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Driving towards Success in the Air Force Cyber Mission

Leveraging Our Heritage to Shape Our Future

Lt Gen David S. Fadok, USAF
Dr. Richard A. Raines

Just a few decades ago, we viewed airpower primarily as rated aircrews operating combat aircraft and dropping bombs on targets. Today, it means so much more. For example, 16 of the 18 Airmen whose heroic accomplishments are highlighted in the latest edition of the Air Force chief of staff's *Portraits in Courage* are not flyers, and 15 are enlisted personnel.[1] All of them, however, delivered airpower on the front lines of combat, whether driving convoys, disposing of explosive ordnance, providing security outside the wire, serving as instructors to Afghan and Iraqi forces, or calling in precision strikes from aircraft flying above. In fact, the most recent version of our capstone doctrine document, AFDD 1, *Air Force Basic Doctrine, Organization, and Command*, recognizes this changing nature of

airpower by defining it as "the ability to project military power or influence through the control and exploitation of air, space, and cyberspace to achieve strategic, operational, or tactical objectives."[2]

General of the Air Force Henry "Hap" Arnold offered sage counsel when he declared that "we must think in terms of tomorrow."[3] A large part of airpower's tomorrow will take place in the emerging operational domain of cyberspace. Rapid advancement in computer and communication technologies, as well as the tight coupling of the "digital domain" to physical operations, makes cyberspace increasingly important to military success. The challenges presented by cyberspace reflect its global nature, the political sovereignties it transcends, and the fact that operations take place at the speed of light. By no stretch of the imagination does the United States enjoy the clear, asymmetrical advantage in cyberspace that we do in the land, sea, air, and space domains.

We share information instantly across the World Wide Web by means of e-mail, social networking sites, and other forms of electronic communication. Although this ability has substantially decreased the time necessary to make decisions, it has increased our reliance on communication systems. Information flows through cyberspace at extremely rapid rates, and—unlike traditional kinetic attacks—cyberspace attacks can start, stop, and change completely within a matter of seconds . . . without warning. Consequently, our Airmen must be ready to respond at a moment's notice—and herein lies the challenge.

The proverbial "laptop and Internet connection" provides entry at extremely low cost into the cyberspace exploitation game. As a result, the modern cyberspace adversary is, and will continue to be, highly agile and innovative. We struggle to produce guidance and policies for cyber operations rapidly and accurately, but adversaries have proven quite adept at developing new, creative methods of cyber exploitation and attack, many times using the restrictions of our own legal system against us. The cyber environment changes so rapidly that one can argue that our policies may be largely outdated when we finally approve them. Furthermore, we face

the real danger that we cannot develop doctrine and tactics rapidly enough to keep pace with changing operational threats in cyberspace.

For years, cyber espionage and exploitation have existed on a global scale. Not limited to nation-states, these actions have also involved actors from industry, organized crime, activist groups, and terrorists. Obviously, motives vary by group, but in most cases, cyber espionage and exploitation are driven by gains in finances and intellectual property. We in the Air Force are concerned about protecting our critical assets and intellectual property as well as prosecuting targets via cyber means as allowed by the *United States Code* and title authorities. To do so, we must create the thought leaders, cyber workforce, operational concepts, and technological capabilities to execute successfully during times of cyber conflict and/or cyber warfare.

Ongoing debates address what constitutes cyber warfare and whether or not we really are at war in cyberspace. This article does not enter into those issues; rather, it suggests how the Air Force and Air University should move forward to lead and support our nation's cyber security needs. Thus, it focuses on analogous lessons learned from history, our position today and what it needs to be, and plans for getting there with respect to our cyberspace capabilities.

Our Heritage: The Air Corps Tactical School

During the years between World War 1 and World War II, a collection of great minds came together in the Air Corps Tactical School (ACTS), the progenitor of Air University. ACTS brought together some of the brightest people available to define, develop, and demonstrate how best to control and exploit the new domain of airspace. These pioneering aviators used their collective talents to drive the development of technologies needed to implement airpower capabilities. From classroom drawing boards to applied classrooms in the skies, ACTS offered a learning environment for early airpower development and a testing ground for the refinement of proposed concepts and technologies. Students became teachers and vice versa, sharing ideas and concepts for

nearly 20 years. By advancing airpower thought, they exerted a tremendous influence on how we conducted air operations in World War II.

One of these great thinkers, Gen Muir Fairchild, would become the first commander of Air University. When its doors opened in 1946, he determined that this new institution would adopt the motto of ACTS: *Proficimus More Irretenti* (We Make Progress Unhindered by Custom). Since those early days of ACTS, the Air Force has continued to lead the advancement of airpower concepts and capabilities through new, innovative methods for improving our effectiveness in the air domain. In large part, we can attribute these successes to the talented, imaginative men and women aviators who found solutions to problems.

Addressing Today's Cyber Challenges for Tomorrow's Air Force

Much has changed since ACTS established the foundations of airpower. We now find ourselves in a global, instant-access-to-information environment where conflict can begin in the blink of an eye and without apparent evidence. Cyberspace has created a domain in which conflict can go undetected and unattributed. As mentioned above, the cyberspace domain admits players for a low cost of entry, many of them highly educated and skilled. Given the rapidity of cyberspace events, the protection and control of information to assure our mission success are of utmost importance. Exfiltration of information from our cyber assets, as well as attacks on our critical resources, demands that we quickly develop the means to counter these adversarial actions and at the same time develop and mature our capabilities in offensive cyber operations.

The Air Force and Department of Defense (DOD) must have leadership and a workforce capable of understanding how cyberspace can and will be used against us, and how we can utilize it to deliver sovereign options for our national political leaders. We must advance, develop, prove, and deploy those options to our war fighters. Education,

training, research, testing, evaluation, and development must emphasize mission assurance, independent of the operating domain.

Currently, Air Force cyberspace must consider two tasks: creating and sustaining a workforce to meet tomorrow's issues, and developing concepts and capabilities to counter as well as mitigate the efforts of our skilled adversaries. The first task will prove difficult, driven primarily by shrinking defense budgets and commitments to our core mission areas.

Operations in cyberspace will continue to challenge us with unknowns and rapidly emerging threats of ever-increasing complexity. Cyber excellence must be grounded in superior cyber *education and research*. Speed-of-light operations within cyberspace call for rapid, effective development and employment of operational concepts and technological capabilities to help reduce demands on the cyber operator/warrior. Concepts and capabilities must meet the commander's mission needs and ensure effective operations with an extremely high level of certainty.

A Way Ahead: The Cyberspace Air Corps Tactical School

Lately, we have heard several references to the notion that, in terms of cyberspace, we are once again in the interwar years. If true, perhaps it is time to establish a "Cyber" ACTS (C-ACTS), where we can gather critical, strategic thinkers from all the key players in government (both inside and outside Air University) and the private sector for the purpose of advancing thought in our newest domain of cyberspace. A successful C-ACTS would

- Strongly link and leverage talents and resources from education, science, and technology, as well as operational communities.
- House and closely interact with innovators from the above-mentioned communities who possess exceptional credentials in academics, research and development, and experience.
- Provide a forum for creativity, innovation, and exchange, not only to cultivate ideas but also to develop and test prototypes rapidly and to field system(s).

- Strongly couple technological innovations and development with the evolution of tactics and doctrine.
- Blend state-of-the-art education with experiential learning (i.e., "fly" the cyber ideas).
- Closely integrate cyber developments into overall mission-assurance requirements to deliver effective nonkinetic courses of action to the decision maker.

Because we live and operate in a decentralized environment, we should not house a C-ACTS solely within a single organizational structure. We have many cyber-smart organizations that we can and must leverage. At the national level, the Central Intelligence Agency, DOD, Department of Energy, Department of Homeland Security, and Federal Bureau of Investigation possess inherent cyber operations and development capabilities with distinct but sometimes overlapping cyber responsibilities. Within the DOD, US Cyber Command, the National Security Agency, and each of the armed services have cyber organizations chartered to conduct operations under the authority of Titles 10, 18, 32, and 50. DOD service academies can offer foundational cyber education, while institutions such as the Air Force Institute of Technology and the Naval Postgraduate School make available continuing, advanced, and graduate cyber education. The Air Force and Navy boast extensive cyber training capabilities through Air Education and Training Command and Cyber Forces, respectively. The Army and Marine Corps leverage their two sister services' existing education and training capabilities while developing mission-specific capabilities by means of their own Cyber Commands. Furthermore, research and development capabilities reside in the research laboratories of each armed service. Industry and academe also play key roles in the development of both human and technological cyber capital.

Air University is moving ahead with the C-ACTS concept to create a better environment for sharing information and advancing thought. Building upon existing partnerships and developing new ones as appropriate, we seek to work closely with our operational partners in

Twenty-Fourth Air Force and our research and development partners in the Air Force Research Laboratory to ensure the highest return on investment for cyber activities. Across Air University, we have resources supporting C-ACTS. The Center for Cyberspace Research, designated the Air Force Cyberspace Technical Center of Excellence and located within the Air Force Institute of Technology, is charged with coordinating C-ACTS efforts. This tasking complements those issued by the Secretary of the Air Force in 2008 for the Center for Cyberspace Research to "connect the dots" regarding who is doing what in cyberspace education, research, and development.

Final Thoughts

The Air Force is conducting operations during a time of dynamic change. Operations in and through cyberspace will demand new tactics, techniques, and procedures as well as new leadership mind-sets to counter enemy actions. We must rapidly develop and maintain the next generation of cyber leaders and warriors, who will confront a complex information age and the cyberspace domain of operations. We in Air University are up to the challenge of developing and equipping our cyber leaders and warriors with the knowledge and experience they need for mission assurance and operational success. As General Arnold advised, we will continue to think in terms of tomorrow, pursuing progress unhindered by custom in the newest operational domain of cyberspace. ✪

Notes

1. Department of the Air Force, *Portraits in Courage: Airmen in the Fight*, vol. 6 (Washington, DC: Department of the Air Force, 2011), http://www.af.mil/shared/media/document/AFD-110921-035.pdf.
2. Air Force Doctrine Document 1, *Air Force Basic Doctrine, Organization, and Command*, 14 October 2011, 11, http://www.e-publishing.af.mil/shared/media/epubs/afdd1.pdf.
3. H. H. Arnold, *Global Mission* (New York: Harper, 1949), 615.

Lt Gen David S. Fadok, USAF

General Fadok (USAFA; MA, Oxford University; MAAS, School of Advanced Airpower Studies, Air University) is commander and president of Air University, Maxwell AFB, Alabama. He provides full-spectrum education, research, and outreach at every level through professional military education, professional continuing education, and the granting of academic degrees. The general leads the intellectual and leadership center of the US Air Force, graduating more than 50,000 resident and 120,000 nonresident officers as well as enlisted and civilian personnel each year. Additionally, he is responsible for officer commissioning through Officer Training School and the Reserve Officer Training Corps. He previously served as commander of the Curtis E. LeMay Center for Doctrine Development and Education and vice-commander of Air University. General Fadok completed graduate studies as a Rhodes Scholar before earning his pilot wings in 1985. A command pilot with more than 4,000 hours, he previously commanded at the squadron, group, and wing levels. He flew combat and combat-support missions in operations Just Cause, Desert Shield, Desert Storm, and Southern Watch. A distinguished graduate of both Squadron Officer School and Air Command and Staff College, as well as a National Defense Fellow, the general received the Secretary of the Air Force Leadership Award in 1988.

Dr. Richard A. Raines

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The Air Force's Individual Mobilization Augmentee Program

Is the Current Organizational Structure Viable?

Col Robin G. Sneed, USAFR
Lt Col Robert A. Kilmer, PhD, USA, Retired

The Air Force's individual mobilization augmentee (IMA) program provides trained, equipped, and ready reservists when the service needs them to support an operational requirement. A significant change to the Reserve brought about by Operation Desert Storm continues to affect this program. These reservists are assigned to active duty rather than Reserve units, so their program's organizational structure is unique and often confusing. Since an organization's configuration can significantly influence its ability to support the mission, one may reasonably inquire about the viability of the command

structure of the Air Force's current IMA program. This article uses Stafford Beer's viable system model as an analytical tool to examine that structure.[1] The evaluation presented here focuses on optimizing the management of IMA forces to ensure increased operational readiness in times of crisis; it also addresses the need to meet reservists' reasonable expectations that the Air Force use them in roles for which they are well suited and well trained, as well as roles consistent with an integrated All-Volunteer Force.

The Individual Mobilization Augmentee

The IMA program immediately augments active duty units in time of war or national crisis by assigning reservists to them for training prior to such events. Instead of spending weeks or months trying to understand a unit's unique personalities and relationships, the IMA who has experience with the unit can step in and provide seamless support. This concept of Reserve support has been part of the Air Force since activation of the Reserve in 1948 when Lt Gen George E. Stratemeyer, commander of Air Defense Command, assigned reservists to key command positions for training as understudies and availability in case of general mobilization.[2] Although often questioned in peacetime, the concept effectively supported the active duty service during Operation Desert Shield / Desert Storm, the last time the president activated IMAs under title 10. Currently, by volunteering for activation, IMAs offer critical active duty support to deployments of air and space expeditionary forces and other missions through man-day tours.[3]

The Air Force defines an IMA as "an individual filling a military billet identified as augmenting the active component structure of the Department of Defense [DOD] or other departments or agencies of the U.S. Government."[4] The perception of the IMA role remains one of backfill capacity, but the validation process has expanded to include mobilization, contingency operations, specialized or technical requirements, and even economic considerations.[5] Like most other reservists, IMAs serve part-time, typically 30 days annually, having the primary

military responsibility of meeting the Air Force's mobilization needs. For reservists and their supervisors, this translates into meeting and documenting compliance with the service's fitness, medical, dental, security clearance, and specialty code training demands. Command and unit training requirements may also come into play.

For active duty supervisors and commanders, the integration of part-time reservists presents unique challenges. Some aspects of these reservists, such as their flexible participation dates and unique civilian skills, prove beneficial, yet mastering different paperwork and writing performance reviews of part-time Airmen create issues even for the most conscientious supervisors. Given the primary emphasis, appropriately, on the unit mission, the prioritization of tasks can often lessen the importance of training and supporting IMAs. Therefore, they must frequently take the initiative—schedule their own training, identify their duty activities, and manage their own careers. The understanding that IMA is an abbreviation for "*I'm a*lone" does not seem amusing to the reservist.

Despite such difficulties, the IMA program continues to exist because commanders find ways to integrate these reservists into the unit in a manner that ensures appropriate training and supports unit goals. When used effectively, senior personnel with the appropriate training can offset deficiencies in the active duty realm. The Air Force can exploit particular civilian skills and experiences to address unit issues. Moreover, fresh perspectives and unconventional viewpoints—the result of periodic unit participation—can combat groupthink and identify new solutions. Oftentimes, successful IMAs are also exceptional performers and people since they continue to support national defense as citizen-Airmen and have learned to balance their military duties, civilian careers, and family commitments. As the number of active duty members continues to decline, IMAs also become the face of the Air Force to their communities and businesses.

Organizational Structure of the IMA Program

Because IMAs are reservists assigned to active duty units, neither the Reserve's nor the major commands' (MAJCOM) hierarchical organization can effectively manage the program. Therefore program responsibilities have been split—MAJCOMs responsible for operational control (OPCON) and Air Force Reserve Command (AFRC) responsible for administrative control (ADCON).[6] OPCON—the authority to designate objectives, assign tasks, organize units, and employ forces in direct support of the mission—may be delegated to subordinate units but not to entities outside the command.[7] ADCON covers support and administrative functions such as pay, logistics, and personnel management. Though logical, this structure is not without problems because two separate data systems document IMAs: the Reserve databases and those of the active duty service. Notwithstanding attempts to harmonize the systems, they do not always interface smoothly, commonly generating errors and inconsistencies.

The activation of IMAs for Desert Shield / Desert Storm identified some of the tracking system disconnects and highlighted areas needing improvement to increase AFRC's visibility of reservists. A subsequent audit by the Government Accountability Office noted the IMA program's compliance with public law and concerns about DOD and Air Force regulations. To address these issues, Gen John Bradley, AFRC commander, created the Readiness Management Group (RMG) in 2005 as a direct reporting unit to the deputy commander of the Air Force Reserve. This organization seamlessly integrates wartime-ready Reserve forces into the Air Force mission, supporting both steady-state and contingency operations.[8] The RMG tracks the readiness of the 8,000 IMAs in the Air Force through 19 detachments led by an IMA program manager (a colonel) (fig. 1). Due to the incompatibility of the Reserve's and regular component's tracking and management systems, many ADCON functions have become shared responsibilities, the MAJCOM implementing the action and AFRC tracking it. These commitments include readiness, mobilization, training, discipline, and personnel management.[9]

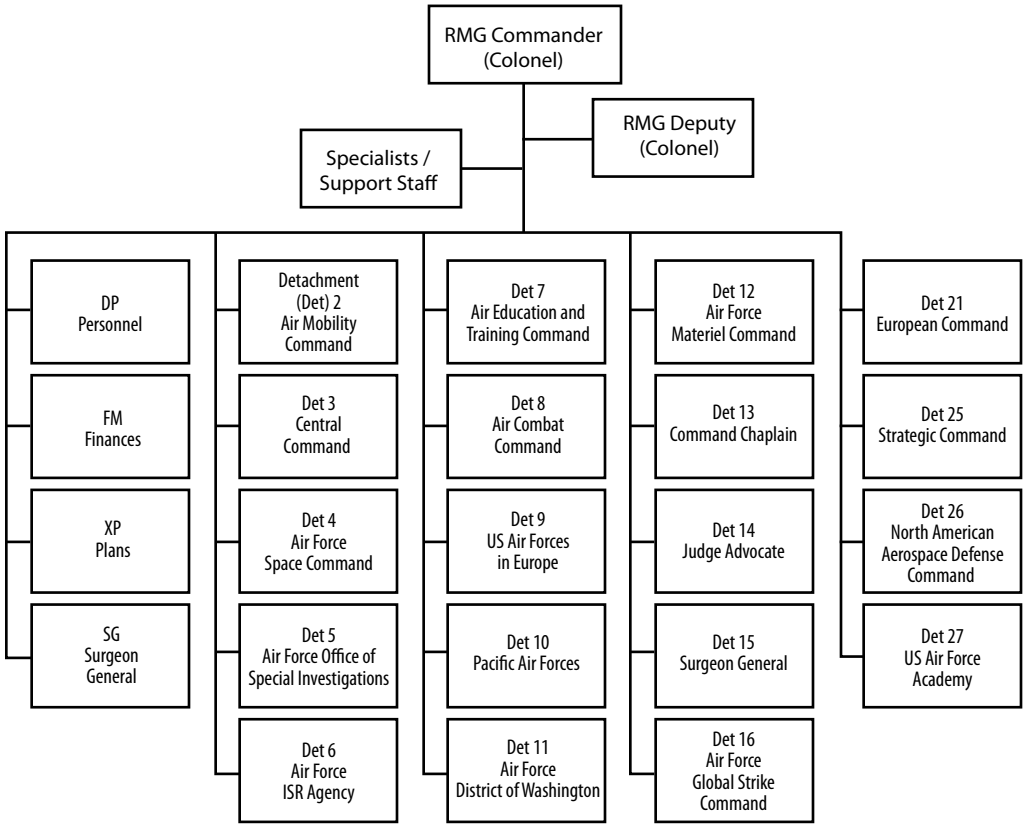

Figure 1. Organizational structure of the Readiness Management Group. (Adapted from CMSgt James R. Pascarella, "Readiness Management Group Overview," PowerPoint presentation [Robins AFB, GA: Air Force Reserve Command, 19 October 2011], 23.)

Viable System Model

Used to evaluate and diagnose organizational structures, the viable system model, developed in the 1980s by Stafford Beer, facilitates the understanding and optimization of a wide variety of business entities.[10] Employing organizational cybernetics, Beer created a detailed and elegant model that tracks the interactions and relationships of a complex enterprise, identifying the necessary and sufficient subsystems of an

organization that make it self-regulating and able to exist independently.[11] An examination of these systems—designated System 1, System 2, System 3 and 3*, System 4, and System 5—allows managers to determine an organization's viability and detect organizational deficiencies (fig. 2).

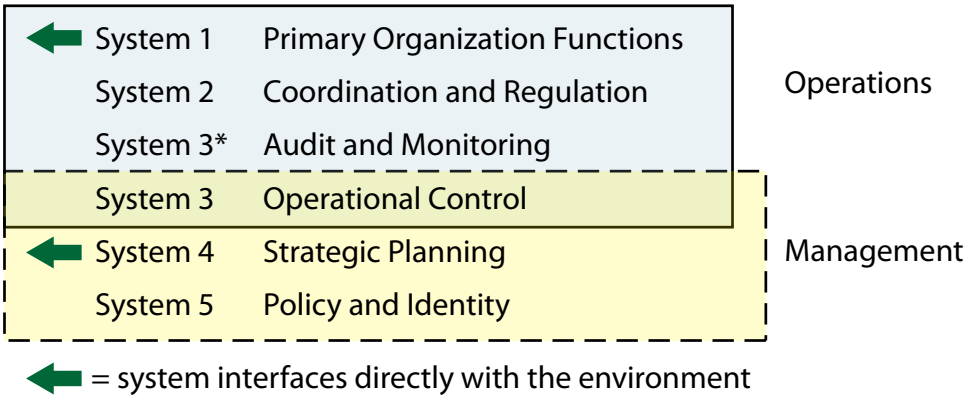

Figure 2. Required components of the viable system model.

The following definitions apply:

- System 1 implements the purpose of the organization. Directly providing the good or service, such systems represent the primary organizational unit, interfacing daily with the environment and creating the value of the organization.[12]
- System 2 coordinates between the System 1s, balancing the output, implementing consistency, and minimizing any oscillations.[13] An administrative function, it ensures that operations run smoothly and serves as the information conduit that allows System 3 to manage the component systems.
- System 3, the operational planning and control of the current organization, integrates the System 1s into a coherent business by establishing rules, balancing resources, and optimizing situations.[14] With Systems 4 and 5, System 3 also supplies the supervisory management function.

- System 3*, a selective audit and monitoring function, assists System 3 in managing the system.[15] This operation supports System 3's need for specific, detailed information not available on an ongoing basis from System 2.
- System 4, the organization's strategic planning element, is responsible for long-term program development as well as the "outside and future" interface of the organization. It interacts directly with the environments to anticipate future trends and plan the integration of current and future states.[16]
- System 5 provides overall organization policy, balances current and future operations, and determines the identity and culture of the organization.[17] It does so by balancing System 3 and System 4 plans.

Another fundamental aspect of the viable system model involves its repetitive and nested nature—the idea that any viable system contains, and is contained in, a viable system.[18] This feature allows managers to target each recursive layer of an organization using the same methodology and tools. Without affecting the inherent complexity of the enterprise, the researcher can target and simplify an organization for analysis in a way that increases the practical value of the model.

Using the model to analyze an organization entails three steps:

1. Identify recursion levels and select level for analysis (the system-in-focus).
2. Define purpose and identity of the system-in-focus.
3. Analyze the system-in-focus for required subsystems 1 through 5, the necessary and sufficient elements.[19]

Applying these steps to the IMA program will determine whether it remains viable in the face of changes that have occurred and will point to actions that may optimize the program and have a beneficial effect on both the reservists and the Air Force.

Application of the Model

Following the steps highlighted above and drawing on Air Force regulations, organizational and mission briefings, publications by senior leaders, and the 20-year experience of this article's lead author in the Air Force IMA program, we used the viable system model to evaluate the IMA organizational structure. The first step called for determining the system-in-focus for analysis. We selected the Air Force level as a reasonable boundary since it addresses the shared responsibilities of the MAJCOMs and AFRC and would best encompass the scope of the program. We rejected examining the DOD's IMA program as too broad, just as we rejected targeting the IMA supervisor—the System 1 element—as too narrow for an insightful analysis at this stage.

At the Air Force level, the purpose and identity of the IMA program deal with raising, training, and sustaining reservists to immediately augment the active duty component. By means of regulation and the support of senior leaders, the IMA has become an important reserve manpower resource that gives the Air Force wartime capability, specialized skills, and continuity at active duty units during mobilization.[20] The *Readiness Management Group Individual Reserve Guide* instructs IMAs that their primary mission in peacetime is readiness—meeting the Air Force's training, fitness, and medical requirements to allow for mobilization.[21] Based on these sources, the service's IMA program seeks to ensure that IMA reservists have the organization, training, and equipment that allow them to activate and support and defend the United States in times of crisis, national emergency, and war.[22]

Continuation of the analysis demanded a review of the necessary and sufficient systems of the system-in-focus. The following sections describe the results (see the table on the next page), making use of examples to illustrate the findings and note any deficiencies.

Table. Systems of the viable system model identified for Air Force Reserve Command's IMA program

System 1 Primary Operations	*System 2* Coordination and Regulations	*System 3* OPCON	*System 3** Audit / Monitoring	*System 4* Strategic Planning	*System 5* Overall Policy
IMA Supervisor	Active duty reporting systems Reserve reporting systems DOD instructions / Air Force instructions	MAJCOMs	RMG (AFRC)	none	AFRC

Primary Operations: System 1

The IMA supervisor directs the primary activity of the Air Force IMA program by preparing reservists to support the Air Force when required and by ensuring the fulfillment and documentation of all mobilization requirements.[23] Members of the regular component, either military or civilian, these supervisors manage a limited number of IMAs—typically one or two—as an additional duty. Because very few of them are familiar with the differences between regular and Reserve documentation, they rely on the reservist to teach them the detailed requisites of the IMA program.

As professionals, IMA supervisors take their responsibilities seriously and try to meet all requirements.[24] However, obstacles abound since the typical reservist is present in the unit for only 30 days each year and supervisors must concentrate on the day-to-day mission. Additionally, the tools and reminders that exist for active duty Airmen, such as timely officer/enlisted performance report shells, may or may not exist for the IMA. A number of resources assist supervisors with their task. Often a reservist at the supervisor's command level—sometimes called the senior IMA—may be assigned the additional duty of supporting IMAs and their supervisors with IMA program issues. The unit may also assign an individual to manage IMA paperwork. The RMG detach-

ment and the base IMA administrator are also available to answer questions and offer guidance to the supervisor and IMA.[25] However, due to the unique aspects of the IMA positions, the IMAs themselves must frequently resolve such issues. IMAs who are not proactive, organized, and able to educate others on the program often prove ineffective and remove themselves from the program. Figure 3 highlights the multiple, complex organizational structure of the IMA.

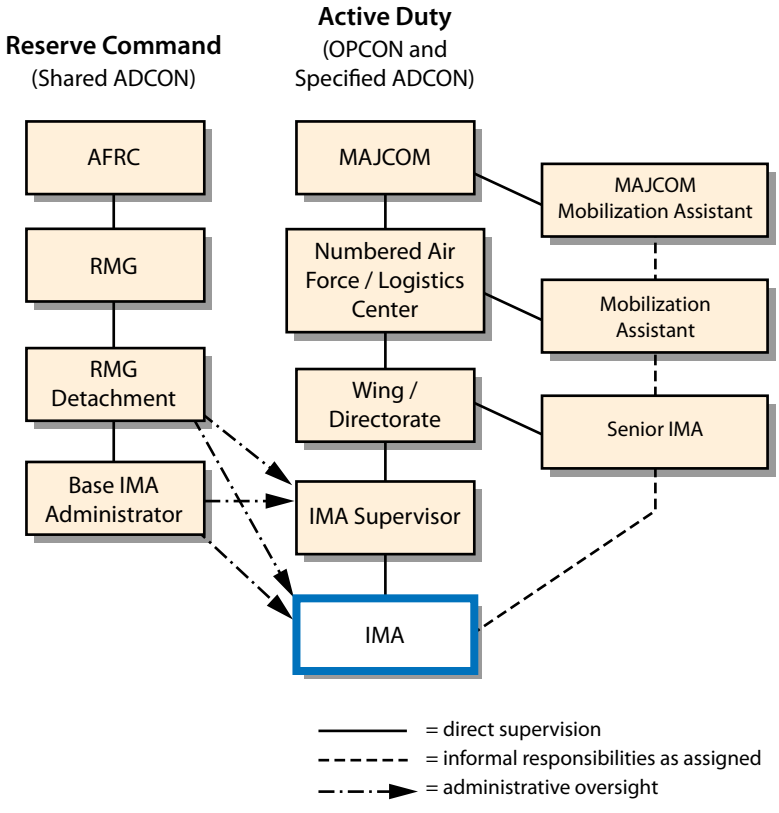

Figure 3. IMA organizational chart. (Data from Air Force Instruction 36-2629, *Individual Mobilization Augmentee Management*, 10 December 2001, http://www.e-publishing.af.mil/shared/media/epubs/AFI36-2629.pdf; and Readiness Management Group, *Readiness Management Group Individual Reserve Guide* [Robins AFB, GA: Air Force Reserve Command, March 2008], http://www.afrc.af.mil/shared/media/document/AFD-080408-050.pdf.)

