans for Islamic State fighting positions near Al Tarab, Iraq, March 17, 2017 (U.S. Army/Jason Hull)

adversary is likely to utilize the geography and how certain areas provide strategic value. For the targeteer developing entities to the intermediate level, the value of such analysis is inestimable.

A thorough survey of the current intelligence pertaining to the adversary in the chosen geographic focus should occur once the GCNA analyst has attained a strategic understanding of the adversary. This is a time-consuming step in the process of deliberate analysis, but it is necessary due to the dynamic nature of the adversary. Fortunately, advances in the assimilation and tagging of intelligence reporting in databases available to the military intelligence analyst have increased both the speed of data retrieval and the discoverability of available intelligence reporting. Additionally, the ability to visualize reporting through an array of geospatial and temporal tools provides analysts with near-instant geographic and chronological context of adversary activity. The scalable geographic scope of GCNA makes it well suited for use with the activity-based intelligence tradecraft alluded to above. By focusing on discrete geographic areas and defined component systems, analysts are able to filter the data related to their particular analytic inquiry down to a more understandable level. This all-source intelligence deep dive will provide context on how the adversary organizes itself and operates within the given focus area. Perhaps most importantly, a review of available current intelligence will allow analysts to identify gaps, thus enabling the refinement of priority intelligence requirements and submission of collection requirements to more fully understand adversary networks.

As the relation between individual targets becomes clearer and the network is more fully discerned, the analyst can begin to craft network description remarks that will allow for an understanding of the broader component system. It is the underlying analysis and not the format of these remarks that is important, since the intent is to inform target validation authorities of the significance of the network and the individual targets that it comprises. Once a network becomes clear and has been characterized and summarized, targetable entities with associated reporting of adversary activity should begin to emerge. In this sense, the process begins to resemble the dynamic targeting process; an analyst discovers what he or she believes to be an adversary point of interest, seeks out additional intelligence to more fully characterize the target, and submits the target to the joint force for validation as a lawful military target. But because the entity can be tied to other entities as part of a larger network due to the GCNA process, the analyst can now effectively assess its significance to the adversary and anticipate how its neutralization will

RQ-4 Global Hawk descends during landing after completing sortie in support of Operation *Inherent Resolve* at undisclosed location in Southwest Asia, February 20, 2017 (U.S. Air Force/Tyler Woodward)

affect the system as a whole. It is this trait that aligns GCNA with the deliberate targeting process and is the type of analysis that lies at the heart of deliberate target development. Ultimately, target development nominations for all entities related to the identified component system in the given geographic area, along with the analysis related to the characterization of the larger network, can be packaged together and delivered to the target validation authority.

The format in which this analysis is delivered is largely irrelevant; various components and joint forces will have differing requirements for how network and entity characterizations should be conveyed. What is important, however, is that there now exists a body of analysis characterizing a network and its associated entities that conveys the function and significance of the network and that the process to attain said results is scalable and repeatable in future iterations. Furthermore, the analytic baseline of adversary capabilities established through this process will enable both the creation and validation of MOEs, which in turn will contribute to more effective overall campaign assessment.

Strengths and Operational Considerations

There are five primary benefits that can be gained from applying GCNA against a hybrid adversary with an operational objective of gaining and defending territory.

Focuses on the Adversary's Operational Objective of Controlling Territory. Targeting an adversary's center of gravity will always be a daunting proposition. To effectively do so, we should seek to first understand our enemy's objectives and then formulate our analytic methodology and targeting strategy in a manner to most effectively define and disrupt their capability to achieve it. In the case of IS, the actions and public declarations of key leaders make it clear that the group's strategic objective is the establishment of a vast "Islamic" caliphate. This objective is a central tenet of the group's ideology, a philosophy that can only be actualized by securing territory. At the operational level, IS must be able to expand the caliphate through the seizure and governance of territory to further its strategic objective and ensure the continued legitimacy of the caliphate. Stated concisely, its operational objective is to gain and control territory. IS fighters, then, represent the group's operational center of gravity insofar as they enable the acquisition and continued control of territory; the security and governance functions these personnel provide in geographically defined areas of control are a critical requirement for the

group to meet its operational objectives. This assertion is supported by the work of Daniel Smith, Kelley Jeter, and Odin Westgaard, who also cited the group's ability to control territory and people as "the decisive operational objective that defines the caliphate."[13] The cycle of expansion and defense of the caliphate are critical to its legitimacy. As Jessica Lewis points out, IS "must be able to defend the territory within the Islamic Caliphate, like a modern state, or it is vulnerable to counter-argumentation that its control is insufficient to support its political aims."[14] Again we see the importance of analyzing the most prominent component systems in the various geographic strongholds IS occupies to determine the best way to deny its ability to achieve the operational objective of gaining and maintaining control of territory.

Aids in Satisfying the Competing Demands for More and Better Targets. It is our position that a decade-plus of consistent dynamic targeting operations in the *Enduring Freedom* and *Iraqi Freedom* campaigns have created an unrealistic expectation in the minds of senior political and military leaders regarding both the speed at which a deliberate targeting cycle should occur and the number of targets necessary to have a decisive effect on the adversary. All too often, the question asked in any one of the innumerable counter-IS targeting synchronization meetings is, "How many targets will we have in [insert IS-controlled area] by [insert date]?" instead of, "What is the critical capability we are trying to degrade in this operation?" or "What effect do we intend to have on the adversary's warfighting capabilities?" This idea is encapsulated in a statement from Lieutenant General Robert Otto, USAF (Ret.), who served as the director of Air Force Intelligence during a portion of the U.S. involvement in OIR. Commenting on the coalition's ability to target IS, General Otto gave the effort a grade of 5 out of 10, claiming that the problem did not lie in "not having enough fighter jets to drop bombs," but instead could be traced to not "having enough legitimate targets to strike that can put [IS] on their heels."[15] This desire for more targets almost certainly stems from the operational directive of coalition military leadership to conduct persistent strikes against IS targets across the area of operations. As an OIR spokesman noted in January 2016, the intent of the coalition is to "keep pressure on [IS] all the time, everywhere."

This strategy of persistent strikes almost certainly "forces [the enemy] to have to make very difficult decisions" about where to direct efforts. Viewed this way, it is an understandable strategy to keep the enemy in a perpetual state of adaptation and incapable of planning for sophisticated conventional attacks. Additionally, it is an executable strategy in the permissive environment in which our coalition air assets operate that does not require exquisite mission planning to fly sorties. However, it must be acknowledged that consistent strikes on single IS targets complicate the ability of coalition intelligence analysts to perform systematic analysis and form a holistic picture of the adversary's structure and capabilities, since a strike on a single target will invariably affect the system as a whole. We refer to this process of affecting targets in this piecemeal fashion versus developing targets as systems or networks and striking them in close succession as *dyliberate targeting*, since it utilizes the process of the deliberate targeting cycle to approve and engage single targets in a manner much more consistent with dynamic targeting operations.

The consistent demand for more targets is not likely to ebb any time soon. Therefore, any analytic model to understand the networks of an adaptive hybrid adversary must be able to satiate the desire for more targets while also providing the necessary level of analysis to determine the most lucrative targets. In essence, any model must provide both a high quantity and high quality of targets. GCNA satisfies both these demands.

Decreases the Time Necessary to Form a Coherent Understanding of Adversary Networks. Timelines to generate a typical target system analysis product generally range from 8 to 12 months. By scoping the focus down to the component system level in a distinct geographic area, GCNA limits the land mass and corresponding nodal linkages an analyst must examine. Consequently, the time necessary to gain a comprehensive understanding of the adversary in that area shrinks. Timelines to conduct GCNA ranged between 2 weeks and 1 month when conducted by the Langley Target Development Cell, an organization developing targeting nomination on behalf of the air component in support of Combined Joint Task Force–OIR. To cite a specific example, GCNA conducted on an IS-controlled town in western Iraq in the summer of 2016 took just under 1 month. During that time, analysts were able to uncover a linked network of 11 targetable entities, articulate the military capability the network provided to the adversary, and prepare the individual target nominations for validation and approval. This experience illustrates that a shorter timeline ensures the analytic process is more adaptable to the hybrid nature of the adversary and is more conducive to producing targets at the pace of the dyliberate targeting process. GCNA integrates timeliness of analysis and depth of content to generate a methodology that is content-focused with punctuality in mind. Consequently, it incorporates many of the benefits from both time-dominant fusion and content-dominant analysis in an effort to rapidly meet "the need for the deep content required to help generate a rich contextual understanding of the environment."[16]

Enables the Assembly of Intelligence Data into a Useful Intelligence Product for Targeteers. Specifically, when intelligence data are gathered through structured observation management and activity-based intelligence processes, targeteers benefit. The Department of Defense has recently made huge strides in its ability to provide services that enable the visualization of big data to the operational warfighter.[17] There is a vast amount of intelligence data, spanning the spectrum of intelligence disciplines, that pertain to IS. Data without any analytic rigor applied, however, remain just that—data. GCNA offers a scalable framework to incorporate the massive amount of data available to today's Intelligence Community at a level that is much more

Airman with 407th Expeditionary Maintenance Squadron tests functionality of weapons rack releasing system of F-16 Fighting Falcon in support of Operation *Inherent Resolve,* February 4, 2017 (U.S. Air Force/Benjamin Wilson)

manageable to a small team of intelligence analysts or targeteers.

Aids in Maximizing Coalition ISR Capabilities. The platforms and personnel used to collect, process, exploit, and disseminate intelligence data used by joint and coalition forces are not infinite. Like any finite resource, great care should be taken in determining how to utilize precious intelligence, surveillance, and reconnaissance (ISR) collection and processing, exploitation, and dissemination capabilities. There is simply not enough capacity to devote ISR resources to every point with reporting of adversary activity, nor would it be advisable to do so. This peanut butter–spread approach to ISR allocation will only yield an incomplete understanding of all entities we collect on and perpetuate the ongoing struggle to secure overtaxed assets. A prioritized collection strategy and systematic analysis of the adversary are necessary to determine which targets possess the most significance and therefore require further deliberate development and consistent ISR coverage.

There are also two operational considerations that leaders and analysts must keep in mind when employing GCNA.

Requires Patience. Even though the time commitment associated with conducting GCNA is significantly less than that of performing traditional TSA, time and deliberate analysis are both still required. Leaders must be cognizant of this planning factor and afford their personnel the tactical patience to act accordingly, while intelligence analysts and targeteers must resist the pressure to submit target development nominations that result from hurried or incomplete analysis.

Necessitates Close Coordination Between Strategy, Plans, Intelligence, and Operations Elements. This applies to all deliberate targeting processes, not simply effective employment of GCNA. Military strategists and planners must ensure they are providing intelligence and operations personnel with adequate time and proper signaling to conduct deliberate analysis and target development. Similarly, intelligence analysts and targeteers must ensure their efforts are consistent with guidance and satisfy the commander's objectives. Finally, operators must affect the entities identified by targeteers in a deliberate manner that is synchronized with the operations of a ground force capable of seizing IS-controlled areas after its defenses have been weakened through the deliberate targeting process.

Conclusion

Coming on the heels of over a decade of mostly dynamic targeting operations, the counter-IS campaign has enabled the U.S. military to reacquaint

itself with a more traditional deliberate targeting cycle. Viewed this way, one could be tempted to view IS as a mere *transitory* adversary, bridging the gap between conflicts dominated by dynamic and deliberate targeting operations and allowing the U.S. warfighter to again become well versed in the lexicon and processes of deliberate target development in preparation for a potential conflict versus a peer or near-peer competitor. While this latter scenario would certainly be the most dangerous course of action for U.S. military operations, a more likely scenario is that America's military will face a hybrid, IS-like adversary again before engaging in conflict with a more sophisticated conventional military force. Consequently, intelligence analysts, strategists, and operations planners must develop cognizance of the characteristics of hybrid adversaries if they are to prove effective in developing targeting strategies to defeat them.

As the nature of the adversaries the U.S. military engages on the battlefield changes, so must our thinking on how to systematically analyze and degrade their centers of gravity. Admittedly, there is nothing revolutionary described in the concepts discussed above. Our aim is merely to adhere to a doctrinally sound targeting framework while slightly modifying the scope and application of traditional target system analysis in a manner that is more conducive to understanding and targeting a hybrid adversary. GCNA enables more rapid analysis of a hybrid enemy in a focused, systematic manner to degrade the adversary's capability to effectively govern and project combat power from defined territorial strongholds. The ultimate strength of the GCNA model is its simultaneous appeal to the idealist's need for a strategy grounded in doctrine and the realist's desire to satisfy leadership's desire for more targets. The small scope of GCNA is a pragmatic solution intended to satisfy these competing demands. Far from theoretical, this tested model greatly shrinks the timeline typically attributed to traditional target system analysis from a period of months to weeks, enabling the rapid generation of targetable entities for submission into the joint targeting process. **JFQ**

Notes

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USS *John Paul Jones* launches Standard Missile-3 Block IIA during flight test off Hawaii, marking first successful intercept engagement using Aegis Baseline 9.C2 weapon system, February 2, 2017 (Missile Defense Agency)

Joint Integrated Air and Missile Defense

Simplifying an Increasingly Complex Problem

By Gabriel Almodovar, Daniel P. Allmacher, Morgan P. Ames III, and Chad Davies

The strength of any Joint Force has always been the combining of unique Service capabilities into a coherent operational whole.

—General Martin E. Dempsey

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As indicated in the Chairman of the Joint Chiefs of Staff's *Joint Integrated Air and Missile Defense: Vision 2020*, the joint force faces an increasingly complex array of

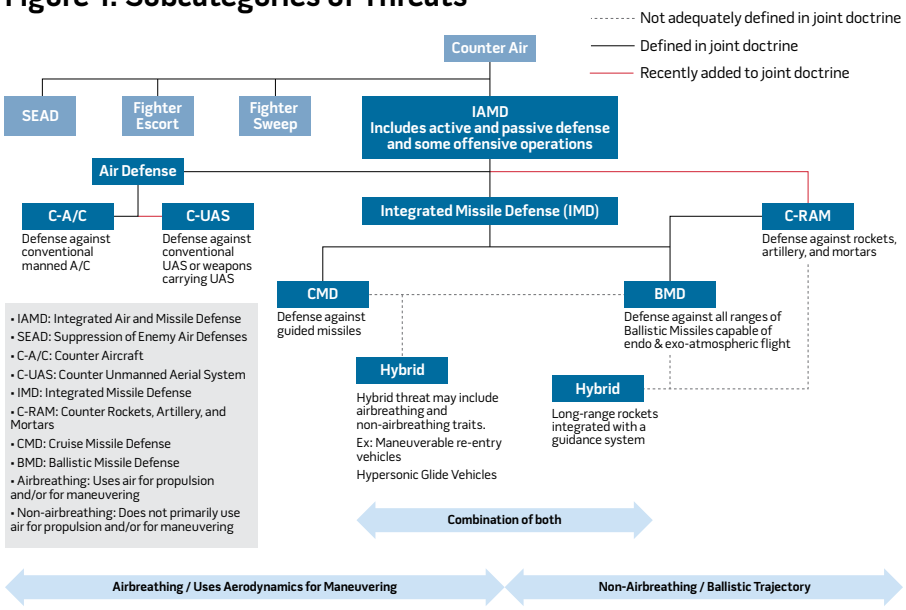
air and missile threats that have the potential to overwhelm current U.S. integrated air and missile defenses and lead to an operational or strategic failure in a future conflict.[1] Our potential adversaries are rapidly developing emerging air and missile threat capabilities from new manned and unmanned aircraft systems, stealthy cruise missiles, hypersonic glide vehicles, and advanced ballistic missiles. These capabilities could dramatically reduce the effectiveness of current U.S., allied, and partner air and missile defenses. As these advanced threats become more prolific and threaten to exploit gaps and seams in traditional integrated air and missile defense (IAMD) architectures, the Department of Defense (DOD) must assess its ability to effectively and efficiently develop, field, and operate *advanced* IAMD capabilities.[2] According to Geoffrey F. Weiss:

The proliferating air and missile threat and their advanced capabilities have further collapsed the old paradigm of separate IAMD domains—regional and homeland. . . . Air and missile attacks can easily and rapidly cross area of responsibility boundaries, placing a premium on coordination and integration between Combatant Commands, Services, and the Joint Force.[3]

Based on increasing levels of unacceptable risk and cost, emerging adversary air and missile capabilities may fundamentally alter the way future conflicts are conducted and limit or negate current U.S. critical capabilities to project joint military forces.[4]

These emerging complex air and missile threat environments demand that the joint force reassess future organizational structures to ensure they are focused and empowered with the authorities and resources to synchronize joint capabilities across the range of organizations in the DOD IAMD enterprise. Analysis of IAMD roles and responsibilities across DOD identifies disparate doctrines and policies. There is no single entity with the authority and resources to effectively and efficiently develop, field, and operate joint IAMD capabilities, resulting in a gap in coordination and synchronization. While the current IAMD mission is growing in complexity, it is made more complicated by the current organizational structures within DOD tasked to develop and execute it.

Figure 1. Subcategories of Threats



The IAMD Construct

Joint Publication (JP) 3-01, *Countering Air and Missile Threats*, defines *IAMD* as the "integration of capabilities and overlapping operations to defend the homeland and U.S. national interests, protect the Joint Force, and enable freedom of action by negating an adversary's ability to create adverse effects from their air and missile capabilities."[5] IAMD is nested under the counterair mission, integrating offensive and defensive operations to attain and maintain a degree of air superiority and protection by neutralizing or destroying enemy aircraft and missiles, both before and after launch. When evaluating the IAMD mission, adversary capabilities are typically categorized into air-breathing and non-air-breathing threats. Air threats comprise manned aircraft, unmanned aircraft systems (UAS), and aerodynamic missiles (to include cruise missiles). Non-air-breathing threats traditionally consisted of ballistic missiles with flight profiles capable of endoatmospheric and exoatmospheric standard ballistic trajectories. Additionally, rockets, artillery, and mortars—which are characteristically non-air-breathing, short-range threats with ballistic flight profiles—were recently included in the IAMD mission area as part of the April 2017 update to JP 3-01. Each of these threat categories poses unique technical and operational challenges that affect how the joint force should defend against them. Figure 1 depicts the various subcategories defined within or associated with IAMD.

Advances in adversary air and missile capabilities are blurring the lines between traditional air-breathing and non-air-breathing threat categories, broadening the IAMD mission. Hybrid threats—such as a ballistic missile equipped with a maneuvering re-entry vehicle or hypersonic glide vehicle, a lethal one-way UAS, or long-range, large caliber rockets equipped with terminal guidance—demand a multilayered defense to eliminate exploitable gaps between traditional IAMD subcategories. Additionally, advances in longer range ballistic missiles, manned and unmanned aircraft, and cruise missiles present new challenges that require improved cross-combatant command integration. Further challenging the IAMD mission is the counter-rocket,

Chairman discusses capabilities of USS *Barry* during tour of ship and Aegis Baseline 9.C2 weapon system, which includes air and ballistic missile defense, surface warfare, and undersea warfare capabilities, Yokosuka, Japan, September 7, 2016 (U.S. Navy/Leonard Adams)

-artillery, and -mortar (C-RAM) mission. The increased precision guidance capabilities of adversary rockets, artillery, and mortars countered by new technologies, such as the land-based Phalanx weapons system or Israel's Iron Dome system, necessitated that joint doctrine be revised to incorporate this threat and C-RAM capabilities into IAMD. This revision to joint doctrine was necessary despite the traditional belief that the C-RAM mission is "not generally considered part of the centralized joint AMD [air and missile defense] network" because of the weapons' localized effects in the battlefield.[6]

Solving Ballistic Missile Defense

Executing the IAMD mission is already complex, but it is further complicated by the organizational structure within DOD tasked to develop and execute it. The Defense Department's disparate efforts for developing IAMD solutions provide a basis for examination of stakeholder organizations. To date, most of the efforts to address missile defense have focused on the integration of various ballistic missile defense (BMD) systems across the Services and deployed with the combatant commands (CCMDs). Many of the newer BMD systems utilize cutting-edge hit-to-kill technology to destroy incoming ballistic missiles targeting the homeland or friendly forces deployed in theater. The complexity of developing, fielding, and then integrating these advanced weapons systems into a cohesive BMD family of systems capable of defeating myriad ballistic missile threats has been a formidable undertaking; however, a significant hurdle to the development of BMD systems was the complicated organizational and bureaucratic structures within DOD.

In 2002, the threat of strategic ballistic missile attacks to the homeland prompted the George W. Bush administration to conclude that "all missile defense plans should be brought under one large umbrella."[7] However, the BMD mission does not fit singularly into any one of the military departments' core mission areas. Therefore, DOD redesignated the Ballistic Missile Defense Organization as the Missile Defense Agency (MDA) and granted it "full agency rank and with it, the power and influence associated with such positioning."[8] The creation of MDA consolidated the responsibility for the lead development of the BMD system under one organization with authority to directly effect change and development in the joint force. With its own budget, personnel, and resources, MDA could focus on developing and integrating BMD systems in coordination with the Services, Joint Staff, and combatant commands. MDA authorities allowed the organization to better synchronize development of capabilities across DOD and invest in

capabilities that may have been lower in priority for the separate military Services. The demonstrated capability to shoot down ballistic missiles launched toward the homeland or at friendly forces deployed in theater is a direct result of the creation of the MDA.

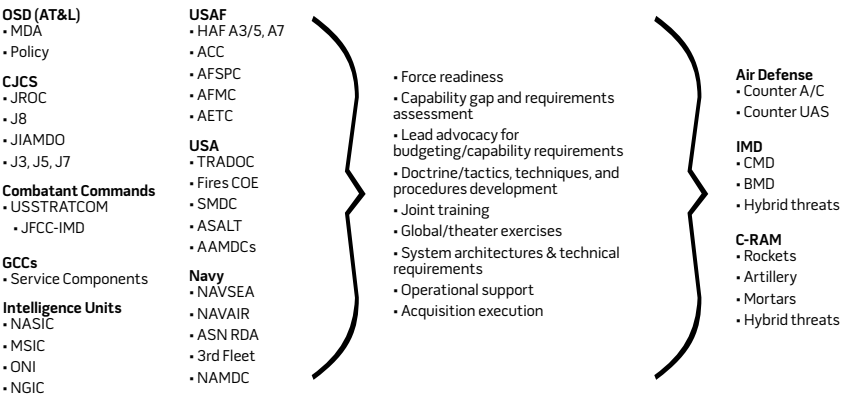
Overview of IAMD Structures

The emerging complex array of IAMD systems faces many of the same hurdles that challenged DOD development of BMD capabilities because IAMD similarly requires capabilities from all the Services to operate in and across areas of responsibility in each of the CCMDs. Analysis of the IAMD roles and responsibilities across DOD shows that there is no single entity with the authority and resources to effectively and efficiently develop, field, and operate joint IAMD capabilities. Instead, the joint IAMD mission area requires numerous DOD organizations to develop, field, and operate disparate IAMD capabilities.

Each of the organizations in the IAMD enterprise contributes differently by performing one or more of the following functions: force readiness, capability gap, and requirements assessment; lead advocacy for budgeting/capability requirements, doctrine/tactics, techniques, and procedures (TTPs) development; joint training; global exercise; system architectures/technical requirements; operational support; and acquisition execution. While these functions are not unique to how DOD executes the IAMD mission, the challenge is that a large set of diverse organizations perform one or more of these different functions for various capabilities to address one or more subsets of the IAMD threat. Figure 2 depicts the multiple organizations executing different functions to counter a variety of threat subsets. It is important to note this figure is not all-inclusive.

The 2005 Unified Command Plan assigned U.S. Strategic Command (USSTRATCOM) the role of "global synchronizer" for integrated missile defense (IMD). To execute this mission, USSTRATCOM created the Joint Functional Component Command for Integrated Missile Defense (JFCC-IMD).

Figure 2. Organizations, Functions, and Threat Subsets of IAMD Mission Area



In doing so, USSTRATCOM leveraged the Army's Space and Missile Defense Command's (SMDC) commanding general, who also serves as the commanding general for Army Strategic Command, and designated him as the commanding general for JFCC-IMD, resulting in a tri-hatted position. In 2007, the JFCC-IMD and SMDC commanding general, Lieutenant General Kevin T. Campbell, wrote that "the primary mission [of JFCC-IMD] is to conduct functions for global missile defense to protect the United States, its deployed forces, friends, and allies from ballistic missile attacks" and to synchronize BMD needs and operations across the combatant commands.[9] Although the original scope of JFCC-IMD was on integrated ballistic missile defense only, that mission area is expanding to include defense of cruise missiles and hypersonic missile threats. The joint community is currently considering ways to better define the USSTRATCOM role in integrated missile defense because the term *global synchronizer* is not properly defined in doctrine or used in other references.