Coordination and Regulations: System 2

The coordination channels for IMAs consist primarily of tracking systems for medical, dental, fitness, security clearance, and training status. Additional systems that require access from both IMAs and their supervisors include orders generation systems (Air Reserve Order Writing System) and duty scheduling (Unit Training Assembly Participation System). Since IMAs are assigned to active duty units, billet identification (unit manning document) and supervisor assignments are also important. Air Force regulations that implement the IMA program make up a component of System 2 as well.

Due to the division between the systems of the regular and Reserve components, the available coordination and tracking tools repeatedly prove ineffective. System disconnects and entry errors, caused by users' limited experience with the systems, delay the identification and resolution of issues. Additionally, slowdowns occur because data tracked by AFRC must be redistributed to the MAJCOMs and then down to the supervisors. Furthermore, two trends affect coordination systems: IMAs' self-reporting of data and the RMG's oversight of readiness. Most IMA electronic systems upgrades require the IMA to input readiness data directly, without coordination with the assigned unit. At the same time, the RMG attempts to correlate master system data to track IMA readiness. Leading to two different end states, these two processes are thus diametrically opposed. Additionally, both trends remove the IMA supervisor and operational unit from the information channels, resulting in inefficient management and coordination.

These trends have factored into recent coordination failures. In May 2010, for example, AFRC updated the process for authorizing IMA duty, supplying information to the detachments for distribution. However, because that data dealt with OPCON, the detachments did not communicate it to the IMAs or their supervisors. Consequently, on the transition date, two-thirds of the IMAs were not in compliance, primarily because they had no knowledge of the change. Similarly, the Air Force recently directed that all active duty and Reserve Airmen

undergo training in the repeal of the "Don't Ask, Don't Tell" policy, an operational requirement levied on the supervisor. Unfortunately, due to time constraints, IMAs not on duty were often overlooked, or those who had the training could not enter this information into the active duty tracking system. The status of IMA training became a priority just days before final reports were due, when the operational Air Force realized that the lack of training for these IMA reservists would adversely affect its compliance metrics.[26] Failures and disconnects in the readiness tracking systems add to the pressures on supervisors and can influence the Air Force's impression of the competency and value of the IMA program.

*Operational Control: System 3 and System 3**

The relatively small number of IMAs allows most of the MAJCOMs to exercise their OPCON of them at the headquarters level through a Reserve adviser's office. The MAJCOM mobilization assistant, an IMA assigned to the MAJCOM commander, assists in this process. These assistants also work together as part of their executive-level responsibilities to coordinate the IMA programs among the MAJCOMs. Additionally, since IMAs are included in the administrative documentation systems used by the regular component, not the separate systems used by the Reserve component, AFRC must share ADCON with the active duty service. These shared responsibilities, involving implementation by MAJCOMs and tracking of compliance by AFRC, include readiness, mobilization, training, discipline, and personnel management, mentioned previously.[27]

Ambiguity in both regulation and practice of the MAJCOMs' IMA program managers has adversely affected OPCON. Prior to the advent of the RMG, the program manager—assigned to the MAJCOM—resided in the OPCON chain of command. When Air Force Manual 36-8001, *Reserve Personnel Participation and Training Procedures*, became Air Force Instruction (AFI) 36-2254, *Reserve Personnel Participation*, in 2010, this position converted to an RMG program manager, an adjustment that

moved the authority of the position to the ADCON chain of command. Unfortunately, the update and resultant changes have not been clearly identified or incorporated. Sections of the regulation assign tasks to "Commander / RMG program manager," implying that either may authorize a specific action (i.e., based on either OPCON or ADCON authority).[28] This is ambiguous, confusing, and a clear violation of the OPCON and ADCON construct.

Another component of OPCON, the System 3* audit and monitoring function, is identified as AFRC's RMG and its detachments. The base IMA administrators, base-level IMA support (part of the RMG), serve as advisers on personnel and readiness for the assigned unit, AFRC, and the IMAs. They also train commanders and supervisors in the appropriate use and management of reservists.[29] As noted earlier, the RMG primarily deals with the shared ADCON responsibilities that it monitors and tracks. Having direct interaction with IMAs and their supervisors, the RMG organizational structure—specifically colonels serving as program managers—implies an autonomy inconsistent with the authority of the organization and its administrative mission.[30] Moreover, the fact that a colonel serves as deputy in the RMG violates AFI 38-201, *Management of Manpower Requirements and Authorizations*, which prohibits this practice.[31] Although one can waive Air Force policy for legitimate reasons, the negative interpretations ascribed to this practice in a support organization judged by the regular component can diminish joint operations. Perception of the program could improve if the RMG organizational structure complied with Air Force policy.

Strategic Planning: System 4

This analysis could not identify a System 4 function, a strategic planning element, in the Air Force IMA program. The chief of reserves, Headquarters Air Force, is responsible for overall IMA management policy, but AFI 36-2629, *Individual Mobilization Augmentee Management*, does not mention a subordinate organization for IMA long-term planning. Headquarters AFRC has explicit responsibility only for IMA re-

cruitment, pay, and lodging reimbursement. Although the mobilization assistant to the chief of reserves is designated the IMA program advocate, the concept of long-range strategic planning does not exist.

Similarly, the MAJCOMs and agencies have no strategic planning element for the IMA program. AFI 36-2629 requires these organizations to support the IMA program manager, now part of the RMG detachment, and participate in the validation and funding processes concerned with command-level management to ensure the availability of trained and ready reservists. MAJCOM manpower offices handle IMA position requirements, based upon requests from subordinate units that AFRC must approve. AFRC's adviser offices implement the IMA program and do not deal with Air Force–level IMA program planning. Having no centralizing function to identify or implement long-range IMA program goals, the commands and agencies offer operational but not strategic program support. Therefore, based on this review, no System 4 element exists for the Air Force's IMA program.

Overall Policy: System 5

According to AFI 36-2629, AFRC—the policy organization for the IMA program—has responsibility for the overall management policy for the total Reserve resources, including IMAs. The chief of reserves, Headquarters Air Force, also serves as the AFRC commander. Additionally, AFRC considers the IMA program one of its responsibilities and includes that program in formal mission briefings. Finally, the typical Airman associates the IMA program with the Air Force Reserve since the participants are members of the latter, not the regular Air Force.

However, as a practical matter, the IMA program and the official status of the IMAs themselves are not well understood. IMA supervisors and commanders consider IMAs unit assets because of their assignment to the unit. AFRC considers them a Reserve asset since they are reservists. Regulations support this fractured identity by directing the MAJCOMs to request and justify IMA billets but leaving the final authority to approve/deny and fund them with AFRC. Most active duty

Airmen do not consider the official status of IMAs at all because they do not have significant interaction with them or because the IMAs have become so integrated into the force that their coworkers do not recognize their unique status. Meanwhile, the DOD's *Comprehensive Review of the Future Role of the Reserve Component* (2011) identifies individual reservists as important components of the future Reserve force.[32]

Therefore, in the desired Air Force transition to an operational Reserve, a major question remains: who determines the skills and contributions needed from IMAs? Should the Reserve assess overall Air Force needs and allow the MAJCOMs to train and operationally manage the assets? Or should the MAJCOMs determine their requirements and have AFRC continue to provide tracking and administrative support? In the current environment, marked by changes in the nature of warfare and by ominous political and economic forecasts, this fundamental identity issue may impinge upon the long-term viability of the IMA program.

Relationships, Connections, and Insights

Our analysis indicates that the organizational structure of the Air Force's IMA program is not viable because it does not include all of the necessary subsystems in Beer's model. Specifically, without System 4, a strategic planning element, System 5 collapses into System 3, and the organization simply reacts to environmental changes instead of anticipating and planning for structured transformation.[33] The analysis also identified two other significant issues. The first, a functional deficiency dealing with identity, a System 5 matter, concerns the ill-defined, ambiguous nature of the IMA program. Furthermore, incompatibilities between the Reserve and regular component systems and the proclivity of data systems to move in divergent directions render management information channels fragmented and ineffective. Without organizational remediation, the IMA program will devolve to a point that it can no longer support the Air Force mission.

Recommendations

Our examination of the structure of the IMA program has identified issues that may erode its future success and value to the Air Force. The viable system model produced insights that can prove useful in addressing these concerns and implementing four key actions: (1) determine and communicate the IMA identity (System 5), (2) create a strategic planning element (System 4), (3) align the RMG's organizational structure with its mission (System 3), and (4) improve the communication and information channels (System 2). Implementation of these recommendations would benefit the IMA supervisor (System 1) even though this analysis identified no specific actions for this aspect of the program.

Headquarters Air Force must take the lead in addressing deficiencies in the IMA program's identity and strategic planning. First, it needs to determine and document the role of reservists in the Air Force of the future. Since the future role of the Reserve component has been analyzed recently, the service need only review and identify what it expects of IMAs specifically.[34] Second, Headquarters Air Force should add the IMA program's strategic planning mission to the responsibilities of the chief of reserves. The final step, communicating the information to all involved—AFRC, the MAJCOMs, operational units, IMA supervisors, and the IMAs themselves—would prove more time consuming but not difficult. Given the part-time nature and distribution of IMAs, the effort to communicate an Air Force program should cover a longer time frame than typically required (e.g., two to three years). An effectively communicated, consistent, and long-term message would revitalize the IMA program and increase its contribution to the Air Force. A strategic planning element would support ongoing efforts by Lt Gen Charles Stenner to transform the Reserve into the operational, cost-effective, enhanced force that he envisions.[35]

Adjusting the rank structure for the 19 detachments by assigning lieutenant colonels to the program manager role instead of colonels would effectively align the RMG with its ADCON mission. This change will have little effect on office management since lieutenant colonels are quite capable of managing groups of this size, but it will transform

both active duty personnel's and the staff's perception of the mission. Unlike lieutenant colonels, colonels—considered autonomous officers—create, not simply implement, policy. Since the RMG seeks to manage and track Reserve readiness, standardization across the detachments would prove beneficial. Lieutenant colonels also have sufficient rank to act as effective representatives of the Air Force Reserve; therefore, any missteps would not appear as flaws in the IMA program but as personnel issues. The RMG deputy could then move to detachment management, removing the negative perception caused by assigning a colonel to the deputy position, in violation of Air Force policy.

Finally, the Air Force should identify, prioritize, and modernize the information systems and communication channels used by the IMA program. Although issues with operations and expenses will prevent total upgrades or replacements, understanding and documenting the systems would have value. Once identified, obvious disconnects could be flagged for improvement during the next upgrade of systems, and operational work-arounds could make do in the meantime. Project managers and contractors should ensure that they change their perspective when considering communications related to the IMA program. Since both regular and Reserve data systems document IMAs and since their coworkers may not identify them as such, all aspects of planning and implementation should recognize and consider the unique requirements of these reservists. Employing IMAs who have served significant time in the traditional part-time role would enhance any information technology project team. Implementing these recommendations would address the issues identified by the viable system model analysis and improve the organizational structure of the IMA program, thus continuing support of the Air Force mission.

Though not designed as an operational reserve, the current IMA program, with minor changes, could easily become one, as have other organizations when the flexibility of current regulations comes into play. Take, for instance, the Air Force Reserve Ammunition Team (AFRAT), an IMA organization implemented in the early 1990s as a unique solution to a difficult problem. In 1993 the Wholesale Ammunition Stockpile Program re-

port found 25 percent of the Air Force's ammunition stockpile in less than serviceable condition and the go-to-war munitions readiness posture in decline. Air Force leadership determined that this situation arose from the transition to consolidated DOD munitions depots and the unrecognized reality that, unlike bullets and dumb bombs, Air Force munitions demanded periodic inspections and upgrades. Since this task called for special munitions skills but not full-time support by either the regular component or the Reserve, the service developed an IMA structure. Air Force Materiel Command's munitions sustainment directorate received authorizations, and IMAs went to geographically separated depots for training. Driven by the team nature of munitions work, IMAs supervised other IMAs and underwent training on unserviceable depot munitions, directly benefiting the war fighter and the Air Force.

Over time, the skills and capability of the AFRAT organization became one of the options routinely accessed by the Global Ammunition Control Point, the active duty organization responsible for Air Force–wide munitions distribution and availability. Since the creation of AFRAT, its volunteers have been activated to support ammunition needs during Desert Storm, the nuclear inventory effort, and other munitions tasks as man-days became available. AFRAT's size and organization enabled it to meet the Air Force's peace and wartime contingency demands while complying with IMA regulations.[36] Over the last 20 years, AFRAT has returned in excess of $3 billion in munitions to the war fighter, and in 2009 it documented a return on investment of 230 percent. The ability to activate these reservists for premobilization tasks such as munitions distribution and their support of current operational needs have created unique value for the Air Force. Adapting the standard view of an IMA backfill mission has enabled AFRAT to offer significant, cost-effective support to munitions sustainment throughout the Air Force. Other IMA programs, including contracting or air battle damage engineering, could easily adopt AFRAT's organizational structure. By using this proven structure, AFRC and MAJCOM leaders could realize General Stenner's vision of an operational individual Reserve program.

Conclusion

The DOD is counting on reservists to assist in addressing the national security challenges of the future. Faced with economic and political issues, the armed forces need to optimize all programs in order to realize maximum benefit. The IMA program continues to support the mission of the Air Force despite finding itself in an environment transitioning from a strategic to an operational reserve. Using the viable system model to analyze the Air Force IMA organization, we found that it lacks a long-term, viable structure, reflected in the program's ambivalent identity, the absence of a strategic planning element, and ineffective information channels. However, with the help of senior leaders and minor course corrections, the functions of the IMA program should improve, ensuring that 8,000 citizen-Airmen remain ready and available to support the Air Force effectively in times of war and national crisis. ✪

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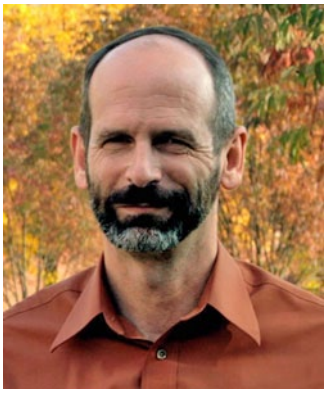

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An Evolution in Intelligence Doctrine

The Intelligence, Surveillance, and Reconnaissance Mission Type Order

Capt Jaylan Michael Haley, USAF

Every day, intelligence, surveillance, and reconnaissance (ISR) assets complete a variety of missions but not necessarily in an effective way. Over the past several years, the Department of Defense rapidly expanded ISR assets and missions, responding to a directive of 2008 from Secretary of Defense Robert Gates that established the department's ISR Task Force and commissioned it "to provide resources needed now on the battlefield" as a means of keeping US forces safe worldwide.[1] Although quick to field ISR platforms like the MC-12, with its heavily used full-motion video capability, the task force does little to address inadequate collection-management processes that hinder timely and relevant ISR operations.[2] However, over

the past several years, the Air Force's ISR operators developed the ISR mission type order (MTO) to overcome impractical and constrictive tasking procedures rooted in doctrine and inflexible theater guidelines that detract from the gains in hardware. As articulated by joint leaders of the past and present, predominant collection-management processes ignore the fluidity of asymmetric operational environments filled with "enemies who are adaptive, decentralized and able to hide in plain sight."[3] The ISR MTO, a more flexible alternative to the traditional ISR tasking method, is a proven and effective corollary to the traditional process, providing timely and relevant collection to supported units while offering higher headquarters (HHQ) flexibility in the application of scarce ISR assets.[4] The Air Force must ensure that both service doctrine and joint doctrine, as well as current tactics, techniques, and procedures, continue to reflect the benefits of undiluted, layered, and responsive ISR operations offered by MTOs.

Doctrine: The Heart of the Collection-Management Problem

The traditional collection-management system suffers from two primary shortcomings: (1) collection requirements management, the authority to determine what the ISR assets will collect, based on priority, and (2) collection operations management, the authority to determine which assets will collect requirements and how they will collect those having priority.[5] Rooted in joint doctrine from 1996, execution of these two management authorities under the traditional tasking process strangles innovative and effective ISR operations.[6]

For example, in Operation Enduring Freedom, the International Security Assistance Force (ISAF) Joint Command (IJC) exercises collection requirements management while Air Forces Central, under the combined force air component commander (CFACC) exercises collection operations management.[7] The IJC prioritizes thousands of requirements garnered from subordinate organizations and matches

them to assets already at its disposal. If the command cannot meet internal requirements with "organic" ISR assets, it submits priority items to the CFACC for theater-level airborne ISR collection.[8] Until recently, the CFACC's execution of collection operations management drew criticism because tasking and collection for theater-level ISR did not supply the timeliness and relevance needed by supported ground commanders.[9] But collection management starts with requirements, thus implicating both parties—and not simply for theater-level ISR operations.

Traditional joint ISR tasking doctrine calls for ranking all of the collection requirements.[10] Consequently, the IJC and its subordinate organizations, as well as the CFACC staffs, create numerical ranking systems associating specific numbers with individual requirements nominated for collection by theater ISR assets.[11] Collection managers use these priority numbers (e.g., 100, 200, etc., from higher to lower priority) to match needs with ISR assets. For instance, on a list of 1,000 collection requests, the top 200 may consist of "priority-100 targets," usually the first to have assets assigned to them. Requirements assigned to ISR assets may be spread over several supported units to maximize the number of priority items collected—a practice that does not necessarily maximize battlefield effects. Tasking inefficiencies arise as this "peanut butter spreading" method promotes a numbers-driven collection-management system, elongates tasking timelines, and encumbers lower-echelon war fighters with HHQ micromanagement.

In an article on the CFACC's ISR approach to counterinsurgency, Lt Col Michael Downs argues that peanut-butter spreading degrades ISR's relevance since "the actual intelligence derived from these missions and the resultant impact on friendly operations" are overshadowed by an emphasis on the number of requirements collected.[12] For example, with regard to the traditional tasking process, at Air Forces Central the CFACC's senior ISR officer receives a briefing on the number of requirements collected by ISR assets without the provision of operational impacts. The assumption that requirements fulfill operational effects because of their high ranking suggests that the more higher-

priority requirements collected, the better. In actuality this collections process results in numbers-driven rather than effects-driven operations.[13] Moreover, it falsely assumes that individual needs, collected incongruently, equate to successful ISR operations simply because of their high ranking. Frontline ground commanders at battalion level or lower, though, are more concerned with the relevance of collected requirements than the number collected. In addition to undue emphasis on the latter, the CFACC's air tasking order (ATO) elongates collection timelines and unnecessarily involves HHQs with individual target selection—a problem in collection operations management.

According to Joint Publication 3-30, *Command and Control for Joint Air Operations*, "The ATO articulates the tasking for joint air operations . . . match[ing] specific targets with the capabilities and forces made available to the [C]FACC for the given ATO day."[14] Thus, the ATO has two functions: (1) to detail assets available to the CFACC and (2) to match those assets to requirements. The reconnaissance, surveillance, and target acquisition annex to the ATO specifies collection requirements matched to ISR assets, and collection managers task these assets according to availability provided by the ATO construct.[15] Maj Stephen Price discusses the applicability of the 72-hour ATO cycle under the previous US Army Corps construct in a major conventional operation.[16] The CFACC demands predictable asset availability, but the ATO cycle forces supported units like battalions to submit their needs days in advance even though "many [dynamic] operations are triggered and approved only hours before execution."[17] Hence, the ATO fails to reconcile sortie generation and optimal tasking, but the two are not mutually exclusive. In addition to elongating the collection timelines, the traditional tasking process fosters overcentralization at HHQs.

More than 80 percent of the CFACC's requirements originate at the primary ground-war-fighting echelons: battalions and regiments.[18] In Afghanistan these echelons submit their needs 72 hours or more in advance of operations for review at no fewer than four HHQs, enabling micromanagement of individual requirements each day.[19] This system

detracts from war-fighting echelons' flexibility to support operations that may occur within the 72-hour tasking cycle, creating an exploitable collections gap. Gen Raymond Odierno, Lt Col Nichoel Brooks, and Lt Col Francesco Mastracchio emphasize that successful ISR operations depend on the agility and initiative of commanders at the lowest level—qualities not encouraged by the traditional tasking process backed by joint doctrine.[20]

Overall, although joint doctrine is sufficient for numbers-driven collection and sortie generation, predominant ISR tasking processes unwisely levy long timelines on subordinate units and overcentralization that encumbers effective ISR operations. The discussion of persistent ISR in the *Commander's Handbook for Persistent Surveillance*, published by Joint Forces Command (now decommissioned) in June 2011, notes that "current processes are ad-hoc, not codified adequately in joint doctrine, and are therefore not responsive in today's operational environment. These ad-hoc processes coupled with improvements in technology leave the joint warfighter 'starving' for actionable information while drowning in data."[21] Major supported commands, such as the IJC, and CFACCs worldwide have changed processes to create conditions for more effective ISR collection management. MTOs are among these processes, but joint doctrine does not yet specifically refer to ISR MTOs as a collection-management method that complements the decades-old traditional procedure. Although we should not discount traditional ISR tasking, we should acknowledge the existence of a more dynamic methodology: the MTO.[22]

Solutions to Shortcomings in Collection Management

An MTO is "an order to a unit to perform a mission without specifying how it is to be accomplished"; in other words, HHQ leaders convey their intent to subordinates rather than give them specific tasks.[23] After Operation Desert Storm, Maj Michael Fischer explored the MTO as a means of overcoming decapitation, cumbersome tasking orders, and overcentralized planning.[24] Although his research addresses kinetic op-

erations, parallels to ISR are unmistakable. Specifically, his examination of command techniques, beginning with those characteristic of ancient Greece, emphasizes two key realities of operations—timeliness and relevance, objectives realized by MTOs.[25] In an effort spearheaded by many ISR operators—including members of the 480th ISR Wing, key leaders at multiple combined air and space operations centers, and the IJC—the ISR MTO emerged as the joint community's and CFACC's answer to previously levied critiques of untimely and irrelevant ISR collection. The ISR MTO must stand as a dynamic ISR tasking method rooted in joint doctrine because the tasking process emphasizes effects rather than numbers and gives subordinate commanders tactical agility founded upon the HHQ's command intent.

ISR MTOs offer three key benefits not available from the traditional tasking method. First, they emphasize qualitative effects as opposed to quantitative gamesmanship. On the battlefield, effects outweigh numbers, and these MTOs focus on effects-based operations (e.g., the neutralization of improvised explosive device [IED] networks or the suppression of border smuggling). Second, they deal with "just-in-time" ISR operations rather than collection requirements generated days before operations begin—requirements that have soured before anyone can use the intelligence. ISR MTOs avoid attempts to predict both friendly and enemy operations days in advance (virtually impossible in dynamic situations) by ensuring collection at the right time and in pursuit of relevant needs without burdensome procedures. Third, these orders concentrate on justification of command intent instead of prioritization of individual targets, pulling HHQs "out of the tactical weeds" and allowing subordinates decentralized flexibility as they use assets in pursuit of headquarters' intent. Ultimately, the ISR MTO must appear in joint doctrine alongside the traditional tasking method, thereby cementing the successes of the matured tasking procedure, which offers ISR planners, operators, and commanders greater flexibility.

To be sure, such orders proved successful, albeit on a smaller scale, with special operations forces up until 2010.[26] Since the beginning of

that year, in US Central Command, dozens of conventional forces used the ISR MTO to great effect. Not until February 2010, however, during Operation Moshtarak, led by the 1st Marine Expeditionary Force (I MEF) in Helmand Province, Afghanistan, did conventional units explore the utility of multiasset, uninterrupted ISR MTOs.[27] ISR mission commanders within the distributed common ground system (DCGS)—more commonly referred to as "MOCs"—lead the ISR mission-management and processing, exploitation, and dissemination elements for multiple ISR platforms like the U-2 and RQ-4 Global Hawk. The author, along with other members of the DCGS, coordinated some of the first ISR MTO missions associated with Moshtarak. These missions were inherently different from traditional ISR taskings insofar as (1) mission performance was evaluated qualitatively instead of quantitatively, (2) taskings came directly from supported units before and during mission execution, and (3) HHQs gave ISR operators a mission intent rather than a specific tasking. Therefore, qualitative effects, direct unit connections for updated taskings, and an emphasis on command intent make up the core of tasking doctrine for the ISR MTO.

For special operations forces, the reality of effects-based ISR changed in 2006 with the strike on Abu Musab al-Zarqawi, the leader of al-Qaeda in Iraq, demonstrating the effectiveness of MTOs.[28] Prior to February 2010, for conventional forces, ISR evaluation was numbers-driven (i.e., requirements tasked, collected, satisfied, and unsatisfied), but ISR MTOs for Moshtarak helped fundamentally alter ISR measures of effectiveness. For conventional units, new questions concerning the outcome of ISR operations emerged: Did we catch any high-value individuals as a result of our collection plan? Did fused, multidiscipline intelligence lead to the discovery of IEDs? Did we verify/deny insurgent tactics? These and similar questions became the measures of ISR effectiveness instead of the old questions: How many requirements did we collect? How many hours of full-motion video did we devote to Regional Command South? Qualitative ISR MTO evaluation portends greater fidelity of fundamental intelligence questions, leading to tailored collection against problem sets. By measuring qualitative rather

than quantitative effects, ISR MTOs enable dynamic operations because supported units can alter collection to better address command intent with ISR assets not tied to "fly the black line."[29]

Traditional ISR tasking spreads assets over many units, maximizing the requirements collected, whereas ISR MTOs dynamically package capabilities in pursuit of qualitative goals. Creation of a multi-intelligence ISR picture is the responsibility of the ISR fusion lead (or ISR tactical coordinator / package commander). The ISR MTO designates this individual to work directly with the supported unit to mass the CFACC's ISR on a particular problem set. Many times, ISR fusion leads are DCGSs led by MOCs who use their intelligence system connectivity to maintain air and ground situational awareness. Working with other ISR operators, MOCs help the supported units layer different types of intelligence to provide multiple perspectives of a target set.[30]

During Moshtarak, the MOCs used multiple assets to identify IEDs in support of the mission that called for maintaining the I MEF's freedom of movement. In one instance, assets supporting that force collected voice communications indicating IED-related activity in a particular area. The MOC verified the report and worked with the I MEF to check it out by passing the target to the RQ-4 Global Hawk for collection of an image. Shortly after the voice intercept, an imagery report was issued to the I MEF identifying a likely IED. The next day, using the collected information, one of the Marine explosive-ordnance disposal teams notified the fusion lead's analytical cell—the DCGS analysis and reporting team—of a recovered 40-pound IED. ISR MTOs made possible this and similar collection scenarios; traditional tasking would have limited the MOC's and supported unit's ability to conduct these types of operations, especially if they interfered with tasked collection requirements, regardless of relevance. Thus, such qualitative results can doctrinally distinguish the ISR MTO from the traditional tasking method, which would consider the pursuit of a single target less optimal because it reduces the total number of targets that can be collected. In addition to supplying a more qualitative focus, the ISR

MTO exploits just-in-time intelligence requirements instead of templated ones.

Another key aspect of ISR MTO doctrine—continual refinement of the target until collection—is not effectively practiced under traditional ISR doctrine. During Operation Moshtarak, the MOC could interface directly with supported units for pre-mission planning as well as during execution to refine targeting without HHQ validation—a significant benefit. Mentioned previously, many ground operations emerge after the tasking of theater-level ISR assets. Under the traditional tasking method, a painstaking "dynamic targeting" process of collection operations management kicks off to cover emerging requirements, a process that very often exceeds 30 minutes to add a single target to a collection deck. One must then multiply this process by the dozens of battalions and brigades as well as the regional commands that currently operate in Afghanistan. Although excessively long deliberations do not always occur, timeliness and relevance are lost when no fewer than four levels of command become involved in approving individual requirements for literally dozens of ISR assets. Instead of multiple HHQs standing between the supported unit and supporting asset, during ISR MTOs, the supported unit conveys target changes directly to the ISR fusion lead or other supporting assets for immediate collection.

ISR MTOs offer collection platforms flexibility to develop ISR collection plans that sometimes are not finalized until minutes before takeoff or even during mission execution. This method of tasking ensures collection of the most relevant requirements based on a rapidly shifting battlespace; the U-2 is perhaps the best example of the process. The DCGS has responsibility for mission planning for many ISR assets, including the U-2. DCGS mission planning cells coordinate directly with the fusion lead and supported units to see that requirements have the most relevance to ground units prior to execution. With the ISR MTO, when a supported unit needs to change its collection deck, the unit simply contacts the ISR fusion lead directly, and either the plan-

ning cells or MOCs responsible for current operations make the change within minutes.

During Moshtarak, the U-2's multidiscipline intelligence-collection capabilities made it a commodity widely sought after. For instance, the U-2 received a tasking to support a major convoy movement from central to northern Helmand Province. Prior to takeoff, the supported ground unit, the I MEF, gave the DCGS the planned route. Beginning its trek before the U-2 arrived on station, the convoy hit several IEDs en route; consequently, the U-2's collection targets were completely changed in a matter of minutes to accommodate a new route established by the convoy commander via radio and mIRC.[31] Traditional tasking of the U-2 probably would have resulted in missing the opportunity to aid the altered convoy route. Again, the ISR MTO outperforms standard collection practices by providing just-in-time intelligence. Joint doctrine should reflect developing MTO tactics, techniques, and procedures, thereby guaranteeing that coalition forces do not use templated collections that might diminish in relevance by collection time, as is the case with the traditional tasking method. Though important during irregular warfare, this flexibility can prove just as significant during major conventional operations, discussed below. But ISR and supported war-fighting echelons enjoy the greatest of benefits—decentralized execution—since assets carry out a mission instead of a specific tasking.

The third and final major advantage of MTO tasking involves tasking by command intent instead of against individual, prioritized targets. To paraphrase Gen George S. Patton, when senior leaders convey their intent to subordinates, the latter demonstrate the best execution techniques to fulfill the intent of those leaders.[32] Traditional tasking encourages supported units to assume a fly-the-black-line attitude towards the CFACC's assets because the latter cannot deviate from previously established collection decks without approval from multiple levels of command, as previously discussed. To illustrate the unresponsiveness of this situation, consider a mission to identify the beddown location

of a high-value individual—where a significant enemy commander exercises command and control. The supported unit supplies the target 72 hours in advance, allowing for HHQ validation. During the mission, a human-intelligence report indicates a change in the location, but the ISR platform, the U-2, requires 30 minutes to alter the collection plan, resulting in an unsupported dynamic requirement since the aircraft has only 30 minutes of on-station time remaining. If, however, the supported unit and ISR operators know that their mission is to identify the high-value individual's beddown location, the MTO facilitates a rapid change to the collection scheme of maneuver. Essentially, the order accommodates the new target to realize the senior leader's intent as opposed to doggedly following an outdated tasking that may be irrelevant by the time collection occurs—if it occurs at all.

Tasked ISR MTOs need "purpose and justification," a short narrative by the subordinate unit explaining to the higher-echelon commander and staff how the unit plans to use allocated ISR assets in support of HHQ's command intent. No longer must such units justify individual requirements to HHQs; rather, lower echelons must make the case that their ISR operations fulfill the headquarters' priorities and that they must have assets for certain periods of time to fulfill the intent of collection in pursuit of established priorities. This means that some units that normally have a few requirements on a collection deck may not see them collected because an ISR asset is devoted to a unit (e.g., a battalion, brigade, or division) for a certain period of time. The MTO tasking method, though, will meet the HHQ commander's intent, attaining greater clarity regarding priority target sets.

For instance, during Moshtarak, the I MEF had access to several ISR assets to carry out the ISAF commander's priority of seizing central Helmand from insurgent elements and securing it. Assets were allocated for extended periods of time (weeks and months) to make sure that the I MEF could develop target sets as opposed to collecting on individual requirements whenever an individual target attained a sufficiently high priority. Allocated ISR assets moved when the tactical

ground commander needed them to move with assistance from the ISR fusion lead at the DCGS. The I MEF articulated changes in collection priorities, according to command intent, to the fusion lead, who advised, assisted, and tasked ISR assets with a shared understanding of command priorities. Under normal tasking guidelines, the calculus of target deliberation and operational constraint would occur at the IJC and combined air and space operations center. Instead, the ISR MTO relies on the individuals most attuned to the dynamic environment—the forward war fighters—to coordinate and execute ISR operations. ISR MTOs thus give supported units and ISR operators the minimum guidance necessary to fulfill the mission as opposed to a list of pre-approved targets that may become invalid by the time of flight.

Conclusion: Push the ISR Planning Envelope

Undoubtedly, the ISR Task Force established by Secretary Gates fulfilled its explicit charge of fielding ISR resources on the battlefield "now"; however, we must still address the implied task of fostering effective ISR tasking. By constricting timely and relevant ISR operations, the traditional method does not adequately consider the dynamic operating environment. The ISR MTO offers the CFACC and greater joint community a qualitative as opposed to quantitative solution. Furthermore, it provides just-in-time intelligence that follows command intent instead of emphasizing laborious timelines with overcentralized ISR targeting. HHQ commanders must give their subordinate ISR operators and planners the flexibility to execute the ISR mission in the context of their objectives—something that only a meaningful change in the tasking of ISR can bring about. Such a doctrinal modification will promulgate fully trained ISR operators and collection managers who can integrate ISR at the focal point of operations. ISR MTOs rely on trust and training; joint leaders must trust not only their people but also their training. Moreover, these orders challenge intelligence professionals to think, anticipate, and respond quickly to fluctuations on the battlefield, making our assets more agile.

Although this article has emphasized irregular warfare, we cannot discount application of the ISR MTO to major theater warfare. Consider, for example, a nonpermissive ISR environment where mobile surface-to-air-missile systems complicate preplanned collection requirements. Alternatively, commanders or ISR planners can appoint an ISR tactical coordinator to work with kinetic or nonkinetic package commanders to apply ISR flexibly to a tactical problem rather than tasking ISR assets against specific targets. The commander's intent may be as simple as supporting the force-package commander in gaining and maintaining air superiority. From that ISR MTO commander's intent, the ISR tactical coordinator can flexibly apply all ISR assets against requirements that will dynamically lead to fulfilling the commander's intent.

Granted, the ISR MTO offers timely and relevant ISR collection to supported units, but we should not consider it a one-size-fits-all tasking method—the pitfall of traditional tasking. The spectrum of conflict ranges from the relatively benign to the dynamic, with requirements that change hourly. On the one hand, traditional ISR tasking adequately addresses relatively stable areas of operation, allowing a commander to maximize the coverage of large areas. On the other hand, ISR MTOs are more appropriate and have proven successful in allowing dynamic missions to meet more narrowly defined goals with requirements that vary constantly. HHQ commanders must have a set of ISR tasking tools that allow mission-specific collection, and ISR MTOs, rooted in doctrine, should be a part of that tool set.

Dennis Drew and Donald Snow write that "military doctrine is what we believe about the best way to conduct military affairs."[33] The ISR MTO—specifically, ISR collection—is a part of that process. This mission type order represents a proven tasking method, already part of tasking procedures for three of the six geographic unified commands. Further, it supports foundational doctrine statements outlined in Air Force Doctrine Document 1, *Air Force Basic Doctrine, Organization, and Command*.[34] Although a part of Air Force basic doctrine, MTOs must

still become part of joint doctrine to ensure the widest understanding and application across the joint community—thus the call for members of the joint community, specifically the ISR Task Force, to address the issue of the optimal application of ISR. Ultimately, a doctrinal shift in ISR tasking will afford the joint community a tailored ISR solution that embodies timeliness and relevance in dynamic environs. ✪

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Joint Targeting and Air Support in Counterinsurgency

How to Move to Mission Command

LTC Paul Darling, Alaska Army National Guard

In December 2006, the US Army and US Marine Corps jointly published Field Manual (FM) 3-24 / Marine Corps Warfighting Publication (MCWP) 3.33.5, *Counterinsurgency*, to much fanfare and interest from both the civilian media and military circles.[1] The colead writers of this manual, Gen David H. Petraeus, USA, retired, and Gen James N. Mattis, have both enjoyed professional success and favorable public notices for their efforts. In April 2009, FM 3-24.2, *Tactics in Counterinsurgency*, appeared, defining in more detail the application of the doctrine originally espoused in FM 3-24/MCWP 3-33.5.[2] In October 2009, the Joint Staff followed with Joint Publication (JP) 3-24, *Counterinsurgency Operations*, which reiterates many of the basic counterinsurgency (COIN) principles found in the initial US Army/US Marine

Corps document.[3] It makes several subtle but important changes, however, while ignoring others made in FM 3-24/MCWP 3-33.5 as well as FM 3-24.2, thus actively undermining the entire joint effort within COIN operations. Apparently, JP 3-24 did this to reinforce service component tenets that do not work in guerilla/low intensity conflicts, as verified by the historical record and research and as addressed by FM 3-24/MCWP 3-33.5 as well as FM 3-24.2. Specifically, in the realms of targeting, air support, and command relationships, there remains a distinct lack of coherence in the joint understanding of COIN—and the blame for that deficiency lies in the joint publications. These disparities reveal a fundamental flaw in the review process for joint publications that must be addressed immediately for the sake of the mission in Operation Enduring Freedom and elsewhere, and for the safety of the men and women engaged in combat operations today.

The Doctrine

Command and control for COIN, as identified in FM 3-24/MCWP 3-33.5, focus on mission command, which "is ideally suited to the mosaic nature of COIN operations. Local commanders have the best grasp of their situations. Under mission command, they are given access to or control of the resouces needed. . . . Thus, effective COIN operations are decentralized, and higher commanders owe it to their subordinates to push as many capabilities as possible down to their level."[4] FM 3-24.2 further identifies the application of this principle: "Once a BCT [brigade combat team] is given an AO [area of operations], they, along with the Host Nation, should be the controlling headquarters for all other elements in their AO. This should include the temporary attachment for control, if not command, of any element that is physically within their AO."[5] As applied in combat operations, this decentralized mode of command, control, and execution is tasked as such: "Each subordinate element is tasked to find, fix, finish, and exploit all enemy forces in their area within their capabilities."[6] FM 3-24/MCWP 3-33.5 and FM 3-24.2 repeat the theme of decentralized control, but the

joint publication on the same subject fails to mention this concept, addressing execution as the only decentralized aspect: "Successful COIN is normally conducted with decentralized execution based upon centralized vision and orders."[7]

Unique to the joint publication, the phrase "centralized vision and orders" is found nowhere in either FM 3-24/MCWP 3-33.5 or FM 3-24.2, as is the case with the preference for mission command. Furthermore, the phrasing in JP 3-24 has changed to match Air Force doctrine's first tenet of airpower (limiting all decentralized actions to execution alone and mandating centralized control): "The mosaic nature of COIN is ideally suited to decentralized execution."[8] This apparent desire to have joint doctrine match Air Force doctrine often stretches to extremes. According to JP 3-03, *Joint Interdiction*, "Marine aviation's philosophy is one of centralized control and decentralized execution."[9] Compare this to the statement in MCWP 3-2, *Aviation Operations*:

> Central to the concept of employment for the ACE [aviation combat element] is the philosophy of centralized command and decentralized control. . . . The ACE commander also wants to optimize the flexibility, versatility, and responsiveness of aviation by allowing control of assets to be conducted by subordinate agencies. These subordinate agencies are both responsive to the commander and in touch with the changing dynamics of the battle (i.e., decentralized control.)[10]

This concept of centralized control and decentralized execution is enshrined within the Air Force's doctrine and philosophy, which insist that "centralized control is commanding airpower and should be accomplished by an Airman at the air component commander level who maintains a broad focus on the JFC's [joint force commander's] objectives to direct, integrate, prioritize, plan, coordinate, and assess the use of air, space, and cyberspace assets in any contingency across the range of operations."[11] This concept is at direct odds with that of mission command developed by what one should nominally consider the supported services within a COIN: the ground components. Misrepresentations aside, Marine Corps doctrine embraces the concept of mission command, as does the Army's doctrine of close combat at-

tack (CCA), demonstrated by decentralized command, control, and execution acting as an integrated unit in support of a subordinate maneuver element.[12]

The confused nature of the preferred command and control relationship evidenced here is but one of several conflicts between the ground component and joint doctrine—and this is no longer merely an intraservice consideration. A white paper by the chairman of the Joint Chiefs of Staff dated 3 April 2012 highlights the joint deficiencies insofar as it mandates the incorporation of mission command into Joint Force 2020: "The basic principles of mission command—commander's intent, mission type orders and decentralized execution—are not new concepts. They are a part of current joint and service doctrine. But this is not enough."[13]

Targeting in Counterinsurgency

FM 3-24.2 addresses the modes of targeting across the seven COIN lines of effort. The COIN targeting cycle includes four processes: decide, detect, deliver, and assess.[14] The air tasking order forces these processes into a 96-hour targeting cycle, but the nature of COIN operations most often renders this timeline too long for utilizing effective air support.[15] The cycle for targeting addressed in FM 3-24.2 obviously conflicts with the joint procedure highlighted in JP 3-24, which models the six-step joint targeting cycle in JP 3-60, *Joint Targeting*.[16] Within the joint targeting concept, the dynamic targeting steps incorporated into step five of mission planning and execution further complicate matters. Here the six steps include find, fix, track, target, engage, and assess.[17] JP 3-60 defines the "fix" portion as follows: "The fix step of dynamic targeting includes actions to determine the location (fix) of the potential target."[18]

Compare this to FM 3-24.2's description of strike operations as the mission to "find, fix and finish insurgent forces."[19] The plain reading of "find" seems to equate to JP 3-60's notion of "fix." Both the Army and

FM 3-24.2 appear to use the same definition of the term *fix*: "A tactical mission task where a commander prevents the enemy from moving any part of his force from a specific location for a specific period to [*sic*] of time."[20]

JP 1-02, *Department of Defense Dictionary of Military and Associated Terms*, misses the opportunity to rectify the conflict by failing to define the term *fix*.[21] JP 3-24 addresses targeting in COIN in less than one page, reiterates some basic phrases without specificity, and quickly references JP 3-60.[22] FM 3-24.2, however, dedicates a section to targeting in COIN, again involving a different process than that defined in JP 3-60, which fails to mention COIN or irregular warfare at all. By only cross-referencing major combat operations (MCO), JP 3-60 neglects the development of COIN-specific doctrine, thus revealing a suprising lack of intellectual honesty. Joint publications are not known for nebulous, vague descriptions left to the imagination of the JFC or his or her staff—witness the 275 pages of infinitesimal detail in JP 3-09.3, *Close Air Support*. FM 3-24.2 offers a sound targeting cycle designed for COIN that is neglected in order to embrace the MCO-centric JP 3-60. This situation results in the ground tactical commander's utilizing doctrine developed by the land component but remaining dependent upon conflicting doctrine for fixed-wing air support. The tactical air control party utilizes the joint / Air Force doctrine, so Army brigade or battalion headquarters must use different processes again, with different command and control philosophies and, consequently, conflicting doctrinal foundations. Taken in this context, Gen Stanley McChrystal's tactical directive limiting the use of fixed-wing air support in Afghanistan was a tactical and strategic necessity.[23]

Close Air Support in Counterinsurgency

The most obvious problem created by this doctrinal morass occurs where the air and land components meet most closely: close air support (CAS). Regardless of its length, JP 3-09.3, the publication on CAS, offers suprisingly little on doctrinal foundations, leaving the war

fighter to study the Air Force's counterland doctrine—Air Force Doctrine Document (AFDD) 3-03, *Counterland Operations*—which encompasses both CAS and air interdiction and remains vital to an understanding of the concepts underlying current joint doctrine. Ironically, *fix* as a doctrinal term makes another appearance, this time in concurrence with the Army's doctrine and definition.[24]

AFDD 3-03 establishes several concepts, such as the need for terminal control. Of the document's 100 or so pages, only one paragraph identifies the possibility of CAS not supported by the joint terminal attack controller (JTAC) and its emergency nature.[25] Because the JTAC is a company-level asset for the majority of maneuver elements, however, we can often assume that no JTAC support will be available during typical COIN operations, which often occur at the platoon or squad level.[26] The Air Force declares that, by definition, CAS "is the only way to get air support against enemy targets in close proximity to friendly forces," a false statement since the Army's CCA provides equal, if not superior, air support in close proximity to the enemy.[27]

CCA doctrine integrates airframes and pilots as integral members of the combined-arms maneuver team. It reflects the integration of many different branches and capabilities customized to the mission at hand and can support periods as long as a year or as short as a few hours. The taskable aircraft can conduct independent operations at the discretion of the aircrews within the framework of the operation or as directed within the fight by the senior ground commander. In the context of COIN / guerilla warfare, they usually make their greatest contribution as the eyes of the ground forces, leveraging their aerial perspective. Within COIN, the ground commander may not wish to employ aerial-delivered ordnance against identified targets due to casualty concerns. Rather, Army aviators will direct and order ground forces towards possible threats, remaining capable of ordnance delivery in support as required. Although precision munitions have done much to mitigate collateral damage, the individual rifleman firing a single shot remains our most precise capability on the battlefield and

provides the commensurate information operation advantages of such precision. Formal CAS, designed to maximize survivability against an integrated tactical air defense threat, cannot supply this flexibility. Conversely, CCA employed against a mature air defense threat would be prohibitively risk laden. There is a time and a place for both.

The author utilized CCA from AH-64Ds numerous times in Afghanistan at ranges as close as five meters and felt that this type of attack, with its decentralized control, habitual relationship, and common doctrinal language, served as a better form of air support in the small-war environment. AFDD 3-03 assumes a linear battlefield, developing its doctrine accordingly.[28] Its opening section of "Foundational Doctrine Statements" specifically notes that "the success of both offensive and defensive CAS operations in contiguous, linear warfare may depend on massing effects at decisive points—not diluting them across the entire battlefield."[29] Historically, this statement in nearly all instances is correct. However, it implies that the converse situation would call for the opposite effect, but the "Foundational Doctrine Statements" fail to mention combat that isn't "contiguous" and "linear" so the implication remains only that—an implication, unincorporated into Air Force and joint doctrine. In light of the fact that this noncontiguous, nonlinear form of warfare has dominated since World War II, perhaps it should find its way into that doctrine.

AFDD 3-03 holds close the concept of centralized control, wishing away the flexibility desired by ground components by defining the preferred tactics for ground commanders: "A deliberate attack occurs when adequate time for planning and coordination exists; this is the preferred mode of ground advance."[30] The source of this proclamation remains a mystery since neither FM 3-90, *Tactics* (July 2001), nor JP 3-0, *Joint Operations* (11 August 2011), includes it. Nevertheless, the declaration does justify what appears to be a predetermined service bias. From a maneuver commander's perspective, deliberate attack—designed for use against a prepared enemy—is probably the least preferable. Pursuit and exploitation arguably provide maximum

opportunity at minimum risk. Forces can conduct these operations, though, only in a decentralized manner; thus, regardless of the inherent maneuver advantage, one must apparently subordinate these concepts to the sanctity of the air tasking order. In yet another example, even the term *close proximity* ties into the obvious service bias, defined by AFDD 3-03 as "the distance within which some form of terminal attack control is required."[31]

The History

Overall, AFDD 3-03 is an extremely well developed explanation of Air Force doctrine. As doctrine designed around the concept of joint operations or support of the land component in COIN, however, it appears to conflict with both FM 3-24/MCWP 3-33.5 and FM 3-24.2 in terms of tenets and concepts. The various disagreements between these doctrines mostly deal with the concept of control and who should wield it—the combatant commander's staff and the air and space operations center assigned to it or the supported ground elements. Determining the preferred direction requires a brief historical analysis of air support in COIN. Depressingly, today's debate echoes a common refrain dating back to World War II, and the body of published work on the repeated failures of US CAS doctrine is shocking in its depth.

In Korea the failure of doctrine was such that Col George Reinhardt of the US Army proposed that the Navy take on the mission of all CAS "Tac Air" for both ground components. He realized that the use of "penny packets," instantly available to the ground commander and under his control, represented the preferred method of CAS. Gen Douglas MacArthur's exclusion of Air Force assets at the Inchon landings tends to support the notion that the least useful branch of service was the same one identified by Colonel Reinhardt.[32] Existing Marine Corps CAS doctrine, based upon principles that considered CAS an extension of and integrated with the ground commander's forces and available as the ground commander saw fit, reinforced this lesson learned.[33]

The RAND Corporation undertook an analysis of the application of CAS in COIN in 1964, seeking to identify the best lessons of Malaysia, the Philippines, Algeria, Burma, and other conflicts. It noted the particularly effective use of helicopter or aircraft command posts serving forward ground commanders in combat situations.[34] Vietnam saw a vast increase in the publication of analyses of the optimal method of air support in COIN. There, such concepts as colocated and decentralized command were considered optimal, which directly led to the colocated Army aviation task forces seen today throughout Afghanistan.[35] Although joint CAS procedures are clearly identified as a highly detailed process, rotary-wing pilots were discovering that simple, decentralized procedures were both safe and highly effective in COIN when conducted by units habitually operating together.[36] By the end of the Vietnam War, even the masses of aircraft employed did not ameliorate the conflicts occurring with Air Force support to the Army in COIN CAS, as highlighted in the interestingly titled article "Close Air Support: Sixty Years of Unresolved Problems," published in 1970.[37] RAND bookended the Vietnam War in 1971 with yet another exhaustive study which, unsurprisingly, concluded that the foremost disagreement between the Army and Air Force dealt with command and control relationships.[38] Predictably, the Army desired decentralized control, and the Air Force mandated centralized control.

Concurrent with American involvement in Vietnam, Rhodesian forces were developing their own COIN doctrine, which saw the expansion of air roles in support of the ground commander.[39] Under Rhodesian doctrine, air support had five separate subtasks, including CAS. The Rhodesian definition of CAS mirrored the American, but the doctrine then expanded and developed concepts such as immediate air support, indirect air support, preplanned air support, and tactical air support. Immediate air support, an entirely different support concept than CAS, was "designed to meet the specific requests which arise during the course of battle and cannot be planned in advance."[40]

Aside from our own forces' experience in Iraq and Afghanistan, which sees the same arguments and proposed solutions replayed, one of the best ongoing debates involves the Israel Defense Forces' (IDF) experience in Lebanon in 2006 and in Gaza in 2009.[41] Israel entered the 2006 campaign with a fighter pilot as chief of staff of all combat forces and a doctrine firmly rooted in effects-based operations, largely drawn from current US Air Force and Joint Forces Command doctrine.[42] The Lebanon campaign—which saw airpower (under centralized command and control) used in a completely disjointed fashion during a halfhearted and largely ignored ground campaign—ended at best in a tactical draw but a clear strategic and political defeat.[43]

Based upon these results, Israel completely revamped its CAS doctrine for Operation Cast Lead in Gaza, reverting to decentralizing control down to the maneuver-brigade command level (called practical control by the IDF), which produced much greater success and decreased both friendly and civilian casualties. This occurred despite the condensed, urban nature of the campaign in Gaza as compared to that in southern Lebanon.[44] This adjustment affected not only CAS but also all fires and targeting, including what one would normally call interdiction.[45] The Gaza test bed proved so successful that its methods are now official IDF doctrine. A retired Israeli Air Force officer and Israeli defense analyst commented that

> Cast Lead was three notches above Leb II. The theater was saturated with air assets available to the lowest ground command level. Some assets at company level. Physical meetings between aircrew and ground forces at the lowest levels. Air assets involved at the lowest level of ground fighting, [unmanned aerial vehicles] clearing around the corner at urban fighting, Apaches doing enemy suppression for company commanders, fast jets even clearing the terrain [of improvised explosive devices] and other ground obstacles prior to ground movements. Unprecedented.[46]

Though not conclusive, the historical analysis is illuminating. US ground forces regularly repeat the call for decentralized control of CAS and are regularly rebuffed by doctrinal guardians within the US Air Force. Other countries find mechanisms to maximize the effectiveness

of their air support through variations in doctrine or expansion of available options to meet the mission requirements. Envisioning multiple forms of CAS doctrine (as the US Army has done with CCA and the Rhodesians with their five forms of air support) or delineating the fact that there are times for both centralized and decentralized control, depending on the circumstances, would constitute simple first solutions. There is an art to warfare, and good-intentioned people can disagree for all the right reasons, but the arguments of the supported unit should carry the most weight. Within COIN, the need for decentralized control is even more pronounced. As David Galula notes in his discussion of the "primacy of the territorial command,"

> The counterinsurgent's armed forces have to fulfill two different missions: to break the military power of the insurgent and to ensure the safety of the territory in each area. It seems natural that the counterinsurgent's forces should be organized into two types of units, the mobile ones fighting in a rather conventional fashion, and the static ones staying with the population in order to protect it and to supplement the political efforts.
>
> The static units are obviously those that know best the local situation, the population, and the local problems; if a mistake is made, they are the ones who will bear the consequences. It follows that when a mobile unit is sent to operate temporarily in an area, it must come under the territorial command, even if the military commander of the area is the junior officer. In the same way as the US ambassador is the boss of every US organization operating in the country to which he is accredited, the territorial commander must be the boss of all military forces operating in his area.[47]

A JTAC on the ground does not meet this requirement. The demands of battle can change instantaneously from that of close fires; to intelligence, surveillance, and reconnaissance; to interdiction; to pursuit. At a minimum, all forces operating in support of the mission commander must remain under the tactical control of that senior ground commander, especially in the confused COIN environment. The idea of a theater-level air and space operations center having omnipotent knowledge over an area as vast as Afghanistan is questionable. Even the postage-stamp-sized Gaza (at 45 square kilometers) and the

10 kilometer sliver of southern Lebanon proved too large for such a control relationship.

The Way Ahead

This problem must be fixed at the joint level. If joint doctrine is written to justify service doctrine, regardless of the service, then some will ignore it and some will use it, defeating the whole purpose. It must be the best analysis possible, prepared by experts and senior leaders of all the branches with a vested interest. That FM 3-24/MCWP 3-33.5 is considered the defining doctrine and JP 3-24 an afterthought stands as an indictment of the entire joint publication system of writing, review, and approval. The author's own branch of service, the Army, appears derelict in treating these critical tasks so carelessly—even to the point of mission failure. The Marines, too, should not have let such a glaring misrepresentation of their own aviation doctrine go unchallenged and uncorrected.

Specific to the CAS issue, MCOs and COIN are fundamentally different missions and, as such, require completely different tactics, techniques, and procedures, as well as completely different doctrine. FM 3-24/MCWP 3-33.5 was not a stand-alone document. FM 3-24.2 took the earlier document's theory and attempted to describe the tactical application for ground forces. To truly adapt to what was unquestionably the predominant form of warfare in the past 60 years and will be in the foreseeable future, the Air Force must make a similar effort. The decentralized nature of effective COIN mandates that our most mobile and critical force multiplier, the aircraft, operate and be controlled in a similarly decentralized manner by the supported element. CAS doctrine, freed from trying to bridge the gap between mass-fires-based MCO and decentralized-maneuver-based COIN, can then be rebuilt, thus maximizing the revolution in combat operations led by remotely piloted vehicles and precision-guided munitions. Similarly, the Air Force can free interdiction, currently tasked to shape the ground battle, to expand to theater deep strike and concen-

trate primarily on the JFC's operational needs as they expand beyond mere ground-battle considerations.[48]

This is not to say that during COIN, current doctrine would not remain preferable in certain circumstances. During the siege at Khe Sahn, Vietnam, Gen William Westmoreland saw fit to integrate all Marine fixed-wing assets under a single air component commander to facilitate the effective use of airpower against a massed enemy.[49] Certainly in such a situation, deliberate planning arising from our current doctrine remains the best option to deconflict great numbers of aircraft operating in a small area. Events like these, however, are unquestionably an anomaly during most COIN campaigns. We simply can't expect a one-size-fits-all doctrine to operate throughout the spectrum of decisive operations. As Gen Martin Dempsey, the current chairman of the Joint Chiefs of Staff, observes, "Our fight against a decentralized enemy has driven home the necessity to decentralize our capabilities and distribute our operations."[50]

Regardless of the methodology used to correct our current failings, the disconnect between doctrine and mission leaves the latter at risk as well as the service personnel we ask to accomplish it. If the unwieldy bureaucracy that the joint community has become is incapable of properly adjusting, despite the apparent best efforts of the current chairman, then we must find interim solutions to ensure that mission success and not service parochialism stands in the forefront of our thinking and actions. The best first step would eviscerate the 64-year-old Key West agreement, based upon assumed nuclear combat against a Soviet Union now 20 years absent. Long-term integration of a doctrine joint in both name and actuality would represent the optimal and necessary culmination. Doing so would help incorporate the trust required to successfully integrate the chairman's vision of successful joint operations embracing mission command.[51] ✪

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Building Partnership Capacity

Operation Harmattan and Beyond

Col James H. Drape, USAF

The Air Force Association is planning a remarkable panel discussion—Close Cooperation among Allies—as part of its National Convention and Air and Space Conference near Washington, DC, in September. The association has invited Gen Denis Mercier, the Armée de l'air (French air force) (FAF) chief of staff, and Air Chief Marshal Stephen Dalton, the Royal Air Force (RAF) chief of air staff, to join Gen Mark Welsh, the new US Air Force chief of staff, on stage.[1] This joint invitation is in step with the US Department of Defense's effort known as building partnership capacity.[2] According *Building Partnership Capacity: QDR Execution Roadmap* (2006), the nation cannot attain its strategic objectives without a unified approach among capable partners at home and with key friends and allies abroad.[3] At the same time, the French and British have national ambitions that drive a deeper partnership with each other and closer ties with the United States. Within this geo-

political backdrop, the three chiefs developed their vision to better integrate the three air forces.[4] But let us be clear from the start: this rapprochement is not a matter of starry-eyed idealism or naïveté but of straightforward pragmatism fueled by austerity. As physicist Ernest Rutherford, a Nobel laureate, once said, "We haven't the money, so we've got to think."[5] As this article shows, the close cooperation among allies during the Libya operation affirmed this new "thinking."