To complicate matters further, in 2008, the USSTRATCOM commander was also designated the Air and Missile Defense Integrating Authority (AMD IA). In this role, the USSTRATCOM commander not only was responsible for synchronizing global IMD per the Unified Command Plan but also had to act as the lead integrating authority for all IAMD capabilities across DOD. The AMD IA's chartered mission was to "provide a collaborative means for combatant commands, Military Departments, and Defense Agencies to identify and assess desired AMD capabilities and characteristics, examine the operational risks associated with capability gaps and redundancies, and review possible solutions and implementation timelines to support programmatic and milestone decisions."[10] The additional AMD IA mission forced USSTRATCOM to again leverage another organization, the Joint Integrated Air and Missile Defense Organization (JIAMDO). In 2015, USSTRATCOM's role as AMD IA was disestablished because of resourcing, and the majority of AMD IA responsibilities fell onto JIAMDO.

JIAMDO is another key organization within the IAMD enterprise. It was established as a Chairman of the Joint Chiefs of Staff (CJCS) Controlled Activity that reports to the Chairman through the Joint Staff J8 Directorate. ("CCAs [Chairman's Controlled Activities] are specialized organizations designed to address unique areas that are of joint interest.") JIAMDO is chartered to support both the CJCS and USSTRATCOM in their efforts "to develop and integrate sensors, weapons, command and control systems, and the concepts to employ them in the air and missile defense mission area."[11] While JIAMDO's authority is primarily limited to performing the J8 function for the CJCS in that it provides "support to

CJCS for evaluating and developing force structure requirements," it additionally assisted USSTRATCOM as the AMD IA to "advocate for warfighter's desired IAMD capabilities within DOD's capability identification, development, budgetary and acquisition process" before the AMD IA role was disestablished.[12] In 2017, the Deputy Secretary of Defense removed JIAMDO's designation as a CCA, but JIAMDO still provides the Chairman and combatant command assessment and analysis for the BMD, IMD, and remaining IAMD mission areas so that DOD leadership, including those from the military departments, can make informed recommendations and resourcing decisions.

While MDA is chartered to focus on the development of BMD capabilities, in 2013 it was assigned the role of IAMD Technical Authority (TA) to "lead IAMD engineering and integration efforts to enable joint capability."[13] In this capacity, the IAMD TA can create and recommend system standards, modifications, and other joint technical requirements to close gaps in interoperability and facilitate integrating IAMD capabilities across DOD. This is especially important in establishing a joint architecture for command, control, and communications of IAMD elements across the Services. The IAMD TA role is limited in that it does not have the authority to execute its recommendations. The military departments must be the organizations that plan, budget, and execute those requirements that the Services determine are worth the investment.

Each military department provides major contributions to the IAMD mission area, but departments also have other missions and priorities to balance. The military departments are responsible for organizing, training, and equipping military forces for combatant commanders and ensuring the U.S. military can conduct operations in current conflicts while balancing risks of future potential conflicts. As such, any IAMD capability will rely heavily on the programmatic investments made by the Services, but the Services' cultures, priorities, and available resources will likely dictate how they view and prioritize IAMD.

The U.S. Air Force views IAMD as a subset of the much larger counterair mission area, as described in JP 3-01. One of the Air Force priorities for the joint force has been to obtain and maintain air and space superiority, a core mission. The air and space superiority mission requires much more than IAMD capabilities, and, with that context in mind, one can understand why the Air Force may be less focused on certain areas within IAMD. On the contrary, JP 3-30, *Command and Control of Joint Air Operations*, states that the Joint Force Air Component Commander (JFACC) may also be designated as the Area Air Defense Commander (AADC).[14] In more recent combat operations, the Air Force has been designated as the JFACC and AADC; however, the Air Force does not own most of the active IAMD capabilities, which are generally provided by the Army or Navy. Nonetheless, with limited resources, the Air Force will continue to support capabilities vital to its core missions, functions, and the joint force.

The Navy sees IAMD in two major mission areas: self-protection of its vital carrier assets and, more recently, BMD for critical assets. Given the nature of maritime operations, the Navy must be able to protect its assets from a diversity of threats to ensure they can support joint operations. Advances in ballistic missile systems are making them more accurate in targeting U.S. ships at sea. The Navy, working closely with the MDA, has fielded capable BMD assets associated with their Aegis SPY-1 radar and standard missile variants, proving itself critically important to BMD. Today, the Aegis weapons system has proved capable of defeating ballistic missile threats because a single cruiser, destroyer, or Aegis Ashore provides the ability to find, fix, target, track, engage, and assess a variety of threats.

The Army views IAMD as providing protection for critical assets and ground maneuver forces. Historically, Army IAMD forces focused on defending ground forces to support movement, maneuver, and protection; however, since the joint force has maintained air superiority over the past 30 years of conflicts, the focus of the Army's air defense artillery has shifted to the defense of fixed critical assets, facilities, and infrastructure centered on BMD and C-RAM. This has more recently come at the expense of traditional short-range air defense (SHORAD) capabilities that could be used to counter air-breathing threats such as manned/unmanned aircraft systems and cruise missiles. With the evolution and proliferation of adversary cruise missiles and UAS, the Army is shifting its focus back to development of SHORAD units with the indirect fire protection capability that will again provide air defense coverage of maneuvering ground forces.

Ideas to Consider for Improvement

While developing a comprehensive solution to DOD IAMD organizational challenges may prove too difficult, improving the construct and its efficiency is fundamentally easier. Any ideas—big, small, radical, or simple—could result in positive impacts on the joint force. Although recommending full solutions is beyond the scope of this article, the following are ideas decisionmakers could consider to provoke further discussion about how DOD could improve the current IAMD enterprise construct.

DOD could create a new dedicated three-star joint IAMD command or agency with the mission, manpower, expertise, and authorities to integrate IAMD capabilities across DOD. This organization could focus on functions and needs that cross organizational roles and responsibilities and use its resources to implement technical solutions in DOD acquisition programs or focus on TTPs and nonmaterial solutions to solve combatant command needs. To accomplish these and other missions, this organization would require an appropriate budget authority to influence change across DOD and Service acquisition programs. This budget authority could be used to fund the development of IAMD capabilities or establish and fund joint IAMD requirements in Service acquisition programs that may otherwise not receive Service priority and funding.

Above Mount Fuji, five E-2D Advanced Hawkeyes, stationed at Marine Corps Air Station Iwakuni, Japan, lead two E-2C Hawkeyes, stationed at Naval Air Facility Atsugi, Japan, as part of Asia-Pacific rebalance, May 11, 2017 (U.S. Navy/Artur Sedrakyan)

Alternatively, this organization could use the resources to better focus the joint IAMD community on developing integrated TTPs or championing and funding innovative concepts to more effectively use existing IAMD capabilities. To do this, the organization needs the capability to support combatant commands in analyzing potential solutions to IAMD challenges and to support cost-versus-benefit analysis of future investments. This joint organization could also increase our effectiveness in the IAMD mission set by using its manpower and budget authority to influence improvement across DOD.

Similarly, DOD could focus on more effectively executing a smaller piece of the IAMD mission area—missile defense—by better enabling, resourcing, and empowering USSTRATCOM's JFCC-IMD with a dedicated three-star billet, support staff, subject matter experts, and a larger budget authority. DOD could also analyze broadening the MDA mission set to include developing capabilities to defend against all types of missiles, not just ballistic ones. This could concentrate the DOD effort in missile defense by establishing a single organization responsible for the acquisition of DOD missile defense capabilities within the greater IAMD mission area.

DOD could look at reconfiguring the roles and responsibilities of the Services. In 2011, the Russian military combined its air force, air and missile defense troops, and space forces into a combined Aerospace Force. While this may not work for the U.S. military, we may find utility in reallocating ground air defense systems to the Air Force or rearranging other missions to consolidate more IAMD responsibilities into a Service. This would allow the Service to better integrate those capabilities into its command and control structure, facilitating training among other potential benefits.

Additionally, DOD could create a Joint Acquisition Executive (JAE) to support IAMD (and other joint) acquisition programs. As former Defense Secretary Robert Gates stated, "We have really come to a point where we do extraordinarily well in terms of joint operations, but we do not do well in terms of joint procurement. It is still very Service-centered."[15] The Defense Science Board concluded that a "JAE would be more motivated than a Service-specific Acquisition Executive to resist individual Service culture, parochialism, and component-unique requirements and is more likely to reach out to CCMDs for requirements, both before program initiation and after baseline requirements have been set."[16] Having a JAE could reduce the stovepiped nature of the departments and agencies that operate in their own priorities and that often center their attention on major platforms rather than capabilities.[17]

Furthermore, DOD could create general officer– or flag officer–level IAMD centers of excellence within each of the Services and combatant commands. These centers could, with the proper authorities, establish a dedicated cadre of IAMD operators and subject matter experts to enhance and facilitate communication on cross-cutting IAMD challenges, training issues, and requirements. As an example, Pacific Air Forces recently established the Pacific IAMD Center, which will train theater, joint, and international IAMD professionals and coordinate IAMD exercises and training events, all while engaging with allies and partners dedicated to regional defense.[18] To further improve coordination and integration of IAMD capabilities, combatant commands could operationalize and staff a dedicated and collaborative air and missile defense board akin to the well-known and practiced joint targeting coordination board, or to the joint collection management board.[19] Establishing this type of board and working groups and codifying them into doctrine could increase the joint IAMD planning and coordination support to the joint force commanders.[20] All of these IAMD centers or air and missile defense boards could be used to more easily collaborate across areas of responsibility or organizations by creating known IAMD groups with which to collaborate.

These ideas are by no means all-inclusive, without their disadvantages, or even politically feasible, but they demonstrate that concepts for improvement could come in many forms to support the challenges of fielding and operating IAMD capabilities.

Conclusion

As the complexity of air, cruise, and ballistic missile threats quickly evolves over the next 10 to 20 years, DOD must find a less complicated way to rapidly develop and integrate the Services' IAMD capabilities and employ them across CCMD boundaries. How DOD is currently organized and how it manages the IAMD threat do not allow the joint force the ability to comprehensively counter this evolving and increasingly complex threat with the degree of agility required. If DOD fails in this endeavor, the United States and its allies risk losing more than just access to the global commons—the U.S. military risks losing current advantages in the land, sea, and air domains.

The current IAMD enterprise organizational construct can be streamlined and empowered to simplify the process in which DOD deals with IAMD. While some proposed solutions require significant change or restructuring, it is important that DOD continue to focus on how to improve its responsiveness and the integration of IAMD capabilities even with the influence of organizational resistance, Service cultures, and parochialism. The key to any proposed ideas for improvement will most likely require the clarification, specification, and consolidation of roles, responsibilities, and budget authorities to effect change within the IAMD enterprise. The results would be more effective organizations that are better focused on IAMD and enabled by the right set of authorities, personnel, resources, and budget to achieve a more agile and responsive joint force. The joint force cannot afford to maintain the status quo, but must evolve DOD's IAMD construct to mitigate current and future risks and make an increasingly complex problem less complicated. **JFQ**

Notes

[1] *Joint Integrated Air and Missile Defense: Vision 2020* (Washington, DC: The Joint Staff, 2013), available at <www.jcs.mil/Portals/36/Documents/Publications/JointIAMDVision2020.pdf>.

[2] Geoffrey F. Weiss, "Seeing 2020: America's New Vision for Integrated Air and Missile Defense," *Joint Force Quarterly* 76 (1st Quarter 2015), 108.

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RQ-4 Global Hawk and U-2 Dragon Lady are Air Force's primary high-altitude ISR aircraft, Beale Air Force Base, California, September 17, 2013 (U.S. Air Force/ Bobby Cummings)

Achieving Secrecy and Surprise in a Ubiquitous ISR Environment

By Adam G. Lenfestey, Nathan Rowan, James E. Fagan, and Corey H. Ruckdeschel

Sun Tzu could not have prophesied the future any better when he stated, "All warfare is based on deception. Hence, when we are able to attack, we must seem unable; when using our forces, we must appear inactive; when we are near, we must make the enemy believe we are far away; when far away, we must make him believe we are near."[1] How can today's military planner execute a successful operational deception when the eyes of the world are always watching?

The notion of military offset strategies has been widely discussed in recent years. The first Department of Defense (DOD) offset strategy was envisioned to mitigate the Soviet Union's numerical advantage in conventional forces through a credible nuclear deterrent. When the Soviet Union, and to a lesser extent China, became nuclear powers, a new offset strategy was required. The second offset strategy consisted most prominently of antiaccess/area-denial (A2/AD) capabilities, such as precision navigation and timing (PNT), precision-guided munitions, and advanced intelligence, surveillance, and reconnaissance (ISR).[2] The second offset could be said to have culminated in 1991 during Operation

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U-2 Dragon Lady delivers critical imagery and signals intelligence to decisionmakers during all phases of conflict, Sierra Nevada Mountain Range, California, March 23, 2016 (U.S. Air Force/Robert M. Trujillo)

Desert Storm, which was the first major U.S. combat operation since Vietnam.

To signal our warfighting superiority to the Iraqi regime and bolster American public confidence leading into this campaign, several capabilities key to the second offset strategy were declassified: high-resolution aerial and satellite imagery, precision strike, and stealth technology. The 1991 U.S.-led coalition against Iraq quickly achieved air superiority and began an extended campaign of precision strikes, enabled by air and space reconnaissance, against Iraqi critical warfighting infrastructure and forward-deployed forces in Kuwait, such as Republican Guard units. Under the blanket of air supremacy, the United States massed ground forces in Saudi Arabia while deceiving the Iraqi regime to believe it intended an amphibious landing in Kuwait. The ground war began when the now-famous "left hook" (the attack from the western desert rather than the anticipated amphibious assault from the southern shores of Kuwait) caught Iraqi forces completely by surprise. The combination of PNT, advanced ISR, and precision strike, coupled with a massed ground attack enabled by operational secrecy and surprise, resulted in a resounding victory over what was the world's fourth-largest military.

As the implications of second offset technologies became known and battlefield-proven over the ensuing decades, the world took notice. Governments around the globe sought for themselves the sort of results the United States realized against Iraq—in some cases to reproduce these U.S. advantages and in other instances to counter them. Entrepreneurs, likewise, realized the potential market value of rapid global ISR capabilities and began to develop them for commercial sale. By 2015, commercial remote sensing (CRS) satellites, also known as Earth observation services, had become a $1.8 billion-per-year industry comprising 14 percent of operational satellites worldwide, while military surveillance satellites composed an additional 8 percent.[3] The global aerial imaging industry, meanwhile, "including helicopters, fixed-wing aircraft, multi-rotor unmanned aerial systems [UAS]," and so forth, was valued at $1.1 billion in 2014 and is forecast to grow to $3.3 billion annually within 10 years.[4]

A strong U.S. CRS industry presents undeniable benefits to U.S. and coalition warfighters, policymakers, and interagency partners through innovation, cost-sharing, and its inherently unclassified nature. Yet once a U.S.-based CRS provider is licensed to operate, DOD has little ability to affect its activities or prevent its products from falling into hostile hands. Also, while U.S. industry remains preeminent in most areas of space-based CRS such as resolution, large constellations for rapid revisit, and advanced sensor phenomenologies, foreign government and CRS systems are advancing rapidly. Along with the exponential proliferation of small UAS and handheld smart devices, these trends pose a serious challenge to the traditional military principles of secrecy and surprise.

DOD has begun to invest in a third offset strategy, designed to "offset shrinking U.S. military force structure and declining technological superiority in an era of great power competition."[5] Third offset investments are necessary because potential adversaries, and in some cases the private sector, are approaching parity with the U.S. national security community in key areas of second offset capability. Yet while the proposed third offset strategy will develop new asymmetric U.S. military capabilities, it will not remove our responsibility to consider fundamental warfighting principles. As foreign and commercial ISR capabilities proliferate, our ability to leverage secrecy and surprise for battlefield advantage is in danger of being severely degraded or lost altogether. We must take prudent near-term steps to address this concern.

Improving Counter-ISR

To leverage secrecy and surprise in today's operating environment, DOD needs to improve its counter-ISR posture in five specific ways:

- identify friendly force signatures that require obfuscation
- develop passive and active denial and deception capabilities
- update DOD policy regarding aerial and space-based collection on militarily sensitive sites
- work with U.S. industry, the interagency communuty, and Congress to manage proliferation of militarily relevant CRS collection against friendly forces
- engage on a military-to-military basis with partner nations to develop bilateral and multilateral agreements and norms for operational and transactional controls on CRS collection.

Identify Signatures. First and foremost, planners need to understand the true nature of friendly force exposure to modern ISR collection during military operations. DOD should baseline the current temporal, spatial, and spectral signatures of conventional military forces as they will operate in land, maritime, and air domains in major deliberate planning scenarios. This study should evaluate current operation and contingency plans, focusing on deployment from garrison, transport, joint reception, staging, onward-movement, and integration in theater, and the associated logistics footprint. It should assume a robust, nonfriendly ISR presence both prior to and during combat operations. Combatant commands should evaluate the results of the signature study to identify and prioritize the operational signatures we must hide to preserve secrecy and/or manipulate to facilitate surprise. The commands may also find it necessary to revise portions of some deliberate plans against robust A2/AD scenarios.

Develop Countermeasures. DOD should baseline the current state of its denial and deception capabilities, identifying all such existing investments across all conventional military components and assessing their potential for employment in standing operation and contingency plans. This baseline should include all appropriate special handling caveats required to achieve a comprehensive picture of the existing pockets of excellence across the enterprise. Ultimately, unless these capabilities are scalable in sufficient numbers to meet combatant commander needs and available for regular training and exercise, they will be suboptimally employed when needed most.

The military Services should reinvigorate tactics, techniques, and procedures (TTPs) to manage operational signatures, train forces to employ those TTPs, and exercise them regularly. The Services will also likely need to develop new camouflage, concealment, and deception or other counter-ISR capabilities. It may even be necessary to adjust the DOD steady-state force posture to achieve a robust presence in A2/AD areas by combining secrecy and surprise with dispersal and displacement of forces, hardening of key infrastructure, and rapid reconstitution capabilities.[6]

Combatant commanders should also seek ways to mitigate the predictable operational signatures of deploying forces. Ubiquitous ISR makes surprise in mass extremely challenging, which is why the United States invested in the second offset decades ago. Now that U.S. adversaries are nearing ISR parity, to regain battlespace advantage senior commanders may need to distribute authority in new ways, such as disaggregating surface action groups at sea.[7] As a historical example, in the Battle of Austerlitz, Napoleon was successful in creating self-sustaining battalions that allowed him to surprise and attack the enemy on multiple axes with a minimal logistics and command and control footprint. It is imperative that combatant commanders find innovative ways to emulate this technique in a modern environment.

In terms of defensive measures, the United States is being outpaced in operational denial and deception, such as the use of decoys and dummy weapons systems. Decoy (systems that look, emit, and act like the real system) and dummy (ones that look *enough like* the real system) platforms are extensively used by U.S. adversaries to complicate our targeting cycle. Previous operations in Kosovo and Serbia saw the United States targeting dummy surface-to-air missile (SAM) sites that were nothing more than plywood sheets constructed and painted to look like real weapons. Recently, companies in Russia, China, and India have begun to make life-size inflatable SAM and aircraft replicas that match real-world dimensions and paint schemes. These inflatables can be quickly erected, interspersed with real systems, and relocated to create confusion against adversary analysts.

DOD should consider investing in similar systems for our own use to take advantage of the very adversary ISR that currently presents such a challenge. The Allies used dummy systems in World War II to confuse German intelligence by providing false numbers and disposition of forces. Effective ISR work can negate the confusion caused by dummy and decoy systems, but this takes time that can be used to friendly advantage. While some investment within DOD has likely already occurred, effective implementation will require a coordinated effort to develop, field, operate, and maintain such systems on a strategically or operationally relevant scale.

Passive measures likely will not be able to counter 100 percent of adversary

United Launch Alliance Atlas V rocket carrying second Mobile User Objective System satellite for U.S. Navy lifts off from Space Launch Complex-41, Cape Canaveral Air Force Station, Florida, July 9, 2013 (Courtesy Pat Corkery)

ISR capabilities, however. In addition to direct counter-ISR capabilities, DOD should develop unique information operation TTPs to create doubt in the intelligence collected by near-peer competitors, working to sow inconsistencies in the data generated from different sources of collection. We should create and leverage adversary uncertainty to ensure U.S. decision advantage, since it takes time to develop sufficient confidence in intelligence analysis to enable quality decisions. This requires us to hone our skills in currently underutilized mission areas. Currently, information operations are often improperly planned and executed in military operations, typically because they are difficult to simulate during planning and exercises, and thus their effects are hard to predict.[8] However, such active measures will become essential tools to complicate adversary kill chains in a robust ISR environment.

Cyber operations, for example, can paralyze an adversary's ability to defend and counterattack. The Russian war with Georgia in 2008 made heavy use of cyber attacks on Georgian command and control, finance, and governmental networks before and during combat. These attacks delayed a Georgian defensive reaction to Russian troops crossing the border into South Ossetia, since Georgian forces were dependent on electronic networks for command and control, targeting, fires, and logistics. However, cyber weapons can be costly to develop and maintain. A nation must first develop cyber tools to penetrate and surveil adversary networks. Upon identifying critical nodes, additional tools must be emplaced for activation at the desired time. These tools must be built to remain undetected yet accessible to the owner. Even then, the operator cannot be certain a given cyber effect will be executable when desired. The target may have an intelligence collection value that supersedes its neutralization, or the action against the target may bring about undesired secondary and tertiary consequences. Additionally, once a cyber weapon is used, it is exposed and is potentially open to the adversary to analyze, modify, and reuse against the originator.

Cyber operations may not need to include penetration of protected adversary networks, however. Instead, cyber operators could focus on third-party sources of information and intelligence such as social media, which has developed into a method of rapid information dissemination where it is often difficult to validate individual users or the accuracy of their information. Manipulation of social media will not fool dedicated, analytic government agencies indefinitely, but it could provide valuable maneuver space, as it takes time and resources to disprove misinformation and determine facts. Such operations can be compared to aerial chaff

dispersed to confuse radar. Advanced radars may be able to work through the clutter and relocate the initial target, but by the time this occurs, the target has likely escaped and possibly placed itself in a position of relative advantage.

DOD may also require new force projection capabilities with smaller footprints. For example, the use of drones has already rapidly transformed the way we go to war. Drones can be employed in all warfighting domains and can be far less detectable than conventional forces. They provide extended surveillance capabilities with a minimal forward logistics footprint and provide real-time data that allow commanders to assess the battlespace and potentially apply combat power, dramatically expanding the capabilities of an otherwise small and isolated unit.[9] Incorporation of drones into conventional operations can greatly improve economy of force while maintaining the element of surprise.

Update Policy. To this point, we have discussed ways to mitigate detection by hostile ISR. There are significant cases, however, where the nonfriendly ISR capability is, in fact, within our policy influence in various ways. For example, U.S. law grants the Secretary of Commerce authority to license CRS space systems,[10] and the U.S. National Security Council CRS policy requires the Secretary of Commerce, prior to granting any such license, to consult with the Secretary of Defense for national security concerns and with the Secretary of State for foreign policy and international obligations.[11] Each Secretary can direct the inclusion of license conditions, including operational controls such as limits on spatial and spectral resolution, special collection modes, geographic restrictions, or latency requirements. These can be enduring conditions or can be activated for a specified duration. The cumbersome interagency process by which this license adjudication occurs is currently under review by the National Security Council in light of a rapid increase in the number and complexity of CRS license requests in recent years.

The U.S. National Space Policy (NSP) states that "a robust and competitive commercial space sector is vital to continued progress in space." One theme of the NSP is to encourage U.S. commercial industry growth, both to support government needs and compete favorably in the global market. The NSP has borne fruit: the U.S. CRS industry leads the world market in all but a single niche market (synthetic aperture radar), and it is growing rapidly in size, scope, and complexity. New commercial entrants are bringing high-resolution electro-optical, synthetic aperture radar, multispectral and hyperspectral imagery, and large constellations that provide extremely frequent coverage of the Earth.

DOD evaluates each new license based on sensor capabilities and planned operating modes, but it lacks formal implementing guidance or operational context to assess the likely national security impact of new concepts. In concert with the study of operational signatures described above, the department should develop a set of theoretical minimum time, space, and spectrum sensor system parameters that enable an operator to detect militarily sensitive signatures. DOD should then leverage these parameters, along with the operational effect determined by the combatant commands, as it adjudicates future CRS license requests. In addition, the department should evaluate the operational effectiveness of limited-duration operational controls such as geographic restrictions or temporary resolution limits.

Our potential adversaries, as well as commercial providers, have also recognized the potential applications of drones for ISR. However, unlike space assets, drones are tactically countered by a variety of means. Combatant commands and military Services should identify sensitive locations that should be off limits to drone overflight and should use established air traffic management means to restrict access by friendly collectors. DOD should develop policy regarding the use of tactical countermeasures to prevent collection by hostile or third-party drone operators, including readily available kinetic and nonkinetic options.

Manage Proliferation. While DOD can place some operational controls on U.S.-based systems through the licensing process, the U.S. Government currently lacks clear statutory authority for transactional controls, such as the ability to restrict sale of remote-sensing data and products to specific actors of concern. Federal law prohibits some entities, such as those on the State Department's Denied Party or Treasury's Office of Foreign Assets Control lists, from directly tasking collection from domestic CRS imagery providers. However, even assuming effective enforcement of this prohibition, CRS images are rarely proprietary to an individual customer. Once a CRS provider loads an image to an archive for commercial sale, it is nearly impossible to prevent its sale to actors of concern. This is largely due to the prevailing interpretation of the Berman Amendment, which "stipulates that transactions involving 'information and informational materials' are generally exempt from the purview of the presidential regulation."[12] The amendment was intended to facilitate U.S. sale of entertainment programming, participation in academic conferences, and other such pursuits overseas during the Cold War. However, archived satellite imagery currently is regarded to fall into the broad category of information and informational materials despite any latent national security implications it may entail. This prevailing interpretation of the Berman Amendment causes DOD to be more conservative in licensing CRS operations than it might be if it had recourse to curtail dissemination of sensitive satellite data to actors of concern after collection.

DOD should work within the interagency community and with Congress to develop regulatory and legislative change proposals for transactional controls that could better prevent proliferation of militarily relevant CRS collection against friendly forces, while still enabling a flourishing CRS market. One potential solution would require CRS operators whose systems reach a threshold capable of detecting critical operational signatures, as identified in the aforementioned studies, to enroll in the National Industrial Security Program (NISP) as a condition of their license. NISP is a

partnership between government and industry to safeguard classified and controlled but unclassified national security information in the possession of private industry and academia.[13] As such, the NISP could facilitate handling and release procedures for CRS imagery if governed by transactional controls. It is commonly argued that implementing transactional controls would place the U.S. domestic CRS industry at a disadvantage to foreign competition. This argument is weak, however, because most significant foreign CRS competitors already operate under transactional controls within their host nations.

Engage Allies. World governments generally fall into one of three categories of overhead ISR consumption. In a few cases, they rely primarily on indigenous national technical means, perhaps augmented by CRS. In other cases, they form consortia or public-private partnerships to produce dual-use indigenous systems that meet their national needs and sell excess capacity in the CRS market to offset their cost of ownership. In the remaining cases, they simply form imagery-sharing agreements with allies or buy CRS products from any provider that meets their needs.

The United States is on friendly terms with most, if not all, significant CRS provider nations and has established bilateral/multilateral defense agreements with many of them. Foreign CRS providers approaching peer capability with U.S. systems are nearly universally subject to operational and transactional controls by their host governments. In the current global environment, it is fair to say there are no significant foreign CRS systems that operate under less regulation than their U.S. counterparts. To ensure the competitiveness of U.S. industry while better protecting national security, DOD should work within the interagency community, as well as through bilateral and multilateral military-to-military engagements, to establish a set of international norms for operational and transactional controls among CRS provider nations. These controls should be designed to prevent the exploitation of CRS by hostile entities to target friendly military operations and critical infrastructure.

A Chinese proverb states, "The best time to plant a tree was 20 years ago. The second-best time is now." This problem cannot be solved quickly, and no doubt DOD would have been well served to consider and implement counter-ISR measures over the last 20 years had we known how rapidly the field would develop. That said, DOD should begin to take action to ensure we do not lose the military principles of secrecy and surprise as our adversaries approach parity in second offset capabilities. We should begin by identifying the spatial, spectral, and temporal signatures that most expose friendly forces' intent and plans. Armed with these new insights, DOD should prioritize, develop, and employ denial and deception capabilities to deny adversary collection and create strategic ambiguity. In parallel, we should update DOD policy to mitigate our exposure to, and work across, government and industry to develop new techniques to manage proliferation of sensitive collection by non-hostile actors. Lastly, we should engage with our allies in military-to-military channels to develop bilateral/multilateral agreements and norms for operational and transactional controls among CRS provider nations.

None of these recommendations is a panacea. Independently, their effects likely will not generate the desired effects against near-peer adversaries. However, in concert, these recommendations have the potential to re-enable operational secrecy and surprise in a ubiquitous, nonfriendly ISR environment. JFQ

Notes

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U.S. Air Force survival evasion resistance and escape specialist air advisor, with 818th Mobility Support Advisory Squadron, demonstrates navigation skills for Kenyan Defense Force members, Laikipia Air Base, Kenya, June 23, 2016 (U.S. Air Force/Evelyn Chavez)

Implementing Guidance for Security Cooperation

Overcoming Obstacles to U.S. Africa Command's Efforts

By Andrus W. Chaney

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In 2000, Commander Richard G. Catoire, USN, recommended creating a new commander in chief for Africa.[1] Eight years later, his idea became a reality with the creation of U.S. Africa Command (USAFRICOM). In a decade since then, the new command has maneuvered through the challenges of establishing a new unit, the effects of the Arab Spring, and the growing terrorist threats of al Qaeda in the Islamic Maghreb, al Qaeda in the Arabian Peninsula, Boko Haram, the so-called Islamic State, and al Shabaab in Somalia.

In 2010, Secretary of Defense Robert Gates outlined his vision for the future of security cooperation: "This strategic reality demands that the U.S. government get better at what is called 'building partner capacity': helping other countries defend themselves or, if necessary, fight alongside U.S. forces by providing them with equipment, training, or other forms of security assistance."[2] Following this guidance, Defense Secretary Leon Panetta stated in 2012, "Whenever possible, we will develop innovative, low-cost, and small-footprint approaches to achieve our security objectives, relying on exercises, rotational presence, and advisory capabilities."[3] These two statements summarize USAFRICOM's security cooperation efforts since 2008. Before 2012, security cooperation professionals serving in USAFRICOM used old strategies, policies, directives, publications, and combatant command campaign plans (CCCP) to execute security cooperation activities in Africa. USAFRICOM previously planned security cooperation efforts in stovepipes, without synchronized strategic effects across all staff levels.

USAFRICOM can better implement Department of Defense (DOD) security cooperation guidance by overcoming four obstacles. This article first reviews some challenges of establishing a new combatant command, notes the changes in security cooperation brought about by Secretary Gates, and highlights changes to security cooperation in the recent National Defense Authorization Act (NDAA). The article next illustrates the systems USAFRICOM has established to operationalize its CCCP and identifies areas for further improvement. It then outlines specific areas where USAFRICOM and its components are succeeding in improving their efforts and identifies gaps for future improvement. Overall, this article highlights areas where USAFRICOM and its components are struggling with implementing the multitude of new guidance for DOD security cooperation efforts.

Challenges of a New Combatant Command

USAFRICOM is the newest of the six geographic combatant commands (GCCMDs) created in the last 45 years, excluding U.S. Northern Command. Over the last 45 years, other GCCMDs have had, on average, 15 rotations of commanders and Active-duty staff (3 years each) and 9 rotations of civilian staff assignments (5 years each). USAFRICOM received four commanders in its first 8 years, recently completed its first full rotation of civilian staff, published its third CCCP, and approved the second edition of its country cooperation plans. By these measures, USAFRICOM is still a young command.

USAFRICOM continues to improve itself by conducting necessary analysis and developing strategic plans to achieve the endstates outlined in the Nation's strategic guidance. However, it historically has received a multitude of recommendations from the Government Accountability Office (GAO). A GAO report from 2010 concerning USAFRICOM's efforts on the continent identified areas of needed improvement in training, planning, and interagency collaboration. These included the lack of overarching strategies such as a CCCP and country cooperation plans, the lack of measuring long-term effects of activities, and the lack of training on applying funding sources to activities by staff members on the patchwork of security cooperation authorities. It also highlighted that limited resources prevented the desired number of interagency personnel from participating on the USAFRICOM staff and that limited cultural knowledge and understanding of U.S. Embassy operations caused missteps during engagements.[4] GAO also highlighted that program managers from other agencies failed to implement guidance from Presidential Policy Directive (PPD) 23, *Security Sector Assistance*. Not fully implementing this guidance has resulted in an inability to accurately track the distribution of program funding and a lack of agencies to coordinate and implement programs.[5] Department of State program managers have since improved funding assessments and integrated more agencies into planning and executing programs.

In another report, GAO highlighted ongoing DOD reforms for security cooperation efforts but highlighted four significant unaddressed challenges.[6] Of the six combatant commands reviewed, USAFRICOM, U.S. Pacific Command, and U.S. Southern Command required more work in at least 12 of the 20 identified deficient subtasks. A few examples of the deficiencies were that senior U.S. officials created unrealistic partner country expectations, the Theater Security Cooperation Management Information System (TSCMIS) provided an insufficient common operating picture of all security cooperation activities, and inaccurate cost estimates led to the cancelation of or reductions in the scope of a case.[7] DOD addressed most of these deficiencies in the new policies, directives, and doctrine. However, others require significant changes in the knowledge management system, TSCMIS, and more training for security cooperation personnel.

Since 2012, there has been a gradual increase in new and updated strategies, policies, and regulations issued concerning security cooperation. This growth, primarily because of security force assistance (SFA) activities in Afghanistan and Iraq, resulted in 15 new publications for combatant commands to execute. President Barack Obama issued PPD 16, *U.S. Strategy Toward Sub-Saharan Africa*, in June 2012, and PPD 23, *Security Sector Assistance*, in 2013. From 2012 to 2017, DOD agencies collectively issued four new policy directives and one planner's handbook, including security cooperation as the main subject.[8]

The Joint Staff and Headquarters Department of the Army issued or updated seven notes, pamphlets, field manuals, publications, or other guidance during the same period.[9] In 2013, the Joint Staff issued Joint Publication Note 1-13, "Security Force Assistance," which stated that "despite the importance of its national mission, SFA does not have a dedicated JP [joint publication] and existing joint doctrine makes only occasional references to it." Four years later, JP3-20, *Security Cooperation*, was published. The 2015 U.S. National Military Strategy further defined the security cooperation and security assistance communities.

U.S. Marine assigned to Special Purpose Marine Air-Ground Task Force Crisis Response–Africa watches as Ugandan soldier uses radio to relay messages, Camp Singo, Uganda, November 17, 2016 (U.S. Marine Corps/Alexander Mitchell)

The release of these 15 documents within the last 6 years is connected to Secretary Gates's vision. This vision, combined with the significant increase in SFA programs since 2006 and the consistent findings of the GAO, has led Congress to implement new strategies ensuring that DOD fully operationalizes its security cooperation efforts.

Changes in Security Cooperation

The National Defense Authorization Act of 2006 authorized DOD to use its Title 10 funding source instead of the Department of State's Title 22 funding to support the Building Partnership Capacity of foreign militaries. This authorization allows DOD to assist other allied or partner nations in transferring training and equipment so long as they are in direct support of U.S. efforts to counter terrorism. This authorization was a "departure from vesting security assistance authorities in the Department of State and led to charges of a militarized foreign policy."[10] This significant shift in security assistance policy and authority undoubtedly laid the foundation for Secretary Gates's 2010 vision of the future of DOD SFA activities.

This change created numerous issues for DOD staffs that are expected to execute this vision, especially since "the number of authorities and associated funding provided to DOD to conduct security cooperation activities has expanded significantly since 2001, with DOD security cooperation funding tripling from 2008 to 2015. In contrast, the Department of State's security assistance funding has increased by 23 percent in the same period."[11] The Defense Security Cooperation Agency (DSCA) and Security Cooperation Officers (SCO) have mainly experienced these effects.

DOD systems have felt this 23 percent increase in demand. "It has to be staffed," DSCA director Vice Admiral Joseph Rixey remarked of the system. "If you look at the ways sales are going up, if workforce doesn't correspond with sales going up, or at least stay steady, it's going to have an obvious impact on time because you're running everything through that particular system."[12] Overall, DOD continues to expect war on terror results from systems designed for Cold War–era timelines while cutting staffs by 20 percent and under the constant stress of unknown budget allocations.

Operationalizing Security Cooperation

Congress codified Secretary Gates's vision through the 2016 NDAA. In section 1202, Congress mandated that DOD, "in consultation with the Secretary of State, shall develop and issue to the DOD a strategic framework for DOD security cooperation to guide prioritization of resources and activities."

U.S. Army instructor with soldier from Senegalese army's 1st Paratrooper Battalion, as part of Africa Readiness Training 2016, Thies, Senegal, July 13, 2016 (U.S. Army Africa/Craig Philbrick)

It also directed that DOD discuss strategic goals of security cooperation programs; identify the primary objectives, priorities, and desired endstates of programs; identify challenges to achieving the objectives, priorities, and endstates; and develop a methodology for assessing the effectiveness of the programs.[13] In response to these requirements, DOD developed policies and processes to improve security cooperation communities. These new changes became law in the 2017 NDAA. Four areas that the new legislation would focus on include streamlining security cooperation authorities, coordinating more between DOD and the State Department on security cooperation activities, improving monitoring and evaluation of security cooperation activities, and increasing the professionalism of the security cooperation workforce.[14]

With the 2017 NDAA, these directives and instructions have become law. For USAFRICOM staff members, these new directives and changes in the NDAA 2017 resulted in new requirements without the systems or trained staff to accomplish these tasks. With these challenges, how does USAFRICOM implement new DOD policies and laws and improve our security cooperation efforts?

Obstacles to Operationalizing the CCCP

Security cooperation efforts require detailed plans that are synchronized with congressional funding cycles and that are capable of being executed over multiple years and through various program managers. It is DOD policy that security cooperation activities "shall be planned, programmed, budgeted, and executed with the same high degree of attention and efficiency as other integral DOD activities."[15] However, operations tend to receive the full attention of the staff because officers are more familiar with them. Operations have a clear and defined task, purpose, and timeline. Security cooperation is about building relationships, sometimes with "difficult" partners who have a say in what we do. To fully operationalize security cooperation, USAFRICOM must overcome four obstacles: institutionalize new processes, institutionalize all programs in the CCCP, reduce the number of events, and increase training for its staff.

Institutionalize New Staff Processes. USAFRICOM has begun establishing CCCP line-of-effort boards to synchronize all combatant command and component staffs' security cooperation efforts and programs into five defined areas. This allows the boards to prioritize

USAFRICOM efforts, resulting in synchronizing efforts through the issuance of operation orders for security cooperation events. U.S. Army Africa (USARAF), which is USAFRICOM's Army component command, has further operationalized this by initially establishing an 18-step system to achieve full staff integration and support the CCCP. Neither of these new staff processes has achieved a full execution of their cycles, nor are they fully integrated into a written and published standard operating procedure.

USAFRICOM's orders are not synchronized with the requirements of its components' timelines and requirements. USARAF regularly receives the order to execute security cooperation programs just weeks before the new fiscal year, and not within the 180-day requirement by U.S. Army Forces Command to task regionally aligned forces. USAFRICOM should challenge its line-of-effort boards to produce operation orders that include all security cooperation events and send these orders to its components 270 days before the start of the new fiscal year.

With any new staff procedure, time is required to synchronize efforts fully. Over the upcoming years, USAFRICOM and USARAF should continue to refine their staff processes and integrate them into a codified system that outlasts staff changeovers. In doing so, USAFRICOM will reduce its staff's learning curve, provide the time required to task allocated forces correctly, and comply with the new requirements from the 2017 NDAA by fully accessing every security cooperation event.

Institutionalize All Programs in the CCCP. USAFRICOM must include in the CCCP all State Department programs and DOD units that operate in its area of operation but are not directly assigned. For example, DSCA is responsible for the Defense Institutional Reform Initiative, Africa Center for Strategic Studies (ACSS), and Ministry of Defense Advisor (MoDA) programs. These programs and center execute activities in the USAFRICOM area of operations, yet none are captured or directed in the CCCP. Neither are the State Department's Foreign Military Financing (FMF) and International Military Education and Training (IMET) programs. To synchronize these efforts, the CCCP should become the sole directive for all security cooperation efforts in the combatant command's area of operations, including the National Guard Bureau's State Partnership Programs. Likewise, the CCCP should become the tool through which USAFRICOM directs FMF and IMET funding by showing the desired long-term effect of State Department security assistance.

Reduce the Number of Military-to-Military Events. The impact of military-to-military events is rarely measured and accessed due to their small size (two to three personnel), small effect (3 to 4 days), and sheer numbers (more than 100). Instead of trying to do something in every country in Africa, USAFRICOM should make its staff and components do fewer events with more synchronization and more effects afterward. These events should be longer, with more personnel, more expected outcomes, and more synchronization of efforts with allied partners. If these efforts were synchronized with other programs over several years, these small touch points could be included in the larger assessment of an overall effort.

Increase the Professionalism of the Security Cooperation Workforce. To ensure security cooperation funds are spent properly, USAFRICOM must ensure its personnel are properly trained and staffed. DSCA is primarily responsible for the professional development of the security cooperation workforce, and does this through resident and online training courses by its Defense Institute of Security Cooperation Studies (DISCS). Security cooperation professionals need more than a few weeklong courses to understand the complexities of their jobs. The fact that the Service branches conduct their own security cooperation courses highlights the previous lack of training opportunities from DISCS. Both the Army and Marine Corps have separate security cooperation planner courses. Since DISCS recently expanded and updated its training curriculum, USAFRICOM should code each billet properly to ensure its staff is properly trained through DISCS. As well, DISCS should absorb the U.S. Army and Marine Corps Planner's courses to include Service-specific processes.

Overcoming these four obstacles to operationalizing the CCCP will not be accomplished easily or quickly. They may not be realized for several years because significant coordination and buy-in from within DOD and the State Department are required. However, without overcoming these issues first, none of the following three recommendations will be achieved.

Improve Coordination Efforts with Allies

Synchronizing security cooperation efforts with our strategic partners in Africa is ongoing at the highest and lowest levels. These efforts sometimes end in meeting notes, but without any credible action taken. As military budgets decrease, our militaries are forced to look for ways to synchronize our efforts. North Atlantic Treaty Organization (NATO) doctrine is designed to enhance interoperability as the primary defense against aggression. In addition to operationalizing interoperability, we need to operationalize our security cooperation efforts. This concept is directly in line with all DOD policies and directives recently released.

USAFRICOM participates in multiple initiatives that help synchronize its efforts with allied nations. Specifically, USAFRICOM participates in the Sahel Multilateral Planning Group, which synchronizes allied activities in the Sahel Maghreb region, the Multinational Joint Task Force to synchronize efforts in the Lake Chad Basin to counter Boko Haram, and the East Africa Multilateral Planning Group to synchronize efforts in East Africa. These efforts have shown some progress. However, these efforts were previously restricted by the lack of headquarters staff synchronization. USAFRICOM is attempting to expand staff synchronization through the Defense Systems Information Agency's All Partners Access Network,

Republic of Mali airman trains with U.S. Soldiers, Airmen, and partner nations during aerial logistics and resupply Exercise Atlas Accord 2012, Mopti Airfield, Sevare, Mali, February 6, 2012 (U.S. Army/ Callie West)

but even this system has its limitations to synchronizing with other knowledge management systems. For example, USAFRICOM's component planners selectively participate in these groups, and when they do, few overarching action agreements are operationalized due to a lack of understanding of their capabilities, operations, and security cooperation systems. USAFRICOM could overcome these shortcomings by focusing its understanding on France and Great Britain's efforts and by identifying ways that we can further synchronize our efforts.

France's security cooperation efforts fall into two broad categories: structural and operational. The structural category has a long-term planning horizon of 5 to 10 years. This category includes activities such as building a military academy or a demining unit (building partnership capacity) and is executed by embedded trainers and advisors. These advisors live full time in the country for 2 years and wear the rank and uniform of the partner nation, something DOD normally does not do. The operational category includes activities such as peacekeeping pre-deployment training, and short-term police and border security training events. A majority of France's security cooperation efforts in Africa are with its former colonial nations.

In 2008, France released its first defense white paper since 1994. In it, France explained that its security cooperation mission was to develop the capacity of its partner nations to respond to crises and support peacekeeping operations led by regional or subregional organizations.[16] France further defined its goals for security cooperation efforts in Africa in its 2013 white paper: "Support for establishment of a collective security architecture in Africa is a priority of France's cooperation and development policy."[17] Collaboration between the United States and France in operational efforts is increasing in Africa, particularly in West and Central Africa; however, security cooperation efforts are minimally integrated, and mainly at the Embassy level, among security cooperation officers.

The British army is currently undergoing a significant shift in its forces called "Army 2020." Part of this change is identifying priority regions for defense engagement (security cooperation), and another important change is the creation of regionally aligning brigades.[18] Great Britain, like the United States, recognized that aligning units to regions of the world is a smart approach, especially when downsizing an army. The chief of general staff for the British army commented on this in a report in 2014, stating that the "U.S. Regionally Aligned Forces programme is the most advanced of these and one that we are very conscious we need to work alongside, complement, and collaborate with such that our activities are reinforcing rather than interfering."[19]

A recent example of collaboration is the peacekeeping training for Malawi Defence Forces that were trained by British and U.S. soldiers for deployment to the Democratic Republic of the Congo in support of a United Nations mission. Our efforts can go further with the British by synchronizing more with the four British regionally aligned brigades. Recent staff talks between the U.S. and British armies show potential to synchronize our efforts in some nations. However, it will take more than yearly staff talks to synchronize efforts in Africa. To further expand our efforts, USARAF recently hosted a British army delegation to increase interoperability and collaboration by establishing routine staff-level discussions. Agreements were made to provide each other common operating pictures and to invite British army participants into USARAF's annual order and multiyear planning cycles. Establishing operational planning teams that focus on specific aspects of planning will achieve the required collaboration to synchronize efforts. Additionally, by including the British army's regional brigade representatives, USARAF will enable effective planning for several different engagements across multiple regions and achieve DOD guidance.

Senior ranking members of our allied nations are members of USAFRICOM's Multinational Coordination Center. This center is the channel through which USAFRICOM continues to improve its synchronization efforts. This center should be more than liaison officers. The USAFRICOM commander must empower them, and so should their commands, to coordinate throughout the breadth and depth of USAFRICOM

security cooperation efforts. Additionally, USAFRICOM can improve our efforts with the British and French by including them in our annual security cooperation conferences, reducing the classification of certain documents, and coordinating staff talks between the British, French, and USAFRICOM's other component commands. These efforts will move away from security cooperation officers and components trying to accomplish the interoperability of efforts between two nations and toward full staff synchronization of all our efforts. It will also allow our African partners to benefit from a coordinated and cohesive security cooperation strategy.

Create a New CCCP Line of Effort

Defense institution-building (DIB) by USAFRICOM has been minimal and focused on the individual instead of the institution. In Africa, the primary programs through which DIB is executed are through the ACSS, Counterterrorism Fellowship Program, and Defense Institutional Reform Initiative, which primarily are only seminars and conferences. Additionally, professional military education through the IMET program has been provided on a limited scale in comparison to other combatant commands.

DOD guidance outlines what planners should take into account when deciding whether to support an event: "Security cooperation planners shall consider the economic capabilities of the foreign country concerned. Except in cases of the primary military considerations, an improvement of military capabilities that the partner country cannot or will not support, safeguard, or sustain shall be discouraged."[20] Planners in USAFRICOM and USARAF face a complicated decision when including these economic considerations into security force assistance proposals because most African nations struggle to sustain the equipment available through the DSCA Foreign Military Sales system. Providing less sophisticated equipment and focusing more on improving their defense institutions could go further in improving the capabilities of our partner nations.

President Bill Clinton envisioned the Africa Center to "be a regional center modeled after the George C. Marshall Center in Germany designed in consultation with African nations and intended to promote the exchange of ideas and information tailored specifically for African concerns."[21] The Africa Center is currently achieving President Clinton's vision, but it is not as successful as the Marshall Center. The center limits itself to primarily being a strategic institution significantly contributing to the academic community and reports to congressional leaders when required; however, most of its information is duplicative of other think tanks that cover Africa. The center seemingly is unaffiliated with USAFRICOM based on an analysis of its activities compared with other regional centers and collaboration with their respective combatant commands. The Africa Center currently executes one of eight components of DIB for DOD with its Africa Miltary Education Program (AMEP). This program is directed by the State Department and mandated by the Office of the Under Secretary of Defense for Policy for ACSS to serve as the executive agent. Under the AMEP mandate, ACSS partners with 19 nations for 32 programs. The USAFRICOM commander should refocus this organization to concentrate more on synchronizing and leading its DIB efforts in Africa at the executive direction and generating forces levels. The Africa Center could become the bridge between DSCA DIB programs and USAFRICOM's effects.

USAFRICOM should request the expansion of the DSCA MoDA and AMEP programs. Currently, there are dozens of MoDAs in Afghanistan, but only one in all of Africa. The AMEP program is poorly funded at only $3 million a year—less than the amount spent on one of the dozens of tactical-level counterterrorism events. USAFRICOM could employ up to 20 new MoDAs in Africa and expand its DIB efforts into every military institution in Africa for the price of one of these events.