The article has a twofold purpose. The first, in essence, is pedagogic, presenting what the FAF brings to the fight through the lens of the military action in Libya, code-named Operation Harmattan by the French for the hot, dry winds that blow through the Sahara between November and March. This aim is essential in and of itself—as American Airmen endeavor to build dynamic partnerships, we must begin by knowing the capabilities of individual air forces. Second, the article sets the contextual framework for the chiefs' initiative to "develop an increased level of interdependence" among the three air forces and addresses how Libya serves as a springboard for this endeavor.[6] It is neither a comprehensive treatise on the operation in Libya nor a summary of "lessons learned." Moreover, it purposely avoids the larger strategic debates concerning the operation's implications for the future of the North Atlantic Treaty Organization (NATO) alliance. Rather, the article highlights particular contributions of the FAF with regard to what the operation means for future cooperation among the three air forces. It explains why Harmattan was an important milestone for the FAF, validating 20 years of transformation and demonstrating the coherence and capability of its force. By design, the article singles out the French contribution but by no means intends to minimize that of the 14 other air forces and joint partners that participated.

This piece is both timely and necessary. Even as the world hails the historic elections that took place just eight months after the fall of Muʿammar Gadhafi, one finds an overwhelmingly negative slant in the US press, running contrary to what Vice President Joe Biden declared immediately after the dictator's capture: "NATO got it right."[7] "While

the operation has revealed strains within the Alliance and foreshadows future challenges, the Libyan operation is a great success," agrees Damon Wilson, renowned NATO expert.[8] However, one year later, in 2012, the *Washington Post* declared that "NATO's Lost Lessons from Libya" deal with the disputed number of civilian casualties rather than the success of the operation.[9] "Libya hardly looks like a success story right now," comments international relations expert Stephen M. Walt after the NATO summit in Chicago.[10] Meanwhile, the *New York Times* editorial board opines that the operation is "one more reminder that Europe is still not ready for prime time."[11] Certainly, Libya displayed alliance shortcomings, but coalition members can—and should—be proud of what they achieved. As Gen Norton Schwartz said in his *CSAF Vector 2011*, "I could not be more proud of you!"[12] Similarly, after the free Libyan elections, President Obama recently emphasized that "the United States is proud of the role that we played in supporting the Libyan revolution and protecting the Libyan people."[13] As this discussion points out, the FAF is equally proud of its effort in Operation Harmattan.

Toward that end, the article first examines the French contribution, including the prelude to war, the national air campaigns, the ad hoc coalition effort known as Operation Odyssey Dawn, and the NATO-led Operation Unified Protector. It then briefly presents the four French weapons systems employed in Libya: the Rafale aircraft, the Armement Air-Sol Modulaire (AASM) precision-guided munition (PGM), the Système de croisière conventionnel autonome à longue portée (SCALP) air-launched cruise missile, and the Harfang remotely piloted/autonomous vehicle. Finally, the article explores how airmen can capitalize on Libya to further the chiefs' vision of "increased operational effectiveness through closer collaboration."[14]

The French Contribution

For good reasons, American Airmen may not be very familiar with the particular capabilities of the FAF, not the least of which is France's particular relationship vis-à-vis NATO since 1966. The lack of direct

interaction with the French over many decades often accompanies persistent "legacy" stereotypes: the French are "ungrateful"; they "would rather surrender than fight"; and "we can't rely on the French . . . they are too damned independent."[15] However, the Air Force Association's Aaron Church recently pointed out that for many years, France has been "in the fold" as one of the largest contributors of combat troops to NATO operations in Kosovo and Afghanistan.[16] He notes that in the aftermath of the terrorist attacks of 11 September 2001 (9/11), French president Jacques Chirac fully supported the US-led operation in Afghanistan, deploying 5,000 French troops—a force second only to Britain's among allied contributors. Further, during Operation Anaconda in March 2002, French fighter aircraft, flying from Manas Air Base in Kyrgyzstan, and the French aircraft carrier *Charles de Gaulle* carried out the first non-US air strikes against targets in Afghanistan.[17] France remained committed (even as "Freedom fries" replaced French fries in the House of Representatives cafeteria in protest over France's lack of support in Iraq), maintaining the third-largest contingent of combat troops and suffering the fourth-highest number of deaths.[18] France has indeed been in the fold.

From the very beginning of the rebel movement against Gadhafi as part of the "Arab Spring," France in many ways led the Western response to the rebellion—in part to recover from previous missteps, particularly in neighboring Tunisia. France was the first country to recognize the new rebel government—the Transitional National Council—and joined Great Britain in calling for military intervention. The two countries remained in lockstep throughout the seven-month operation, as Amb. Ivo Daalder, US permanent representative to NATO, noted in his remarks to the press after the capture of Gadhafi. Highlighting the assistance of other NATO nations and allied partners, he remarked, "*Of course* France and the United Kingdom did an extraordinary job and they were equally indispensable to the success of this operation" (emphasis added).[19] However, the extent of the French and UK effort is likely not evident on the other side of the Atlantic. For their part, the French flew one-fourth of all coalition sorties, launching one-third of

the offensive missions and more than 20 percent of the total coalition air strikes, hitting in excess of 750 military targets. Furthermore, the French army flew 90 percent of the attack helicopter missions, destroying 550 targets.[20] French forces logged 27,000 hours, 80 percent by the FAF. In total, the French flew more than 5,000 sorties, losing no aircraft or personnel.

As mentioned above, Harmattan held particular significance for the FAF, affirming its successful 20-year transformation since the first Gulf War and demonstrating what Gen Jean-Paul Paloméros describes as the *cohérence* in its recruitment and training of French airmen.[21] Whether in the Gulf, Kosovo, and Afghanistan or during French-only operations in Africa, the FAF has repeatedly demonstrated its expeditionary mind-set and capabilities. However, given the sustained length of the campaign, coupled with the fact that significant portions of the operation were conducted from bases within France, Harmattan gave the FAF an opportunity to show how far it has come since the days of the Cold War force that deployed during Operation Desert Storm. The FAF has transformed itself, transitioning to an all-volunteer force while reducing its manpower by 50 percent—from 100,000 to 50,000—possibly with more cuts to come.[22] Additionally, the FAF has radically cut the number of aircraft in its fleet, developing omnirole platforms such as the Rafale. It continues to address deficits, particularly the need to modernize its aging tanker and airlift fleet. In this regard, the Airbus A400M strategic airlifter will begin arriving in 2013, and the FAF plans to acquire the Airbus A330 multirole tanker transport.[23] Finally, it is in the process of revamping its infrastructure, closing 12 bases (one of every four), all the while ensuring that the remaining bases remain flexible *outils de combat* (combat tools).

One should keep in mind that throughout the seven-month war, the FAF could not put its other defense commitments on hold. As President Obama recently quipped in the middle of his reelection campaign, "I've still got my day job."[24] For seven months, French airmen also went about their "day jobs," namely maintaining the air compo-

nent of the French nuclear deterrent and standing vigilant in what they call the *Posture Permanente de Sécurité* (Permanent Security Posture). The FAF maintains an air defense alert unmatched in Europe, able to respond in seven minutes during the day and 15 minutes at night, thanks to alert aircraft at numerous bases and a network of 80 radar stations throughout France. Moreover, in addition to its commitment in Afghanistan, the FAF is forward based in Djibouti and, since May 2009, at Al Dhafra Air Base in the United Arab Emirates, directly across the Strait of Hormuz from Iran. It is there to "assert a joint presence, to deter any possible aggressor and, where appropriate, to facilitate the rapid implementation of initial actions for responding to hostile action."[25] Their vigilance at home and their forward posture in crisis regions offer a clear indication that the French, contrary to what some American analysts might say about European air forces, do not have an "air force [just] for air shows."[26]

In addition to these ongoing commitments, the FAF created and managed an aerial-exclusion zone over Deauville, Normandy, during the G-8 conference in May 2011.[27] Further, beginning 1 July, the FAF took the lead of NATO Response Force (NRF) 17 for six months, having already successfully led NRF 5 in 2005 and NRF 12 in 2008.[28] Finally, just 12 days after the first air strike in Libya, the FAF participated in a noncombatant evacuation operation (NEO) in the Ivory Coast, where military aircraft transported almost 3,000 people.[29] Yes, the FAF was also busy with its "day job" throughout Operation Harmattan.

Phase One: National Air Campaigns

One month before the opening strikes, the FAF was already in Libya conducting NEOs and intelligence, surveillance, and reconnaissance missions. On 22 February, the FAF flew two Airbus A310s and an Airbus A340 to evacuate 512 French citizens from Tripoli and Sebha. Notably, two weeks later, these same airplanes and crews flew six shuttles between Tokyo and Seoul, evacuating 977 French nationals after the tsunami and subsequent nuclear accident at Fukushima.[30] Combined

with the aforementioned NEO in the Ivory Coast, the FAF demonstrated its capacity to use organic assets to evacuate noncombatants, flying under extreme conditions where civilian airline companies refuse to operate.

Additionally, from 5 through 18 March, the FAF autonomously collected intelligence using numerous platforms—the French Airborne Warning and Control System (AWACS), the C160G Gabriel, and the Mirage F1CR, a tactical reconnaissance fighter. According to French authorities, the FAF flew approximately 30 missions to gain precise comprehension of the Libyan situation on the ground, conducting its own operational mission planning and using its own command and control (C2) architecture. French intelligence centers exploited the imagery, sending it on to the FAF Commandement de la défense aérienne et des opérations aériennes (CDAOA) (Air Operations and Air Defense Command) and then to the Centre de Planification et de Conduite des Opérations (Joint Operations and Planning Center) in Paris. The French chief of defense staff presented the imagery directly to French president Nicolas Sarkozy, who was directly engaged in the effort.

On Saturday, 19 March, at a press conference following a summit among President Sarkozy, US secretary of state Hillary Clinton, British prime minister David Cameron, and other European and Middle Eastern leaders, President Sarkozy announced that he had ordered French planes into the skies above Libya. In all, eight Rafales from Saint-Dizier, two Mirage 2000 interdiction fighters from Nancy, and two Mirage 2000 air superiority fighters from Dijon flew over 1,800 miles, a distance roughly halfway across the United States. Joined by six French tankers and the French AWACS from Istres, the FAF ensemble was the first force to begin fulfilling the United Nations mandate to establish a no-fly zone and protect the Libyan population. In fact, just two hours after receiving the presidential order, FAF jets opened fire and destroyed a column of armored vehicles on the outskirts of Benghazi, where pro-Gadhafi troops were advancing on the city to make good on the dictator's threat to massacre civilians.[31] The French took consider-

able risk because Libyan surface-to-air missile (SAM) defenses had not yet been neutralized by US and UK Tomahawk missile launches, which would come later that night. However, France "had to act fast" due to the threat to Benghazi civilians, explained Col Thierry Burkhard, spokesman for the General Staff of the armed forces.[32]

These first strikes confirmed the FAF's capability to project power as a "first-entry" force. The USAF and RAF followed with air strikes later that evening. While the French navy's antiair destroyer *Forbin* and antiair frigate *Jean Bart* were already off the coast of Libya, the French aircraft carrier *Charles de Gaulle*, recently returned from Afghanistan, was in transit with its full naval group consisting of a submarine and several frigates.[33] Its 20 Rafale, Super Etendard, and E-2C Hawkeye aircraft would join flying operations on day four.[34] Over these first three days, as each nation ran its own national air campaign, France used its strategic, operational, and tactical C2 infrastructure to plan, coordinate, and execute a total of 55 sorties. Together with the naval cruise missile strikes, the three air forces crippled Libya's air defenses and clipped the wings of its air force, halting threatening tanks in their tracks and showing the inherent responsiveness and strategic reach of airpower.

Phase Two: Coalition Operations at Ramstein AB, Germany; Operation Odyssey Dawn

Beginning on 22 March, the operation took a more familiar shape, as the FAF and RAF joined with the USAF and Odyssey Dawn, led by the Seventeenth Air Force commander, Maj Gen Margaret Woodward—the combined force air component commander (CFACC). Earlier, in light of the Obama administration's reluctance to get involved, the FAF planned to lead a Franco-British coalition from Lyon–Mont Verdun Air Base, where it maintains an autonomous national air defense capability as well as a permanent and deployable joint force air component commander. As in the United States, the French air defense mission became more urgent after 9/11. Coordinating that mission is the French Centre national des opérations aérienne (National Center for

Aviation Operations), located inside a hardened facility reminiscent of the Cheyenne Mountain military complex near Colorado Springs.[35] Additionally, the FAF maintains an NRF-certified C2 architecture capable of controlling 200 sorties and 120 deployed aircraft per day—roughly the equivalent volume seen in Libya.[36]

Before the launch of Odyssey Dawn, Maj Gen Patrick Charaix, then the deputy commander of the CDAOA, was en route to Lyon from Paris when he was redirected to Ramstein after President Obama gave the green light to US participation. For the next 10 days, he worked very closely with General Woodward and Air Vice Marshal Greg Bagwell, commander of RAF Group 1, which directs all RAF fighter aircraft, as well as representatives from the other air forces who joined the coalition each day. This was familiar territory for General Charaix, since the FAF had participated in US European Command's Exercise Austere Challenge 2010 (AC10). During that exercise, Lt Gen Frank Gorenc, US Third Air Force commander at the time, directed the combined task force, and General Charaix was forward-deployed to Germany, representing Lt Gen Gilles Desclaux—the CDAOA commander and the exercise CFACC. General Gorenc, General Charaix, and their staffs were colocated and completely integrated as one team at the Warrior Preparation Center just outside Ramstein. At the same time, the FAF remained connected to Lyon, where US Air Force personnel were embedded.

Gen Stéphane Abrial, the FAF chief of staff at that time, and Gen Patrick de Rousiers, then the commander of the CDAOA, first launched the idea for this exercise scenario years earlier as they sought to better integrate with the US Air Force. The FAF prepared extensively for more than a year, spending over $1 million to develop technical solutions that would allow French national C2 systems to communicate with US C2 systems. Moreover, French computer information specialists were in place at the Warrior Preparation Center several weeks before the start of the exercise to ensure smooth connectivity.[37] Unfortunately, despite the tremendous effort, the French and US C2 systems proved incompatible. According to Gen Roger Brady, commander of US

Air Forces in Europe (USAFE) at that time, the US targeting database (not releasable to foreign nationals) required human-in-the-loop approval before the data could pass to the coalition network—a major hindrance. "As a result, the [combined task force] and CFACC could only prosecute 5% of the normal targeting capacity of a US only operation and also much less than what the French could do on their own."[38] Although in this respect it was considered a failure, AC10 represented an important step in identifying the challenges of integrating air force capabilities. As discussed in the section "Capitalizing on Libya," below, overcoming these types of technical and policy-driven obstacles to seamless integration is exactly the intent of the strategic trilateral engagement. As General Brady observed after AC10, "With our emphasis on coalition warfare, we need to resolve issues that impede our ability to fight as an integrated multi-national team."[39]

That said, perhaps the most important part of AC10 was the personal contact between French and American airmen. The trust built through this exercise proved tremendously helpful in working around C2 and information-sharing hindrances encountered later in Odyssey Dawn. Gen Philip Breedlove, the current USAFE commander, recently underscored the importance of these types of exercises: "Building partnership capacity is about human to human contact."[40] Maj Gen Larry Nicholson, commanding general of the Marine Expeditionary Brigade–Afghanistan in 2009, learned the same lesson in Iraq: "The surge was great, the surge provided more troops and more equipment; but at the end of the day, you can't surge trust, you can't surge cooperation, you can't surge personal relations. Those have to be built over a period of time."[41] Fortunately, thanks to AC10, French and US airmen had already established understanding and trust, as General Woodward affirmed: "I think when you look back, we will see this coalition effort as a historic operation that is a testament to the day-to-day training, exercising, and interoperability we've built with various partners around the world. . . . Without those existing relationships and experience working together, we could not have accomplished the task we were given in so short a time frame."[42]

In the days leading up to Odyssey Dawn, General Welsh, then the USAFE commander, personally ensured that the FAF and RAF felt welcomed at Ramstein, receiving—according to one French senior officer—an equal "seat at the table." However, the short time frame made it impossible to overcome certain impediments—namely, existing prohibitions on information sharing that led to inefficient coalition operations. Consequently, French airmen could not participate alongside their USAF and RAF counterparts in developing either the master air attack plan or each day's air tasking order. Neither could they take part in developing the targeting list, which involved a classified network in conjunction with planners at bases in the United States and United Kingdom. Instead, given its national operational planning structure, France continued to develop its own air tasking order and presented it each day to the combined air operations center, which added that information to the daily US air tasking order. Moreover, intelligence gathering, exploitation, and distribution were not a shared coalition effort, as France and the United States relied on their own autonomous capabilities. Finally, according to French officials, French fighters could not communicate with US AWACS aircraft using US cryptographic (secure communications) codes, so they flew their missions only when the French AWACS was airborne. French officials lauded the efforts of General Woodward and the 617th Air Operations Center to work around these obstacles as they led what became a 12-nation coalition. As discussed later, the task at hand (especially in light of increasingly strained resources) calls for removing the types of obstacles encountered during both AC10 and Odyssey Dawn so that commanders can prosecute future coalition air campaigns in the most efficient way possible.

Phase Three: NATO's Operation Unified Protector

NATO took command of Unified Protector on 31 March. The commander of Allied Joint Forces in Naples led the operation, and Lt Gen Ralph Jodice, USAF, commander of Allied Air Command Izmir, oversaw the air component. That coalition air forces sustained operations throughout these successive changes in leadership is a remarkable tes-

tament to the flexibility of airmen. According to a Rafale squadron commander, the FAF was particularly proud of the fact that through all these transitions, it never took an operational pause or a "no fly day." Overall, France's critical role in Unified Protector stood as evidence that the French have been at the heart of NATO operations for years.

Further, while spotlighting known alliance shortfalls, the operation let all coalition air forces demonstrate how much they had improved their capabilities since Kosovo. Alliance and partner nations flew more than 26,500 sorties, destroying in excess of 5,900 military targets.[43] General Jodice noted that "over 85% of the weapons employed came from Air Force aircraft operating from land bases, and 100% of the weapons deployed from fixed wing aircraft were precision guided munitions."[44] An adviser to Ambassador Daalder observed that the operation reflected "the investments made over the past 10 years" by alliance and partner nations.[45] Despite reports that some coalition partners did not have enough PGMs on hand, one must remember that just 20 years ago, during the first Gulf War, only nine out of every 100 bombs dropped were precision guided. True, a decade later in Kosovo, that figure had risen to 90 percent, but as Ambassador Daalder reminds us, "in Kosovo . . . ninety five percent of all PGMs that were dropped were *American*" (emphasis added).[46] Despite such shortcomings, Libya embodied the tremendous strides made by European air forces, particularly in terms of weaponry and targeting.

PGMs, like the French AASMs, proved critical in limiting collateral damage and civilian casualties. No one knows the exact number of the latter; however, despite the 9,658 strike sorties flown by the allies and the 7,700 bombs or missiles launched, their efforts to avoid collateral damage resulted in a minimal number of civilians killed.[47] Certainly, the urban nature of the conflict and the problem of distinguishing between pro-Gadhafi and rebel forces added to the difficulty of this task. On a number of occasions, leaders called off planned air strikes on legitimate military targets at the last minute, fearing for the safety of civilians. Thanks to NATO's leadership and training, as well as the profi-

ciency of NATO and allied aircrews, only 10 percent of the daily sorties represented designated targets—the rest were prosecuted by means of "dynamic target[ing]."[48] In layman's terms, this "means the mission wasn't planned and that the pilot had leeway to find and direct bombs toward targets on the ground."[49]

Although we regret any civilian casualties, the price of nonintervention undoubtedly would have been many more civilian deaths—witness the conflict in Syria. President Obama justified his decision to engage US forces along those same lines:

> At this point, the United States and the world faced a choice. Qaddafi declared he would show "no mercy" to his own people. He compared them to rats, and threatened to go door to door to inflict punishment. In the past, we have seen him hang civilians in the streets, and kill over a thousand people in a single day. Now we saw regime forces on the outskirts of the city. We knew that if we waited—if we waited one more day, Benghazi, a city nearly the size of Charlotte, could suffer a massacre that would have reverberated across the region and stained the conscience of the world.[50]

It is worthwhile to put the discussion of civilian casualties in historical perspective. As the Second World War raged on, Gen Dwight Eisenhower and Sir Winston Churchill developed a bombing plan in advance of Operation Overlord and argued about Churchill's concern for French civilians. General de Gaulle interjected himself into the conversation, justifying the civilian casualties in order to shed the yoke of the Germans. Thus, General Eisenhower prevailed.[51] In fact, during the liberation of France, Allied strategic bombing caused the death of 68,778 French civilians. The bombings in Normandy before and after D-day were especially terrible, killing nearly 50,000 French men, women, and children.[52] Contrary to American pop culture's accusations of cowardice, the French bravely "knew what sacrifices were necessary to rid Europe of Nazi occupation. . . . There is a collective acceptance of this tragedy, a quiet knowledge that it was an inevitable prelude to D-Day."[53] President Obama made clear that the price of nonintervention in Libya, as in France during the Second World War, was too high to accept.

French Arms on Display

France boasts a well developed and technologically advanced defense industry, with more than 4,000 companies employing 165,000 people.[54] The FAF is proud of the performance of its weapons systems in Libya. As General Paloméros explains, that accomplishment was no accident but the product of recognizing after the first Gulf War what it needed to do to become a first-class air force:

> Twenty years ago Operation Desert Storm taught us that the polyvalence of our equipment and armament would allow us to face the unknown commitments the future would hold. Twenty years is the time required to measure the efficacy of large procurement programs, specifically those that are achieving amazing results today. Fighter aircraft that are suitable for all types of missions, all-weather stand-off munitions, precision-guided cruise missiles. . . . All stemmed from the needs expressed in 1991.[55]

Rafale

The Rafale, flown by the French navy since 2004 and the FAF since 2006, confirmed its *polyvalence*—its flexibility to adapt to complex and changing missions. The two services' 28 Rafales deployed to the operation, maintaining an in-service-capable rate of 95 percent. In particular, this aircraft lived up to its reputation as an omnirole fighter, able to fly air defense, ground-attack, or reconnaissance missions during the same flight.[56] According to one pilot, "The idea that a single aircraft can be re-tasked in flight from reconnaissance to strike to interception during the same sortie is truly revolutionary, and we're just now beginning to understand all that this implies."[57] Among other things, this presents a major advantage for operational management, insofar as the FAF no longer needs to match the mission with a given aircraft-weapon combination.[58]

Specifically, General Paloméros emphasized the ability of the Rafale to provide imagery intelligence to the coalition through its advanced digital reconnaissance pod.[59] Furthermore, the Rafale works in a truly networked environment, a necessity underscored by US secretary of

defense Robert Gates: "The most advanced fighter aircraft are [of] little use if allies do not have the means to identify, process, and strike targets as part of an integrated campaign."[60] In this regard, the Rafale can receive targeting and other tactical data from a wide range of coalition sources through the Link 16 datalink, combining this data with that collected by its own sensors. These targeting coordinates are automatically programmed, and the Rafale pilot need only push a single button to launch up to six bombs toward their designated targets, whether in front of, abeam, or even behind the aircraft. In other words, the Rafael can hit up to six targets in just a single pass.[61]

AASM

France's AASMs, automatically programmable bombs, are similar in concept to the American Joint Direct Attack Munition, guided by the Global Positioning System (GPS). Used in Afghanistan since 2008, AASMs always launched near the designated target in that theater.[62] In Libya the French put the 250-pound bomb built by the Sagem company to the test; for example, in one instance, the weapon used its booster's full range to hit a Libyan tank 35 miles away.[63] Former French minister of defense Gérard Longuet notes that France launched a total of 225 AASMs during the operation.[64] Normally employing an inertial/GPS guidance system, the weapon can use infrared guidance for even greater precision. Furthermore, laser guidance has improved the accuracy of the newest AASM version to just one meter.

SCALP

Complementing the AASM, the SCALP (equivalent to the British Storm Shadow) conventional long-range cruise missiles saw their first operational use on 23 March, according to FAF officials. At that time, two FAF Rafales, each loaded with two SCALPs, joined two Mirage 2000Ds and two Rafaels from the French navy, each carrying one SCALP. This ensemble of six aircraft successfully launched their eight SCALP missiles against the Libyan air base of Al Juffra, approximately 240 miles

away. Three more SCALPs were fired in a subsequent strike, all 11 hitting their objectives.[65] These successful attacks confirmed the capabilities of this 2,860-pound weapon, guided by inertial/GPS, topographic, radar, and infrared systems. All told, FAF and French navy jets launched 15 SCALP missiles during the operation.[66]

Harfang

France's remotely piloted/autonomous Harfang operated in Libya alongside US Air Force Predators. The FAF, which gained experience integrating its four Harfangs in Afghanistan, aspires to expand these operations, particularly in partnering with the RAF. During a Franco-British summit in February 2012, leaders agreed to continue plans to develop a medium-altitude, long-endurance vehicle by 2020.[67] Currently, the FAF plans to buy 20 remotely piloted platforms to bridge the gap until that time.