USAFRICOM encounters three programmatic obstacles to executing DIB in Africa, one of which was solved by the recent changes in the 2017 NDAA. Previously, 1-year programs, otherwise noted as "1-year money," limited too many DOD security cooperation

Table. Africa Military Education Program by Country

Country	Program
Botswana	Noncommissioned Officer (NCO) School Staff College Center for Military Intelligence Special Operations or Combat Life Savers
Burkina Faso	Military Academy NCO Academy
Burundi	Staff College Military Academy
Cameroon	Staff College Air Operations School
Chad	Officer's School NCO Academy
Djibouti	Military Academy NCO Academy
Gabon	Staff College
Ghana	Air Force NCO Academy Staff College
Kenya	Military Academy
Madagascar	Staff College Military Academy
Malawi	Armed Forces Sergeant Major of the Army
Mozambique	Institute for Defense Studies
Niger	Military Academy
Nigeria	Defense College Staff College Defense Academy (Senior NCO) Warrant Officer Academy
Rwanda	Medical Simulation Center Staff College
South Africa	Military Academy College for Educational Technology War College
Tanzania	Air Force NCO Academy Air Force Junior Officer Course
Uganda	NCO Academy
Zambia	Staff College
Approved for Fiscal Year 2016	
Angola	War College
Benin	NCO Academy Cadet School Staff College
Côte d'Ivoire	School of Armed Services
Sierra Leone	NCO Academy

Cameroonian soldiers, along with U.S. and Spanish marine advisors assigned to Africa Partnership Station 13, simulate amphibious assault in jungle as part of final exercise, Limbe, Cameroon, October 2013 (U.S. Marines/Tatum Vayavananda)

programs. This resulted in limited returns because many programs required long horizons with long-term growth returns. Therefore, the 1-year money cycle was ineffective for DIB in Africa because it takes more than 1 year to implement changes in defense institutions.

Thanks to Chapter 16, Section 333, of the new NDAA, events can now span multiple years. This solves the 1-year money issue. However, the new section requires each event to have a supporting institutional capacity-building requirement, which is often confused with DIB. This new requirement further highlights the second and third programmatic obstacles: defining DIB and available forces to execute DIB. Few SCOs or component staff officers are trained to access and develop DIB proposals at the ministerial level, which is currently done by DSCA, through the Defense Institute Reform Initiative. Because of this, some staff members regularly refer to generating or operation force activities incorrectly as DIB activities. This causes confusion of the intent of the event and the program through which it should be executed. The new requirement under Section 333 also creates the expectation that USARAF, which is USAFRICOM's primary executor of security cooperation in Africa, can plan these DIB requirements. USARAF's primary executor of security cooperation is the Regionally Aligned Brigade, which is not capable of performing DIB as defined by DOD Directive 5205.82, *Defense Institution Building*. The potential effects of these issues are SFA proposals not meeting the requirements under the new NDAA, poorly developed and executed events, and missteps with partner nations.

By establishing a new CCCP line of effort, USAFRICOM can focus its DIB efforts. This will drive guidance given to the Africa Center, assign DIB efforts to the appropriate executor, and expand ministry-level effects with our partner nations. Lastly, it will synchronize DIB efforts across all security cooperation programs, including the new mandated NDAA requirements.

One System for Security Cooperation Efforts

DOD Directive 5132.03, *DOD Policy and Responsibilities Relating to Security Cooperation*, mandates the use of the Global Theater Security Cooperation Management Information System (G-TSCMIS) as the system for security cooperation activities. DOD recently published another new instruction fully

updating and outlining its assessments, monitoring, and evaluation policy; it directed USAFRICOM to "ensure security cooperation initiatives are appropriately assessed and monitored, including by ensuring that appropriate data [are] entered into G-TSCMIS."[22] The 2017 NDAA also directs implementing new monitoring and evaluation systems.

USAFRICOM security cooperation officers work primarily through three knowledge management systems: DSCA's FMF-IMET Budget Web Tool, into which budget requests, FMF future projected requirements, and IMET future requests are entered; the Overseas Humanitarian Assistance Shared Information System, into which all humanitarian assistance, humanitarian mine action, exercise-related construction, and humanitarian civil action programs are entered; and DSCA's Security Cooperation Information Portal, where all Foreign Military Sales to their host nation are tracked. G-TSCMIS is not synchronized with any of these systems. USAFRICOM efforts to comply with this DOD directive will be further complicated because few SCOs have access to G-TSCMIS due to disconnects between DOD and State Department IT systems. Additionally, some DOD agencies and SCOs execute events that are never captured in G-TSCMIS.

As directed by DOD, G-TSCMIS is now being used by most security cooperation practitioners, and ideally any monitoring and evaluation systems should also be a part of this system. Some units have created their own assessment systems because of the lack of assessment capability by G-TSCMIS. For example, USARAF is using the Strategic Management System to create and track its assessments. This system does not synchronize with G-TSCMIS, nor will SCOs or other component desk officers have access to it. Continuing with this system will mean that different components could execute DOD assessment guidance with its own system. This will result in limited input and access and will also result in multiple assessments that are not synchronized within USAFRICOM.

USAFRICOM should work with the Deputy Assistant Secretary of Defense (DASD) for Security Cooperation to merge the many security cooperation knowledge management systems into G-TSCMIS to achieve the full intent of the new DOD instruction. DASD Security Cooperation should work with the State Department's Bureau of Political-Military Affairs and Bureau of African Affairs to learn from their new monitoring and evaluation systems, which would provide better guidance to USAFRICOM's staff. Doing so would significantly improve USAFRICOM efforts to operationalize security cooperation by providing a common knowledge management system and a common assessment system for its activities and effects. This would inform USAFRICOM's CCCP efforts and drive changes as required. Overall, knowledge management and monitoring and evaluation systems are the two significant capability gaps USAFRICOM must solve to fully operationalize the 2017 NDAA and all the new DOD directives.

USAFRICOM's lack of operationalization of its security cooperation processes, combined with the sheer size of its area of responsibility and the significant changes with the new NDAA, create unique challenges. This article outlined four main areas where USAFRICOM can improve its efforts to operationalize and synchronize its security cooperation efforts. First, improving efforts to operationalize the combatant command campaign plan will result in security cooperation events that are fully staffed and synchronized with other events to create multiple effects. Second, synchronizing efforts with allied nations, notably France and Britain, will result in a common approach to security cooperation in Africa, burden-sharing across NATO Allies, and greater effects with our partner nations. Third, creating a new CCCP line of effort for DIB will result in developing a long-term approach to many of the security-sector issues in Africa and provide space for democracies to grow and develop. Finally, adhering to DOD directives on G-TSCMIS will assist in operationalizing the CCCP by providing a holistic assessment to USAFRICOM's security cooperation efforts, and will reduce learning curves by new staff members through providing a common knowledge management system. **JFQ**

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The Battle Between Scipio and Hannibal at Zama, Cornelis Cort, after Giulio Romano, engraving ca. 1550–1578, Elisha Whittelsey Collection (Courtesy Metropolitan Museum of Art)

Scipio Africanus and the Second Punic War

Joint Lessons for Center of Gravity Analysis

By Kenneth T. Klima, Peter Mazzella, and Patrick B. McLaughlin

Bellum parate, quoniam pacem pati non potuistis.

[Prepare for war, since you have been unable to endure the peace.]

—Scipio Africanus to Hannibal, prior to the Battle of Zama, in 202 BCE

Publius Cornelius Scipio (236–183 BCE), known more widely by the nom de guerre Scipio Africanus, was a Roman statesman and general whose actions during the Second Punic War (218–201 BCE) demonstrate the eternal qualities embodied by modern concepts of joint warfare. Scipio employed said concepts at all levels of war and showed an atypical ability to integrate military and political objectives into a single system. Although the period of antiquity was a time when the concepts of strategy were only nascent, the study of Scipio highlights practically every aspect of modern joint planning and operations. In analyzing Scipio, Basil H. Liddell Hart proposed that his "[m]ilitary work has a greater value to modern students of war than that of any other great captain of the past."[1] In fact, despite warfare's advancements in technology and industry, Hart's observation of Scipio is as applicable to today's joint planner as it was nearly a century ago.

Scipio Africanus's European and African campaigns during the Second Punic War serve as timeless lessons for joint force planners on how to conduct center of gravity (COG) analysis in support of theater and national military planning. The campaigns are a superb vehicle with which to examine five key lessons associated with today's concept of COG analysis:

- achieving the desired endstate
- COGs as part of a system
- the indirect approach to attacking COGs
- how to move between direct and indirect approaches
- the result of poor COG analysis.

Despite the use of 2,200-year-old evidence, all five lessons demonstrate how the basic dictums of modern doctrine proved pivotal in determining whether Rome or Carthage would rule the Mediterranean for nearly 6 centuries. However, before we can use Scipio's campaign history to support our claims of COG analysis, we must first understand the history and operational conditions present during the Second Punic War.

The Operational Environment

As the name suggests, the Second Punic War was not the first skirmish between Rome and Carthage. The First Punic War (264–241 BCE) was a conflict over the control of Sicily that ended inconclusively. In the interregnum between the first and second conflict, an unsteady peace existed as each side maneuvered for advantage.

Circa 218 BCE, Carthaginian general Hannibal Barca prepared for, and then renewed, Carthage's efforts to subjugate its rival. Reportedly, he inherited his father's hatred of Rome and, through a cult of personality, led his army from the deserts of Africa, across the Mediterranean, over the Alps, and into the Italian peninsula, embarking on a bloody campaign to defeat Rome.[2] In victory after victory, using the "mental and material means for a stroke at the heart of the Roman power," Hannibal's tactical and operational genius crushed Rome's armies and established him as one of history's greatest commanders.[3] Following Hannibal's decisive defeat of the Roman forces at Cannae (216 BCE), Carthage gained control of the Italian coast of *Magna Graecia*, which resulted in multiple Roman allies and economic vassals switching allegiances to Hannibal.[4] Post-Cannae, Hannibal was unable to lay siege to Rome to force its surrender. Instead, he launched a decades-long campaign throughout Italy during which, despite unending tactical success, he remained unable to achieve his military or political endstates: the subjugation of Rome.

Hannibal's tactical success did result in a shortage of qualified Roman generals willing to march out and meet him. In desperation, the Roman Senate eventually turned to an unproven 24-year-old Scipio—son of Publius Scipio, the general defeated and slain by Carthaginian forces in 211 BCE—to remove the threat of Hannibal's forces from Rome's doorstep. However, Scipio did not move to directly challenge Hannibal in battle, as was expected by most Roman leaders, but instead chose to take an indirect approach, deploying forces to Spain to conduct a multiyear campaign against Carthaginian forces and allies.[5] In Spain, Scipio isolated and defeated four armies (including two led by Hannibal's brothers, Hasdrubal and Mago), destroyed lines of communication supporting Hannibal in Italy, and rebalanced Carthaginian allies back to Rome. Furthermore, Scipio showed a unique ability to conduct joint warfare, leveraging the unique attributes associated with the different units of the Roman army, navy, and marine forces. Scipio's demonstrated ability to leverage strategic, operational, and tactical flexibility yielded extraordinary success.

Consequently, the victory in Spain solidified the efficacy of Scipio's unorthodox approach, the Senate expanded his commission, and he moved his armies toward Africa to threaten the city of Carthage directly. The confluence of these events compelled Hannibal to abandon Italy and return to Africa, where his army was met and routed by Scipio's forces at the Battle of Zama (202 BCE). Hannibal's defeat finalized Carthage's defeat, securing for Rome a Mediterranean empire that would last nearly 600 years.

Lesson One: COG Analysis Enables Desired Endstates

The failure to understand the desired political endstate—*what comes after* the transition to civil authorities—invariably leads to challenges in war termination and the establishment of legitimate governments, institutions, and authorities in postconflict states.[6] This challenge of overcoming the split between military and political planning is not a phenomenon of the present age. Even a cursory study of Scipio expresses how the soldier-statesman must conduct a range of military operations within a spectrum

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Scipio Africanus Storming New Carthage, ca. 1470, tempera on fabric, mounted on cassone panel, gift of Mr. and Mrs. Theodore W. Bennett (Courtesy Minneapolis Institute of Art)

that simultaneously integrates all three levels of war while still supporting the desired political endstate (often referred to as "national strategic endstate" in joint doctrine). For example, during the Second Punic War, the political endstate was not solely the destruction of the adversary's military, but rather the military means to achieve the political aim of securing unrivaled control of the Mediterranean world.[7] Throughout the war, Scipio's military actions and operational approach demonstrated an ability to directly link singular and multiple military actions toward the achievement of both the desired military conditions as well as the desired political endstate. Scipio's every action, both on and off the battlefield, focused on achieving a lasting postwar peace in which Rome directed the course of a subdued but integrated Carthage. This emphasis ignored the traditional military focus on destruction of armies, industry, and economic means and instead used military successes to set the political conditions for Carthage to comply with Roman will in its affairs.

Another example of Scipio's political foresight in the use of military means was demonstrated after his successful seizure of the Carthaginian Spanish colony of Cartagena (209 BCE). Rather than destroy Spain's Celtic-Iberian tribes who supported Carthage—the very same tribes whose revolt from Rome led to the death of Scipio's father—Scipio broke with tradition and built close ties with former enemies. The day after his triumph in Cartagena, Scipio showed clemency and even mercy toward the indigenous tribes both publicly and through policy. The Roman historian Livy claims these acts actually endeared Scipio to the people throughout Spain and were major causes toward undercutting Carthage's political control in the region. Scipio's actions may have gone against the common military practice of the age, but his mercy shifted Spain's loyalty from Carthage to Rome—irrevocably destroying Carthage's supply of personnel and financial support for Hannibal's Italian operations.

By remaining focused on the desired political endstate, Scipio adroitly avoided expected military practices that were counter to the postwar peace. Spain, a hotbed of insurgents and untrustworthy allies, was also the source of Carthaginian troop levies, food supplies, and war economics essential to Hannibal's Italian campaign. In addition to his military victories, Scipio's benevolent treatment of former foes had a compounding effect in that other tribes and nations loyal to Carthage surrendered to Roman forces rather than battle Scipio or remain Carthaginian vassals.[8] Consequently, in a few masterful strokes, Scipio won a regular war, ended an irregular war, destroyed Hannibal's supply chain, and integrated the Spanish tribes into the greater Roman political and economic system in the Mediterranean. Scipio remarked to the

Roman Senate that in Spain he had faced down four enemy commanders and four armies, with the outcome being not a single Punic soldier remaining in Spain.[9] Focusing on both military and political endstates, Scipio's actions effectively neutralized the troublesome tribes of Spain from supporting Carthage for the remainder of the Punic Wars.[10]

Scipio followed the same formula after his initial victories following the invasion of Africa (206–204 BCE). Hannibal remained in Italy, but Carthaginian political elites, fearing Scipio's invasion force, felt defenseless and sued for peace. The resulting peace terms were lenient for the age and indicate Scipio's preference to integrate Carthage and its colonies into the Roman system as contributing partners. The peace lasted until Hannibal returned to Africa to challenge Scipio directly. Nevertheless, after Hannibal's defeat at Zama and in spite of the Carthaginian Senate's deceit, Scipio's demands for a final peace remained principally the same as those agreed upon prior to Hannibal's return. Livy's record shows this move was not popular in Rome, as some leaders wanted Carthage to suffer in defeat—much like Germany would be made to suffer by the victors after World War I. Scipio's leniency toward his defeated enemy indicates he believed a weakened Carthage with a destroyed army and fragile institutions would have created a peace no different from that following the First Punic War—sowing the seeds for yet another war between the two empires.[11]

Scipio's ability to identify the desired political endstate allowed each tactical and operational movement to advance toward achieving "a more perfect peace." The result was that every action, small or large, was integrated into the overall operational objective of removing Hannibal from Italy and subjugating Carthage. In doing so, Scipio successfully subjugated the enemy while sustaining the smallest possible cost of life and resources.[12] Joint Publication (JP) 5-0, *Joint Operation Planning*, echoes Scipio's approach, identifying the need for "a clear understanding of the end state and the conditions that must exist to end military operations. Knowing when to terminate military operations and how to preserve achieved advantages is key to achieving the national strategic end state."[13]

Scipio's success teaches joint planners that a critical component of COG analysis involves a greater understanding of the desired political endstate. A clearer understanding of the political conditions informs the COG discussion and furthers identification of the means for destroying or disabling adversary COGs. Current doctrine focuses on military termination and phase-transition criteria and directs political endstates to be the province of political decisionmakers. JP 5-0 describes the process and products that the National Command Authority uses to develop national strategy, but does not discuss how the government develops desired political endstates for

specific conflicts. Political entities and institutions do not necessarily have clear (in Department of Defense terms) mechanisms to create identifiable endstates to serve military planning objectives. JP 5-0 does identify the commander's need to work with interagency mechanisms, but these efforts are varied and reliant on the individuals in command and do not lead to clear integration of government institutions and the military.

In contrast to Scipio, Hannibal exemplifies the pitfalls of not integrating desired military and political endstates. According to the Roman record, Hannibal's cavalry leader Maharbal remarked to his commander that Hannibal "knew how to gain a victory" but did "not know how to use it."[14] Hannibal's approach is akin to Mark Cancian's 1998 discourse on the fallacy of COG analysis, as they both incorrectly identify the goal of all military operations as attaining a battlefield advantage.[15] Hannibal's emphasis on battlefield advantage resulted in a series of tactical and operational successes that never led to strategic victory. Scipio's approach stands in stark contrast and serves as a reminder to military planners that the transition to a better peace does not occur simply because one has achieved the desired military endstate.

Other conflicts more recent than the Second Punic War have demonstrated both the difficulty today's joint planners face in outlining war termination criteria and the effective transition from military to civil authorities and the importance in doing so. This is more likely a result of military planners focusing principally on military approaches to the transition from peace to war rather than integrating whole-of-government efforts focused on achieving the smooth transition from war back to peace. Carl von Clausewitz identified the ties between national politics and the aims of conflict, but it was General William T. Sherman who clarified that "[w]ar's legitimate object is a more perfect peace." Historical examples provide evidence that responsibility falls to the rare soldier-statesman to have the greatest understanding of the national strategic ends: the transition between politics-to-war-to-peace and then again to politics. This lesson may be the most profound for modern military planners who train to create a specific military endstate and then speak of transition.

Current doctrine teaches today's planners that military planning cannot be effective without a clear understanding of the military endstate and that the termination of military operations is key to achieving the "national strategic end state."[16] No single government institution is responsible for defining an individual strategic endstate, particularly for major theater contingency plans, whereas the military receives guidance directly from the National Command Authority through a byzantine process of strategic guidance and the labyrinthine Joint Strategic Planning System. Unfortunately, the joint planner does not have a role in developing responsibilities in the international system of states, and the crafters of national strategy are not members of joint planning groups, resulting in a natural fissure between military and political ends. Modern planners therefore must learn from Scipio's example and create a working understanding of the political endstate rather than remain preoccupied solely on the defeat or destruction of the opposing militaries. Only with this understanding can military success effectively translate to lasting stability and peace after hostilities have ceased.

Lesson Two: COG and Its Elements Are Part of an Interconnected System

Scipio's second lesson is to view COGs as part of an interconnected system in order to find which pressure points yield the maximum effect. There remain deep, integral relationships between the COGs at the varying levels of war that create an interconnected system identified through COG analysis. Therefore, the ability exists to use analytical results to focus military operations to create system-wide impacts. Understanding COGs as a system means that even tactical actions can support strategic ends. Applying the modern rubrics of COG analysis to the Second Punic War, it becomes clear that the integrated COG analysis of Scipio indicated Hannibal's forces in Italy were not the strategic COG—the level most interconnected with the desired political endstate—but more likely an operational COG.[17] Moreover, this analysis indicates the defeat of Hannibal at the operational level of war would not have led to a strategic defeat of Carthage. Conversely, improper or incorrect analysis limits the ability to target or influence the whole, and effects are isolated rather than systemic—hence Scipio's decision to ignore the Senate's orders to confront Hannibal directly and instead seek an indirect way of threatening the true strategic COG of Carthage itself.

Hannibal's reliance on Spain as a critical force enabler supporting his operational COG—Carthage's fielded forces in Italy—made it the logical target for Scipio's indirect strategy. In sacking the Spanish city of Cartagena, Scipio cut off Hannibal's lifeline and crippled his operational capability without ever having faced the dreaded general on the battlefield. Livy records Scipio instructing his forces, "You will in actuality attack the walls of a single city, but in that single city you will have made yourselves masters of Spain."[18] Liddell Hart further identified that the Spanish campaign was not merely about Spain, as military actions at the operational level had systemic effects influencing the strategic:

Scipio, in whom the idea of strategic exploitation was as inborn as the tactical, was not content to rest on his laurels. Already he was looking to the future, directing his view to Africa. As he had seen that Cartagena was the key to Spain, that Spain was the key to the situation in Italy, so he saw that Africa was the key to the whole struggle. Strike at Africa, and he would not only relieve Italy of Hannibal's ever menacing presence—a menace which he had already reduced by paralyzing Hannibal's source of reinforcement—but would undermine the foundations of Carthaginian power, until the edifice itself collapsed in ruin.[19]

Scipio's indirect approach into Spain provides planners a lesson in the effectiveness of thorough COG analysis. The military planner must not only

understand the fact that COGs exist at multiple levels but also endeavor to understand how the connection between those COGs and their elements (critical capabilities [CCs], critical requirements [CRs], and critical vulnerabilities [CVs]) interact with one another.[20] While attacking a single vulnerability, one may create a cascading effect that paralyzes or destroys the enemy's system from within—setting conditions for the desired endstate.

Several examples from Scipio's Spanish campaign emphasize the importance of understanding systemic relationships of COGs. The lenient treatment of the Spanish tribes—an operational CR for Hannibal's manpower needs, and those of Carthage at the strategic level—eventually led Spain to switch sides and support Rome's future operations in Africa. Then there is Scipio's leniency following his victory at Cartagena, which led to the defection of the Numidian leader and cavalry commander Masinissa from Hannibal to Scipio. Specifically, after learning one of the prisoners was the nephew of Masinissa, Scipio provided care for the youth and ensured his safe return home. This single act attacked Carthage's system by affecting multiple CRs and CVs of Carthage and Hannibal, resulting in a systemic ripple effect that shaped the execution and outcome of the Second Punic War. Through sparing the life of a small boy, an oddity of restraint in that age, a key Carthaginian ally in Africa became sympathetic to Rome, helping nullify Carthage's powerbase.[21]

As a final example from the campaign in Spain, following Scipio's victory at Cartagena, the Carthaginians split into three armies-in-being, with two commanded by Hannibal's brothers. Rather than staying on the defensive and enabling the Carthaginian armies to mass, Scipio moved from the siege warfare of Cartagena to operational maneuver and eliminated each of the Carthaginian armies in succession without allowing them to combine. Adept at using his new allies as intelligence networks, Scipio was able to maneuver his smaller force to bring larger enemies to battle where and when he chose.[22] The results of his approach were three sequential battles, each characterized by innovative tactics and massive battlefield successes that remain instructive for modern tactical planners and commanders. More important, Scipio's true mastery of warfare is evident in how each individual action was part of a grand strategy to defeat Hannibal (operational COG) *and* Carthage (strategic COG). While Hannibal's tactical successes never placed pressure on Rome's COGs, Scipio's actions attacked all levels of the Carthaginian system. Scipio's example demonstrates the value of understanding the systemic nature of COG, CCs, CRs, and CVs and approaching each step with calculated forethought, considering the systemic impacts associated with the interconnected nature of war.[23]

Lesson Three: Using the Indirect Approach

Scipio's indirect strategy of defeating Hannibal and Carthage offers joint planners a third lesson—how to use an indirect approach to attack COGs. Regardless of the interpretation of Clausewitz, the application of COG analysis theory often devolves into planning to attack an enemy where it is the strongest and falsely believing that when the identified strength is defeated, the enemy's will to resist will crumble. The direct approach maintains that meeting enemy strength with friendly strength is the best use of force and leads to the greatest possible massing of armies. The interpretation continues that COG is therefore the recipe for rapid and decisive victory. Those who decry COG analysis often lean on this misunderstanding as the major point of their assertions of the uselessness of the concept. The review of Scipio not only counters the fallacy of misunderstanding COG analysis but also emphasizes how the application of proper analysis can avoid resource-intensive, force-on-force battles that exhaust militaries and national will but do not result in the culmination of strategic aims.

Although Scipio's senatorial commission specifically directed him to attack Hannibal in Italy, his initial force was too small and inexperienced to have any hope of victory. These orders ignored the years of defeat suffered by Roman generals who could do little more than check Hannibal's advance through small skirmishes and delaying tactics. With Hannibal's army being larger, more experienced, better armed, better resourced, and better prepared, Scipio had no prospect of victory using a direct approach. It was clear to him that Spain was the fundamental source of Hannibal's power to organize for war—a conversion point for levies and material and economic support.[24] Liddell Hart comments, "By swiftness of movement, superior tactics, and skillful diplomacy he converted this defensive object into an offensive, if indirect, thrust at Carthage and at Hannibal."[25] Victory validated this approach; Scipio won Spain for Rome without facing Hannibal's main force, and by taking Spain he struck at the COG—Hannibal's army.