Capitalizing on Libya

Operation Harmattan allowed the FAF to prove that it is a modern, full-spectrum service with an autonomous capacity as a "first entry force." It has a robust operational planning capability and an advanced national C2 architecture; moreover, the FAF can collect, exploit, and distribute real-time intelligence. In both a political and military sense, the Libya operation also confirmed "the birth of a Franco-British 'leading team.'"[68] This is logical in light of the fact that France and the United Kingdom are the third- and fourth-largest military spenders in the world, respectively, and represent half of the European defense effort.[69] Further, they view themselves as global powers and maintain an expeditionary mind-set, having repeatedly shown their willingness to project force independently or as part of a coalition.[70] Given these attributes, as the US Air Force looks to build partnership capacity with allies in Europe, it makes sense to begin with these two air forces. This is a matter of focus, not exclusion. In a letter to General Abrial, cur-

rently NATO's supreme allied commander–transformation, the three chiefs wrote that the cooperation among the three air forces is destined to benefit the greater alliance.[71] Other countries, especially Germany, will certainly have a large role to play during the evolution of the NATO alliance. British defense minister Philip Hammond remarked that this marked "the beginning of a new, more balanced era in the relationships within the Alliance" as close allies "respond to shifts in the geopolitical landscape" with a "recalibration of burden-sharing."[72]

This initiative among the three air forces began before the operation in Libya, but it provides a tremendous springboard. Similar to the situation after the Second World War, these air forces can capitalize on the close collaboration during the operation to further their partnership. After the world war, as an "iron curtain" descended upon Europe, US air, land, and naval forces entered into various defense agreements with their counterparts in the United Kingdom and Canada. These included the Air and Space Interoperability Council; the American, British, Canadian, Australian, and New Zealand Armies' Program; and the naval Combined Communications Electronics Board. These organizations, which still exist, sought to foster interoperability and standardization—that is, to allow their members to fight better as a coalition.[73]

President Eisenhower and British prime minister Harold Macmillan reinforced these links a few years later when they met for three days of defense talks in Washington, DC, in part to repair the "special relationship" following the Suez crisis.[74] The two leaders issued a Declaration of Common Purpose, in which they stated that "the concept of national self sufficiency is now out of date. The countries of the free world are *interdependent* and only in genuine partnership, by combining their resources and sharing tasks in many fields, can progress and safety be found" (emphasis added).[75] Immediately following this joint declaration, Canada subscribed to this principle of interdependence and joined the arrangement, which became known as the Tripartite Technical Cooperation Program. Australia and New Zealand joined in the second half of the 1960s.[76] Collectively, the five nations are com-

monly referred to as the "Five Eyes" community, notably for the ability to share intelligence amongst each other. " 'The Five Eyes community is very close, and we rely and trust each other,' said Lord West, who was former British Prime Minister Gordon Brown's national security adviser. 'We share some sensitive information.' "[77]

Certainly, at the time when these five nations were solidifying their ties, President de Gaulle, who possessed *une certaine idée de la France* (a certain idea of France), was pursuing an independent, sovereign approach often at odds with the United States and its close partners.[78] Fast forwarding a half-century, we find France at a crossroads, as noted by Leo Michel, Distinguished Research Fellow at the National Defense University: "While the French believe strongly in their need to preserve 'strategic independence,' they see new challenges in the evolving international security environment that will oblige them to accept greater cooperation with others, even in areas once considered too sensitive to discuss."[79] As President Sarkozy said, "We no longer have the time for theological quarrels! It is time for pragmatic efforts to make our national security forces more efficient and operational to face today's threats."[80] Calling for cooperation and solidarity, he returned France to the integrated military structure of NATO, providing the first of three catalysts for the chiefs' initiative, allowing their air forces to "work under a common umbrella."[81]

The second catalyst, the Franco-British Lancaster House defense treaty of 2010, marked "an unprecedented rapprochement between the two largest European military powers. Based on the observation that France and the UK have similar capabilities, ambitions and interests, whilst being faced with the same limitations in terms of an increasingly hostile budgetary situation, this cooperation aims to pool the resources of both countries, without either losing sovereignty over them in order to keep their respective capabilities at an optimum level."[82]

Evidently, idealism is not driving the rapprochement. As Prime Minister Cameron said, "Britain and France have a shared history through two World Wars. Our brave troops are fighting together every day in Af-

ghanistan. But . . . this is a treaty based on pragmatism, not just sentiment."[83] More than a century after the 1904 entente cordiale ended the long-lasting enmity between the two nations, the new partnership has been dubbed the *entente frugale*, as ever-decreasing defense budgets have led the French and the British to set aside "years of mutual suspicion."[84] President Sarkozy echoed this idea: "We must go forward with pragmatism, with ambition, not ideologically, with our guiding principle the concern of the security of the Western world."[85]

Michel observes that this rapprochement offers the United States a window of opportunity: "Greater bilateral cooperation [between the United Kingdom and France] will, in my view, actually open new opportunities for trilateral cooperation with the United States."[86] In this sense, the US Air Force stands at the threshold of an opening not seen since the 1950s. Lt Gen Richard Newton, then the assistant vice-chief of staff, supported this notion: "International and industry partnerships will become even more 'crucial' as the Defense Department begins to reduce the size of its forces and looks to cut costs wherever possible."[87] Similarly, the three chiefs identified these financial pressures as the final catalyst for the trilateral initiative: "We are all facing increasing financial pressure to deliver compelling air power with fewer resources. It makes good strategic sense that all these [the three catalysts] should facilitate greater co-operation."[88]

Interdependence. Cooperation. Solidarity. Partnership. What do these words mean for these three air forces? To answer that question, the three chiefs initiated a series of strategic engagements beginning in June 2011.[89] To date, three strategic-level workshops held in Paris, RAF College Cranwell, and Washington, DC, have taken place, organized by each air force's strategic studies group.[90] Charged with "increas[ing] effectiveness through closer co-operation," the vision essentially involves moving beyond interoperability to integration—reducing unaffordable redundancy to be able to operate as a seamless unit. In their letter to General Abrial, the chiefs point out that the workshops have identified not only areas of common interest and capabilities but also

shortfalls, especially in the critical area of C2. They note that these conclusions were consistent with the experience in Libya, emphasizing that improving "command and control coherency [is the] most important near term priority" and recognizing it as "the most effective way to generate capacity, increase tempo, [and achieve] maximum effect from our limited budgetary resources."[91]

With this in mind, French, British, and American airmen will assemble for a fourth trilateral workshop in December 2012 at Lyon–Mont Verdun Air Base. This workshop will have two goals. The first is the same as that of the three preceding workshops: to build trust among these airmen by establishing the type of personal relationships lauded as the enduring value of AC10. As mentioned above, the idea that led to AC10 came from General Abrial, who, almost 40 years ago, spent six months as an exchange cadet at the US Air Force Academy in Colorado Springs, part of a program begun in 1968 to prevent French and Americans from losing all contact.[92] Later in his career, he returned to the United States to attend the Air War College. AC10 and Odyssey Dawn validated the benefit of this type of personal communication, and these workshops offer such opportunities. Although it may take many years to see the fruit of such contact, as General Breedlove told the Washington workshop in April 2012, "We don't build a 30-year friendship on a policy tomorrow."[93]

Of course, attaining the second goal—removing barriers to greater operational effectiveness—requires going beyond establishing relationships. In Lyon, airmen from the three air forces will examine the strategic-level policies, operational-level obstacles, and technical challenges involved in improving C2 processes, infrastructure, and information sharing. US Army colonel Jonas Vogelhut recently wrote an excellent reference for this endeavor, addressing the difficulty of balancing information security and sharing requirements.[94] Everyone concerned must "develop, improve, and implement policies, processes, and technology" that will permit the three air forces to "rapidly and effectively share sensitive mission command information."[95] Regarding

this necessity—certainly not a new challenge—the US national military strategy of 2004 noted that "achieving shared situational awareness with allies and partners will require compatible information systems and security processes that protect sensitive information without degrading the ability of multinational partners to operate effectively with US elements."[96] Impediments to sharing both sensitive mission-command information and situational awareness must be removed before the conflict begins. As mentioned above, the United States did not release many intelligence products to coalition partners during Odyssey Dawn because "many U.S. participants did not understand requirements to classify for releasability."[97] Notwithstanding the tremendous effort by foreign disclosure officers, it took a week to establish "[releasable] to [Combined Forces Odyssey Dawn]."[98] This is a perfect example of the obstacles that must be overcome before integrating with allied air forces—especially those not included in "Five Eyes."

In essence, realizing the chiefs' vision will demand a change in culture, as explained in the *Department of Defense Information Enterprise Strategic Plan, 2010–2012*: Airmen from all three air forces must recognize the problem that information-sharing barriers present to effective coalition operations and need to "embrace . . . new mindsets . . . and apply new thinking to break [them] down."[99] Certainly, airmen by themselves cannot change governing agreements and policies, but the three air forces can advocate modification. Although the DOD has issued guidance specifying the need to remove barriers to effective information sharing, Colonel Vogelhut cautions that it is "difficult and time consuming work, which does not support rapid modifications."[100] Changing cultures, mind-sets, and—eventually—policies will take time, much like the time necessary to build the friendships that General Breedlove discusses above. However, because of declining budgets, the effective delivery of airpower in the new strategic environment will increasingly depend on our ability to command and control operations efficiently and share sensitive information within an assembled coalition.

Conclusion

But there are also unknown unknowns—the ones we don't know we don't know.

—Secretary of Defense Donald Rumsfeld, 2002

The rapid call received by airpower to intervene in Libya is likely a harbinger of future conflicts. According to an interim update to the 2008 French white paper on defense, globalization has brought us into a period of "strategic uncertainty."[101] The French white paper called it an "uncertain, less predictable world," characterized by the "rapid spread of all kinds of crises."[102] According to Mr. Hammond, the future security environment is "unpredictable [and] and volatile"; moreover, "no country, not even the United States, can hope to tackle successfully all the threats we face in common, by acting alone."[103] This echoes what Eisenhower and Macmillan jointly declared a half century ago: "It is not within the capacity of each nation acting alone to make itself fully secure. Only collective measures will suffice. . . . If the free nations are steadfast, and if they utilize their resources in harmonious cooperation the totalitarian menace that now confronts them will in good time recede."[104]

Operations in Libya proved successful—and coalition partners should take pride in airpower's accomplishments—but, as Pixar cofounder Ed Catmull often says, "Success hides problems."[105] Strategic engagement among the three air forces demands addressing the hindrances to seamless coalition operations with the same entrepreneurial spirit found in successful Silicon Valley companies. This "new thinking" is essential. In an era of declining resources and a geostrategic pivoting of the United States' focus toward Asia, more will be expected of Alliance partners, and—more than ever—we will need to operate as an integrated team.

To meet the challenges of this new strategic environment, the road map for building partnership capacity underscores the importance of

dynamic partnerships as emphasis shifts from the US military's performing tasks to building that capacity.[106] In the same spirit of cooperation witnessed after the Second World War, airmen can use the Libyan experience to further the chiefs' vision of an increased level of interdependence. The Libyan operation proved that we are following the right vector, but difficult work remains. We need to face the "strategic uncertainty"—or the unknown unknowns—together, led by the motivated and capable airmen from the US Air Force, the Armée de l'air, and the Royal Air Force. ✪

Notes

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An Airman's Perspective on Mission Command

Col Dale S. Shoupe, USAF, Retired

This article represents one Airman's view of the benefits of mission command. It explains the author's long-held view of that concept, detailing the validity of current joint doctrine and mission command's potential for enhancing the tactical-level planning and execution of joint airpower missions in support of the joint commander. The article clearly explains operational-level command and control (C2) processes that allow the joint force commander's (JFC) premier force multiplier (airpower) to remain as flexible and effective as possible in these austere times.[1] As is always the case, an understanding of validated operational-level doctrine better enables mission command at the tactical level.

The past eight years have seen a drive to establish doctrine specific to counterinsurgency (COIN). Some COIN-centric practitioners now argue that by providing the command authorities of operational or tactical control to tactical-level commanders, the US military can efficiently and effectively attain strategic ends through tactical means.[2] This article argues, however, that the reality is quite different. In point of fact, we need a clear understanding of current operational doctrine and the critical role spelled out for operational-level headquarters in Joint Publication (JP) 3-0, *Joint Operations*: "The operational level links the tactical employment of forces to national and military strategic objectives."[3] Current tactical-level doctrine for COIN—spelled out in joint, service, and multiservice tactics, techniques, and procedures—works well with today's operational-level doctrine as long as the required tactical control authorities and systems are in place to support the complex COIN effort.[4] As outlined in the Mission Command White Paper by the chairman of the Joint Chiefs of Staff, delegated and spe-

cific control authorities to "qualified" mission commanders at the tactical level can improve the effectiveness of tactical operations.[5]

To be clear, operational-level headquarters are the combatant command (COCOM) headquarters and the headquarters of the combatant commander's subordinate joint task force (JTF), service, and functional commanders. Corps, division, brigade, battalion, wing, and squadron headquarters are not operational-level headquarters. (The numbered army—the US Army's operational-level headquarters element—serves as the Army component to COCOMs.) Rather, they are tactical-level headquarters, and personnel at that level and below need to understand the COCOM-established command relationships for JTFs, services, functional components, and operational-level processes.[6] Tactical-level C2 nodes must be in place, robust enough to support complex COIN operations and utilized according to operational and tactical doctrine. All operational-level commanders must determine what control authorities they need to delegate to mission commanders at the tactical level. Mission commanders must arm themselves with an understanding of the operational-level theaterwide plan and the operational intent of the operational-level commander. Given specific control authorities, the personal qualities necessary to execute mission command, and the operational/tactical C2 elements required to conduct complex operations, tactical commanders (including joint air mission commanders and brigade combat team leadership) can plan and execute tactical actions that may result in operational success and the desired strategic outcome sought by national leadership.

Utilizing validated lessons learned, the joint force has developed a sound body of doctrine. Tactical-level mission command—which involves knowledge of the flexibility inherent in that doctrine and tactical leaders who possess the required training, C2 elements, and control authorities (not command authorities)—will help tactical commanders efficiently and effectively plan and execute tactical actions that should realize operational-level objectives and secure the desired strategic end state.

Mission Command Defined

In 1985 as a young captain, I attended the US Central Command Air Forces (CENTAF) (now US Air Forces Central) Mission Commander Course at Shaw AFB, South Carolina. The week-long course included classroom lectures on all Air Force aircraft types, missions, employment concepts, tactics, and C2 of the entire operational effort (centralized control and decentralized execution). It focused on our ability to understand the commander's intent and carry out his or her (mission type) orders. Once we arrived in the target area (area of operations [AO]), we were expected to exercise initiative and act aggressively to accomplish the tasking. Several weeks later, I served as mission commander for a package of more than 40 aircraft conducting training exercises on the Wildcat ranges in Utah. A successful mission and rigorous debriefing resulted in designation as a qualified CENTAF mission commander. Not a new concept in the Air Force, mission command has been and continues to be exactly what the white paper by the chairman of the Joint Chiefs of Staff describes: "The conduct of military operations through decentralized execution based upon mission-type orders. Successful mission command demands that subordinate leaders at all echelons exercise disciplined initiative and act aggressively and independently to accomplish the mission."[7]

Note that this description specifies execution based on mission type orders, which, according to JP 1-02, *Department of Defense Dictionary of Military and Associated Terms*, are those "issued to a lower unit that [include] the accomplishment of the total mission assigned to the higher headquarters [as well as those issued] . . . to a unit to perform a mission without specifying how it is to be accomplished."[8] Three different documents published to lower Air Force and joint air units result in the mission type orders for Airmen: (1) the joint air operations plan (JAOP) contains the commander's intent for each phase of the operation, and (2) the air operations directive (AOD) includes the joint force air component commander's (JFACC) intent for a specific (3) air tasking order (ATO) or period of time. Hence the commander's intent ar-

ticulates a desired set of conditions for a given point in time and the purpose that those conditions will support. The AOD and ATO typically convey the commander's intent for a single 24-hour period.

The JAOP can lead to publication of a joint air operations order or may become part of the JFC's operation order. The air plan, completely nested within the JFC's operation plan (OPLAN), reflects a connected series of joint air operations that meet the JFC's objectives within a given time and joint operational area. The transition from the operational order to daily tasking order begins with formulation of the AOD. After consulting with other component commanders, the JFACC presents the air apportionment recommendation to the JFC. Ideally, guidance and apportionment input will be reflected in the JFC's instructions, making preparation of the AOD more timely and efficient. The JFC's apportionment decision and intent for the 24-hour period covered by the AOD and subsequent ATO enable tactical-level planning and execution, utilizing the mission command concept.[9] The ATO is the "method used to task and disseminate to components, subordinate units, and command and control agencies projected sorties, capabilities and/or forces to targets and specific missions. [It normally] provides specific instructions to include call signs, targets, controlling agencies, etc., as well as general instructions."[10] It does not dictate tactics, techniques, and procedures to mission commanders.

Mission command is the control authority delegated to a tactical-level commander by a superior commander (for the Airman, normally the JFACC or JFC). The mission commander uses that authority, together with his or her understanding of air warfare in the context of the current situation, to act independently of any further guidance from higher headquarters, carrying out the mission specified in the AOD and ATO. Sometimes the mission commander receives updated guidance en route from some other control agency with higher authority (e.g., an air support operations center [ASOC], an Airborne Warning and Control System aircraft, or a control and reporting center). Not a panacea for complex integration problems observed during the last decade of war, mission command is one essential element that can en-

able the attainment of operational objectives through tactical actions. Only when US forces execute mission command in concert with other nested operational and tactical actions that directly support the JFC's objectives will they bring about the desired strategic end state.

Operational Lessons of Operations Enduring Freedom and Iraqi Freedom

Reports on lessons learned from Operations Enduring Freedom and Iraqi Freedom highlight the ability of air operations centers (AOC) to offer robust, flexible C2 capabilities at the operational and upper tactical level. However, "key portions of the theater air control system (TACS) must continue to be reinvigorated to improve the vertical and horizontal integration required in any modern conflict. The TACS needs to be viewed in its entirety, for it is the entire system, not simply the AOC that provides robust and flexible capabilities to the joint force commander (JFC). The depth and flexibility of the USAF system grows when combined with sister service capabilities allowing for a robust and flexible TACS."[11] Although the current operational-level command structure gives the JFC flexible airpower, the entire TACS still needs improved training, manning, and equipping.

According to joint doctrine, the JFACC's staff (including the joint air operations center) works to integrate the joint airpower effort with the JFC's intent. The JAOP, developed in concert with the JFC and all other components, serves as a supporting plan to the JFC's OPLAN. Not designed to be put on a shelf, the plan is worked each day, informing the daily planning and execution procedures not well understood by individuals outside the process. The JAOP contains the JFC's and JFACC's intent for each phase of the operation, whereas the AODs include the JFACC's intent for a specific ATO or period of time. According to JP 3-30, *Command and Control for Joint Air Operations*, "the JFACC should provide objectives and guidance to the staff for joint air operations to achieve the JFC's intent, recommend an air scheme of maneuver, review joint force

capabilities and forces available to achieve assigned tasks, refine requirements for capabilities and forces from other components, and, in consultation with other component commanders, formulate an air apportionment recommendation for presentation to the JFC."[12]

Oftentimes people fail to understand the fact that plans, the JAOP, the AOD, and the ATO change frequently during execution. Moreover, most of them do not know that one joint air component has supported US Central Command (CENTCOM) and multiple JTFs for the past 10 years. Developing a single JAOP to support a single JFC is difficult, as is developing several disparate JAOPs to support CENTCOM and multiple JTFs. Furthermore, plans cannot remain static because the constant planning process enables flexibility. Near-constant changes to battlespace awareness, informed by all-source intelligence, constantly drive updates to the plan. The very adaptable ATO planning cycle allows the fluidity necessary for successful implementation of airpower across the spectrum of warfare. Supported units or customers of airpower need to understand the process and the need for inputs that will effect necessary changes as planning efforts advance through the production and publishing of the ATO. They must also know that the ATO itself is a living document and that *changes can be made until completion of its period of execution*. As a joint force, we must comprehend our planning processes, the purposes they serve, and the way they enable support of the JFC and mission accomplishment. We must work with all components to help them understand how to obtain our best support and how they can best support us when the JFC calls on them to do so. We must learn the right lessons from the current conflicts and not attempt to solve tactical-level planning problems by discarding proven operational-level planning processes.[13]

To enable the most successful execution of plans that achieve operational objectives, we must continue to make improvements at the tactical level of operations. Mission command plays its most significant role at this level, demanding the empowerment of tactical-level commanders with delegated authorities (*not* operational or tactical control) required to accomplish their mission. For Airmen these authorities

could include launch or takeoff, weapons employment, abort, or the authority to engage targets below published minimum altitudes or to engage in higher-threat environments when the mission commander thinks that mission accomplishment requires such action. For a land force supported by air, direct liaison authority should be the norm since the synchronization of actions requires great effort.

A Scenario from Operations Enduring Freedom and Iraqi Freedom

During Enduring Freedom / Iraqi Freedom, the commander of CENTCOM (a JFC) decided to establish a JFACC and retain all nonorganic air assets at the operational theater level. In conjunction with the president and secretary of defense, the JFC also decided to create multiple JTFs in his area of responsibility and directed the JFACC to support them. The JFACC had an OPLAN that supported the combatant commander (JFC), and the JTF commanders had developed plans that supported their assigned missions. In this example, the JTF commands and their supporting tactical units rotated into and out of the theater every 12 to 18 months. The JTFs developed their concept of operations (CONOPS) as they went through spin-up training back in the United States. Their plans emphasized their AO, but they also had to support the combatant commander's plans for his entire area of responsibility. The JTFs had no attached air assets, no attached air component, and a limited number of air planners to help develop the CONOPS or resultant OPLAN. Tactical elements supporting the JTF, perhaps several brigade combat teams, developed their CONOPS based on guidance from the JTF. The OPLANs lacked input from Airmen, as did operational and tactical concepts at the design and development stages.

The creation of multiple JTFs without attached air components, established coordination mechanisms, and mutual trust produced an operational-level planning seam between the staffs of the functional air component and JTF commander in Afghanistan and Iraq. JFCs and

their staffs must remain aware of the higher-level objectives as well as the associated desired and undesired effects that influence planning at every juncture. Failure to link operational objectives to strategic goals can break the inherent linkage or nesting, and tactical considerations can eventually begin to drive the overall strategy at cross-purposes. If a CONOPS does not include a coherent air scheme of maneuver, then issues will arise during execution of the CONOPS-turned-OPLAN. The need for planners to continue daily horizontal and vertical integration will not diminish; in fact, given the growth of subtheater JFCs and COIN operations in recent years, the requirement has increased. Robust, scalable structures—including tailored ASOCs, control and reporting centers, air component coordination elements (ACCE), subordinate air and space expeditionary task forces (AETF), and reinvigoration of the mission commander's role—could prevent the breakdown in coordination and trust at the subtheater operational level.[14]

Realizing the necessity of robust horizontal and vertical integration, the Air Force first implemented the concept of the ACCE in 2002 after hurried establishment of Combined Joint Task Force–Mountain to take charge in Afghanistan. The service then increased manpower in the ASOCs, tailoring the Air Force specialty codes assigned to each unit based on the supported mission. In 2011 the Air Force codified the concept of establishing subordinate AETFs to help support the JTFs in Iraq and Afghanistan. These institutional changes have improved support to tactical-level planning and execution, but we must ensure that subordinate AETFs or ACCEs are established early enough to become involved in the design and CONOPS-development phase of a JTF's operational-level planning. The Air Force can improve support to joint partners and cultivate general officers oriented toward mission command by emphasizing that concept of command.

Although produced at the operational-level headquarters (the AOC), the ATO is not an operational-level plan. Instead, it translates the OPLAN into tactical taskings for a specific day. Air Force Tactics, Techniques, and Procedures 3-3.AOC, *Operational Employment—Air Operations Center*,

codifies the processes to effect coordination among all JFC components and supported JTFs—a procedure poorly understood by the vast majority of people who complain about airpower support to ground commanders. The next section, however, explains not only the allocation, command, and control of close air support but also the means by which that process can benefit from the concept of mission command.

An Example of Mission Command

Each day, the JFACC gathers inputs from the components and JTFs and recommends an apportionment to the JFC. In CENTCOM, that apportionment decision rests with the CENTCOM commander or his or her delegated representative—not the individual JTF commanders. (They have neither air assets attached nor air components/JFACCs.) During the COIN fight of the last several years, the apportionment decision has proven fairly easy. Fighter aircraft in one AO support that AO (Iraq or Afghanistan), and the long-range assets flow to support the AO (sometimes including support to and from US European Command and US Africa Command), as determined by the CENTCOM commander. The apportionment decision is based on CENTCOM and JTF priorities for that day.

Subject-matter experts at the ASOCs assist the ground commanders and their planners in determining the support they need. That information is coordinated with the Army's battlefield coordination detachment and other component, allied, and supporting planning teams inside the AOC. After the JFC makes the apportionment decision, the apportioned air support is allotted and detailed in the ATO. We need a designated mission commander to pull together the entire air effort: intelligence, surveillance, and reconnaissance; cyber; space; armed overwatch; and other air missions as assigned. That commander should coordinate tactical-level planning with the supported commander and all other units supporting the effort. Further, although the mission commander will need connectivity to all of the tactical-level participants in order to conduct tactical planning before carrying out the mission, he or she need not be colocated with the supported tactical-level ground commander.

Making This Concept Better Support Counterinsurgency

COIN is a not a lesser form of warfare; indeed, formal lessons learned have observed and codified the complexity of such operations. If anything, COIN requires greater horizontal and vertical integration than do conventional operations. It is completely irrational to attach or assign a four-ship of fighters, remotely piloted vehicles, and the inherent C2 systems necessary to employ such assets to each brigade combat team; however, the joint team must train, plan, and then execute tactical operations together. Currently available assets and facilities allow us to address this issue of training together.

Facilities at Nellis AFB, Nevada, and the National Training Center in California can support the joint training of today's mission commanders. Airmen attending the Weapons School and various flag exercises at Nellis undergo most of the required training. We can place US land component commanders in advanced joint scenarios (both conventional and COIN) and establish a training program to build the future leaders that the chairman mentions in his Mission Command White Paper. Airmen must become a larger part of the training program at the National Training Center, and even though they will never be ground experts (just as ground officers will never be air experts), these leaders must come to a better understanding of their sister service's capabilities. These training events not only allow them to do just that but also give US forces the opportunity to continue to learn and develop new tactics and operational doctrine should our wartime operations become a thing of the past. We can even improve our joint understanding of the two services' planning requirements and methodologies that best support efforts in their respective domains.

Over the last several years, great improvements have occurred in operational-level planning. The complexity of the COIN environment, coupled with the methodologies that JTF commanders decided to employ to secure tactical objectives, has driven a need for more integrated tactical-level planning. The training program for mission commanders must include such planning—training that teaches how each service

plans its tactical operations (one method will not serve the best interests of the separate services). We must have one final plan that supports accomplishment of the tasked mission—a plan practiced by each prospective mission commander. The overall mission commander, in concert with the supporting mission commanders, develops the tactical concept and plan for execution. All of them then conduct the mission and debrief it to garner both positive and negative lessons learned. This is a joint version of the 30-year-old CENTAF Mission Commander Course that led to the Air Force's dominance in executing more than 3,000 sorties a day during Operation Desert Storm in 1991. Mission commanders were spread all over the theater then, as is the case with aircraft because of support requirements and their ability to range thousands of miles in a matter of hours. Rudimentary virtual means permitted the Desert Storm mission commanders to plan and execute, and nothing prevents us from making plans with the virtual means available to us today. Granted, every service will pay the costs of fielding the robust communications equipment that allows virtual tactical-level planning with such detail. Regardless, before any of this will work under the stress of combat, all planners must receive training in understanding what the other joint units can do and what they expect us to do during the operation—something possible only through joint execution training.

Such training—undergone by members of the entire joint force, not just mission commander trainees—is mandatory if we intend to conduct COIN operations as outlined in current tactics, techniques, and procedures. This approach will require additional funds for the training budget and probably an increase in the Air Force's force structure. (The Army and Marines are currently drawing down from the surge of 100,000 troops in Enduring Freedom / Iraqi Freedom, but the Air Force has steadily drawn down since 1991 and does not have the manning to support such a level of joint execution training.) At least as complex as conventional war, COIN is not a lesser operation, mentioned previously; as such, it can demand even more manpower and other resources. *If we choose the methods currently proposed as the best way to*

prosecute COIN and if we wish to have any realistic chance of succeeding in our operations, then we need to grasp the total costs involved.

Conclusion

Almost 60 years passed before we developed an understanding of the operational level now enjoyed by US forces. We should discount out of hand the current arguments to ignore codified joint operational doctrine because disaster follows those who cannot learn and implement validated lessons. We must concentrate our efforts on better vertical/horizontal planning and execution at the tactical level—where gains can be made over the next decade. The improvement of tactical planning and execution, of course, relies on sound operational-level practices—not the elimination of those practices. The tactics, techniques, and procedures that we developed over the past 10 years have intensified our need for seamless vertical and horizontal integration of all available assets. As resources become scarcer (and they certainly will), we will soon have to make some hard decisions about defending this nation throughout the twenty-first century.

The joint force must make a priority of the joint training of tactical-level mission commanders. We must not reduce service-specific training, however, because we will continue to rely heavily on subject-matter experts. The bill will include the cost of establishing the training programs, of sending prospective mission commanders to that training, and, naturally, of conducting the exercise. We must also equip tactical-level units with the required communications systems and ensure that the theater air control system/theater air-ground system are robust enough to support tactical flexibility in complex environments. Discarding today's doctrine or viewing lessons learned through a single myopic lens will not improve our joint force's ability to utilize mission command. Training is the key to developing and implementing mission commanders; it worked in the past and will continue to work in the future. ✪

Notes

1. Command and control is "the exercise of authority and direction by a properly designated commander over assigned and attached forces in the accomplishment of the mission. Command and control functions are performed through an arrangement of personnel, equipment, communications, facilities, and procedures employed by a commander in planning, directing, coordinating, and controlling forces and operations in the accomplishment of the mission." JP 1-02, *Department of Defense Dictionary of Military and Associated Terms*, 8 November 2010 (as amended through 15 July 2012), 56, http://www.dtic.mil/doctrine/new_pubs/jp1_02.pdf.

2. Operational control is the "command authority that may be exercised by commanders at any echelon at or below the level of combatant command. Operational control is inherent in combatant command (command authority) and may be delegated within the command. Operational control is the authority to perform those functions of command over subordinate forces involving organizing and employing commands and forces, assigning tasks, designating objectives, and giving authoritative direction necessary to accomplish the mission. Operational control includes authoritative direction over all aspects of military operations and joint training necessary to accomplish missions assigned to the command. Operational control should be exercised through the commanders of subordinate organizations. Normally this authority is exercised through subordinate joint force commanders and Service and/or functional component commanders. Operational control normally provides full authority to organize commands and forces and to employ those forces as the commander in operational control considers necessary to accomplish assigned missions; it does not, in and of itself, include authoritative direction for logistics or matters of administration, discipline, internal organization, or unit training." Ibid., 233.

Tactical control is the "command authority over assigned or attached forces or commands, or military capability or forces made available for tasking, that is limited to the detailed direction and control of movements or maneuvers within the operational area necessary to accomplish missions or tasks assigned. Tactical control is inherent in operational control. Tactical control may be delegated to, and exercised at any level at or below the level of combatant command. Tactical control provides sufficient authority for controlling and directing the application of force or tactical use of combat support assets within the assigned mission or task." Ibid., 308.

3. Joint Publication (JP) 3-0, *Joint Operations*, 11 August 2011, I-13, http://www.dtic.mil/doctrine/new_pubs/jp3_0.pdf.

4. Control is the "authority that may be less than full command exercised by a commander over part of the activities of subordinate or other organizations." JP 1-02, *Department of Defense Dictionary*, 69.

5. Gen Martin E. Dempsey, chairman, Joint Chiefs of Staff, Mission Command White Paper, 3 April 2012, 7, http://www.jcs.mil/content/files/2012-04/041312163814_CJCS_Mission_Command_White_Paper_2012_a.pdf.

6. Lt Gen Ricardo S. Sanchez with Donald T. Phillips, *Wiser in Battle: A Soldier's Story* (New York: HarperCollins, 2008), 437–40.

7. Dempsey, Mission Command White Paper, [1].

8. JP 1-02, *Department of Defense Dictionary*, 208.

9. JP 3-30, *Command and Control for Joint Air Operations*, 12 January 2010, chap. III, http://www.dtic.mil/doctrine/new_pubs/jp3_30.pdf.

10. JP 1-02, *Department of Defense Dictionary*, 14.

11. Col Dale S. Shoupe, USAF, Retired, briefing, AETC Symposium, San Antonio, TX, subject: Enduring Lessons from OEF/OIF: Adapting to Evolving Combat Realities, January 2012.

12. JP 3-30, *Command and Control*, III-23.

13. Dale Shoupe, "Clearing the Air," *Wright Stuff*, 2009, 4.

14. Shoupe, briefing.

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Seeing It Coming

Revitalizing Future Studies in the US Air Force

Col John F. Price Jr., USAF

"Why didn't we see any of this coming?" The secretary of defense's question echoed in the general's head as he walked out of the heated discussion in the executive conference room. As his footsteps echoed down the Pentagon hallway, he wondered, "Were we so fixated on the future we were trying to create that we failed to perceive the future being created around us?" The remainder of 2020 would now prove very different than the Air Force chief of staff had planned. As he considered the ramifications of the current situation, the chief could not help wondering what else might soon happen in this "new future" and what he could have done to prevent these surprises.

As the chief of staff contemplated the path ahead, his mind turned to the decision in 2010 to close US Joint Forces Command. Although this action appeared fiscally sound at the time, the hasty elimination of this institution, created by the Commission on Roles and Missions of the Armed Forces in 1997, seemed particularly myopic. Instead of narrowing mission requirements, leadership chose to target the source of joint lessons learned, experimentation, and future studies. The plan called for migrating these responsibilities to the Joint Staff, but an already taxed staff simply could not handle all of these functions. As a result, the focus on future studies disappeared, and forecasting became more the domain of service programming and budgeting and less an equal partner in strategic planning. The present state of affairs did not occur because leaders ignored future trends but because an organizational culture did not value future studies and, consequently, failed to identify relevant tendencies and incorporate them into planning processes.

Future Studies

Strategic surprise, rarely a welcome event for organizational leaders, is especially undesirable for those charged with providing national security. Even without knowing the nature of the strategic surprise alluded to in the beginning of this article, one can easily imagine catching the sluggish defense system, despite its expansive intelligence apparatus, off guard. To make progress, we must go beyond simply acknowledging this vulnerability and must avoid the skeptics of futurology, who would have us continue lumbering along in a reactive state.

By nature, the development and execution of strategy for the US Air Force are directed at the future. As a discipline, future studies include both forecasting and planning—the former representing the cognitive aspect that determines the plausibility of futures and the latter the action side that creates the desired future.[1] Practitioners must "forecast the cause-effect relationships that will underlie the strategic effect [they are trying to achieve]."[2] In this way, executing strategy is the emergent process of testing a strategic theory based on the hypotheses generated from forecasting. Like its sister services, the Air Force is a bureaucracy dominated by a strategic planning culture, but, to ensure a balanced strategic approach, we must equip this culture with an equally strong forecasting capability.

Some futures will naturally appear more plausible than others, but the point is not probability but possibility. As with all organizations, the military benefits the most by thinking deeply about the range of future possibilities and considering how the current strategy and force structure would fare in the various environments. Futurist Edward Cornish writes that "the goal of futuring is not to predict the future but to improve it. We want to anticipate possible or likely future conditions so that we can prepare for them."[3] However, in some cases, the military needs to actively take a role in working to kill possible futures. Instead of simply preparing for this future, James Canton, another futurist, advises aggressive action: "You envision future scenarios that are con-

ceivable yet so bleak that, if left unchecked, could destroy all that you've created."[4]

Future Trends

Although the number and diversity of prognostications about the second decade of the twenty-first century cause many individuals to dismiss the process as mere speculation, both the identification process and presentation of futures have great value. The majority of futures efforts in the Air Force exist apart from mainstream discussion, partitioned in analytic or programmatic sections of the Air Staff. Though functional, this placement does not foster the necessary, continuous dialogue among Air Force leaders that will incorporate forecasting into the leadership culture.

In an attempt to cultivate change in this approach, this article offers the skeletal outline of five separate trend lines for the next decade (see the table on the next page). In each case, a connecting thread from the current environment provides a temporal bread-crumb trail leading to a plausible future. The omission of detailed causal chains and full explanations helps prevent the "fighting the scenario" problem and limits the emphasis to core aspects of the trend. Even though some futures are more plausible than others, each scenario flows from current realities and has the potential to create future surprises that the chief of staff of 2020 would like to avoid. By no means are these tendencies either comprehensive or mutually exclusive; rather, they simply depict some of the plausible scenarios.

These brief depictions do not approach the level of the "Gulliver's Travails," "Zaibatsu," "Digital Cacophony," and "King Khan" scenarios developed in the Air Force's *Alternate Futures for 2025* study of 1996, but they do offer a glimpse of future possibilities that deserve consideration.[5] Furthermore, like the 1996 study, the true intent here is not to predict the future but to encourage discussions about it and rekindle the connection between forecasting and strategic planning.

Table. Trends for the next decade

	Current Trend	Future Trend / Events
Force Fracture	• Exhausted military personnel and equipment • Strained reserve structure • Unconstrained requirements	• Gradual demise of the all-volunteer force • Collapse of the Total Force construct • Creation of contract military units • Movement toward a single-component military
Caliphate Rising	• Islamic radicalism • Lack of unity in Islam • War on "terror," not radical Islam	• Islamic nations rally together around Egypt after major attack on the United States / Israel • Recurring Islamic terrorist attacks on US soil; nuclear attack threatened
Foundational Cracks	• Smaller military / fewer bases • Less than 1% of population in military • Decreased service advertising • Public resentment over costly wars and large defense budget	• Public respect/confidence drops significantly, becomes adversarial • Rising tensions between civilian and military leaders • Increasing US isolationism and domestic pressure to reduce the military
Panda Express	• Rising China • Uncertainty in Korea/Taiwan • Asia taking the stage from Europe	• Collapse of US influence across Asia • Japan isolated; Taiwan coerced • China calls in US debt
State of Nature	• Blue-red ideological divide • Domestic discord evidenced in Tea Party, debt pressures, unemployment, immigration, health care, privacy, homeland security (Transportation Security Administration), and environment	• Collapse of confidence in republic • Increasing political fractionalization and radicalization • Emergence of political violence • Use of martial law and active duty military to quell domestic unrest

Implications

Although completing the forecasting process for any of these potential futures would require significantly more detail, one could readily imagine how each could nurture conditions that could produce a strategic surprise for the Air Force and the nation. Despite the remote likelihood of any particular scenario emerging, as long as it remains within the limits of plausibility, it warrants consideration in the strategic calculus. By including these and other possibilities as planning factors, Air Force strategists can shape the future and reduce the risk of undesired outcomes. As Antoine de Saint-Exupéry argues, "As for the future, your task is not to foresee it, but to enable it."

By advocating a renewal of future studies in the Air Force, this article does not seek to exchange the current myopia for apocalyptic schizophrenia. As the model created by Charles W. Taylor illustrates, the realm of plausible futures does not contain all possible futures (see the figure on the next page). Taylor uses this "cone of plausibility" to bound the future landscape yet include a wide range of alternatives. Through this process, leaders can assess existing plans and understand deviations when they occur. Keeping this full range of futures in sight instead of becoming preoccupied with the Air Force's vision (desired future) will ensure that leadership sustains the peripheral vision to avoid major surprises.

Taking Action

Although people may not have viewed it from a futures perspective, the chairman of the Joint Chiefs of Staff's recent and repeated warnings about the possibility of the military's becoming a "hollow force" is a deliberate attempt to "kill" an undesirable but plausible future for the US armed forces. Based on his previous knowledge of the "hollow" military of the 1970s and attention to current trend lines, Gen Martin Dempsey foresaw a future where military readiness was drained to the breaking point. His actions over the last year through advocacy and process change have amounted to specific attempts to kill the future of the hollow force.

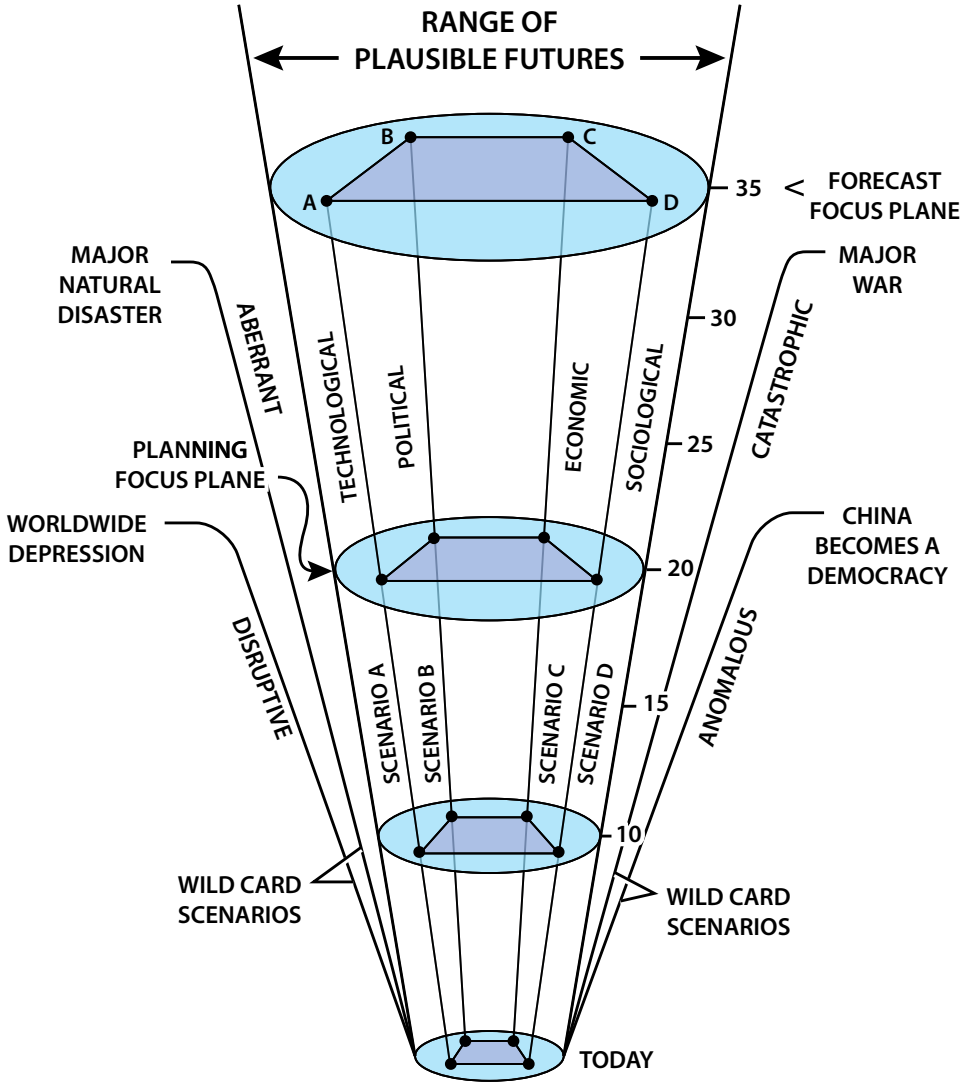

Figure. Cone of plausibility. (Reprinted from Charles W. Taylor, *Alternative World Scenarios for A New Order of Nations* [Carlisle Barracks, PA: Strategic Studies Institute, US Army War College, 1993], 5, http://www.strategicstudiesinstitute.army.mil/pdffiles/pub245.pdf.)

Senior military leaders must begin embracing future studies on par with current strategy and planning. However, doing so will demand a culture change from the often rigid world of military planning: "Deal-

ing with the ambiguity inherent in strategic foresight requires an attitude different from simply providing the right data or information."[6] Planners have long understood that the real value of planning is not the plan itself but the intellectual illumination that occurs during the planning process. Similarly, scenario planning's greatest value comes from the process of exploring the future. However, worthwhile strategic foresight is not simply an exercise in structured brainstorming: "The goal of strategic foresight is to make better, more-informed decisions in the present. Forecasting lays out a range of potential futures to consider so that the organization can act effectively now."[7] Strategic foresight can produce tangible benefits for military leadership by enabling the connection of current resources to promote or eliminate specific future end states.

The military's classic ends-ways-means can now be grounded well over the horizon and offer a deliberate path, even during times of significant instability. We should not abandon the time-tested skills of military planning and strategy, but the confluence of rapid change and risk demands the adoption of new skills to improve agility and confidence. As Bill Ralston and Ian Wilson remind us, "the real value of scenarios . . . comes not from giving us more accurate forecasts but rather from improving our understanding of the dynamics of the world around us, seeing the range of possible ways in which the world could evolve, providing us the courage and confidence to make difficult decisions, and quickening our response time to events."[8] Defense leadership must start now to embrace the discipline of futuring as a necessary tool for both creating the future and killing it in order to guide the department into times of uncertainty.

Conclusion

In the Department of Defense during the first decade of the twenty-first century, a contrast existed, on the one hand, between intellectual emphasis on transformations, revolutions in military affairs, and next-generation warfare, and, on the other hand, the realities of insurgents

on horseback and renewed piracy on the open seas. We must not allow ourselves to use the failure to anticipate the current "alternative future" of 2012 as a condemnation of future studies. Instead, the repercussions of this unexpected shift should motivate the Air Force to turn away from the myopic tendencies that have become so prevalent and renew its focus on future studies. Anticipation of the next decade promises to be equally challenging, but service leaders must cultivate the disciplines of forecasting and planning to prepare themselves for the possibilities ahead. ✪

Notes

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2. Stephan Frühling, "Uncertainty, Forecasting and the Difficulty of Strategy," *Comparative Strategy* 25, no. 1 (January–March 2006): 21.
3. Edward Cornish, *Futuring: The Exploration of the Future* (Bethesda, MD: World Future Society, 2004), 65.
4. James Canton, *The Extreme Future: The Top Trends That Will Reshape the World for the Next 5, 10, and 20 Years* (New York: Dutton, 2006), 11.
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6. Andy Hines, "Strategic Foresight: The State of the Art," *Futurist* 40, no. 5 (September–October 2006): 19.
7. Ibid., 21.
8. Bill Ralston and Ian Wilson, *The Scenario-Planning Handbook: A Practitioner's Guide to Developing and Using Scenarios to Direct Strategy in Today's Uncertain Times* (Mason, OH: South-Western Educational, 2006), 45.

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A Misapplied and Overextended Example

Gen J. N. Mattis's Criticism of Effects-Based Operations

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On 14 August 2008, Gen J. N. Mattis, at that time the commander of US Joint Forces Command, declared that the concept of effects-based operations (EBO) had been "misapplied and overextended to the point that it actually hinders rather than helps joint operations."[1] The empirical and historical case that the general emphasizes in his explanation of the foundation for this conclusion is Israel's campaign against Hezbollah in 2006.[2]

This article argues that although many good reasons may exist for criticizing the EBO concept, the particular campaign cited by General Mattis represents an inadequate example from which to draw his conclusion. Israel's own Winograd Report points out that Israel did not have a clear, identifiable strategy for its military operations and that its planning was neither "conducted on the basis of deep understanding of the theatre of operations" nor based on fundamental "principles of using military power to achieve a political . . . goal."[3] The absence of a clearly identified military strategy for war or of one's objectives reduces the relevance of the concept of EBO—or, indeed, of any military concept. In other words, if you do not know where you are going, the means to get there is hardly the key problem. Thus, one risks cherry-picking the variable (in this case EBO) that actually played a subordinate role in the negative outcome for the Israel Defense Forces (IDF) during this conflict. Logically, these factors render this particular conflict largely unsuitable as an empirical foundation for harshly criticizing EBO.

Both General Mattis's "USJFCOM Commander's Guidance for Effects-Based Operations" and his memorandum for US Joint Forces Command (14 August 2008), which includes that guidance, focus on the concept of EBO. In the former, Mattis spends half a page on Israel's 2006 campaign to underline his point that EBO is a flawed concept that in effect impedes the development and conduct of joint operations.[4] Although he mentions other historical examples, the Israeli campaign remains his most prominent one by far. Thus, one can only assume that the general considers it a particularly good illustration of his point.

This article seeks to analyze the empirical foundation of General Mattis's conclusion regarding EBO as a military concept—not the concept of EBO itself. If that foundation is weak or even misguided, then the conclusion should undergo reassessment. Consequently, a finding that the Israeli campaign in 2006 does *not* provide sufficient empirical evidence of flaws in EBO justifies challenging General Mattis's assertions regarding that concept. The article, therefore, analyzes the basis of his critique to determine whether or not the latter includes the key issue at hand—the limitations of Israel's strategic thinking in this war.

The Analytical Basis of General Mattis's Critique

Although General Mattis acknowledges that "there are several factors why the IDF performed poorly during the war"—factors not related solely to EBO—he points out that "various post-conflict assessments have concluded that over reliance on EBO concepts was one of the primary contributing factors for [the Israelis'] defeat."[5] The "various post-conflict assessments" that Mattis cites in his guidance include (1) Avi Kober's article "The Israel Defense Forces in the Second Lebanon War: Why the Poor Performance?"; (2) Matt M. Matthews's paper *We Were Caught Unprepared: The 2006 Hezbollah-Israeli War*; and (3) the Winograd Report.[6] The analytical precision of these three assessments is therefore of great significance regarding the validity of the general's overall conclusion.

Professor Kober's interesting analysis of the war offers nine explanations of why the IDF performed so poorly in the Second Lebanon War: (1) "a late understanding that it was war"; (2) "adherence to post-heroic warfare" and its sensitivity to casualties; (3) "the erosion of the IDF's fighting standards due to policing missions" of the two intifadas; (4) "false Revolution in Military Affairs–inspired concepts"; (5) "the adoption of the notion of controlling instead of capturing territory"; (6) "a centralized logistical system"; (7) "poor generalship"; (8) "a hesitant and inexperienced political leadership"; and (9) "IDF dominance in decisions on military matters."[7] One of several important studies of this conflict, his article would prove useful to anyone striving to understand this war; nevertheless, one should note a few points. Although well written and covering a broad spectrum of factors, it undercommunicates the strategic dynamics of the war, including the Israeli-Lebanese dynamic, the domestic dynamics in Lebanon, and—most importantly—the limited strategic thinking in Israel regarding going to war. Kober does point out that Israel was slow to understand that this was a war, that the political leadership in Israel was inexperienced, and that a weak intellectual tradition existed (exists) within the IDF's officer corps; however, the limitations of Israel's strategic thinking, which should have been the centerpiece, do not play a predominant role in the article. This is not simply one of many mistakes of the war, but the key problem. Logically, the lack of any strategic guidance from the outset concerning what to achieve and how to achieve it greatly influenced the other factors. Furthermore, Kober does not clearly indicate how the concept of EBO stands out as a key problem of the war, instead pointing to a number of reasons for the IDF's difficulties. His conclusion includes, among other matters, a more general critique of a tendency towards overreliance on airpower, technology, network-centric warfare, and other conceptions dealing with a revolution in military affairs (RMA). As Kober notes, one should remain skeptical of having a force structure, training, and doctrine that reduce one's tactical, operational, and strategic flexibility. But nowhere in this article does one find a basis for isolating the concept of EBO, pulling it out of the context of other variables far more important to the overall

outcome, and putting it on display as "one of the primary contributing factors for [the Israelis'] defeat," mentioned above.

Based on the number of quotations and footnotes in General Mattis's guidance, the paper written by Matthews, *We Were Caught Unprepared*, appears to have influenced him the most. Published by the US Army Combined Arms Center, this piece—a far weaker and less balanced analysis than Professor Kober's article—takes few prisoners in its contempt for EBO. In his foreword, Col Timothy R. Reese argues that "his [Matthews's] research convincingly argues that the Israeli reliance on poorly understood and controversial Effects-Based Operations (EBO) and Systemic Operational Design (SOD) warfighting theories, and a nearly singular dependence on air power, were root causes of Israeli problems."[8] On occasion, the author's language seems normative to the extent that it borders on becoming less serious as an academic analysis: "For six years, the IDF conducted a counterinsurgency campaign against the Palestinians and developed a doctrine rooted in EBO and high-tech wizardry."[9] As noted by Matthews, General Mattis chooses to quote Israeli major general Amiram Levin, who evidently considers Israel's new (EBO) doctrine "in complete contradiction to the most important basic principles of operating an army in general . . . and is not based upon, and even ignores, the universal fundamentals of warfare. . . . This is not a concept that is better or worse. It is a completely mistaken concept that could not succeed and should never have been relied upon."[10] The general also cites Matthews's analysis: " 'EBO proponents within the IDF came to believe that an enemy could be completely immobilized by precision air attacks against critical military systems' and that 'little or no land forces would be required since it would not be necessary to destroy the enemy.' "[11] To some extent, this quotation illustrates the tone of Matthews's paper, a land-centric analysis published by the US Army Combined Arms Center in order to provide—in the author's words—"valid and important lessons for today's US Army officers."[12]

The author's study lacks the breadth and balance necessary to give an adequate account of the overarching political and military dynamic

at play, a fact reflected in the titles of its four chapters: "The 2000 Israeli Withdrawal from Lebanon"; "Planning for the Second Lebanon War"; "Opening Moves: 12 July to 16 July"; and "The Ground War: 17 July to 14 August." This deficiency paves the way for overstating the role of EBO. Whereas Kober pointed out the lack of strategic thinking and guidance as one of several factors that caused the problems of the IDF during the war, Matthews hardly touches upon that matter. In other words, his analysis does not include the fundamental issue of a political and military leadership that neither provided a military strategy for the war nor adequately identified what it wanted to accomplish. Subsequently, there are no discussions about how these pivotal factors interplayed with a number of other matters that this paper chooses to emphasize—a fundamental analytical error that severely reduces the validity of its conclusions.

Moreover, one encounters some confusion as to whether the problem is the concept of EBO or its proponents (an issue that this article addresses later on)—in this case, Gen Dan Halutz, the IDF chief of staff, who appears to be the enfant terrible—and as to where the concept of EBO borders the more general features of various other concepts and improved technology. Do standoff precision weapons, increased reliance on technology, enhanced belief in airpower in general, network-centric warfare, RMA, systemic operational design, and other factors at play in this war necessarily adhere to the logic of EBO? Matthews's work seems more a general critique of "a past way of thinking" that tends to overfocus on these issues at the expense of ground forces and the need to dominate the battlefield. Although parts of this notion have some appeal, the analysis would have benefited from a more precise and balanced discussion of the concept of EBO, with its inherent strengths and weaknesses. A certain lack of intellectual honesty seems inherent in the way the author chooses to approach this concept—an approach that reduces the analytical precision, which in turn diminishes the validity of its conclusions. Granted, his paper includes interesting passages and valid arguments on a number of points, but its

overall structure renders the piece largely unsuitable as an empirical case study that categorically denounces the concept of EBO.

General Mattis's use of the Winograd Report as a basis for his assessment of EBO reveals a somewhat selective use of information. As this article shows, the key finding of the report is the limited strategic thinking within the Israeli government and IDF leadership when going to war—not a stinging critique of the concept of EBO. The Winograd Report points out that Israel entered this war without adequately thinking through what it wanted to achieve and without a thorough understanding of the context at hand—a premature and rash decision that "limited Israel's range of options."[13] The report concludes that Israel went to war with "serious failings and flaws in the lack of strategic thinking and planning" and with "serious failings and shortcomings in the decision-making processes and staff-work in the political and the military echelons and their interface"; further, it found "serious failings and flaws in the quality of preparedness, decision-making and performance in the IDF high command."[14]

The Interim Winograd Report is particularly harsh in its evaluation of the three main figures of the war: Prime Minister Ehud Olmert, Minister of Defense Amir Peretz, and General Halutz, the IDF chief of staff.[15] Although the report states that many others share responsibility for the mistakes of this war, it points out that "the decision to respond with an immediate, intensive military strike was not based on a detailed, comprehensive and authorized military plan, [or] based on careful study of the complex characteristics of the Lebanon arena."[16] The report concludes that had the three "acted better—the decisions in the relevant period and the ways they were made, as well as the outcome of the war, would have been significantly better."[17] It blames the prime minister for having "made up his mind hastily, despite the fact that no detailed military plan was submitted to him and without asking for one" and for not systematically consulting others "despite not having experience in external-political and military affairs."[18] The report offers even harsher criticism of the minister of defense, who "did not have knowledge or experience in mili-

tary, political or governmental matters. He also did not have good knowledge of the basic principles of using military force to achieve political goals," leading to a somewhat devastating conclusion: "In all these ways, the Minister of Defense failed in fulfilling his functions. Therefore, his serving as Minister of Defense during the war impaired Israel's ability to respond well to its challenges."[19] Additionally, it declares that the chief of staff was unprepared "for the event of the abduction despite recurring alerts" and that, among other things, "he responded impulsively" when the abduction happened.[20] In effect, Israel's own Winograd Commission labeled its prime minister, defense minister, and IDF chief of staff incompetent in managing the war.

The Limits of Israel's Strategic Thinking

According to the Winograd Report, the lack of adequate handling of the war left Israel with only two main military options "with its coherent internal logic, and its set of costs and disadvantages":

> The first was a short, painful, strong and unexpected blow on Hezbollah, primarily through standoff fire-power. The second option was to bring about a significant change of the reality in the South of Lebanon with a large ground operation, including a temporary occupation of the South of Lebanon and "cleaning" it of Hezbollah military infrastructure.[21]

In other words, more adequate handling would have increased the number of options, but this was not the case, so the two alternatives represented the only choices. Logically, the final selection depended on what one wanted to attain—something not clear at the time.