Scipio would continue an indirect approach throughout the Second Punic War. Following victory in Spain, he prepared to invade Africa with an army built on the Roman legions defeated by Hannibal at the Battle of Cannae. The Senate again ordered him to attack Hannibal in Italy. Roman Senator Quintus Fabius Maximus Verrucosus (surnamed Cunctator), who had previously conducted a campaign to delay Hannibal's army, criticized Scipio's indirect approach: "Why do you not apply yourself to this, and carry the war in a straight forward manner to the place where Hannibal is, rather than pursue that roundabout course, according to which you expect that when you have crossed into Africa Hannibal will follow you tither."[26]

Scipio countered his political opponents and again sought to fight Hannibal indirectly by taking the war to Africa: "Provided no impediment is caused here [in the Senate], you will hear at once that I have landed and that Africa is blazing with war; that Hannibal is preparing to depart from this country. . . . I shall . . . have the opponent you assign me, Hannibal, but I shall rather draw him after me than be kept here by him."[27]

Bronze bust of Scipio Africanus in Naples National Archaeological Museum, dated mid-1st century BCE, from Villa of Papyri in Herculaneum, modern Ercolano, Italy (Courtesy Miguel Hermoso Cuesta)

In the invasion of Africa, Scipio moves firmly from the operational to the strategic in his approach to implementing his COG analysis. His words and actions indicate an understanding of how the indirect approach provided the greatest systemic effects by threatening a strategic COG—in this case, the will of the political elites of Carthage to continue the war. With the main body of the Carthaginian army abroad, Scipio's combined/joint amphibious assault into Africa threatened "regime change" in Carthage proper. Whereas Hannibal's army in Italy was necessary to defeat Rome, it was wholly irrelevant in the defense of Carthage with Scipio's army in Africa. The Carthaginian Senate ordered Hannibal to end his Italian campaign and return to Carthage's defense. A masterstroke of strategic craftsmanship, Scipio's COG analysis drove Hannibal from Roman lands even though he had not lost a major battle.

The lesson from antiquity is clear to joint military planners—the adversary's *army* should not be the focus of military strategy. The use of the indirect approach provides means to neutralize or defeat an enemy or enemy force without necessarily attacking strengths or, at times, even forces. There are no unlimited resources in war, and the force that can better meet military and political ends through the efficient use of force has the advantage. The indirect approach also offers the ability to create better postwar political conditions by controlling force and thus minimizing its collateral effects. Scipio's indirect approach is an example of how the adversary's integrated political and military system can be analyzed to most effectively apply force in pursuit of statecraft. As the system becomes clearer, the means to collapse that system also become clearer. Notably, the use of COG analysis toward an indirect approach aligns with modern maneuver doctrines among the land components, the evolution of airpower doctrine, and distributed lethality concepts in the maritime domain. It stands to reason that if proper analysis could help avoid costly military overextension in conventional war, it would also assist in identifying better ways of applying military force in our current irregular wars. To plan for the future of combat, it appears the joint force must return to antiquity: Scipio's indirect approach to the use of force within adversarial COGs could and should inform the development and execution of modern doctrine.

Lesson Four: Moving Between Indirect and Direct Approaches

Scipio's use of the indirect approach to attack COGs comes with a caveat. Should direct military action offer an opportunity for a debilitating blow, so long as it supports the COG analysis and the risk to one's own force is lower,

one should take the opportunity and strike. In 205 BCE, while preparing to invade Africa, intelligence indicated the leaders of Locri favored Rome over Hannibal, their occupier. Scipio departed from his plan and launched a swift seaborne raid, the shock of which caused the rapid evacuation of all Carthaginian forces at Locri. Hannibal quickly moved to counter but found himself exposed to a trap laid by Scipio, who had combined operational deception with an expeditionary assault behind Hannibal's lines. Hannibal withdrew. The result of the movement from the indirect to direct approach was the addition of another Italian ally to Rome, the reduction of a Carthaginian ally, a moral victory for Scipio's legions, and a moral defeat for Hannibal's army.[28]

Scipio's caveat to the indirect approach appears similar to Admiral Chester Nimitz's calculated risk order to his operational commander prior to the Battle of Midway: "In carrying out the task assigned in Operation Plan 29-42 you will be governed by the principle of calculated risk, which you shall interpret to mean the avoidance of exposure of your force to attack by superior enemy forces *without good prospect of inflicting, as a result of such exposure, greater damage to the enemy.*"[29] In the cases of Locri and Midway, the victory weakened a component of an identified COG. For Hannibal, it was the perception of the invincibility of the commander, whereas at Midway, it was the loss of four Japanese aircraft carriers. Scipio's and Nimitiz's approaches to transition from the indirect to the direct approach show the power of measured boldness and of how the operational impact of switching to the direct approach at a time and place of their choosing was fundamentally supported by the previous use of the indirect approach. Each had at his disposal all the personnel and resources to take advantage of the situation. Nimitz had three carriers and critical intelligence, whereas Scipio had trained and experienced legions, significant sealift, and intelligence from disaffected allies.

After Locri, Scipio principally returned to the indirect approach. He maneuvered once Hannibal was in Africa, taking no direct action until drawing Hannibal away from his lines of communication and ensuring he was located in territory advantageous to the Roman force. Only at Zama did Scipio return to the direct approach, attacking the operational COG: Hannibal's forces.

Scipio's excellence in generalship was not only in the use of the indirect approach over the direct but also in his ability to switch and know when to switch between the two. A deep understanding of the environment and the enemy must exist to have this level of battlefield cognizance, and such understanding is an element of planning developed during COG analysis. Current doctrine, such as JP 2-01.3, *Joint Intelligence Preparation of the Operational Environment*, discusses how one should conduct COG analysis but does not cover the flexible use of the theory and how COG analysis can provide a level of understanding that allows commanders to seize the initiative and convert from the indirect to the direct approach.[30] Expansion of our current doctrine can provide commanders a far greater level of understanding through which force maybe applied.

Lesson Five: The Result of Poor COG Analysis

Lessons from the Second Punic War include the effect of negligent or nonexistent COG analysis of the enemy. Polybius, the Hellenistic historian who is the closest primary source of the Punic Wars, noted, "Those who have won victories are far more numerous than those who have used them to their advantage."[31] In the Second Punic War, the absence of the elements of COG analysis by Hannibal was at minimum a contributing factor to Carthage's ultimate defeat.

Hannibal's strategy against Rome focused on defeating armies and subjugating allies. Historical hindsight indicates this was an incorrect analysis because Rome's power came from the institutions that bound its Senate and its people. This analysis of Rome's COG is strengthened by the fact that repeated military defeats were never able to sway Rome from its strategic goals. Furthermore, the Roman Senate appeared to understand to some extent its own COG in that it weighed each of Hannibal's military moves in relation to his ability to take Rome. This Roman view is similar to Clausewitz's instruction to consider "the dominant characteristics of both belligerents,"[32] as well as Sun Tzu's duality that victory requires understanding the adversary and self.[33] Hannibal would threaten the city of Rome—the source of political will and the Roman Empire's strategic COG—only once. Following his triumphant victory at Cannae, Hannibal moved to attack the heavy defense of Rome but was unable to secure victory due to a lack of siege machines and enablers for urban combat. Hannibal's lack of COG analysis and its resulting impact on operations amplified his failure to alter or change his operational approach.[34] Despite years of campaigning, Hannibal never built the siege weapons or combat arms necessary to strike at the heart of his enemy—Rome itself. Consequently, despite his invincibility on the battlefield, Hannibal could not win the war.

A second example of poor COG analysis comes from Carthage's failure to check Scipio's ability to maneuver throughout the Mediterranean, particularly using sealift. In the First Punic War, Carthage held a numerical and technological edge in maritime warfare, forcing Rome to execute a massive shipbuilding program. Rome used innovative techniques and new technology to turn the Mediterranean into a contested maritime environment, winning six of seven major naval battles and setting the conditions for an unsteady peace. Both states maintained a sizable naval capability through the Second Punic War, with each heavily relying on sealift for the movement of forces. Scipio, for instance, used a fleet of 50 warships and 400 transports to transfer his forces to Spain. Carthage maintained a large maritime force in the war and was able to move whole armies—first the army of Hannibal's brother, Mago, from Gaul to Africa, and then Hannibal himself from Italy to Carthage—during its course. Proper COG analysis would have indicated sealift as a CR of Scipio's force, and Carthage

would have had the ability to attack it with good prospects of contesting the sea lines. In this endeavor, Carthage would not have needed to defeat Roman navies, which they appeared to lack the aptitude to do, only to challenge Rome's ability to use the sea lines and in so doing complicate or disrupt the ability of Scipio's forces to move by sea.

Yet the Carthaginian strategic failure to appreciate the nature of contesting the maritime domain is evident in one of the most referenced elements of the Second Punic War: Hannibal's overland movement of his army from Spain to Italy. The feat is often heralded as masterful, but Hannibal in fact lost half of his elephants and half of his army along the route. Alfred Thayer Mahan pondered Carthage's refusal to check Rome's navy by considering "how different things might have been could Hannibal have invaded Italy by sea, as the Romans often had Africa."[35] Rome, conversely, remained concerned with Carthage's ability to use sea power throughout the war. Following Scipio's Spanish victories (207 BCE), he was ordered to yield a large element of his navy to the military governor of Sicily because intelligence indicated the threat of Carthaginian maritime forces blockading the Italian coast.[36] Throughout the course of the war, Rome kept multiple fleets to protect its territorial waters from Punic raids, secure vital sea lines of communication, and stave off a second-front war engineered by Carthage with Macedon—all indicating that Rome continued to view Carthaginian maritime forces as a key threat. Minimal Carthaginian efforts to interdict or destroy communications, envoys, or supplies would have created detrimental systemic effects across Scipio's force, at a minimum delaying his timelines and possibly preventing his ultimate invasion of Africa. Carthage had the forces to do so, as became apparent in the final treaty of the war wherein Scipio ordered the entire navy of Carthage destroyed save for 10 ships to allow the city to defend its commerce from piracy.[37]

Whereas COG is not necessarily the pathway to victory, its "true value . . . may be the framework the concept provides for thinking about war. In other words, the process of determining centers of gravity may be as important as the product."[38] Moreover, poor analysis that reinforces biases or prejudices and fails to implement a thorough approach almost certainly leads to defeat. The example of Scipio shows how understanding the operational environment enables the commander to make sense from chaos when complex military challenges are analyzed and viewed systemically.

Conclusion

The campaigns of Scipio Africanus provide an ancient example of the application of the modern doctrine of center of gravity. COG analysis is not a new concept, and the universality exposed in an example from 2,200 years ago underscores the vital linkages between today's modern doctrine and the wars of antiquity. While COG analysis is a doctrinal process, its value in application is directly proportional to the skill of its use. Using this analysis to entrench preconceived notions about force-on-force battle or to support an individual's views related to the dictums of strategic science, is a misapplication that is as detrimental to the desired military and political endstates as battlefield defeat. Proper COG analysis through all levels of war, including the pursuit of "a more perfect peace," assists the military planner in constructing military means of supporting an integrated approach to the culmination of the desired political endstate. COG analysis enables the planner to better think about what goal is trying to be achieved (ends) and how it is to be achieved (means).[39] A well-executed COG analysis allows one to anticipate which parts of one's own system the adversary may attempt to directly or indirectly target, giving the thoughtful planner greater insight into the opponent's intent.[40]

To find examples of the effective application of COG analysis, joint force planners can return to antiquity. During the Second Punic War, Scipio Africanus demonstrates multiple historical models that show timeless and universal themes of war that exist whenever sanctioned violence is employed in the pursuit of national security interests. Perhaps more than those of any other historic figure, Scipio's exploits provide the modern joint force anecdotal excellence in the application of modern military theory—particularly in the realm of COG analysis and its use in supporting combat forces. In studying the victories and defeats of history's great captains, modern joint planners should use joint doctrine as a prism to view and distill the genius and folly that resulted in victories and defeats. They should look upon the battles of antiquity as laboratories for honing doctrinal principles and crucial lessons in military acumen prior to employing them in the field. The lessons identified only scratch the surface of the practical application that exists within the study of Scipio. There still exists a wealth of intellectual treasure from generals and battles that have been "lost" due to a lack of familiarity among modern readers. Such is the case with Scipio Africanus, arguably history's greatest general, wherein many studies have focused not on his victories, but on the failures of the general he defeated. **JFQ**

Notes

[1] Basil Henry Liddell Hart, *Scipio Africanus: Greater Than Napoleon* (Boston: Little, Brown, 1927), vi.

[2] Ibid., 20–21. Hart provides commentary on the emotional and moral aspects of Hannibal's Italian campaign: "During the long interval of outward peace this Carthaginian Bismarck prepared the mental and material means for a stroke at the heart of the Roman power, educating his sons and followers to conceive the conquest of Rome as their goal, and using Spain as the training ground for the Barcinse school of war, as well as the base of their forthcoming military effort. In 218 B.C., Hannibal, crossing the Alps, began his invasion of Italy to reap the harvest for which his father had sown the seeds."

[3] Ibid., 21.

[4] Polybius, *The Histories of Polybius*, vol. 1, trans. Evelyn S. Shuckburgh from the text of F. Hultsch (London: Macmillan, 1889), book 3, chapter 118.

[5] For the purposes of this article, modern geographical boundaries will be used except where doing so would complicate the narrative. *Spain* refers not to the political entity but to the Iberian Peninsula, and *Italy* to the Italian Peninsula.

[6] Joint Publication (JP) 5-0, *Joint Operational Planning* (Washington, DC: The Joint Staff, 2011), III-44.

[7] Basil Henry Liddell Hart, *Strategy* (New York: Meridian, 1991), 55. "The campaign of Zama (the culminating battle) made Rome the dominant power in the Mediterranean world."

[8] Hart, *Scipio Africanus*, 83.

[9] Robert L. O'Connell, *The Ghosts of Cannae: Hannibal and the Darkest Hour of the Roman Republic* (New York: Random House, 2010), 223.

[10] Hart, *Scipio Africanus*, 84.

[11] Half a century later, for multiple reasons, there was a Third Punic War (149–146 BCE). It did not go well for Carthage, with the capital being destroyed, all territory annexed, and the population killed or enslaved. Such means would have likely been seen by Scipio as not supporting Rome's national security interests.

[12] "The aim of a nation in war is, therefore, to subdue the enemy's will to resist with the least possible human and economic loss to itself." Basil Henry Liddell Hart, *Thoughts on War* (London: Faber and Faber Ltd., 1944).

[13] JP 5-0, III-18.

[14] Livy, *The History of Rome*, trans. Frank Gardener Moore (Cambridge: Harvard University Press, 1949), book 22, chapter 51.

[15] Mark Cancian, "Centers of Gravity Are a Myth," U.S. Naval Institute *Proceedings* 124, no. 9 (September 1998), 5.

[16] JP 5-0, III-18.

[17] Joseph Strange and Richard Iron, "Understanding Centers of Gravity and Critical Vulnerabilities, Parts I and II," Air War College, available at <http://www.au.af.mil/au/awc/awcgate/usmc/cog1.pdf> and <www.au.af.mil/au/awc/awcgate/usmc/cog1.pdf>.

[18] Livy, book 26, chapter 43.

[19] Hart, *Scipio Africanus*, 63.

[20] Strange and Iron.

[21] Hart, *Scipio Africanus*, 86–87.

[22] Although beyond the scope of this article, Scipio's use of intelligence to support his operations and foresight is notable for antiquity as well as the modern world. His Spanish and African campaigns evidenced a use of intelligence that was unprecedented. Furthermore, it could be argued Scipio established the first J2 unit specifically for the collection and analysis of intelligence to support his military operations.

[23] Hart, *Scipio Africanus*, 98.

[24] Antulio J. Echevarria II, *Clausewitz's Center of Gravity: Changing Our Warfighting Doctrine—Again!* (Carlisle Barracks, PA: Strategic Studies Institute, 2002), 12.

[25] Hart, *Strategy*, 49.

[26] Livy, book 28, chapter 41.

[27] Ibid., book 28, chapter 44.

[28] Hart, *Scipio Africanus*, 109.

[29] James M. Stelle, "Running Estimate and Summary, CINCPAC Staff at Pearl Harbor, Hawaii, Covering the Period 7 December 1941 to 31 August 1942," in *Command Summary of Fleet Admiral Chester W. Nimitz, USN*, vol. 1, available at <www.usnwc.edu/Academics/Library/Naval-Historical–Collection.aspx#items/show/849>. Emphasis added.

[30] JP 2-03.1, *Joint Intelligence Preparation of the Operational Environment* (Washington, DC: The Joint Staff, June 2009), II-65–II-67.

[31] Polybius, vol. 2, book 11, chapter 36.

[32] Carl von Clausewitz, *On War*, ed. and trans. Michael Howard and Peter Paret (Princeton: Princeton University Press, 1976), 703.

[33] "If you know the enemy and know yourself, you need not fear the result of a hundred battles. If you know yourself but not the enemy, for every victory gained you will also suffer a defeat. If you know neither the enemy nor yourself, you will succumb in every battle." Sun Tzu, *The Art of War: The New Translation*, trans. J.H. Huang (New York: Harpers, 1993).

[34] The First Punic War provided ample grist for analysis. Particularly Hannibal would have been aware of the depth of Roman political will in warfare as evidenced by its construction of a navy when none of note had previously existed. Using a combination of public and private financing, Rome constructed and maintained a fleet of approximately 300 vessels for 26 years. See Michael Pitassi, *The Roman Navy: Ships, Men, and Warfare 350 BC–AD 475* (South Yorkshire, UK: Seaforth Publishing, 2012).

[35] Alfred Thayer Mahan, *From Sail to Steam: Recollections of Naval Life* (New York: Harper & Brothers, 1906), 231.

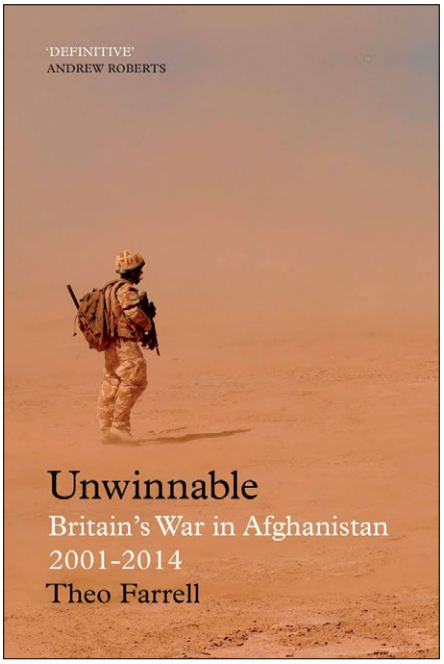
[36] Livy, book 27, chapter 22.

[37] Scipio's focus on the military and political endstate is also shown in his keen awareness of Carthage's maritime tradition and capability in the destruction of the navy during a time when ships could have easily been seized and added to one's own force, all the more so since the Carthaginian and Roman warships were identically built. Seizure would have swelled, perhaps doubled, the size of the Roman navy, making it larger than Rome had the ability to manage. Such a large force, with its personnel spread over a larger number of hulls, would have been weaker in the naval battles of the day. Many of the largest would have likely been "decommissioned" or sold, making them available potentially to Rome's enemies. It is notable in these treaties that Scipio did not destroy the Carthaginian means for naval construction. This is likely due to the fact the shipyards of the day could be purposed for either commercial or military vessels. The lesson to Carthage's leaders was clear: they could continue their maritime commerce, but not have a navy. Lastly, building a navy from 10 small vessels would have been a resource-heavy endeavor that a weakened Carthage, subservient to Rome, would be unable to undertake.

[38] Milan Vego, *Joint Operational Warfare* (Newport, RI: Naval War College Press, 2009), VII-14.

[39] Echevarria, 20.

[40] Strong and Iron, 7.



Unwinnable: Britain's War in Afghanistan, 2001–2014

By Theo Farrell
Bodley Head, 2017
$34.58 576 pp.
ISBN: 978-1847923462

Reviewed by Carter Malkasian

For years, the British enjoyed a reputation of counterinsurgency excellence. Their campaigns—Malaya, Kenya, Oman, Northern Ireland—were hailed as successes in this difficult form of war. Afghanistan, however, turned out to be painful for the British. They committed a peak of over 9,500 troops, eventually drawing down to a few hundred by the end of 2014. They faced numerous battlefield reverses. Eventual successes were overshadowed by the arrival of 20,000 U.S. Marines. Britain's counterinsurgency reputation came out of the campaign tarnished.

Many books and articles have been written criticizing British government and military decisions. Mike Martin's *An Intimate War* (Oxford University Press, 2014), Frank Ledwidge's *Losing Small Wars* (Yale University Press, 2017), and Emile Simpson's *War from the Ground Up* (Oxford University Press, 2016) loom especially large. Still, there has been no comprehensive history, especially for Americans less interested in British political debates than an explanation of what happened and why. Theo Farrell's *Unwinnable: Britain's War in Afghanistan, 2001–2014* is just that.

Farrell is the former head of the renowned Department of War Studies at King's College London, and is now an executive dean at the University of Wollongong in Australia. Farrell traveled to Afghanistan repeatedly throughout the course of the war. He was able to review military plans and post-operational reports and interview over 200 British officers and officials. He also collected a small sample of Taliban opinion. All serve as rich sources for the book.

Farrell shows that the British experience was not one of unremitting blunders. Certainly, the beginning was tough. After engaging in a variety of counterterrorism operations and development activities from 2001 to 2005, the largest British troop commitment started in 2006 in Helmand Province. The British went in overly optimistic and neglectful of Afghan memories of their empire. They compounded the problem by removing the drug lord provincial governor, Sher Mohammed Akhundzada, turning part of his tribe against them. Tactically, the British settled on an overly militarized approach and failed to focus on protecting the population. By the end of the year, the situation had gone so badly that the British withdrew from three districts—Musa Qala, Sangin, and Nowzad—in three controversial ceasefire agreements.

Over time, the British adapted. They introduced new equipment, deployed more helicopters, and developed new counter–improvised explosive device techniques. Counterinsurgency tactics improved. Battalions were assigned to districts for their entire tours in order to develop "an intimate knowledge of the ground, the local nationals, and the pattern of life" rather than rotated through positions throughout the province. Firepower was restrained in order to minimize counterproductive civilian casualties. A focus on protecting the population was asserted in late 2008. Farrell assesses, "By 2010, British forces had achieved significant results in Helmand, creating the security for governance and development to flourish in many parts of the province."

A great strength of *Unwinnable* is the author's detailed coverage of the British effort in Nad Ali, a critical district next to Helmand's provincial capital. This front has gone woefully understudied. It is perhaps Britain's greatest tactical success in Afghanistan. While the U.S. Marines cleared southern Helmand and Marjah, the British were clearing Nad Ali and the adjacent sector of Babaji. Americans cannot understand the outcome of its effort in Helmand without understanding Nad Ali. Indeed, U.S. Marines are helping Afghan soldiers and police fight there today. Farrell's is the first account to explain the full history of what happened in Nad Ali across 7 years and the deployment of multiple British battalions.

While fair to British tactical and operational successes, Farrell contends the overall strategy was misguided, as his title implies. The main reason is "political absenteeism and military hubris." His text makes clear that a large part of this was poor knowledge of Afghanistan and a resistance to learn. British policymakers and generals had the scantest of knowledge on Afghanistan yet insisted on moving forward without regard for facts that challenged their preconceptions. They disregarded reports of Taliban strength and studies that called for caution and taking time to deepen their knowledge and did not recognize the popular antipathy toward Britain. They even neglected future President Nad Ali's warning that if they "go in fighting . . . there will be a bloodbath."

Farrell describes how British officers made key tactical errors because they did not understand Helmand. In 2006, British commanders infamously diverted from a plan to defend the population in central Helmand that had been written by a team of officers and civilian officials who had studied the province. Instead, the commanders scattered British forces into rural districts to fight the Taliban. British forces became besieged

in far-flung "platoon houses" and suffered heavy casualties. Farrell debunks a decades-old argument that pleas from President Hamid Karzai and Provincial Governor Mohammed Daoud had forced the British commanders to move off the original plan. He tells how the British commanders never even read the plan and decided on their own to get into a fight in the hinterlands. Brigadier Edward Butler, the British commander in Helmand at the time, dismissed the original plan as "pretty light on the military Line of Operation . . . drawn up by people who did not properly understand the Brigade's skill sets and capabilities." Years later, of course, Butler's successors fell back on defending central Helmand, just as the original plan had advised. Farrell's case will surely draw great controversy.

What should we take from this? The United Kingdom was caught in the same dilemma that the United States has faced again and again in Iraq and Afghanistan. For the outsider, intervening in an insurgency or a civil war is a learning experience. The imperative to work with the people demands knowledge of society, culture, politics, and history, in all their complexity. Yet learning takes time. Outsiders face an unavoidable dilemma of making decisions with incomplete knowledge or making no decisions at all. Every decision stands a reasonable chance of being a misstep. Friction is inevitable. What Farrell reminds us is that at any decision point we should listen to the knowledge that does exist and not dismiss it because it complicates what we want to do.