Few Israelis—if any—wanted to invade Lebanon and stay there long enough to root out the Hezbollah threat to Israel's northern border. They did not want to reengage in a painful occupation like the one from 1982 to 2000—at least not on the basis of two abducted soldiers. So even a large ground operation would have had limited strategic ambitions. The Winograd Report is likely right in its assessment that, in reality, the handling of the war left Israel with only two principal military options and that even

the most hard-hitting military option was in effect reduced to "temporary occupation of the South of Lebanon and 'cleaning' it of Hezbollah military infrastructure," mentioned above. In fact, Gen Eyal Ben-Reuven, former battalion commander in the First Lebanon War (1982) and deputy commander of Israel's Northern Command in 2006, points out that

> when we withdrew from Lebanon in 2000, we went out from a weak position. We feel that we went out because we did not know what to do. We had casualties every year, and we did not have particularly clear targets and objectives for that, except to keep the border. The hatred of our forces in Lebanon was increasing. We spent 18 years in Lebanon. As the deputy commander of Northern Command in 2006, I understood very well that we could not stay in Lebanon. That is why my planning was to make the operation very short, with a lot of forces, with limited objectives to achieve.[22]

The same can be said of a limited operation using airpower and standoff firepower. It would surely not root out Hezbollah as a future threat to Israel by targeting its forces in southern Lebanon. Before the war, the Israeli Air Force pointed out that it could not operate effectively against the short-range Katyusha rockets.[23] The tactical use of airpower against Hezbollah operatives in southern Lebanon would have been of limited assistance.[24]

Still, one could probably argue that if Israel sought to reestablish its breached deterrence posture by raising the more general cost to both Hezbollah and the Lebanese community at large, then the relevance of airpower would increase significantly.[25] General Ben-Reuven argues along those lines: "If you ask me about the parameters of this war, we killed more than 700 Hezbollah soldiers/terrorists, and we explained to all of them that if you kidnap Israeli soldiers, we become 'crazy' and we will fight you with all we've got."[26] Similarly, according to General Halutz, "The concept was to react beyond the expectations—a lot beyond, dramatically beyond—to cause [the enemy] damage so that he would not dare to do something like this in the future. I wanted to charge him a price that makes him think 10 times next time before he will dare to violate the status quo."[27] This was not clear when Israel went to war and was hardly agreed upon as its strategy after the war.

Furthermore, the choice of military means and concepts—as well as the particular combination to use—depends on many factors, predominant among them providing political guidance and direction for realizing the objectives and having a military strategy that chisels out the objectives the military should seek to attain. The lack of such direction significantly reduces the war effort's chance of succeeding, regardless of one's preferred military concept. By and large, that is what happened in Israel's war against Hezbollah in 2006.

Gen Giora Eiland, head of Israel's National Security Council until shortly before the war, argues that establishment of the strategic goal for the operation *should* have governed Israel's response:

> The strategic goal is the answer to the most important question, What do we want to achieve? The second important question is, What do we have to do in order to achieve the strategic goal? Finally you have to ask yourself, How do we plan to execute the mission in order to achieve the goal? Now, these questions need to be answered in a very clear way at the strategic level and then conveyed to the military level. Sadly, this process was missing in this particular situation.[28]

In line with the Winograd Report's conclusions, Eiland maintains that "real, serious, and professional discussions on how to respond to the abductions did not take place in the Israeli government that day." In reality, says Eiland, the government simply decided to "begin to attack Lebanon or to attack *in* Lebanon, and [determine] what to do later. Such a decision at the political level makes it almost impossible for the military level to develop a clear and well-coordinated military plan."[29]

Similarly, the Winograd Report concludes that "this outcome [failure to win the war] was primarily caused by the fact that, from the very beginning, the war has not been conducted on the basis of deep understanding of the theatre of operations, of the IDF's readiness and preparedness, and of basic principles of using military power to achieve a political and diplomatic goal."[30] Thus, the key factors pointed out by the Israelis themselves do not immediately seem to include any specific military concept, but an approach to the conflict—on both the political and the military strategic levels—that simply proved inadequate

and largely incompetent. Regarding the extent to which the IDF relied on the EBO concept, General Eiland points out that

> EBO was not the problem. All this kind of talk shows a fundamental lack of understanding because the use of concepts—air force versus ground forces or other means—depends on a large number of variables. So it is not a matter of concept; it is a matter of how to choose the right combination of answers depending on terrain, on the enemy, and on a number of other circumstances. In 2006 this was not the main problem—the main problem was the lack of strategic understanding at the political level, which did not provide the answers to the key questions one should have asked and answered: What are the strategic goal(s) for this operation? What is the mission to achieve this goal? And how should this mission be executed in order to achieve the strategic goal(s)? Without this, a sound military plan could not be—and was not—devised by the IDF.[31]

A general Israeli reluctance to reengage militarily on the ground in Lebanon and the perceived quagmire this action would entail constitute one of the key factors shaping this operation. General Ben-Reuven says that a very important shaping factor of the war was the fact that when the IDF pulled out of Lebanon in 2000, "the Israeli society and Israeli politicians did not want to hear the name *Lebanon* again—they did not want to reengage and go back there." Thus, when the abduction took place, the desire to call up reservists and invade the southern part of Lebanon with a large ground force was obviously not a first choice.[32] Rather, as General Halutz explains, "Ground forces became the last choice. We certainly would not want to retry our Lebanese experience. In fact, the [Israeli] government explained to me in no uncertain terms from the start that they were not interested in a ground campaign in Lebanon."[33] Both generals note a certain risk aversion as well as a more general perception among politicians and Israeli society at large that casualty numbers were a critical factor that had to be managed and kept to a minimum. Indeed, this factor influenced the political and military approach to the war. The costs of a ground invasion in terms of one's own casualties had to be compared to the relative cost of the abduction and the potential gains from a limited ground operation.[34]

From this perspective, Israeli politicians appear to have been more inclined to use airpower. General Ben-Reuven argues that "when Gen Dan Halutz told our prime minister that he had a new concept for conducting the war from the air without ground forces—without casualties or with much fewer casualties—of course, the political echelon liked it very, very much."[35] General Halutz counters that such a perception simply is not true, claiming that nothing like that was ever communicated to the prime minister or to anyone else. More generally, however, Halutz admits that "airpower has become more important—at least in the Israeli society—because the Israeli society has become more sensitive to casualties. More sensitivity to casualties means that you have to use elements and means that by their nature are less exposed to massive casualties."[36] He declares that the notion of Israel's adopting the US-founded EBO concept is flawed, saying that a close relationship exists between the US Air Force and the Israeli Air Force but that the Israelis have adopted their own approach to war, based on their own unique experiences during the past decades:

> *Effects-based operations* is an inadequate term which does not describe properly our approach war or the way I would conduct wars. EBO is not only related to airpower. EBO can be related to land or naval forces as well. Airpower is one of the tools that may serve the theory of EBO, but rather there are EBO elements in the way we approach war. I don't think that we have adopted EBO—we developed parts of it to the needs of the Israeli theater, to the Middle East theater, but that is all.[37]

Like General Halutz, General Ben-Reuven stresses that the main problem was not EBO:

> Unfortunately, we had a trio at the strategic level that simply was not up to the job. We had a prime minister that had too little experience in national security issues, a defense minister that knew nothing about war in general and the Lebanon theater in particular, and a chief of staff that relied too heavily on airpower. I absolutely support the Winograd Report, which points out the need for better decision making at the strategic level and the need for a better and more professional staff that can contribute to this end.[38]

Conclusion

Although one may have many reasons for criticizing the concept of EBO, singling out the Second Lebanon War as a good empirical case study to illustrate the point is misguided. If, as this article has demonstrated, the empirical foundation of those claims lacks substance, that fact should have implications for the future debate on this issue. This article indirectly asked whether serious flaws in the way one approaches war more generally—instead of the EBO concept—represent the key problem of the past two decades. The wars that occurred during that time (Bosnia, Kosovo, Afghanistan, Iraq, and Israel) appear marked by significant defects in the most basic premise for utilizing force: sound military strategic thinking. In his notable article "The Lost Meaning of Strategy," Prof. Hew Strachan observes that "the state . . . has an interest in reappropriating the control and direction of war. That is the purpose of strategy. Strategy is designed to make war useable by the state, so that it can, if need be, use force to fulfil its political objectives."[39] Debating EBO without acknowledging the more general challenges of strategic thinking in the wars portrayed by General Mattis and others as empirical evidence of the flaws of that concept is somewhat intellectually dishonest and analytically misguided. Including the overarching issues of military strategy would prove beneficial to both the EBO debate and—more importantly—the more general discussion about the utility of force. ✪

Notes

1. Gen J. N. Mattis, commander, US Joint Forces Command, to US Joint Forces Command, memorandum, 14 August 2008, 1, http://smallwarsjournal.com/documents/usjfcomebo memo.pdf. This article will not enter the debate about what EBO is or should be; rather, it addresses General Mattis's methodology of assessing the concept—not the concept as such. It therefore considers a general definition of EBO adequate for the reader, specifically the one provided by US Joint Forces Command since, as commander, General Mattis presumably had it in mind at the time he wrote his memorandum: "[EBO is] a process for obtaining a desired strategic outcome or effect on the enemy through the synergistic and cumulative application of the full range of military and non-military capabilities at all levels of conflict." Lt Col Allen W. Batschelet, "Effects-Based Operations: A New Operational Model?," strategy

research project (Carlisle Barracks, PA: US Army War College, 9 April 2002), 2, http://www.iwar.org.uk/military/resources/effect-based-ops/ebo.pdf.

2. "USJFCOM Commander's Guidance for Effects-Based Operations," in Mattis, memorandum, [3–7].

3. "Winograd Committee Submits Final Report," Israel Ministry of Foreign Affairs, 30 January 2008, point 19, http://www.mfa.gov.il/MFA/MFAArchive/2000_2009/2008/Winograd+Committee+submits+final+report+30-Jan-2008.htm?DisplayMode=print. After the war, the Israeli government appointed a commission chaired by retired judge Eliyahu Winograd to investigate and draw lessons from the Israel-Hezbollah war. The Commission of Inquiry into the Events of Military Engagement in Lebanon 2006 issued its final conclusions in January 2008.

4. Mattis, memorandum, [4].

5. Ibid., 2.

6. Avi Kober, "The Israel Defense Forces in the Second Lebanon War: Why the Poor Performance?," *Journal of Strategic Studies* 31, no. 1 (February 2008): 3–40, http://www.tandfonline.com/doi/pdf/10.1080/01402390701785211; Matt M. Matthews, *We Were Caught Unprepared: The 2006 Hezbollah-Israeli War*, Long War Series Occasional Paper 26 (Fort Leavenworth, KS: US Army Combined Arms Center, Combat Studies Institute Press, 2008), http://www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA477851; and "Winograd Committee Submits Final Report."

7. Kober, "Israel Defense Forces," 3.

8. Matthews, *We Were Caught Unprepared*, iii.

9. Ibid., 3.

10. Mattis, memorandum, [4]. See also Matthews, *We Were Caught Unprepared*, 62.

11. Mattis, memorandum, [4]. See also Matthews, *We Were Caught Unprepared*, 24.

12. Matthews, *We Were Caught Unprepared*, 3.

13. "Winograd Committee Submits Final Report," point 13.

14. Ibid., point 12.

15. The Interim Winograd Report was released on 30 April 2007. "Summary of the Winograd Committee Interim Report," *Jerusalem Post*, 30 April 2007, http://www.jpost.com/Israel/Article.aspx?id=59701.

16. Ibid., point 10.

17. Ibid., point 11.

18. Ibid., point 12.

19. Ibid., point 13.

20. Ibid., point 14. The term *abduction* refers to the incident on 12 July 2006, in which a patrol of two Hummers with seven IDF soldiers was attacked by Hezbollah on the Israeli-Lebanese border. Ehud "Udi" Goldwasser and Eldad Regev were abducted by Hezbollah, while three other soldiers were killed during the abduction. Two soldiers were injured during the attack but managed to escape. This event triggered the so-called Second Lebanon War (2006). See Amos Harel and Avi Issacharoff, *34 Days: Israel, Hezbollah, and the War in Lebanon* (New York: Palgrave Macmillan, 2008), chap. 1, 1–15.

21. "Winograd Committee Submits Final Report," point 13.

22. Gen Eyal Ben-Reuven, interview with the author, Tel Aviv, Israel, 29 June 2010.

23. Kober, "Israel Defense Forces," 24.

24. For information on Hezbollah tactics to avoid Israel's asymmetric advantage in airpower, precision-guided munitions, and standoff firepower, see Brig Gen Itai Brun [IDF],

"'While You're Busy Making Other Plans'—The 'Other RMA,'" *Journal of Strategic Studies* 33, no. 4 (August 2010): 535–65.

25. For further reading on Israel's strategy on the eve of war, see as a starting point Dag Henriksen, "Deterrence by Default? Israel's Military Strategy in the 2006 War against Hezbollah," *Journal of Strategic Studies* 35, no. 1 (February 2012): 95–120.
26. Ben-Reuven, interview.
27. Gen Dan Halutz, interview with the author, Tel Aviv, Israel, 24 June 2010.
28. Gen Giora Eiland, telephone interview with the author, 22 December 2009.
29. Ibid.
30. "Winograd Committee Submits Final Report," point 19.
31. Eiland, interview.
32. Ben-Reuven, interview.
33. Halutz, interview.
34. Ben-Reuven, interview; and Halutz, interview.
35. Ben-Reuven, interview.
36. Halutz, interview.
37. Ibid.
38. Ben-Reuven, interview.
39. Hew Strachan, "The Lost Meaning of Strategy," *Survival* 47, no. 3 (Autumn 2005): 49.

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Geopolitics *versus* Geologistics*

Lt. Col. Harry A. Sachaklian

PERHAPS the most striking manifestation of the growing consciousness of geography in the United States has been the acceptance of the word "geopolitics" into the modern lexicon.

Yet, a careful examination of the origin of the term, the uses to which it has been put, and the apparent impossibility of arriving at a satisfactory definition of this word, causes serious doubt as to its applicability to the conditions that face the world today. It would appear reasonable to assume that the usefulness of the term and the concept ended with the defeat of Hitler's Germany.

Geopolitics is a word of German origin. It was conceived in the German language to reach a German audience and was dedicated to the proposition that Germany deserved more of the wealth of the world than it then possessed. It is an empty quibble to point out that Rudolf Kjellén, in whose writings the word first appeared, was a Swede. Lord Haw Haw was indisputably an Englishman but no one has yet suggested that his concepts were anything but German.

To emphasize further the German origin of the word, it must be understood that Kjellén coined the word *Geopolitik* in 1917 as one of a group of five such words. They were: *Geopolitik* (geography and the state), *Demopolitik* (population and the state), *Oekopolitik* (economic resources of the state), *Sociopolitik* (social structure of the state), and *Kratopolitik* (governmental organization).

The Germans, under the guidance of Haushofer, chose to consider *Geopolitik* as being all-encompassing and they virtually ig-

*Reprinted from *Air University Quarterly Review* 1, no. 2 (Fall 1947): 53–63.

nored the other classifications. It is a matter of record that Kjellén was a little disturbed at this partial acceptance of his concepts, but since his concepts found favor only in Germany, he had little further influence on subsequent developments.

From the moment this word was seized by the Germans, it became the best descriptive term of the guiding philosophy of German neoimperialism. It was designed and developed as a guide to those statesmen and military men in whose hands the destiny of Germany rested. The connection between Haushofer and Hitler was close, enduring, and well publicized. The principal use of the term by the German state was to salve the conscience of the German people for murders, past, present and future. Its success as a conscience salve is measured by such institutions as Buchenwald. Its success as a concept is measured by the state of Germany today.

The term *Geopolitik* was not generally known in the United States until about 1937. At that time, American journalism learned about Haushofer and his *Institut fur Geopolitik*. With typical journalistic fervor and in true Sunday-supplement style, large segments of the American public were introduced to this mystic, geographic alchemy, this invincible blueprint for world conquest.

Despite the thoroughgoing criticism of *Geopolitik* by numerous American geographers, the war-induced hysteria caught on and a number of books were published explaining the principles of this new "science." Certain educators and educational institutions responded to this stimulation and began teaching something called *geopolitics* in American universities.

An examination of the existing literature on geopolitics reveals certain significant things. In the first place, practically all American

books on the subject coincide in their condemnation of the German view of it and call the German view a perversion of geopolitics. In all honesty, it must be argued that the originators of a term or concept have the sole right to define and delimit the term or concept they originated. If American authorities refuse to accept the German definition of a German word, then they, the American authorities, are guilty of perversion if they continue to use the term or concept but ascribe a different meaning to it.

In the second place, the American authorities who choose to use the word are by no means agreed as to the different meaning or the variation from the original theme they believe is most applicable. Though there are as many different shades of interpretation as there are authorities on the subject, American use of the word, geopolitics, can be classified in general into three major groupings:

a. Approximately the German view, namely, geographical determinism, or as one German writer put it, "the geographical conscience of the state."

b. A synonym for political geography.

c. A general term to indicate planning for national security.

With meanings as widely varied as those listed above, serious doubt is reflected on the value of the word itself. A word that has meaning only to the speaker is no better than gibberish. A word used as a synonym should clarify and not obfuscate.

In the third place, the mere examination of the dates of publication of American books on geopolitics indicates a remarkable coincidence. People simply stopped writing about geopolitics when Germany succumbed. Books on geopolitics reached their peak of profusion between 1942 and 1944 and then fell off sharply

to nothing. An intensive search for recent reference matter on the subject reveals that only two obscure articles in an obscure journal were written on geopolitics since 1945. Yet, the long established and respected fields of geography, political geography, economic geography and political science continue to exhibit healthy activity in research and discussion.

In the fourth place, all texts exhibit basic weaknesses by failure to incorporate adequately two prime factors, the effect of Air Power and the even greater effect of social, ethical and cultural values on geopolitical concepts.

The contradiction of Air Power to one of the basic themes of geopolitics, the heartland theory, was posed on the very day the heartland theory was announced. It was not adequately answered then and has not been adequately answered to this day.

The concepts of morality and culture have been opposed to deterministic theories since mankind emerged from the jungle. Geopolitics in some ways is a reaction against Marxism, but geopoliticians make the same mistakes as the Marxists. Instead of economics, space becomes the absolute yardstick. Geographical determinism is as void of moral evaluation and restraint as is economic determinism. Geopolitical materialism states that space and soil is the determining factor rather than any independent Man. This is as much as saying that mankind acts as does either the lemming of the frozen North, that responds to some mystic urge beyond its comprehension and dashes headlong into the sea, or the army ant of South America, that periodically gathers its fellows and sets off across country devouring everything in its path, again in response to some mystic urge beyond its comprehension.

In the fifth place, many of the American books on geopolitics, though vehement in the denial of determinism in geography, insist on perpetuating the myth that geopolitics is dynamic. This is an incredible contradiction, since if it is dynamic it must have momentum and if it has momentum it must be deterministic.

There are other things about geopolitics that make it even less desirable as a guide to the military and political leaders of the United States.

Geopolitics is essentially pessimistic. It assumes that the wealth of the world is limited to that which is now discovered and that peoples can acquire more wealth only by seizing wealth belonging to others. This is obviously as erroneous as the "Mature Economy" theory of the early New Dealers or the "Share the Wealth" doctrines of the Huey Long group.

Such concepts are not new and have been disproved time and again by visionaries who, looking into the future and finding it good, kept right on adding to the wealth of the world.

For example, geopolitics considers the world ocean either as a separation of land masses or as a connection between land masses but, in any event, not as a source of wealth except possibly for sea flora and fauna. Yet the ocean itself as well as the bottom of the ocean is an almost completely unexplored and unexploited source of wealth. Today, the extraction of magnesium from sea water is commonplace. Today, the oil resources of the continental shelf appear within reach. Who knows what else tomorrow?

Geopolitics is concerned only with the state. It assumes that the state is the beginning and the end of everything. It traces this

concept back to Aristotle, as if Aristotle were the beginning and end of all reasoning. Aristotle is quoted by geopoliticians as saying, "The state is natural to man, and man is by nature a member of the state." From this hypothesis his reasoning progresses as follows: nature always works for the best; what is best, therefore, is the product of nature. The state, as a product of nature, is the *summum bonum,* the best form of life to which man can aspire.

In the days of the Spanish Inquisition, it was worth a man's life to quarrel with the doctrines of Aristotle. The best place for geopolitics would appear to be in a museum along with a bust of Aristotle and relics of the Spanish Inquisition, for both Aristotle and the geopoliticians completely ignore the fact that the state is a man-made institution and, as such, is equally subject to the imperfections of everything that is man-made. In ignoring the fact that the state is man-made, the geopoliticians overlook the possibility that man may change or even abandon that which he has made. Instead, the geopoliticians substitute the divine right of states for the long since exploded divine right of kings.

The German geopoliticians even went so far as to say that the state is a biological entity and, as such, is subject to Darwin's laws. This is like saying that the Germans are a separate species and can not breed with other nationalities. The occupation armies in Germany are proving the fallacy of such belief, if proof is necessary.

Perhaps the most poisonous inconsistency of geopolitics is that it poses instability as the fundamental principle of international relations. It sees but one certainty, everlasting struggle, and urges states to seize what they can before some other state seizes them. When states carry out this recommendation they succeed only in verifying a hypothesis that otherwise is not necessarily true, for if

all states refused to respond to this urging, everlasting struggle no longer would appear certain.

In any event, if the everlasting struggle is for wealth, it should be apparent that the process of seizure consumes wealth rather than adding it. The net result of any aggression is to reduce the wealth of the world, since even the preparation for aggression diverts wealth. "Guns instead of butter," the Germans said. They now have neither.

In the last analysis, geopolitics is nothing more nor less than a rationalization of why people must be killed, based on a reprehensible refusal to admit that people can be fed.

The quiescent and tacit acceptance of geopolitics on the part of the military services appears to be sciolism in its purest form. It is reminiscent of the fable of the king who hired two rascals to make him a suit of clothes so finely woven and so exquisite in texture that only an honest man could see it. According to the fable, these early-day confidence men extracted large quantities of valuables from the king and sat for days weaving imaginary cloth from imaginary thread. Naturally, neither the king nor his courtiers would admit to dishonesty by exposing their failure to see the beauty of the material. The author of this article hopes he is playing the role of the child who, on seeing the king at last dressed in his imaginary finery, said in a loud, clear voice, "But mother, the king has no clothes on at all!"

Part of the reason for the acceptance of the term geopolitics may be the lack of a better one. There appears to be a definite need for an all-encompassing term to describe the relationship of people and governments to environment. It is argued herein that geopolitics is not apt and does not fit for, among many others, the following reasons:

a. The originators of the term have the sole right to define the term they originated and their definition is largely unacceptable outside of Germany.

b. The term has been used as a justification for aggression.

c. The term ignores all ethical or moral values.

d. American use of the term is very loose and unscientific in that it does not mean the same thing to all people.

e. American use of the term appears to be rapidly dying out and if retained for use by the military would end up being a purely military term.

f. The entire concept is permeated through and through with assumptions that suit the purposes of bandits far better than civilized human beings.

The accumulation and interpretation of geographical data for military, political, economic and social purposes are both valid and necessary. The term heretofore partly used to describe this process is subject to misinterpretation and obviously incapable of scientific definition. A new term seems to be required.

The term *geologistics* is offered. This word is derived from the Greek, *geo*, meaning the earth or pertaining to the earth, and *logistikos*, meaning calculation or accounting. Geologistics, then, would literally mean the calculation of the earth and its resources.

Geologistics could properly be defined as being an inclusive term used to describe the process of concentrating all knowledge for the purpose of utilizing the resources of the world for the welfare of mankind.

Geologistics would not necessarily be connected with states as such but would deal directly with the relationship of human beings to environment. Geologistics would thus avoid the intellectual pitfalls of geopolitics wherein German (or other) "scientists" can say, "geopolitical maxims are valid only if they operate in favor of the Reich (or other nation)."

There would appear to be three major phases of geologistics:

a. The identification of resources.

b. The inventory of resources.

c. The technique of placing resources in motion to attain human aims.

Identification of resources is the function of the research scientist. His work in the past fifty years in adding to the list of things that are of use to man is one of the most remarkable achievements in all history. Uranium, plutonium, radium, and the products of organic chemistry such as the various coal-tar derivatives and the range of products derived from cellulose, all add up to an imposing list. Yet, the most significant conclusion to be reached from this half-century of investigation is that the true value of the earth and its component materials is limited only by the ability of men to comprehend it.

Having determined that a substance is of value to mankind, the next logical step is the determination of where and in what quantities this substance exists. Even to this day, the world has never been adequately surveyed to determine the location and quantities of such widely recognized and utilized resources as iron and oil. In North America alone, huge areas remain comparatively unknown in respect to the mineral and other resources that may

exist. In recent years clues to the existence of tremendous quantities of oil have been discovered at the northern rim of the North American continent. In northern Laborador [*sic*], large deposits of high-grade iron ore have been discovered, with the true extent of the resources there yet to be determined. Recent newspaper accounts credit the Soviet Union with a plan to make a complete survey of their own natural resources. This is geologistics in action.

The third step, after identifying and locating resources, would be to place them in motion. Resources lying inert are not resources; they must be utilized. They must be utilized profitably or the system breaks down. Profit can be measured in terms of the value of resources expended to acquire the new resources. If expenditure exceeds return, obviously wealth has not been added to the sum total available to the world. All resources must be carefully utilized to avoid waste, since waste is an expenditure of resources without return and consequently the waster is depriving the world of wealth otherwise available to it.

Human resources are not always so highly prized as material resources. This is the gravest error of all, since human resources are the only ones capable of placing other resources in motion. It must be one of the prime functions of geologistics to point out that human resources are the most important of all, and that careful utilization of these resources is the paramount key in adding to the wealth of the world. Human life is the only resource that is beyond measurable value.

A geologistical study made on a world-wide basis would cast a new light on the attempts of states to achieve autarchy (economic self-sufficiency). It would indicate that no state, as presently constituted, can achieve meaningful autarchy without access to the

resources of other states. It would indicate that true world autarchy is unattainable without world domination by a single power, unless existing powers are able and willing to produce that which they are best qualified to produce and to forego production of items that are best produced elsewhere. It would indicate that existing powers might be willing to relinquish their dreams of complete autarchy if they knew for certain that they would not be deprived of essentials at the whim or prejudice of an alien state.

The value of geologistical study to the military and political leaders of the United States would be considerable.

If the world were studied as a logistical problem, conclusions would be reached that, in all probability, would vary considerably from a study of the world as a political problem. The difference is akin to the old intelligence admonition to study capabilities instead of intentions. The political steps a nation takes are strictly in the category of intentions and as such are transitory and eminently subject to change. The very fact that a nation has learned that its intentions are suspect can cause it to change its intentions. A changing national capability is as obvious as the rising and the setting of the sun to the trained observer.

The environmental and geographic factors that have a bearing on national logistics or national capability are fixed and firm and are capable of scientific measurement. Although national power, like individual power, is composed to a considerable degree of certain intangibles that do not lend themselves to statistical expression, there is an ultimate beyond which national effort cannot be exercised. The intangible factors mentioned before will determine not the ultimate, but how close to the ultimate the specific nation

can come. The requirement, when considering a rival nation, is to determine the ultimate and then base judgement on the assumption that the ultimate will be reached. In war, the requirement is to render the nation in question incapable of exercising to the utmost its latent or potential power. The requirement, when considering one's own nation, in peace or in war, is to determine how this ultimate can best be reached.

There would appear to be ten general categories of environmental and geographic factors that must be thoroughly studied before the ultimate expression of a nation's power can be assessed. They are: (1) The Land Mass, (2) Water Areas, (3) Climate, (4) Political, Economic and Social Organization, (5) Manpower Resources, (6) Agricultural and Forest Resources, (7) Mineral Resources, (8) Transportation Capabilities, (9) Fuel and Power, (10) Industrial Development.

By making such studies a basic part of military and political knowledge, the nation can best determine the course of action it must take to accomplish the aims of its people. This course of action by no means needs to be armed conflict. In fact, if such a study were made by the United States today, it would probably indicate that the aims of the people of the United States, including relative security, could best be accomplished by the better development and utilization of those resources now available to the United States. It might also indicate that certain resources not now available to the United States in sufficient quantities could probably be acquired at once, at the best possible terms.

Geologistics would teach that the most practical step a free people can take to increase its own security is to add to the wealth of the world. The farther away from stark hunger the world travels, the less attraction and control tyranny can have. Tyranny fears

prosperity, since hunger is its principal weapon. The best, the most practical kind of power politics for the modern world is to use power to create world prosperity. This means trading with and taking from the world. This means *quid pro quo*, something for something. Such is the essence of geologistics.

The need for another concept of the relationship of men to one another and to the world in which they live is more than urgent; it is the most important feature of modern times. World union of some form or another seems to be the alternative to eternal strife. Geopolitics produced a blueprint for world union by world conquest. It failed, as has every previous attempt to conquer the world.

Modern science has produced weapons and forces that might appear to make world conquest feasible. Yet, it is a basic law of physics that force creates counterforce. World conquest would be meaningless if the world conqueror had nothing but radioactive rubble over which to rule. Perhaps a study of geologistics will produce a practical road to world union based on something other than force and conquest.