With its broad scope and detail, *Unwinnable* is akin to an official history in the finest of British historical tradition. In fact, whenever the official history does come out, it will find itself in stiff competition with Farrell's work. **JFQ**

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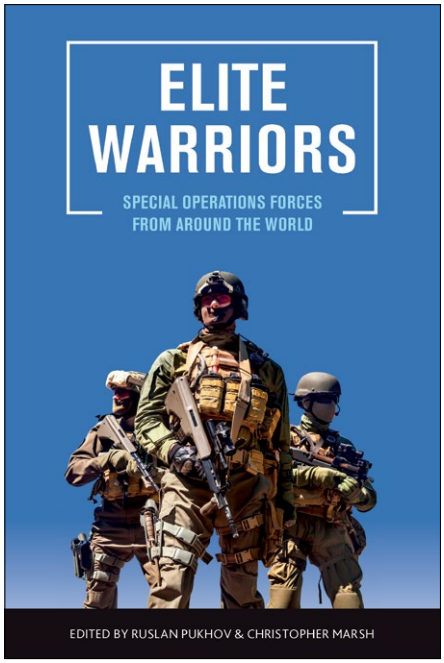

Elite Warriors: Special Operations Forces from Around the World

Edited by Ruslan Pukhov
and Christopher Marsh
East View Press, 2017
$79.95 263 pp.
ISBN: 978-1879944992

Reviewed by Bruce McClintock

Special operations forces (SOF) have existed in some form and played roles in warfare since the advent of conventional military operations. For example, in biblical times, King David had a special forces platoon. World War II brought growth, greater recognition, and prestige for special forces like the British Commandos, Special Air Service, and the American Office of Strategic Services. The last two decades have witnessed explosive growth in various forms of unconventional or SOF.

In *Elite Warriors*, Ruslan Pukhov and Christopher Marsh aim to provide accessible, high-quality comparative research on the elite SOF of 14 countries. They achieve some of their lofty objectives and add value to the important field of literature on special operations. Marsh, editor of the *Special Operations Journal* and professor at the U.S. Army School of Advanced Military Studies, opens the book by discussing the modern (post–World War II) proliferation of SOF and claims that many countries "seek to gain the status and capabilities" that come from possessing such specialized units. He then briefly describes the intent of the book—to fill the gap between "a vast body of literature that focuses on single cases of heroism, or at best, histories of single units" during a select period.

To help fill the gap, *Elite Warriors* provides descriptive chapters on the SOF forces of 14 countries in the following order: Russia, Ukraine, France, Germany, Italy, Poland, Iran, Israel, Jordan, Turkey, China, Singapore, Columbia, and Algeria. The book claims a format commonly used by the Center for Analysis of Strategies and Technologies (CAST), the Russian think tank co-founded and directed by Pukhov. CAST regularly employs a team of highly capable research analysts to provide summaries on a variety of topics—usually focused on Russia's defense industry and national arms procurement program. *Elite Warriors* claims that each of the chapters provides a "brief historical background to that country's special operations forces, then quickly moves to the present time, offering the reader a very comprehensive overview of the many units that exist, the missions which they are designed to address, and examples of some of the missions they have conducted." Marsh states, "Encyclopedic in nature, it is filled with a wealth of information on the special operations forces of the countries included."

Most chapters do include some form of historical discussion, a detailed organizational listing for known units, and some information on equipment used, as well as training and education. However, the diversity of contributors creates inconsistency in the format as well as the style of the different chapters. If read cover-to-cover, the inconsistency in the chapter organization is readily apparent, as is the level of detail available for various countries. The chapter on Iran, for example, provides good detail on the weapons used by Iranian SOF and provides basic

information on recent operations in Syria with substantive footnotes of the sources for the information. Other chapters include substantially less detail, often citing the lack of available information. The chapters are generally short with the shortest being only eight pages and containing no information on equipment or training.

The strength of *Elite Warriors* is the variety of authors and their use of native-language sources, often from mass media and generally current, as well as other authoritative material. The generous use of footnotes makes the book a worthwhile resource for those who want a guide to other useful material. The book, however, fails to explain its rationale for the relevance or importance of the 14 selected countries. Readers will find value in the China and Iran chapters but wonder where they might find information on key allies including Japan, South Korea, Denmark, the Netherlands, and the United Kingdom. Furthermore, the inconsistent format and level of detail may frustrate some readers. Readers looking for more specifics on U.S. forces should examine Linda Robinson's *Masters of Chaos* (PublicAffairs, 2009) and the more recent historical evaluation by Mark Moyers titled *Oppose Any Foe* (Ingram, 2017). Nevertheless, the material in *Elite Warriors* is valuable and the book is an ideal primer for someone without a background in special operations who wants to learn the basics about foreign military elites and have a guide to other useful sources. **JFQ**

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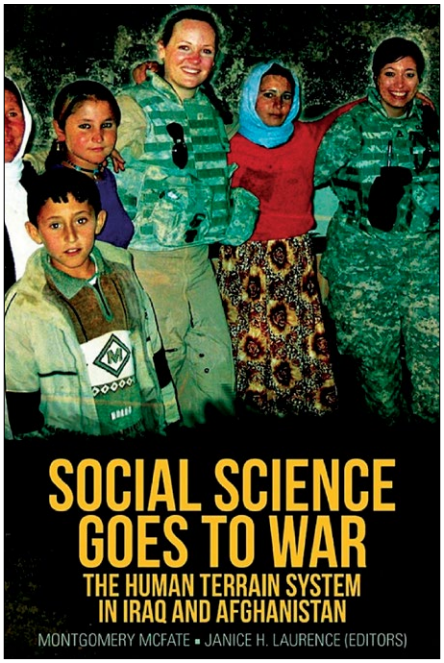

Social Science Goes to War: The Human Terrain System in Iraq and Afghanistan

Edited by Montgomery McFate and Janice H. Laurence
Oxford University Press, 2015
$39.95 320 pp.
ISBN: 978-0190216726

Reviewed by Brian R. Price

The gap between academia and the military has existed at least since the early 1960s, when Project Camelot crystallized political opposition to the American military/security apparatus by activist academicians. As a result, the military/security community established its own think tanks, designed to replicate social and hard science capabilities, reducing the political noise and fallout inherent in the engagement with a potentially hostile academic community. On the other side of the divide, many academics reacted with anger to social scientists engaged in military activity, political beliefs fusing with concerns of academic freedom and fanned with the flames of opposition to the Vietnam War in what they saw as colonialism and rampant militarization of American society.

This gap has, arguably, reduced the military's effectiveness in operations like Iraq and Afghanistan because think tanks and professional military education have not replicated the academic depth of understanding in local cultural dynamics. Critics like author and co-editor Montgomery McFate, herself an accomplished anthropologist, attorney, and longtime professor at the Naval War College, argue this is because military culture is task-oriented, reductionist, and problem-solving by nature as opposed to the more open-ended, expansive, and puzzle-solving individual nature of academic inquiry that is necessary to produce depth of qualitative knowledge of social complexity. This becomes a problem when the military is tasked, as it has been many times since 1989, with operations other than war where understanding the complexities of the local culture can mean the difference between success and failure, reduced casualties, and escalation.

In the polarized literature surrounding the U.S. Army's controversial Human Terrain System (HTS), few publications are likely to have the impact that this volume promises on the debate surrounding the inclusion of social science expertise within the American military/security establishment. McFate introduces a concept of *the military-academic divide*, noting how the HTS was often successful in bridging the sociocultural gap between not only the Afghan/Iraqi societies and expeditionary military units but also the social scientists' own academic world and that of the military. This out-of-the-box perspective, McFate and co-editor Janice Laurence conclude, proved valuable in widening the perspective of military teams in an effort to represent the local population in the military decisionmaking process.

McFate was the anthropologist who, together with Colonel Steve Fondacaro, USA, led HTS in its formative period. McFate and Laurence gathered first-person data by social scientists who worked in Iraq and Afghanistan. They offer the best summary to date of the program's establishment and mission in "Mind the Gap." McFate's contribution

in particular is valuable given the U.S military's retrenchment following sequestration and the myriad points around the globe where the U.S. military is likely to be again engaged, albeit at a much lower level of intensity. Laurence provides the concluding chapter, assessing HTS's successes and failures with an insightful piece, "The Human Terrain System." She and the whole group of authors assert that, in keeping with the military's own assessments, sociocultural knowledge and understanding directly contributed to operational success at the brigade level and below at the least.

Social Science Goes to War offers a number of valuable and well-written contributions that range from memoir-type lessons learned pieces, such as Ted Callahan's "An Anthropologist at War in Afghanistan," Katherine Blue Carroll's "What Do You Bring to the Fight?" and Jennifer Clark's "Playing Spades in Al Anbar." Other pieces are more analytical, offering advice on integration of civilians in military units, including Katherine Reedy's "The Four Pillars of Integration," James Dorough-Lewis's "Investing in Uncertainty," and Leslie Adrienne Payne's "Allied Civilian Enablers and the Helmand Surge." The ethical dimension that has been heavily criticized is ably addressed, though likely without a resonating conclusion, in a useful debate piece in Carolyn Fleuhr-Lobban and George Lucas's, "Assessing the Human Terrain Teams," and in Brian Brereton's "Tangi Valley."

Each of these contributors presents thoughtful, well-heeled commentary that speaks volumes of the program's potential for injecting insight and understanding into stability operations or a counterinsurgency campaign. They also highlight the difficulties: political division at home, ideology, physical danger, lack of consistent access to local persons, administrative complexity, and most of all, cultural gaps between the military and civilian academics working with the mission-oriented military units.

While HTS was closed in September of 2014, the need for sociocultural knowledge in the military/security establishment has not ebbed. If anything, it continues with limited knowledge of potential areas for American military intervention, with humanitarian missions and more limited engagements, even if the United States remains weary of nation-building or large-scale interventions. This book captures the perspectives from within the program, noting successes and responding to critics. While it will not silence challenges from academia or from segments of the military (where criticism of HTS was part of the larger counterinsurgency-versus-conventional operations debate), this volume stands to become a key source in future evaluations of the HTS program, representing both a primary source and analysis that reflects well on the skills of the HTS social scientists who staked their lives and their careers in order to serve downrange.

Countering politically charged commentary against the program, McFate, Laurence, and their contributors offer a balanced perspective between that of the military/security establishment and the academic community. Military critics tended to oppose the program as part of the larger counterinsurgency/major combat operations debate. This is an old debate within the military, one that this volume will hardly dent, but there is a growing consensus that, regardless of whether the military's focus should be on major combat operations or operations other than war, sociocultural knowledge will be of great importance.

To this reviewer, having served as a social scientist within the HTS program in 2011–2012, *Social Science Goes to War* is the most balanced and thorough representation of the program yet produced from the perspective of those who actually did the work, but there are, however, a few weaknesses. Most of those writing served during 2008–2009, but the positions of those who served later—from late 2010 to 2013—are not well represented. This phase represents a new period during which HTS was directly managed by an Army officer, changing the program's tone, policies, and direction. Nor does it include the several critics who served within the program. To be sure, the book achieves its intended purpose, showcasing the program's successes and potential, addressing the administrative and team dynamic/recruiting challenges, and discussing the critical debate that swirled around the program. But this debate hardly touched those riding in the hot, cramped vehicles, risking dismemberment by improvised explosive devices or bullet wounds, and living day to day with the mission of trying to bring understanding to the military's decisionmaking process. *Social Science Goes to War* does a masterful job of representing their perspective and will become a critical piece of literature in the ongoing debate on the use of social science in the conduct of military operations. **JFQ**

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Seabee, assigned to Naval Mobile Construction Battalion 5, yells out enemy locations in simulated attack during field training exercise, Fort Hunter Liggett, California, April 27, 2016 (U.S. Navy/Stephen Sisler)

A COG Concept for Winning More Than Just Battles

By Jacob Barfoed

The center of gravity (COG) is a central concept in U.S. and North Atlantic Treaty Organization planning doctrines, yet the current U.S. center of gravity concept is the target of much criticism from practitioners and scholars alike. The purpose of this article is not to discuss the alleged problems with the concept in current doctrine—plenty of other articles have already done that.[1] Rather, the purpose is to propose a solution in the shape of a revised COG concept. More specifically, the article connects the COG concept to compellence and coercion theory to strengthen the concept's theoretical foundation;[2] presents the concepts of strategic will and ability COGs to strengthen the concept's usefulness at the strategic level;[3] provides a clear and simple method for identifying and validating COGs;[4] exemplifies the concept's usefulness in counterinsurgencies and peacekeeping missions;[5] and provides a method for using the concept to not only link actions, effects, and objectives but also link national-strategic objectives to operational ones. In essence, the article presents a COG concept that will help commanders and staffs focus on not just winning battles but also winning wars and the subsequent peace.[6]

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What and Why

For this article, *center of gravity* is defined as an entity that is the primary component of physical or moral strength, power, and/or will to fight at a given level of command.[7] At the national strategic level, moral strength (will) as well as physical strength

(ability) COGs exist. Both types are physical entities but vary in purpose. At lower levels of command, only physical strength COGs normally exist. By affecting an actor's strategic will COG, one aims to influence his will by persuasion or coercion, whereas by affecting the strategic ability COG, one influences the actor's ability to carry out his overall strategy.[8] By affecting an actor's operational COG, one influences his ability to achieve operational objectives with the current course of action (COA).

COGs have critical capabilities (what the COG can do in context of the actor's mission); critical requirements (means, resources, and conditions essential for a COG to perform its critical capabilities); and critical vulnerabilities (deficient, missing, or vulnerable critical requirements). A key element of operational art is to derive ways to affect the primary actors' COGs sufficiently to achieve national/coalition objectives, whether by strengthening, protecting, weakening, or destroying their COGs. This can be done by affecting their critical vulnerabilities, which are always contextual and therefore subject to change at any time during the campaign or operation. Consequently, COG analysis is an iterative, continuous process.

Strategic Will COGs

COGs representing moral strength exist at the national strategic level; they are called *strategic will* COGs. An actor's strategic will COG is the primary entity that inherently possesses the most of the following critical capabilities: determines—and can alter—policy and strategy, commands the resources and means required to achieve strategic objectives, and inspires and provides moral cohesion and the will to fight. In short, it is the actor's political strategic decision-making entity. Examples of strategic will COGs include a strong political leader, a ruling elite, and a strong-willed population (or a segment of it) determined to prevail. It follows that coalition cohesion cannot be a strategic will COG, as it is not an entity. Instead, the primary entity that provides coalition cohesion can be the coalition's strategic will COG. Likewise, elements such as ethnic nationalism or ideology cannot be COGs, but they can be a critical requirement for the political leadership (the real strategic will COG) to inspire and provide moral cohesion and the will to fight. Since the will to fight ultimately dictates the beginning and end of a conflict, determining desired as well as undesired conditions of the primary actors' strategic will COGs and affecting them accordingly are central for achieving national/coalition strategic objectives.

Identifying and Validating Strategic Will COGs

Using information derived from the Joint Intelligence Preparation of the Operational Environment, the following factors should be considered in determining an actor's strategic will COG: Does the actor have a political leader who possesses all the critical capabilities listed above in the strategic will COG definition? If yes, then this leader is the strategic will COG. If some of the critical capabilities listed above are weak or missing for the actor's political leader, one of the following situations exists: One, the leader is clearly the entity who possesses most of the critical capabilities and is therefore the strategic will COG, but support from the primary entity that possesses the weak or missing capabilities becomes a critical requirement for the strategic will COG. Two, the identified leader is a marionette who possesses few or none of the critical capabilities for the strategic will COG. Instead, the real strategic will COG will be the entity that actually possesses most of the critical capabilities. Three, the leader shares the critical capabilities listed above with one or more people who then, as a group, is the strategic will COG. Four, the strength of will of an actor's population is such that it does not matter who the leader is. If a large part of a population feels so strongly about a policy that leadership cannot thwart, deflect, or dilute its will, then the population itself is the actor's strategic will COG.

Strategic Ability COGs and Lower Level Physical Strength COGs

COGs representing a physical strength exist in principle at each level of command. Thus, it is the entity representing the primary physical strength that an actor depends on to carry out his intent and achieve his objectives at a given level of command. At the national strategic level, these are called *strategic ability* COGs. Examples include a coalition military task force, a particularly strong element of national military power, a national security force, a political group's military arm, or even a strong nonmilitary entity in case the main strategic effort is not a military one.

Operational COGs are found at the joint force command (JFC) level. Examples include an armored corps, an air component command force, a maritime task force, a national police force, or a regional network of insurgent cells. Operational COGs are normally central elements or constituent parts of strategic ability COG. As an example, the national police force (operational COG) is a constituent part of the national security force (strategic ability COG). The strategic ability COG is not necessarily nested within the strategic will COG, but it is chosen and controlled by it as part of the actor's practice of strategy.

Normally, objectives can be achieved in various ways that potentially use different primary physical strengths (that is, physical strength COGs); consequently, identifying the various ways an actor can achieve his objectives is a critical step in identifying an actor's potential physical strength COGs. Defeating an actor's physical strength COG at a given level defeats the actor's current strategy/COA at that level. This forces the actor to change to another strategy/COA that depends on another COG (if one exists), and it also might force the actor to change his objectives at that level. Accordingly, an actor's COG changes when the actor changes the primary physical strength he uses to achieve his objectives. As such, operational COGs might change from phase to phase of an operation. Several

operational COGs might exist for an operation, but normally not simultaneously. Still, if an actor pursues two or more strategies simultaneously using different physical strengths and capable of achieving the actor's objectives by themselves, then multiple COGs can in principle exist simultaneously.

Identifying and Validating Physical Strength COGs

Identifying and validating physical strength COGs at a given level of command require that one identifies the actor's objectives at that level and the actor's strategy/COA for achieving those objectives. Then the following questions—all of which must be answered in the affirmative—can be used to identify and validate physical strength COG candidates:

- Is the candidate the primary entity used by the actor to achieve his objectives at the analyzed level of command? If it is an important or even essential entity but not the primary entity used by the actor to achieve his objectives, then it is a critical requirement for the physical strength COG. If it is not an entity but rather an important condition that must be present for the actor to achieve his objectives, then it is likewise a critical requirement for the physical strength COG.
- Does the candidate possess the most critical capabilities required to achieve the actor's objectives at the analyzed level of command? If some critical capabilities are missing, then support from the entities possessing them becomes a critical requirement for the physical strength COG.
- If the candidate is defeated, does this defeat the actor's COA at that level of command? If not, the candidate might be a physical strength COG for another possible COA for the actor.

COGs in Complex Operating Environments

One of the most severe criticisms of the COG concept is that it is ill-suited for the conflicts of today.[9] Yet the proposed COG concept is not only useful in a classic bipolar interstate military conflict but also in intrastate conflicts—such as counterinsurgencies—or in missions with no adversary.

COGs in Counterinsurgencies. Counterinsurgencies normally present a complex and dynamic operating environment that reflects on COG analyses. The local population is often referred to as the COG in counterinsurgencies; however, it can only be the strategic will COG for an actor if it makes the strategic decisions for the actor. As an example, a part of the population, such as a large ethnic group, might be the strategic will COG for an insurgency that has the characteristics of a popular uprising of that ethnic group. This is not a leader-driven COG. However, support from the local population is often a critical requirement for the COGs of all actors involved in this type of conflict. In a different example, a key actor might be a relatively small political grouping. Here it might not make sense to talk about strategic- as well as operational-level physical strength COGs for the actor, in which case the two levels merge.

An actor, like an insurgent group, might not have a single, integrated strategy but rather a large number of parallel yet uncoordinated efforts. Such a situation raises the question of whether to identify physical strength COGs for each effort or a single physical strength COG representing the combined but physically scattered entities. An example could be a political group's military arm that operates through a large number of decentralized, largely autonomous cells, each with its own independent effort.

Strengthening the local allied government's strategic and operational COGs by addressing their critical vulnerabilities are often key U.S. strategic objectives. Thus, the ally's strategic will COG could most likely have weak or missing critical capabilities, such as a weak ability to inspire and provide moral cohesion for all ethnic groups in the population, along with related critical vulnerabilities. Likewise, the local ally's strategic ability COG could be the national security forces, with critical capabilities such as defeating the insurgent network, protecting the population, and protecting the government and governmental services. The COG's operational national army and national police force as well as U.S. funding and training could be the critical requirements. Operational COGs for the ally would then be the national army and/or national police force nested in the strategic ability COG. Some of their critical vulnerabilities could be corruption and nepotism, a high desertion rate, and poor training. The JFC's mission would then be to address these critical vulnerabilities.

Non-Opposing COGs. In situations where there is no particular adversary, such as peacekeeping missions, the COGs of the key actors should still be identified and analyzed. While an actor might not be an adversary, his intent might still present an unacceptable condition for the national/coalition strategic objectives to be achieved. Knowing the critical capabilities, requirements, and vulnerabilities of the actor's COGs can aid the commander in influencing the actor.

The COG Analysis Model

To assist in finding ways to achieve the required condition of a specific COG, commanders and their staff should analyze the COG within a framework of three critical factors: capabilities, requirements, and vulnerabilities.

Critical capabilities are defined as what the COG can do—its primary abilities—in relation to achieving the actor's objectives at the given level in the context of a given situation. The critical capability concept is useful to identify and validate COGs, as it expresses how an actor could use a particular strength (the COG candidate) to achieve the actor's objectives at the analyzed level of command. If, for example, a specific military task force is identified as a COG, its critical capabilities could be the ability to defend area A against coalition forces and counterattack and cut off coalition forces. However, if the actor's mission changes, the same military task force could still be the COG but possess different critical capabilities. As such, critical capabilities are always contextual, as is the COG

U.S. Soldiers assigned to B Company, 1-502nd Infantry Regiment, 2nd Brigade, 101st Airborne Division (Air Assault), set up AN/PRC-155 (Manpack) radios at Fort Bliss, Texas, as part of annual Exercise NIE 17.2, July 13, 2017 (U.S. Army/Jordan Buck)

itself. In some cases, one or more of the critical capabilities required to achieve the actor's objectives might be a weak ability for a particular COG candidate; in this case, it would have associated critical vulnerabilities. In other cases, a COG might be missing an ability deemed critical for achieving the actor's objectives. In this case, support from an entity that possesses the missing ability becomes a critical requirement for the COG.

Critical requirements are specific conditions, resources, and/or means essential for a COG to perform its critical capabilities. If a military task force has critical capabilities, as in the example above, examples of means that could be critical requirements are a command and control (C2) system, armored land forces, and offensive air forces. Examples of conditions are air superiority, good weather, high tide, secure lines of communication, local popular support, and terrain and infrastructure that favor defense as well as counterattack. Each of the COG's critical capabilities must be considered in relation to what the critical requirements are for the COG. There will normally be an overlap of requirements to perform the various critical capabilities, but it is useful to note which critical capability each requirement relates to. Critical requirements at one level may be COGs or closely related to COGs at the next lower level; that is, lower level COGs are nested within a COG at the next higher level. For example, the armored land forces mentioned above as a critical requirement might be a COG at the next lower level of command.

Critical vulnerabilities are requirements, or components thereof, that are deficient, missing, or vulnerable and might contribute to a COG failure to perform one or more of its critical capabilities—the lesser the risk and cost, the better. For example, a military task force is identified as the COG. The ability to defend a certain area is identified as one of its critical capabilities, and an effective C2 system is identified as one of the critical requirements. If the C2 system (or components of it) is vulnerable to jamming, cyber attack, or physical destruction, it could be a critical vulnerability. If such a critical vulnerability is exploited, the COG will be weakened or cease to function either in general or at a specific time and/or space. Consequently, critical vulnerabilities represent risks associated with the analyzed actor's course of action, whether obvious to the actor or not.

Each critical requirement must be analyzed for vulnerabilities. While some requirements might be deficient or missing already, others need to be affected to become so. For these to be actual critical vulnerabilities, other actors must have the ability to influence them sufficiently to weaken one or more of the critical capabilities. Some critical requirements might only be vulnerable at a specific time and/or space. Similarly, there might be

Table. Using the COG Analysis Model

Center of Gravity Analysis Model	
Assessed objectives and potential COAs (note actor and level of command) The actor's (assumed) main objectives and potential COAs for achieving them, at the analyzed command level. For an adversary, assess as a minimum most likely and most dangerous COAs.	
Center of Gravity Identify the COG for each COA (validate as described earlier); analyze according to this table. Determine the condition of the COG that must exist as well as conditions that must be avoided, in order to achieve U.S./coalition objectives at the analyzed command level. Example: entity destroyed vs. entity isolated (post-war combat effective entity needed for stabilization). The required condition should be reflected in own objectives; if not, revise as required. Conditions to be avoided must be reflected in rules of engagement (ROEs) and other restraints.	**Critical Capabilities** Identifying the COG's critical capabilities serves as a validation of the COG—does it possess the primary abilities required to achieve the objectives for the actor? Some abilities might be weak, in which case associated critical vulnerabilities must be identified. A critical capability deemed essential to achieve the actor's objectives could also be missing, in which case support from an entity that possesses the missing ability becomes a critical requirement for the COG.
Critical Vulnerabilities For every critical vulnerability (CV) identified, assess the impact on each capability and relate to the required condition of the COG. For opposing COGs: For each CV, determine the potential effect(s) that expresses how the CV can be exploited in order to achieve each potential effect—with what combination(s) of actions? What are the risks associated? Are there undesired effects? What combination(s) of effects can achieve the required condition of the COG? Those effects deemed decisive for achieving the required condition are designated decisive conditions (DC). Different COAs might select different combinations of effects and thus DCs. For friendly COGs: (How) can an opponent cause and exploit a vulnerability (effects and actions)? Which effect(s) achieved by the U.S./coalition could protect/prevent the vulnerability in order to satisfy the critical requirement (to achieve the required condition of the COG)—with what combination of actions?	**Critical Requirements** Each of the COG's critical capabilities must be considered in regard to what the critical requirements (conditions, resources, and/or means) are for the COG to perform it. There will normally be an overlap of requirements to perform the various critical capabilities, but it is useful to note which critical capability each requirement relates to.
Conclusions (key deductions) The key deductions should be formulated as elements for further planning, that is, desired and undesired condition(s) of the COG, DCs, effects, actions, ROEs, commander's critical information requirements, etc.	

critical requirements that are potentially vulnerable, but the available or allocated means might not be sufficient to exploit the weakness or the political will to do so might be lacking. Such potential vulnerabilities should be noted, along with potential events that could alter their degree of vulnerability.

The table provides a method for using the COG analysis model to analyze an actor's physical strength COG at a generic level of command. Strategic will COGs are analyzed in a similar way.

Using the COG Concept for Planning

COG identification and analysis focuses the planning effort because it helps identify how an actor's will and primary ability might be influenced in order to achieve U.S./coalition objectives. Commanders and staffs should analyze all actors with central interests in the conflict and establish the conditions of each actor's COGs (strategic and operational) that must exist to achieve these objectives. COG analysis is a continuous, iterative process that must continue throughout planning and execution of the operation as collaborative planning by multiple levels of command. The following steps describe how to use the COG concept to link actions, effects, and objectives, and how to link the JFC level of command with the national strategic level of command. For simplification purposes, only two actors are included: the United States and a single adversary (ADV). The text is worded as if the analysis takes place at the theater-strategic or JFC level, although strategic COG analysis should be started at the national strategic level of planning (that is, the National Security Council).

Applying Strategic-Level COG Analysis in the Planning Process

If strategic-level COGs are not already identified by higher command, the JFC should start by identifying and analyzing them, including both strategic will and ability COGs. Previously identified COGs should still be validated and the analyses refined since COGs and their critical capabilities, requirements, and vulnerabilities may change as the situation evolves.

1. Identify the U.S. strategic will COG (the strategic decisionmaking entity in the current strategic context) and analyze it using the COG analysis model.
2. Identify the ADV strategic will COG. Identify likely successors and assess the potential influence on the U.S. objectives for each one to replace the current leadership.
3. Analyze the ADV strategic will COG using the COG analysis model. Missing information must be provided through the Commander's Critical Information Requirements process (valid for all steps).
4. Identify the ADV objectives and motives driving them.
5. Determine the ADV policy change(s) required to attain the U.S. national strategic endstate and objectives, such as "no longer supports insurgents financially" or

U.S. Marines assigned to Alpha Company, 1st Battalion, 3rd Marine Regiment, conduct amphibious landing during Blue Chromite 18 aboard Kin Blue Beach, Okinawa, Japan, November 2, 2017 (U.S. Marine Corps/Aaron S. Patterson)

"withdraws its forces and accepts U.S. peace terms."

6. Determine the required condition of the ADV strategic will COG and its critical capabilities. The condition must support the desired policy change and should be reflected in the U.S. national strategic objectives. If the U.S. objectives do not reflect such considerations, they should be revised. An example could be "Country X has a stable, representative government." Conditions to be avoided should be determined as well; these must be reflected in rules of engagement (ROEs) and other restraints for all diplomacy, information, military, and economic (DIME) instruments of power (IOPs). A condition to be avoided could be a leadership change instituting a leader not desired by the United States.
7. Determine what possible combinations of strategic effects in the COG's critical vulnerabilities could lead to the required condition of the ADV strategic will COG, as well as what central undesired effects could lead to the conditions to be avoided (ROE and other restraints). Those strategic effects that are deemed decisive for achieving the required condition of the related COG are designated strategic decisive conditions (DCs).
8. Determine what possible strategic actions of the DIME IOPs could lead to each identified strategic effect. One action could in principle support several effects and/or DCs.
9. Identify the various ways the ADV can achieve its strategic objectives using its available means. The primary entity used to achieve the objectives in each potential strategy is the strategic ability COG. Ability COGs should be identified, at a minimum, for the ADV's most likely as well as most dangerous strategic COA; the COGs could be the same for several COAs. The ADV strategic COAs should aim at affecting U.S. strategic COGs and their critical vulnerabilities, which means this step must be revisited once U.S. strategic COGs are identified and every time they are refined or changed.
10. Establish the required condition of the identified ADV strategic ability COGs and their critical capabilities (related to each adversary strategic COA); each condition must directly support the U.S. national strategic objectives. If the U.S. objectives do not reflect such considerations, they should be revised. An example could be "the weapons of mass destruction are destroyed." Conditions to be avoided should be

determined as well; these must be reflected in ROEs and other restraints. An example could be "the Army's armored and artillery units must not be reduced by more than 50 percent (for postconflict regional stability purposes)."

11. Determine what possible strategic effects in each COG's critical vulnerabilities could lead to the required conditions of the ADV strategic ability COG, as well as undesired effects that could lead to the conditions to be avoided.
12. Determine what possible combination of strategic actions of the DIME IOP could lead to each identified strategic effect.
13. The different combinations of strategic effects and actions determined above are core elements of the U.S. strategic design. Different combinations form the core ingredients of different potential strategic COAs (along with strategic DCs, effects, and actions identified elsewhere in the planning process); those strategic effects in ADV critical vulnerabilities, which are selected for a specific COA and are deemed decisive for achieving the required condition of the related COG, are designated strategic DCs in that COA. Each strategic COA must be able to attain the national strategic endstate and the required DIME means to carry out the COA must be available. This might lead to a requirement for revising the national strategic endstate and objectives.
14. For each U.S. strategic COA, identify the strategic ability COG (the primary entity used in the COA) and analyze it using the COG analysis model. Determine strategic effects and associated actions required to protect the critical vulnerabilities. Do this as well for the U.S. strategic will COG analyzed in step 1. Incorporate this in the U.S. strategic COAs and use it to update step 9 (ADV COAs). The COG analyses of the U.S. strategic ability COGs (related to different COAs candidates) will contribute to strategic COA development and selection by highlighting critical vulnerabilities and thus central risks associated with each COA candidate.
15. From the DCs in the selected U.S. strategic COA, objectives for the DIME IOP are developed, including the theater military-strategic objectives.
16. From the theater military-strategic objectives, JFC's operational objectives are developed; normally, the military-strategic effects form the basis of the operational objectives. If the only means available to the military-strategic command is a single operational-level command, the operational objectives should closely reflect the military-strategic objectives deduced in step 15. If more means are available (more than one subordinate command), the same method described below can be used for military-strategic level planning to ensure a logical linkage between military-strategic objectives and operational objectives.

Applying COG Analysis for Operational-Level Planning

Overall, the logic is the same as the political strategic-level method described above. For simplicity, the following assumes that the operational objectives closely reflect the military-strategic objectives deduced in step 15.

17. Identify the ADV operational objectives. For simplicity, the following assumes the adversary's operational objectives are the same as its military-strategic objectives (the adversary's military-strategic and operational level merged); these can be deduced from the adversary's strategic COAs (see step 9). Quite possibly, each identified ADV strategic COA with associated adversary DCs, effects, and actions leads to a different, but likely overlapping set of ADV operational objectives. For simplicity, the following assumes the same set of ADV operational objectives for the most likely and most dangerous ADV strategic COA.
18. Identify the various ways the ADV can achieve its operational objectives using its available operational means. The primary entity used to achieve the objectives in each potential adversary operational COA is the ADV operational COG. COGs should be identified, at a minimum, for the ADV's most likely as well as most dangerous operational COA; the COG could be the same for several COAs. An ADV operational COG should either be a critical requirement (a means) for the ADV strategic ability COG or be able to achieve a critical requirement (a condition). If it is not, the strategic COG analysis must be refined to ensure the operational COG is nested in the strategic COG. The ADV operational COAs should be assumed to exploit critical vulnerabilities of U.S. operational COGs, which means this step must be revisited every time U.S. operational COGs are refined or changed. This step (first performed in mission analysis) initially uses an interim U.S. operational COG based on commander's initial planning guidance.
19. Establish JFC's required condition of each ADV operational COA's COG and its critical capabilities; each condition must directly support JFC's operational objectives. If the operational objectives do not reflect such considerations, they should be revised. Conditions to be avoided should be determined as well; these must be reflected in ROEs and other restraints.
20. Determine which possible effects in each COG's critical vulnerabilities could lead to the required conditions of the ADV operational COGs, as well as which undesired effects could lead to the conditions to be avoided (to be reflected in ROEs and other restraints). Those effects deemed decisive for achieving the required condition of the related COG are designated DCs. Sometimes a DC might also

describe the required condition of a COG.

21. Determine what possible combination of actions across the joint functions could lead to each identified effect. One action could in principle support several effects. The effects and associated combinations of actions must be developed through collaborative planning with the components to ensure they are creatable.
22. The different combinations of effects and related combinations of actions determined above are core elements of the operations design. Different combinations form the core ingredients of various potential JFC operational COAs (along with operational DCs, effects, and actions identified elsewhere in the planning process). Those effects in ADV critical vulnerabilities, which are selected for a specific COA and are deemed decisive for achieving the required condition of the related COG, are designated operational DCs in that COA. Each COA must be able to achieve the operational objectives, and the required joint means to carry out the COA must be available. This might lead to a requirement for revising—in dialogue with higher headquarters—the operational objectives and possibly the U.S. national strategic objectives and endstate.
23. For each JFC operational COA, identify the U.S. operational COG (the primary entity used in the COA—usually the supported component) and analyze it using the COG analysis model. Determine effects and associated actions required to protect the critical vulnerabilities. Incorporate this in the JFC operational COAs and use it to update step 2 (ADV operational COAs). The COG analyses of the U.S. operational COGs (related to different COA candidates) will contribute to COA development and selection by highlighting critical vulnerabilities and thus central risks associated with the COA candidate.
24. From the DCs and effects in the selected operational COA, objectives for the components are defined (that is, the subordinate commands). This happens through collaborative planning with the components to ensure the related actions are realistic and the objectives are achievable. Component-level planning will refine and revise as required, just as described here for operational-level planning.
25. For each branch and sequel developed, each step must be revisited.

Winning Wars and the Subsequent Peace

While current U.S. doctrine makes the COG concept the centerpiece in operational planning, there is a broad call for either revising or killing the concept.[10] However, if the COG concept is to remain the centerpiece in military planning, it must not only help link actions, effects, and objectives but also link the JFC level of command with the national strategic level of command. It must provide conceptual guidance for addressing not just the adversaries' physical ability to wage war but also their moral power—their will—to do so. The proposed will and ability COGs concept aims at doing just that. Failing to revise the COG concept as proposed will likely continue the U.S. tendency to win its battles, but not the peace. JFQ

Notes

[1] For a recent critical article, see Dale C. Eikmeier, "Let's Fix or Kill the Center of Gravity Concept," *Joint Force Quarterly* 83 (4th Quarter 2016), available at <http://ndupress.ndu.edu/Portals/68/Documents/jfq/jfq-83/jfq-83_109-115_Eikmeier2.pdf?ver=2016-10-19-102203-410>.

[2] Paparone and Davis argue that the center of gravity (COG) concept suffers from a "lack of interdisciplinary awareness." See Christopher R. Paparone and William J. Davis, Jr., "Exploring Outside the Tropics of Clausewitz: Our Slavish Anchoring to an Archaic Metaphor," in *Addressing the Fog of COG: Perspectives of Center of Gravity in U.S. Military Doctrine*, ed. Celestino Perez, Jr. (Fort Leavenworth, KS: Combat Studies Institute Press, 2012), 68–70, available at <http://usacac.army.mil/cac2/cgsc/carl/download/csipubs/COG.pdf>.

[3] Vandersteen argues that the COG concept "fails to provide convincing evidence for its use at the strategic level of war." See Kurt P. Vandersteen, "Center of Gravity: A Quest for Certainty or Tilting at Windmills," in *Addressing the Fog of COG*, 40.

[4] This addresses a critique such as "the JOPP [joint operation planning process] . . . lacks a definitive COG qualifying procedure." See Daniel J. Smith, Kelley Jeter, and Odin Westgaard, "Three Approaches to Center of Gravity Analysis: The Islamic State of Iraq and the Levant," *Joint Force Quarterly* 78 (3rd Quarter 2015). Rueschhoff and Dunne raise a similar critique. See Jan L. Rueschhoff and Jonathan P. Dunne, "Centers of Gravity from the 'Inside Out,'" *Joint Force Quarterly* 60 (4th Quarter 2011), 121–122. In relation, Alex Ryan argues that "COG concept is so abstract to be meaningless." See also Eikmeier.

[5] That the COG is a dead metaphor related to Prussian military challenges in the early 19th century is also a typical argument from critics. See, for instance, Paparone and Davis; and Robert Dixon, "Clausewitz, Center of Gravity, and the Confusion of a Generation of Planners," *Small Wars Journal*, October 20, 2015, available at <http://smallwarsjournal.com/jrnl/art/clausewitz-center-of-gravity-and-the-confusion-of-a-generation-of-planners>; and Stephen L. Melton, "Center of Gravity Analysis: The Black Hole of Army Doctrine," in *Addressing the Fog of COG*.

[6] The proposed COG concept builds on Joseph L. Strange's concept of moral and physical COGs. Jacob Barfoed, "The COG Strikes Back: Why a 200-Year-Old Analogy Still Has a Central Place in the Theory and Practice of Strategy," *Baltic Security and Defence Review* 17, no. 2 (2014), available at <www.baltdefcol.org/files/files/BSDR/BSDR_17.pdf>. See Allied Joint Publication 5, *Allied Joint Doctrine for Operational-Level Planning* (Brussels: North Atlantic Treaty Organization, June 2013).

[7] As defined in this article, with inspiration from Strange as well as Eikmeier.

[8] Hereby, the proposed COG concept connects to strategic theory and the work of compellence and coercion theory scholars such as Schelling, Pape, and Jakobsen. See Thomas C. Schelling, *Arms and Influence*, rev. ed. (New Haven: Yale University Press, 2008); Robert A. Pape, *Bombing to Win: Air Power and Coercion in War* (Ithaca, NY: Cornell University Press, 1996); and Peter Viggo Jakobsen, "Reinterpreting Western Use of Coercion in Bosnia-Herzegovina: Assurances and Carrots Were Crucial," *Journal of Strategic Studies* 23, no. 2 (2000).

[9] Paparone and Davis; Dixon.

[10] See *Addressing the Fog of COG*, passim.

Engineman completes written damage control test aboard USS *Rushmore*, operating in 7th Fleet area of responsibility, June 4, 2015 (U.S. Navy/Chelsea Troy Milburn)

Department of Defense Terminology Program

By George E. Katsos

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The Department of Defense (DOD) Terminology Program was formalized in 2009 by the Office of the Secretary of Defense (OSD) and falls under the responsibility of the Chairman of the Joint Chiefs of Staff (CJCS).[1] The program is overseen by the director of Joint Force Development (DJ7) to improve communications and mutual understanding through the standardization of military and associated terminology within DOD, with other U.S. Government departments and agencies, and between the United States and international partners. It includes U.S. participation in North Atlantic Treaty Organization (NATO) terminology development as well as other terminology forums.

Policies

The standardization of military terminology is established under two policies: DOD Instruction (DODI) 5025.12, *Standardization of Military and Associated Terminology*, and CJCS

Instruction (CJCSI) 5705.01, *Standardization of Military and Associated Terminology*. Since the Eisenhower and Kennedy administrations, both documents continue to mature and guide the department on terminology standardization at all workforce levels.[2] DODI 5025.12 is the Defense Secretary's overarching policy for the DOD Terminology Program. Revised in April 2017, it applies to all DOD components including OSD, military departments, the Office of the CJCS, Joint Staff, and combatant commands.[3] Issued by the deputy chief management officer in OSD, this instruction directs the Chairman to manage the DOD Terminology Program, develop and maintain the *DOD Dictionary of Military and Associated Terms* (DOD Dictionary), and resolve terminology issues. An initial set of terminology criteria is provided that is further built upon by the Chairman's Instruction. CJCSI 5705.01F (revised in September 2017) establishes the Chairman's policy and implementation procedures for the joint force.[4] The CJCSI supports and is in compliance with the DODI. The DJ7 provides general/flag officer oversight for the Chairman to coordinate, standardize, and disseminate DOD military and associated terminology. In support, the director delegates development and management responsibilities to the deputy director for Joint Education and Doctrine, who appoints and supervises the DOD terminologist to facilitate the program. The Chairman's Instruction not only refines procedures on how to introduce term and definition additions, modifications, or deletions to the DOD Dictionary but also introduces a new procedure to revalidate existing terms and definitions from nondoctrinal sources. The instruction also includes more clarity on the differences between joint doctrine and policy terms as well as the process to maintain a database where policy terms reside outside the DOD Dictionary.

Processes

Processes are managed by organizational personnel. There are terminologists within the joint doctrine development community who make it their job that *words matter*. This terminology community consists of the DOD terminologist, Service and National Guard Bureau joint doctrine planners and organizational terminologists, and points of contact from OSD and other DOD components. Additionally, Joint Staff doctrine planners individually maintain joint publication (JP) glossaries and represent DOD organizational terminology positions to NATO. Regardless of these occupations, individuals from the joint force can propose new terms and definitions through their own organization processes for consideration in any forum.

Proposed terms and definitions for the DOD Dictionary are introduced under five processes. The first is DOD terminology proposed from joint doctrine JP glossaries. Under this process, a group of organizational representatives and subject matter experts that comprises the joint doctrine development community conducts its own maintenance of glossary terms and definitions that are reflected in the DOD Dictionary. Its community-based consensus—governed under CJCSI 5120.02, *Joint Doctrine Development System*, and CJCS Manual 5120.01, *Joint Doctrine Development Process*—continues to be the sole driver for clear, concise, and complete DOD Dictionary joint doctrine terms and definitions.

Next is DOD terminology directed by the Secretary of Defense, Deputy Secretary of Defense, or CJCS via specific memoranda. These are policy terms directed for placement into the DOD Dictionary to fill a void in joint doctrine with the caveat that they may be adopted into or modified by JP revisions, thus becoming joint doctrine terms.

Third is DOD terminology proposed from DOD (OSD/Joint Staff) issuance glossaries. After being socialized with the DOD terminologist and correctly staffed, these terms of policy origin are proposed to fill gaps and start conversations in joint doctrine until it catches up with and adopts or modifies the terms in JP glossaries, also becoming joint doctrine terms.

The two remaining steps are proposals of NATO terminology that are introduced during JP development and DOD terminologist administrative changes that reflect results of revalidation proposals or directed action by senior leadership.

Principles

The Chairman's Instruction includes three fundamental principles as the basis for appropriate DOD Dictionary term and definition development: clarity, conciseness, and completeness. To propose a successful term and definition, the submission first must be *clear*, focusing on articulating what the term means. It should not contain doctrinal or procedural information on how or why a term is used or address the term itself. Next, the definition must be *concise*, being brief as possible and including only information that makes the term unique. The definition should be limited to one sentence whenever possible. The last principle is that the definition should be *complete* by including all information required to distinguish the term from those that are similar. This includes addressing an associated parent term if applicable. Whenever possible, definitions should use the two-part definition form. For example, "*theater of operations*: an operational area defined by the geographic combatant commander for the conduct of support of specific military operations." In this case, the first part (operational area) specifies the relevant general type and the second part (defined by the geographic combatant command) specifies the instance of the type that is being defined.

Common errors plague term and definition proposals and the following examples should be avoided: multiple definitions that include a series of numbered definitions for different meanings, incomplete definitions that are not detailed enough to include all items necessary, overly restrictive definitions that are too detailed and exclude items that should be covered, circular definitions that repeat the term being defined as part of the definition or used as a characteristic, negative definitions that state what is not covered rather than what is covered, and hidden definitions that embed definitions of one

Table. Nineteen Criteria for Inclusion in the DOD Dictionary	
1.	Merriam-Webster dictionary term is inadequate for DOD use
2.	Not a Merriam-Webster dictionary definition with non-definitional added text (fluff)
3.	Not self-defining (bomber aircraft: an aircraft that delivers bombs)
4.	Not a policy term that competes/overrides a doctrinal term in the DOD Dictionary
5.	Follows established procedures (pre-signature DOD Terminologist coordination, otherwise term referred to Terminology Repository)
6.	Reflects extant DOD capabilities and practices
7.	General military or associated significance (technical terms may be included if defined in easily understood language and of general military or associated significance)
8.	Weaponry terms are limited to generic weapon systems
9.	Not to consist of/contain shortened word forms (abbreviations, acronyms, or initialisms)
10.	Must be UNCLASSIFIED (including shortened word forms) and marked as such
11.	No prowords, code words, brevity words, or NATO-only terms
12.	Not Service- or functionality-specific unless commonly employed in U.S. joint force operations
13.	Approved joint term with similar definition does not exist
14.	Consistent with U.S. law, treaties, international agreements, and executive orders
15.	Noun terms should be in singular form
16.	No proper names
17.	No separate cross-reference entries ("Universal Time" is also called "ZULU time," no separate entry for "ZULU time")
18.	Must appear and be used in the content of the document (not just in its glossary)
19.	Should be written as a definition (what it is) and not as a description (how/why it works)

term inside another. These principles and lessons learned from common errors inform boundaries for the 19 criteria in the Chairman's Instruction to determine the quality and acceptability of terms and definitions for inclusion in the DOD Dictionary (see table).

Products

Terminology products are the tools employed to provide transparency of DOD terminology usage within the joint force and for interagency partners. For the purpose of this review, the following products managed by the DOD terminologist are examined: the DOD Dictionary, the *Terminology Repository of DOD (OSD/JS) Issuances*, and the *U.S. Government Compendium of Interagency and Associated Terms.*

The DOD Dictionary was first published by the Joint Staff in 1948.[5] Now issued monthly, it reflects over 2,400 general and universal terms and definitions in JP glossaries (98 percent), known as joint doctrine terms, as well as policy terms that fill joint doctrine gaps (2 percent) addressed by senior leader memoranda and DOD policy issuances.[6] This document supplements common English-language dictionary terms and definitions in a military context clearly distinguished from other terms. Military terms with more descriptive or narrative text constrained by CJCSI definition criteria are not reflected in the DOD Dictionary but can exist as content within JP chapter text. Those interested in developing new term and definition proposals should access this official resource first prior to precoordination to determine if the term(s) exist, then cross-reference terms and their derivatives that are reflected in the OSD and Joint Staff policy database—known as the Terminology Repository—for situational awareness. Additionally, a basic but non-exhaustive list of shortened word forms (abbreviations, acronyms, and initialisms) criteria is provided as an appendix for general guidance. Shortened word forms included in the DOD Dictionary appendix only reflect those used in individual JPs.

The *Terminology Repository of DOD (OSD/JS) Issuances* is a database that tracks OSD and Joint Staff terms in nondoctrinal policy glossaries. Updated quarterly, the Terminology Repository was established in 2016 to provide awareness of specific and technical policy terms and definitions that are sourced or reside outside of joint doctrine.[7] Now in one location, over 22,000 entries of terms and definitions can be viewed and tracked from over 1,200 OSD and 400 CJCS issuance glossaries. Duplicate term entries from multiple individual issuances are included by design to track differences in organizational definitions and approaches in understanding terms. When developing glossaries, it is recommended to review the Terminology Repository after reviewing the DOD Dictionary in order to develop a full understanding of DOD's usage of the term and potential derivatives. It is also recommended that future issuance glossaries follow CJCSI criteria for developing organizational policy terms to refine and improve overall DOD terminology. The process for updating the Terminology Repository can be found in the CJCSI as well as OSD and Joint Staff workforce polices and checklists.

The *U.S. Government Compendium of Interagency and Associated Terms* was developed to provide visibility on standard terminology used in department dictionaries, U.S. Code, and cooperation activities of the executive branch.[8] DOD Dictionary terms and definitions are reflected in this document to increase efficiencies among and between workforces. Generated by the Joint Doctrine Interorganizational Cooperation Terminology Working Group and created by action officers from all executive branch departments and many agencies, this inaugural release of more than 12,000 entries will be annually revised. As practiced in the Terminology Repository, the appearance of duplicative term entries with different definitions is by design to show differences in organizational approaches, usage, and understanding. The document also contains foreign and domestic thematic lists for reference to enhance workforce interoperability in steady state activities, disaster relief, or other missions. This unofficial document is nonbinding, socialized, used to break

C-5 Galaxy aircraft crew chief assigned to 167th Maintenance Squadron, West Virginia Air National Guard, performs engine check after C-5 lands at Joint Base Charleston, South Carolina, July 22, 2013 (U.S. Air Force/Dennis Sloan)

down organizational stovepipes, and published with the understanding that it not be definitive of a mission or function of any organization. The process for updates is generated through an annual staffing to the organizations under a call for information.

The Way Ahead

The program's continued socialization to the personnel that make up the joint force is paramount to the growth of DOD terminology management. To build on its momentum, informal rollouts continue at all levels of the department with many elements. Five elements help continue to build momentum. The first is the need to expose the joint force to the differences between joint doctrine terms and policy terms. The second is to socialize the Chairman's processes, principles, and criteria that exist and explain why the supremacy of the DOD Dictionary matters over any other framework. The third is to provide maximum awareness of the Terminology Repository and its role on how it supports the foundation and does not threaten the supremacy of the DOD Dictionary. The fourth is the need to reinforce cooperation with non-DOD organizations through terminology transparency in pursuit of maximum interoperability.[9] The last is the need to continue tracking the terminology that informs these products to push the DOD Terminology Program and the joint force further into the 21st century. These steps are guaranteed to empower workforce staff and action officers in solving problems that involve language before they reach senior leadership.

As the joint doctrine development community continues its own maintenance of terms and definitions, its community-based consensus will continue to be the sole driver to improve the standardization of military terminology and relevance of the DOD Dictionary. Still, challenges remain in joint doctrine terminology development and maintenance where legacy terms from the Cold War (for example, *warfare*) and the conflated use of terms (for example, *operation*, *effect*) continue to challenge forward-thinking perspectives within the joint force. As such, the DOD Terminology Program will continue to protect and build upon the DOD Dictionary's purpose where clear, concise, and complete terms and definitions reside.[10] **JFQ**

Notes

[1] Department of Defense Instruction (DODI) 5025.12, *Standardization of Military and Associated Terminology* (Washington, DC: DOD, August 14, 2009), 3.

[2] Memorandum of Policy No. 109, *Standardization of Military Terminology*, June 1, 1959; DODI 5000.9, *Dictionary of United States Military Terms for Joint Usage* (Washington, DC: DOD, September 23, 1961).

[3] DODI 5025.12, April 11, 2017, change 1.

[4] Chairman of the Joint Chiefs of Staff Instruction 5705.01F, *Standardization of Military and Associated Terminology* (Washington, DC: The Joint Staff, September 15, 2017).

[5] *Dictionary of United States Military Terms for Joint Usage* (Washington, DC: The Joint Staff, June 1948).

[6] *DOD Dictionary of Military and Associated Terms* (Washington, DC: The Joint Staff, September 2017).

[7] *Terminology Repository of DOD (OSD/JS) Issuances* (Washington, DC: The Joint Staff, July 2017).

[8] *U.S. Government Compendium of Interagency and Associated Terms* (Washington, DC: The Joint Staff, July 2017).

[9] James C. McArthur et al., "Interorganizational Cooperation I of III: The Interagency Perspective," *Joint Force Quarterly* 79 (4th Quarter 2015), 106–112; James C. McArthur et al., "Interorganizational Cooperation II of III: The Humanitarian Perspective," *Joint Force Quarterly* 80 (1st Quarter 2016), 145–152; and James C. McArthur et al., "Interorganizational Cooperation III of III: The Joint Force Perspective," *Joint Force Quarterly* 81 (2nd Quarter 2016), 129–139.

[10] For more information regarding DOD terminology, see the DOD Terminology Program, available at <www.dtic.mil/doctrine/DOD_dictionary/index.html>.

USS *Ashland* patrols waters off coast of Australia during biennial U.S.-Australia bilateral Exercise Talisman Saber 17, Coral Sea, July 21, 2017 (U.S. Navy/Jonathan Clay)

Born Multinational

Capability Solutions for Joint, Multinational, and Coalition Operations

By Charles W. Robinson

Charles W. Robinson is the Knowledge Manager, Joint Staff Deputy Director J7 Enterprise Architecture Division, and detailed to the Multinational Capability Development Campaign as Federated Mission Networking and Mission Partner Environment Civilian-Military Information-Sharing Project Lead.

U.S. military operations are conducted in a multinational environment. This is true today and for the foreseeable future. Given this fact and the Chairman of the Joint Chiefs of Staff's emphasis on working with allies and other international partners, there are many advantages to certain capabilities being *born multinational*. A multinational development team offers the benefits of both inherent interoperability and a broad set of perspectives, insights, and knowledge sources. The pooling of resources also enables cost savings for each participant. The Multinational Capability Development Campaign (MCDC) provides a quick, affordable way to conduct projects designed to develop concepts and capabilities in collaboration with a

broad set of international mission partners. MCDC capability development projects offer a model of effectiveness and efficiency.

What Exactly Is MCDC?

MCDC is a Joint Staff program led by the director of Joint Force Development (J7). The program consists of 24 partner nations and international organizations focused on developing nonmateriel solutions to fill capability gaps for joint, multinational, and coalition operations. These capabilities are intended to meet the present and future needs of the United States and its potential mission partners. MCDC provides a mechanism for pooling and sharing resources in multinational collaborative development efforts directed at solving or mitigating common problems. The focus is on providing interoperable solutions at the best value. Economics is not, however, the sole driver of the MCDC approach.

Some may wonder why the United States supports the MCDC program given the other possible pathways for capability development. The National Military Strategy and our Joint Concepts envision multinational operations as the primary mechanism for mobilizing collective action from the international community. The United States works daily with multinational partners to address global risks and share the burdens of maintaining global security. Looking across U.S. strategy, threats, commitments, and recent experience, it is clear that current and future operations of most types will be multinational by nature. This view is clearly reflected and reinforced in the strategy, doctrine, concepts, and priorities of the many multinational partners with whom we will team.

Every nation, the United States included, brings cultural perspectives to capability development. When capabilities are developed by U.S. mechanisms and then transitioned to a multinational environment, a lot of time and effort may be required to address others' perspectives. Similarly, partner nations and organizations may have unique insights into solution paths that others might not see. MCDC takes the approach that a broader set of perspectives makes for a better solution to a multinational problem. Projects undertaken as partnered efforts from the start are, in effect, born multinational.

The Joint Staff J7 established the MCDC program in 2013 in order to build and expand from the Multinational Experimentation (MNE) program. The legacy MNE series focused on concept development and experimentation (CD&E), with an emphasis on the latter. MCDC maintains the foundational building blocks that made the MNE series successful but moves into the realm of delivering solutions. MCDC builds on and goes beyond the MNE foundation, incorporating key changes in scope and mission necessary to meet the capability development requirements of the United States and its partners. In other words, MCDC is translating concepts into usable multinational capability.

For multinational force development purposes, it was important that MCDC not be constrained to CD&E methodologies but instead be able to define, produce, and transition relevant solutions and capabilities that could be used now and in the foreseeable future. While some MCDC projects still use basic CD&E methodologies to develop operational concepts, others elect to apply system design and engineering, Business Process Engineering, Six Sigma, Lean, and other methodologies and frameworks. All efforts examine the specific operational gaps and develop solutions to fill these using the doctrine, organization, training, materiel, leadership and education, people, facilities, and policy and interoperability framework to ensure results are comprehensive enough to have an operational impact.

MCDC continues to evolve and improve over time. As it begins its third iteration with the 2017–2018 program of work, significant improvements have been incorporated into the project proposal process, product quality control and consistency, documentation of internal processes, and transition of products to end users.

Nations desiring to become members of the MCDC community do so by requesting membership to the MCDC Executive Steering Group (ESG) via the MCDC secretariat. Information on membership as well as program details can be obtained from the secretariat in the Joint Staff J7. Generally, individual nations or intergovernmental organizations (IGOs)—for example, the North Atlantic Treaty Organization (NATO) and Economic Development Administration—apply to the ESG chair in writing and indicate their desired category of participation. There are two categories of participation to which a member of the MCDC community may belong: contributor or observer. The ESG chair will distribute such applications to the current ESG members for approval under silence. If no one has broken silence at the end of the suspense—usually 30 days—then the application is accepted and a nation or IGO becomes a member of the MCDC community.

How a Capability Development Campaign Works

MCDC uses a 24-month lifecycle for each program of work. This begins with a 6-month requirements analysis and planning phase, followed by a 16-month execution and production phase and a 2-month approval phase. The process starts with member nations and organizations proposing gaps, problems, or issues for consideration by the MCDC partners. The member nations use a blend of informal and formal processes to identify and *down-select* the set of common problems to be addressed in a campaign cycle, which is in effect the MCDC program of work.

The basic selection method is for those proposing projects to recruit members into a multinational project team to conduct the necessary work. Each MCDC contributing member has the ability to invite representatives from its national networks of public, private, and academic institutions as well as functional expertise from other centers of excellence and communities of practice to become project team members. This reachback feature of the program is instrumental in

producing innovative and nontraditional solutions. Those projects that are able to draw interest and resources sufficient to meet requirements are included in the program of work.

Past campaigns have resulted in several useful capabilities being implemented. Some examples include:

- Countering Hybrid Warfare, led by Norway, developed a common conceptual lexicon and framework for multinational efforts and determined conceptual linkages between policy, strategy, and operational implementation when countering hybrid challenges. The outcome was a better understanding of hybrid warfare and an operational framework for how nations and coalitions can deter, mitigate, and counter these threats.
- Counter Unmanned Autonomous Systems [C](UAxS), led by NATO Allied Command Transformation, developed an overarching concept to explore the potential threats to military and civilian personnel, leadership, and facilities and implement protection and countermeasure solutions; conduct a study exploring the evolving technology and future operation implications of UAxS in four domains (ground; air; sea; and command, control, communication, intelligence, and surveillance); explore policy recommendations on priority areas for both future capability implementation and integration with existing assets; and develop policy recommendations on priority areas for both future capability implementation and integration with existing assets.
- Integrated Communication Demonstration (ICD), co-led by Germany and Sweden, developed a validated prototype set of solutions to address processes, organizational structures, and tools for integrated communication and communication management, including practical recommendations for policy, doctrine, standard operating procedures, and training concepts. ICD deployed a capability for designing demonstration events needed to engage future customers and users of the prototype.
- Multinational Defensive Cyber Operations (MDCO), led by the United States, created a MDCO planning guide for use by a multinational force commander. It provides repeatable processes for quickly and effectively integrating multinational forces to conduct defensive cyber operations.
- Federated Mission Network/Mission Partner Environment Civil-Military Enhancement, co-led by the United States and NATO, provided an improved ability to rapidly and effectively respond to international crises through enhanced collaboration and cooperation between military and civilian organizations. The capability development focused on standardizing processes for identifying information, data exchanges, and service requirements; facilitating timely mission-specific information exchange; and developing a means of validating interoperable and compatible information systems and support tools.

The current MCDC campaign includes projects that enable the challenges our multinational team is facing. These include:

- Countering Hybrid Warfare 2
- Globally Integrated Logistics for Rapid Aggregation
- International Cyberspace Operations Planning Curricula
- Integrated Coalition Personnel Recovery Capability
- Integration of Lethal and Nonlethal Actions
- Information Age Command and Control Concepts
- Military Strategic Communication Implementation
- Medical Modular Approaches
- Federated Mission Networking/ Mission Partner Environment Civilian-Military Information-Sharing Project (FMCM, second scenario).

The MCDC project to improve FMCM information-sharing provides an excellent example of how well this approach works. FMCM2 is the second scenario of the FMCM information-sharing project. This project, which sees a continuation and expansion of the 2016 implementation, serves as a good example of how MCDC works and the results that can be achieved.

FMCM2 is a multinational project developing a capability for mission partners to share information with nonmission partners—especially international and multinational organizations—when operating in a common environment. This capability is important where:

- Nations' military forces are participating in either Federated Mission Networking (FMN) or Mission Partner Environment (MPE), or frequently operate alongside nations that do so.
- These military forces have operational requirements to share information with nonmilitary entities such as governmental agencies of other nations, international civilian organizations, or the humanitarian community.

The FMCM2 project addresses both FMN/MPE capability development requirements for civilian-military information-sharing and the need for an operational concept and guidebook to support implementation by member nations choosing to apply the concepts, practices, and standards. FMCM is a military-led effort performed by a team made up of MCDC members. The team is actively sharing information with key organizations including the Department of State, U.S. Agency for International Development, United Nations (UN) Civil-Military Coordination Section, International Committee of the Red Cross, and International Federation of Red Cross and Red Crescent Societies. When implemented, FMCM will provide architectures, standards, techniques, and procedures for information-sharing using the public Internet environment, compatible with those used by nonmilitary entities such as governmental agencies of other nations, international organizations, and the humanitarian community.

U.S. Soldier deployed in support of CJTF–Operation *Inherent Resolve* discusses operations with 9th Iraqi army division leaders during offensive to liberate West Mosul from Islamic State, near Al Tarab, Iraq, March 19, 2017 (U.S. Army/Jason Hull)

Background

As with any project, the first step was problem identification and definition. This problem was analyzed during the 2015–2016 MCDC cycle within the FMN/MPE civilian-military 15/16 project to address technical, process, and standards-based challenges related to civilian-military information-sharing. The major indicator that this problem existed was found through research.

A review of FMN/MPE and other international resources indicated that there was no extant joining, membership, or exiting instruction templates for civilian-military information-sharing as described above. Also, no similar protocols were identified under any other international standardization effort. A survey of after action reviews and lessons learned drawn from multiple nations' experiences indicated chronic problems in this area. Other studies, such as the one conducted by the Stockholm International Peace Research Institute, identified problems with civilian-military information-sharing as fundamental to issues that occurred during humanitarian and disaster response operations. The UN Office for the Coordination of Humanitarian Affairs has recognized this as a problem area. This finding was reinforced by surveys of and focus sessions and interviews with experts from both the military and civilian communities.

Specific statements collected by the FMCM 15/16 solution development team related to these problems included:

- The problem affects all MCDC participating nations who are also users of the FMN/MPE approach to multinational network federation.
- A set of architectures and instructions for information-sharing outside the FMN/MPE environment does not exist outside those produced by FMCM.

Current Project

FMCM is anticipated to have a big payoff in terms of information-sharing with civilians in the mission space. It will provide military forces using FMN/MPE the capability to conduct civilian-military information-sharing between members of a federated network and entities operating external to the network utilizing a public Internet environment to leverage common core services. The FMCM approach will allow information-sharing to be established in a coordinated process early in the operations rather than ad hoc over a much longer period. This will result in improved unity of effort by responding military forces to coordinate, collaborate, and cooperate with civilian

entities within both the affected state and humanitarian organizations. Better information-sharing will support the development of a common awareness of the operational environment and development of a common operating picture among all participants. Additionally, information shared by non-FMN/MPE entities directly with the FMN/MPE network would be available to all FMN/MPE member participants as part of the military-military common operating picture. Information-sharing among stakeholders is foundational to a comprehensive approach for multidimensional crisis response and peace operations.

Information-sharing via the public Internet is critical for FMCM. Military-military information-sharing developed by FMN/MPE will be incomplete if it does not also include the ability for multinational forces to share information external to the network in an unclassified environment using the public Internet. Inability to do this would necessitate that each FMN/MPE nation establish a separate information-sharing approach to the non-FMN/MPE entities. This would create an unmanageable burden for the limited capabilities of these nonmilitary entities to handle information exchanges. That in turn reduces the availability of information to develop and share a common operational picture.

Success will result in more timely, reliable, and clearer civilian-military information-sharing between a FMN/MPE federation network and non-FMN/MPE entities. The FMN/MPE federated network will serve as a single point of contact for humanitarian organizations and affected states to exchange information with FMN military forces instead of the current requirement to have individual information exchange paths between responding military commands and non-FMN/MPE entities. Enhanced information-sharing will support improved overall situational awareness, deconfliction of operations, and better coordination for both military and civilian participants.

The MCDC path is proving successful for FMCM because MCDC offers the following payoffs and benefits that capability developers should consider:

- born multinational capabilities
- lower cost
- broader perspective
- early consensus
- speed of delivery.

MCDC offers the United States and its mission partners an opportunity to collaboratively, rapidly, and affordably define operational capabilities and nonmateriel solutions. These solutions are born multinational. Multinational solutions are more readily adopted by our allies and other partners because of the consensus-building inherent in MCDC. Any U.S. command or organization with a capability requirement can leverage the MCDC as an opportunity to exploit these benefits. JFQ

Joint Publications (JPs) Under Revision (to be signed within 6 months)

JP 1-05, *Religious Affairs in Joint Operations*

JP 3-07.3, *Peace Operations*

JP 3-07.4, *Counterdrug Operations*

JP 3-11, *Operations in CBRN Environments*

JP 3-12, *Cyberspace Operations*

JP 3-15.1, *Counter–Improvised Explosive Device Operations*

JP 3-17, *Air Mobility Operations*

JP 3-24, *Counterinsurgency*

JP 3-28, *Defense Support of Civil Authorities*

JP 3-29, *Foreign Humanitarian Assistance*

JP 3-32, *C2 for Joint Maritime Operations*

JP 3-57, *Civil-Military Operations*

JP 4-0, *Joint Logistics*

JP 4-04, *Joint Contingency Basing*

JP 4-09, *Distribution Operations*

JP 4-10, *Operational Contract Support*

JPs Revised (signed within last 6 months)

JP 1, *Doctrine for the Armed Forces*

JP 3-22, *Foreign Internal Defense*

JP 3-27, *Homeland Defense*

JP 3-33, *Joint Task Force Headquarters*

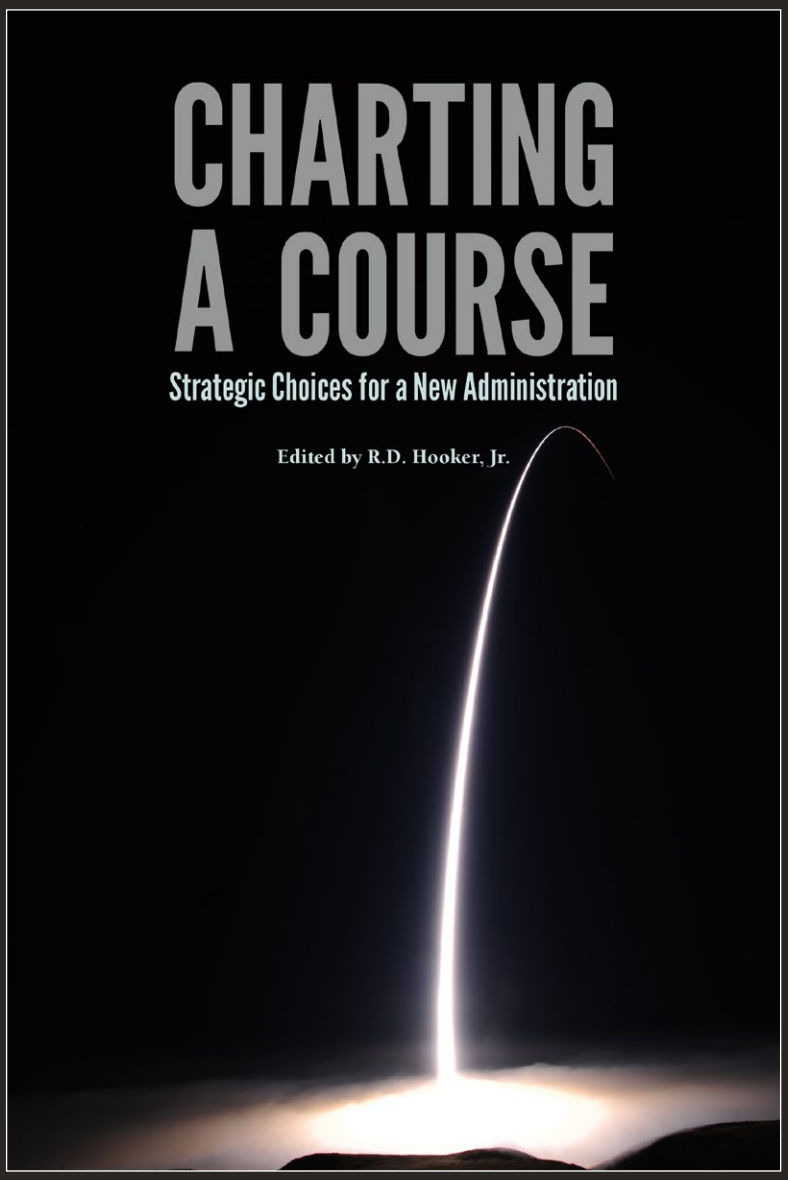
JP 3-35, *Deployment and Redeployment Operations*

JP 3-60, *Joint Targeting*

JP 3-72, *Nuclear Operations*

JP 4-01, *The Defense Transportation System*

JP 4-02, *Joint Health Services*



From NDU Press

Charting a Course:
Strategic Choices for a New Administration
2016 • 396 pp.

The Trump administration takes office in a time of great complexity. The President faces a national security environment shaped by strong currents: globalization; the proliferation of new, poor, and weak states, as well as nonstate actors; a persistent landscape of violent extremist organizations; slow economic growth; the rise of China and a revanchist Russia; a collapsing Middle East; and domestic policies wracked by division and mistrust. While in absolute terms the Nation and the world are safer than in the last century, today the United States finds itself almost on a permanent war footing, engaged in military operations around the world.

This book, written by experts at the Defense Department's National Defense University, offers valuable policy advice and grand strategy recommendations to those senior leaders who will staff and lead this administration in national security affairs. The President and his staff, Members of Congress, and the many leaders throughout government concerned with the Nation's security interests should find this book valuable. Their task is not an easy one, and this volume's insights and reflections are offered with an ample dose of humility. There are no silver bullets, no elegant solutions to the complex problems confronting America and its leaders. This volume provides context and understanding about the current national security environment to those in the Administration as they prepare to lead the Nation during challenging times. To those senior leaders who bear the heaviest responsibilities, these policy insights may chart a course forward.

The lessons encountered in Afghanistan and Iraq at the strategic level inform our understanding of national security decisionmaking, intelligence, the character of contemporary conflict, and unity of effort and command. They stand alongside the lessons of other wars and remind future senior officers that those who fail to learn from past mistakes are bound to repeat them.

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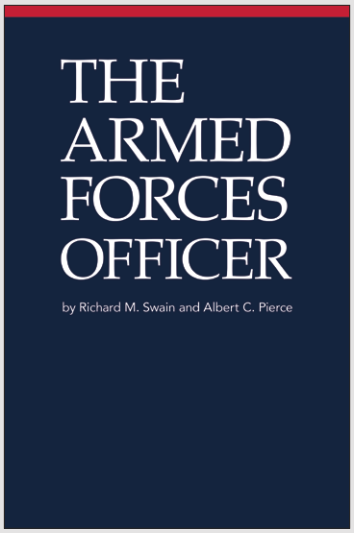

New from NDU Press

The Armed Forces Officer

2017 • 212 pp.

From the Foreword by General Joseph F. Dunford, Jr., Chairman of the Joint Chiefs of Staff:

"In 1950, the great Soldier-Statesman George C. Marshall, then serving as the Secretary of Defense, signed a cover page for a new book titled *The Armed Forces Officer*. That original version of this book was written by none other than S.L.A. Marshall, who later explained that Secretary Marshall had 'inspired the undertaking due to his personal conviction that American military officers, of whatever service, should share common ground ethically and morally.' Written at the dawn of the nuclear age and the emergence of the Cold War, it addressed an officer corps tasked with developing a strategy of nuclear deterrence, facing unprecedented deployments, and adapting to the creation of the Department of Defense and other new organizations necessary to manage the threats of a new global order.

"This new edition of *The Armed Forces Officer* articulates the ethical and moral underpinnings at the core of our profession. The special trust and confidence placed in us by the Nation we protect is built upon this foundation. I commend members of our officer corps to embrace the principles of this important book and practice them daily in the performance of your duties. More importantly, I expect you to imbue these values in the next generation of leaders."

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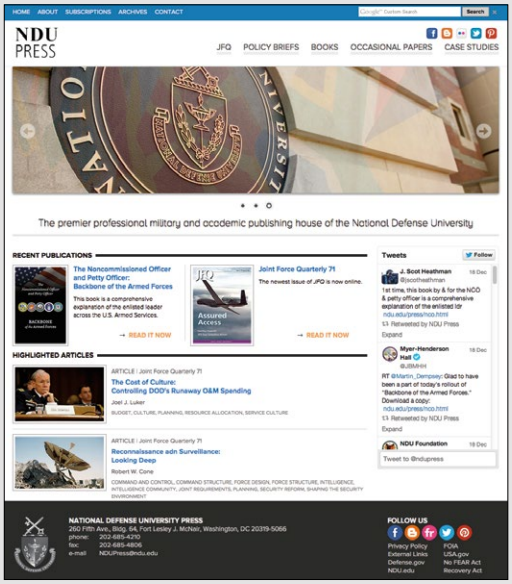

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