Let us understand once and for all that the human will cannot be conquered by force and controlled in perpetuity by penalties and reprisals. The human will can be won only by sincere motivation and deep, spiritual perception. Deterministic theories cannot supply the necessary motivation and certainly lack the necessary perception.

The best answer to an idea is a better idea. The best answer to theory is demonstration. Germany has demonstrated that the concepts of geopolitics are truly the concepts of narrow-minded fatalists and offer nothing but more despair to a despairing world.

The world has demonstrated throughout its history that when hope fades, progress ceases. The United States has demonstrated that the concepts of geologistics are the concepts of hope and, in adhering to the concepts of hope, the United States can offer hope to the world.

Let us not abandon the concepts that have served us well. Instead, let us work to correct the lack of balance we find in our own society and, by so doing, demonstrate our continuing faith in our own concepts. If we look into the future with the intention of adding to the wealth of the world, we will find the future good.

Unless we maintain clearly adequate Air Power in being, no matter at what sacrifice of goods and treasure, all else may well be futile.

Major General Muir S. Fairchild,
in graduation address at the
Air University (4 June 1947)

Lt. Col. Harry A. Sachaklian, instructor in the Logistics Division of the Air Command and Staff School, graduate of the Army-Navy Staff College, was Air Logistics Member of the Joint Plans Staff, Allied Force Headquarters.

We encourage you to e-mail your comments to us at aspj@maxwell.af.mil. We reserve the right to edit your remarks.

TOWARD A SUPERIOR PROMOTION SYSTEM

I read "Toward a Superior Promotion System" (July–August 2012) with interest and applaud Maj Kyle Byard, Ben Malisow, and Col Martin France for taking on one of the traditional "third-rail" issues in our Air Force. I'm old enough to have lived through most of the article's examples (except the Continental Army part), so from that perspective I offer the following comments.

I wish the authors had attacked the Officer Evaluation System and the promotion system in separate articles. I spent some time on the recently concluded Military Leadership Diversity Commission, which took a long look at promotions across the services. We concluded that the promotion process worked, free of bias, because of (or in spite of) the products used to make the determination. However, the commission did recognize inherent flaws in the evaluation system(s), some of which the authors discuss. Given that bias, I offer a few observations on evaluations.

I am somewhat critical of the authors' starting point. It seemed to me that they focused on the individual officer and on creation of a very objective system to the exclusion of some of our old but important concepts. For example, building the Air Force team to carry out our mission in support of the country requires an evaluation system that acknowledges/enhances the importance of teamwork, provides individuals a chance to bloom where they are planted, yet remains unequivocal in performance assessment. Coupling this with the fact that we really do poorly at predicting what will be important 20–30 years down the road renders shortsighted any Officer Evaluation System that clearly values some "current" career fields above all others. Said another way, it pretty much guarantees the ascendance of us pilots to the critical senior leadership positions. That was helpful in my career advancement, but I'm

not convinced it is the model for a future that may shift the focus to personnel associated with intelligence, surveillance, and reconnaissance; remotely piloted vehicles; or mess kit repair—all of whom may wither on the vine until someone decides they are the new "combat pilots."

In the nuts and bolts of determining scores ("performance" x "position"), Major Byard, Mr. Malisow, and Colonel France are absolutely right about the central tendency of a "2" for performance (based upon the "1, 2, and 3" for "below, standard, and above," respectively). If we accept that, then despite what we might like, the assignment process takes center stage. Several questions arise regarding the pilots, maintainers, and even budgeteers looking to boost their score by going to Kunsan Air Base. Who will choose? Will they be allowed to extend since their promotion board is coming up? Will the Air Force award "fractional points" for air and space expeditionary force deployments (suppose it is outside the primary career field)? And so forth.

The article speaks to the value of a six-month reporting cycle and awarding points for training/education, but there are issues with this proposal. I was commissioned in 1969, yet I received only one controlled report (thank goodness it was a "1"). Given the oddities of time spent in training, days of supervision, and changes in rating officials, it probably turned out fortuitously, but it happened—and I'm sure I was not the only one. My point is that this is a workload on the rater and the administrative system. They will seek to circumvent the system, and ratees will try to "game" the system, perhaps even coming to understand that good performance is enhanced, not penalized, by a smaller number of reports. Experience also tells me that a three-year hiatus for an Air Force Academy instructor to earn a PhD is problematic. Certainly if he or she becomes department head or permanent professor, then it was all good. However, Colonel France can probably comment on how many don't make that particular cut. The problem is that big Air Force has never been able to value this level of educational investment, and I don't think the article's recommendations fix it. By the way, will "correspondence" courses receive the same value as "in-residence"

attendance? In the same manner, we show similar "devaluing" through the years for those assignments that draw from all career fields—for example, Air Force Academy air officers commanding, recruiters, and even Air Education and Training Command instructor pilots, to name a few. The Marine Corps makes a not-so-subtle acknowledgement of the importance of recruiting by having a separate promotion category for enlisted recruiters, designed to draw the best and brightest.

Finally, the article doesn't spend enough time on the rater and the difficulty of telling folks they are average. The rater's inability to look the ratee in the eye and deliver the bad news was part and parcel of the demise of the "controlled" officer effectiveness report. I wouldn't go so far as to call it an integrity issue, but in my view we have flunked the tough-love test, and I don't believe that what the authors suggest will fix it. They need to treat and evaluate the other services. Those of us who have experience in the joint arena and who served as raters have seen their systems—and they deserve a look. The Army resolves the "who contributes most to the mission" inequality by creating separate promotion categories. That service evidently knows how many leaders it needs to grow through "combat arms" and how many through "logistics/transportation," so it doesn't create the false choice by having them compete against each other in the promotion process. Yet, the Army still acknowledges their contribution to the team and rewards outstanding performance and potential. Perhaps something similar resolves the conflict we see among acquisition personnel, budget analysts, maintenance people, and pilots. Of course, one of the strong points of the Army's system is that it "grades" the raters. Those raters who seem unable to deliver the full spectrum of ratings lose some punch/credibility. Thanks for the opportunity to comment.

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TOWARD A SUPERIOR PROMOTION SYSTEM: THE AUTHORS REPLY

We would like to thank General Hopper for his critique of our article. We have received feedback from several people who raised questions and offered comments similar to his. We have attempted to address and summarize these as well as provide brief thoughts about them below. Please remember that the article is the presentation of a concept—not an operating instruction. Although the devil may be in the details, the absence of a checklist for every situation does not justify tolerating the current system when more effective alternatives are available and should be studied for possible implementation.

Most of the questions and comments involved very specific and limited situations:

- *How will the system value awards and decorations?* The current officer system does not directly consider awards. Whatever the officer did that merited the award will be reflected in his or her performance rating. To include the award itself in the rating process would amount to double-counting the actions that justified the award.
- *How does the system value in-residence versus correspondence training?* If the experience of in-residence training adds significant, definable value, then the score should be adjusted accordingly.
- *We need more data before we change the current system.* This suggestion is disingenuous since the system has been carefully honed to avoid leaving a trail of analyzable data. Almost all of the officers evaluated received the highest rating on all of their performance reports, and their performance is described in deliberately misleading code words. There is no objective way to quantify grading differences within the current promotion system—for example, between the use of the adjectives *great* and *awesome*.
- *Objections to the present system are anecdotal and come from disgruntled officers who were not promoted.* The Air Force has funded numerous surveys and studies that consistently identify the evaluation and

promotion systems as a primary source of discontent in the officer corps. Because the current process deliberately avoids defining standards or outcomes, only anecdotal evidence is available. The authors have observed that an overwhelming majority of officers have such anecdotes.

- *We do poorly at predicting what will be important 20–30 years down the road. Any Officer Evaluation System that clearly values some "current" career fields above all others is shortsighted.* The proposed system rewards people who seek higher-valued positions and perform well in them. Since we don't know what the specific technical requirements will be in the future force, these people would seem to be the types of officers we need.
- *How does the system properly appraise PhDs? The Air Force has never been able to value this level of educational investment, and I don't think your recommendations fix the problem.* If the service's leaders believe that they have a significant need for full-time PhD candidates, then they can place a high value on the position and let qualified people compete for it. If rating PhD program assignments highly is hard to justify, then that raises more fundamental questions.

We received several questions and comments such as the following ones, essentially saying, "It's hard to define what we value, so leave the system as it is."

- *We have conducted several panel reviews of the evaluation and promotion systems and found that they work fine.* Self-assessments of the system, performed by people who have been most successful in that system, suffer from significant credibility issues. Imagine the headline Royal Family Assesses Monarchy, Finds That It Is Working Well.
- *How would you address the phenomenon of certain officers earning a "halo" whereby the force of past success propels them toward lucrative assignments and a default top rating?* The performance rating will be for the period of evaluation only, justified by definable achieve-

ments within that period. "In the top 10 percent of all officers I supervise" is not a definable performance achievement.

- *How will performance reports handle six-month periods when duties are split between jobs?* In this situation, numerical ratings work very well. Among many other possible solutions, the value of the positions and the performance rating can be weighted by the portion of the evaluation period and averaged.
- *Would the commissioning source be considered?* If the officer's commissioning source has provided a qualitative advantage, then that advantage should be apparent in his or her performance and will be captured there.
- *You don't spend enough time on the rater and the difficulty of telling folks they are average. The rater's inability to look the ratee in the eyeball and deliver the bad news was part and parcel of the demise of the "controlled" officer effectiveness report.* This is a significant and deeply troubling problem but not an issue concerning the mechanics of the rating system.

Several people who left comments mentioned this last concern, which involves a puzzling question. The current system requires that supervisors give periodic feedback to their subordinates, in private and without keeping a permanent written record of it. If the actual quality of performance is difficult for supervisors to articulate and traumatic for their subordinates to hear, then shouldn't these expected effects on morale occur after these mandatory feedback sessions? Or are supervisors required to conduct them so that they deliberately mislead subordinates?

Almost all of these concerns already exist in the current evaluation system, and existing procedures address them. Those procedures may either be adapted to the numerical ratings or improved.

Two frequently repeated themes seemed to bear more weight in concerns about a metric-driven system:

- *Requiring semiannual evaluations would impose a crushing administrative burden on the system.* Compare marking the box for "3" and

adding the justification "This officer's performance was rated as 'Excellent' during the operational readiness inspection" to counting "white spaces," parsing the proper number of exclamation points, sorting action verbs, composing "push" and "stratification" statements, and being extra careful not to describe the officer as "outstanding" or "superior." Searching the web for "Air Force Performance Report Writing Guide" will yield 5,260,000 responses. The current system is staggeringly burdensome on raters, reviewers, and administrative support, all in the service of producing a deliberately abstruse document. Two simple, clear reports will be less burdensome than the present one.

Fundamentally, the primary concern with our proposal appears to be the notion that

- *Promotion is a subjective process based upon the judgment of senior officers, who must evaluate qualities that cannot be quantified*—a frequent criticism of performance metrics for officers. However, the promotion board now applies quantitative scores to officers and ranks them for promotion. A high level of discomfort seems to accompany performing this ranking in a standardized and transparent manner. Reliance on undefined "gut feelings" and "I know an outstanding officer when I see one" instincts maintains continuity in the leadership culture but also may lead to groupthink, stifle innovation, and make the institution stagnant and vulnerable to changes in the environment. However, if the gut feeling of the senior rater is the best possible standard for promotion, then we should formally acknowledge that fact instead of going to such complicated lengths to present the façade of an objective evaluation process.

It is hard to avoid recognizing that the system of officer effectiveness reports was first implemented in 1974, at the end of the traumatic war in Vietnam and at a time when the military leadership felt removed from a popular culture in turmoil. The changing roles of minorities and women as well as the often strident opposition to the military in

many arenas may have influenced the formulation of an evaluation system that openly disdained the quantitative rating of performance and relied upon the subjective judgment of senior officers regarding who had the "right qualities" for promotion, with no substantial definition of what those qualities might be. As we said in the article, "The unique language of performance reports may have an origin but not a purpose" (p. 32).

Behind many of the concerns raised by this article lurk serious questions regarding the integrity and forthrightness of the officer corps, qualities that once marked the military in popular perception but which have diminished over the decades since Vietnam. Considering the alternative language of the Officer Performance Report system, we are reminded of Shakespeare's description of a besotted comrade: "He was wont to speak plain and to the purpose, like an honest man and a soldier; and now is he turned orthography; his words are a very fantastical banquet, just so many strange dishes" (*Much Ado about Nothing*, 2.3).

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Let us know what you think! Leave a comment!

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Embry-Riddle at War: Aviation Training during World War II by Stephen G. Craft. University Press of Florida (http://www.upf.com), 15 Northwest 15th Street, Gainesville, Florida 32611-2079, 2009, 344 pages, $34.95 (hardcover), ISBN 978-0-8130-3299-3; $24.95 (softcover), ISBN 978-0-8130-3503-1.

Following the surprise attack on Pearl Harbor on 7 December 1941, the United States' plummet into World War II created an immediate need for pilots. However, President Franklin D. Roosevelt had prearranged the rush to join the Army Air Forces (AAF) in his message to Congress on 12 January 1939, which many people consider the beginning of a period of expansion that did not peak until 1944. The president asserted that "increased range, increased speed, [and] increased capacity of airplanes abroad" had changed the requirements for defensive aviation and strongly urged Congress to grant a $300 million appropriation for purchasing aircraft (Department of State, *Peace and War: United States Foreign Policy, 1931–1941* [Washington, DC: US Government Printing Office, 1943], 452–53). At this time, the AAF numbered roughly 1,700 aircraft; 1,600 officers; and 18,000 enlisted men. By March, Congress had passed a bill bringing the AAF's strength to 5,500 airplanes; 3,200 officers; and 45,000 enlisted men—half as much as the service had received in the preceding 14 fiscal years.

By 1 July 1939, after Hitler had absorbed Czechoslovakia and was preparing to invade Poland, the AAF possessed a 24-combat-group program with an annual training requirement of 1,200 pilots. As the German blitzkrieg swept across Europe in June 1940, this contingent expanded to 41 groups, then 54, and, finally, in March 1941 to a robust 84 groups with an unprecedented annual production of 30,000 pilots per year. However, the Japanese attack on Pearl Harbor would change those numbers. By late December 1941, the three flying training centers received notice that pilot production had increased to 50,000 per year, a number eventually set at 93,000 annually.

To meet this great demand for pilots, the AAF turned to civilian organizations to help the three regional training centers: the Gulf Coast

Training Center at Randolph Field, Texas; the West Coast Training Center at Moffet Field, California; and the Southeast Training Center at Maxwell Field, Alabama—all assigned to the Army Air Forces Flying Training Command, headquartered in Fort Worth, Texas. Originally Gen Henry "Hap" Arnold favored contracting out primary pilot training to nine private flying schools, but because of Pearl Harbor that number expanded to 41 civilian primary schools overseen by the three centers (at the peak of primary training in May 1943, 56 schools were in operation).

At this point, Stephen G. Craft's *Embry-Riddle at War: Aviation Training during World War II* comes into play. In this book, the author examines a little-known aspect of Florida aviation history during World War II—specifically, the fact that thousands of student pilots received basic and advanced training in civilian and military aircraft in the blue skies above the peninsula. *Embry-Riddle at War* begins by looking at the early history of the company, its absorption during the 1920s into the group that formed American Airways, and its reestablishment in Miami, Florida. Within a few years, a tiny operation of a few seaplanes had become a vast endeavor dedicated to training American and foreign aircraft technicians as well as American and British cadet pilots. Before the war ended, Florida boasted four fields for training pilots, and Tennessee had one.

In September 1939, the Civil Aeronautics Administration (CAA) notified Embry-Riddle and the University of Miami of the approval of their application to participate in the Civilian Pilot Training Program (CPTP), making the University of Miami the first school in Florida to participate in the program and allowing Embry-Riddle to provide pilot training. The CPTP became Embry-Riddle's "bread and butter." John Paul Riddle declared that the company intended "to make this the largest and most efficient flying school in the South" (pp. 22–23)—and it did. During the 72-hour ground course, lectures covered the history of aviation, civil air regulations, navigation, meteorology, parachutes, aircraft theory and flight, engines, instruments, and radio uses, all of which

Craft excellently explains. By November the CAA had certified the school to offer primary flying training and then recertified it in 1940 as a primary flying school authorized to provide secondary flying training.

Embry-Riddle at War makes significant strides in the field in chapter 3, "American and British Cadet Pilot Training," which begins on 16 December 1940 when the undersecretary of war approved a contract for Embry-Riddle to start training military pilots. In January 1941, the US War Department announced Embry-Riddle's assignment as part of the Southeast Air Corps Training Center to provide primary flight instruction to cadets. However, the expansion of Carlstrom Field, Florida, which allowed it to accommodate more students and made Carlstrom the largest "military flight center in the United States" (p. 58) came at a cost. The school nearly went bankrupt as Riddle took loans from a number of banks in Miami, even securing a loan of nearly $150,000 from Standard Oil Company.

By the middle of 1944, some 26,000 individuals had received training from Embry-Riddle. According to John Riddle, of that number, 22,000 were "Army and Navy cadets who received flight and technical training under civilian instructors at the five Embry-Riddle fields and at the Technical School in Miami" (p. 257). Embry-Riddle also restored more than 3,000 engines; 21,000 aeronautical instruments; and 700 complete aircraft through its Overhaul Division for the military and graduated 4,000 civilian trainees who wished to become pilots or technicians.

Stephen Craft's *Embry-Riddle at War: Aviation Training during World War II* is a refreshing and history-packed work that not only tells Embry-Riddle's story but also dives into the grand scheme of a civilian pilot school during America's greatest test—and does so successfully. Moreover, Craft brings to light Embry-Riddle's own fight against the Nazi regime through both homeland defense and the school's activities in Latin America—specifically, its creation of the Latin American Department in 1941, which offered dual education programs to both South American students and US citizens who planned to seek jobs in South America. After Selgado Filho, father of modern aviation in Brazil,

toured various schools in the United States to see how they operated, he was especially impressed with Embry-Riddle. With the help of the US State and War Departments, Embry-Riddle collaborated with the Brazilians and by November 1943 had established the Escola Técnica de Aviação in Brazil for training technicians.

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A Fiery Peace in a Cold War: Bernard Schriever and the Ultimate Weapon by Neil Sheehan. Random House (http://www.randomhouse.com/), 1745 Broadway, New York, New York 10019, 2010, 576 pages, $16.95 (trade paperback), ISBN 978-0-679-74549-5.

The oft-used phrase "American Dream" aptly describes not only one of the historical leaders of the modern Air Force but also a period of American history—the 10 years after World War II and the first decade of the Cold War. To cover both subjects, Neil Sheehan has written two big stories in one book. First he opens with the biography of Bernard Schriever, the Air Force general who helped initiate his service's massive effort to develop the intercontinental ballistic missile (ICBM) and then structure the Air Force's entire research and development program into a major command. Schriever made this organization the driving force that developed, deployed, and managed the military space program from its beginnings.

To say that the future general came from humble origins is an understatement. Schriever's working-class German parents immigrated to America when young Bernard was six years old, arriving here just months before the United States entered World War I. After the family moved to an established German community near San Antonio, his father died young in a workplace accident, and his impoverished mother had to place her two little boys for a time in a Catholic orphanage. At this point, his was a sad story, but his mother got a job working as a laborer for a country club that granted golf privileges to its employees

and their families. Young Bernie learned to play golf—and he learned well, winning a golf scholarship to Texas A&M University. There he joined ROTC, studied engineering, graduated, received his commission as a second lieutenant, and went to an Army Air Corps flying school—all of this occurring in the mid-1930s, during the Great Depression. By December 1941, he was in place as an experienced officer, aviator, and engineer when his country needed all of his talents.

Young Schriever served in World War II as a wing maintenance officer and pilot. After the war, he remained on active duty and rose in rank, using his engineering education to help the rest of the Air Force understand and manage the multiple new postwar projects that were intimately connected to both the Truman and Eisenhower administrations' handling of the onset of the Cold War.

Sheehan then shifts to a history of the Cold War and the evolution of an enormous Air Force research and development effort in the 1950s and 1960s. Because the United States could not match the Soviet Union man for man, tank for tank, and gun for gun, it had to use technology to gain a competitive advantage. This emphasis on technological quality rather than quantity is the book's larger story. To Schriever and his team, the cornerstone of that technological advantage was the ICBM along with its precision targeting.

Corralling the development and deployment of long-range missiles for the Air Force was Schriever's doing. The Army, Navy, and civilian agencies had their own missile programs, but Schriever wanted the Air Force to lead in this arena—and his efforts proved successful.

The many substories within the main narrative include one about competition with the US Army for missile and rocket development. The Army lost. Schriever and the Air Force won. He also endured a tough competition with Gen Curtis LeMay, commander of Strategic Air Command. LeMay resented the allocation of any money to a missile program when he needed it for his bomber-tanker force. Schriever won again.

The Cold War paranoia of the time, yet another crucial substory, was not just a part of the American political game. Real concern about a Soviet threat—based on fragmented intelligence combined with the recent history of Soviet bombast, threats, actual military conquests, and occupation of Eastern Europe—permeated all levels of government, civil and military. Sheehan notes that this threat and America's lack of raw military manpower to stop it motivated Schriever and his team to develop long-range missiles. With their development came all the industries that supplied component parts, including solid-state electronics, miniaturization, and computers—the foundation for the "consumer technology" we play with today.

Sheehan describes the defense-contractor relationships, now taken for granted, that first developed during the 1950s. He offers fascinating details about how Simon Ramo, a civilian science adviser to Schriever, along with scientist colleague Dean Wooldridge and a manufacturing firm started by Charles Thompson formed the firm Thompson, Ramo, Wooldridge, now known as TRW, builder of rockets and satellites. Clearly, this was an amazing and intensely busy period in America's history of science and technology.

Yet, the 1950s has different connotations to different people. This reviewer associates that time with childhood, Truman, Eisenhower, US-Soviet tensions, the Vanguard rocket, the Jupiter and Thor missiles—all part of growing up during the Cold War and all detailed in *A Fiery Peace*. Younger readers, however, may find themselves overwhelmed by the substantial amount of history between World War II and Vietnam that Sheehan presents. Nevertheless, he does a good job of bringing out the personal, sentimental, and human parts of a story based on rockets and missiles. For example, we learn that Air Force colonel Ed Hall, Schriever's manager for the Minuteman missile program in the 1960s, found out only after 1996 that his younger brother Ted, a former physicist at the Manhattan Project in Los Alamos during World War II, was a Soviet spy.

This book offers a wealth of such interconnected anecdotes and "gee whiz" stories. The occasional error in technical descriptions of things military or aviation does not detract from the narrative. Sheehan has provided readers with an eye-opening discussion of foundational events that occurred during a crucial yet underappreciated period of time—events that defined today's Air Force and the nation. *A Fiery Peace* leaves readers with the sense that America is a global military force today largely due to the efforts of Gen Bernard Schriever and his emphasis on the leverage afforded by technology.

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Khobar Towers: Tragedy and Response by Perry D. Jamieson. Air Force History and Museums Program (http://www.afhso.af.mil/booksandpublications/index.asp), 3 Brookley Avenue, Box 94, Joint Base Anacostia-Bolling, Washington, DC 20032-5000, 2008, 276 pages, $29.00 (from GPO, softcover), ISBN 978-0-16-080701-5. Available free from http://www.afhso.af.mil/shared/media/document/AFD-101029-033.pdf.

At 2153 on 25 June 1996, outside the northern perimeter of the Khobar Towers Housing Complex for US personnel assigned to King Abdul Aziz Royal Saudi Air Base near Dhahran, Saudi Arabia, a Mercedes-Benz tanker truck filled with 5,000 pounds of advanced plastic explosive detonated. The blast—with the equivalent force of more than 11 tons of TNT—dug a crater 55 feet across (and 16 feet deep), utterly destroying the exterior face of Building 131, located less than 35 yards away, across an empty lot.

Flying shards of glass and blunt-force trauma killed 19 US Airmen, all but one of them in Building 131. The shock wave—which shattered windows in nearly every dormitory—injured hundreds, caused structural damage to six of the high-rise buildings, and broke windows a

mile away. Residents of Bahrain, 20 miles distant, felt the shock wave, and those in the United Arab Emirates, 120 miles away, heard it.

Brig Gen Terryl J. "Terry" Schwalier was finishing his final day as commander of the 4404th Composite Wing (Provisional), the Air Force's overall unit in Southwest Asia, which included more than 5,000 personnel at 11 locations in four nations—nearly half of them assigned to Dhahran. Like almost all of the members of the 4404th, those in Dhahran were on 90-day in-country rotations. Only 19 of the wing's billets had tours longer than half a year, so about 10 percent of the wing—200 Airmen—began (or ended) their assignments each week.

The first officer to have a full year in command, General Schwalier—then in charge of his second wing and recently selected for promotion to major general—was in his quarters, beginning a letter to his successor Brig Gen Dan Dick, who would arrive in seven hours for the change-of-command ceremony in the morning. Schwalier and his staff had aggressively addressed force-protection measures during the previous year despite launching more than 100 flights a day. Most of the sorties involved Operation Southern Watch, enforcing the no-fly zone south of 32 degrees north latitude in Iraq.

Researched and written by Dr. Perry Jamieson, an Air Force historian, *Khobar Towers* records the history of the bombing and its aftermath. The author relies principally on tape-recorded interviews of more than 70 US military personnel (most prominently, Generals Schwalier and Dick as well as Lt Col Douglas Robb, PhD, interim commander of the 4404th Medical Group). Jamieson also draws on the interviews, records, and writings of SrA Ronald J. Biggs Jr., the 4404th's command historian, and of historians SSgt Eric Grzebinski and SSgt Yancy Mailes, as well as official and unofficial documents and articles (identified in 45 pages of endnotes). He does not make use of publications that appeared after 2004.

Jamieson divides this well-organized, carefully documented, and very detailed history into two parts. The first, "Tragedy," consists of chapters titled "Approaching 10 P.M.," "Operation Southern Watch,"

"Stay Alert, Be Observant," "The Attack," and "In the Wake"; the second, "Response," has seven chapters and an epilogue that detail the actions of personnel and commands in Dhahran; US Central Command; US European Command; Patrick AFB, Florida; Eglin AFB, Florida; and Washington, DC. Four maps and diagrams and more than 50 black-and-white photographs give the reader a clear picture of the subject matter.

Good history, however, does not simply recapitulate events, regardless of how accurately, adequately, and appropriately it does so; rather, it must offer judgments, interpretations, and implications for the future. Thus, the book should address two paramount questions: Did the personnel involved receive justice? Did we learn lessons from the lives lost and blood shed? It might also comment on topics such as preattack restrictions imposed by the Saudi Arabian government and its subsequent cooperation with the investigation; the adequacy of intelligence support; the wisdom of staffing a "provisional" wing for such a long duration; the effects of personnel turnover resulting from 90-day rotations; US government decisions regarding Iraq, Iran, and Saudi Arabia; American civil-military relations; and, of course, details about the enemy's planning, support, and operation.

Although primarily concerned with the Americans on-scene in Dhahran at the time of the attack and in its aftermath, *Khobar Towers* touches on several ancillary topics, and, where possible, it provides nuanced, judicious comments. For an understanding of high-level decision making, the book draws upon Dr. Richard Kohn's interview of Gen Ronald Fogleman (see "The Early Retirement of Gen Ronald R. Fogleman, Chief of Staff, United States Air Force," *Aerospace Power Journal* 15, no. 1 [Spring 2001]: 6–23).

Khobar Towers reveals that when General Fogleman arrived in Dhahran on 3 July 1996 ("after all the high-profile people had gone through"),

> I [General Fogleman] sat down with [Brigadier General Schwalier], listened to what he had to say—to include his offering to retire to remove any kind of a target for people to attack both the institution and individuals. I

> told him at that time that I did not want him to retire but to get the facts out. . . . This is an important issue having to do with whether we support our troops in the field when we send them out there, and if you screwed up, you can expect to be held accountable. If you haven't, then I will support you (p. 174).

High-level investigations followed, chaired by Army general Wayne Downing (recently retired special operations commander), Air Force lieutenant general James Record, jointly by Air Force lieutenant general Richard Swope (the inspector general) and Air Force major general Bryan Hawley (the judge advocate general), and Secretary of Defense William Cohen. "When the results of the Swope-Hawley investigation eventually were published, two Air Force reports were on record supporting General Schwalier's actions" (p. 192). On 28 July 1997, General Fogleman retired as Air Force chief of staff, partly prompted by Secretary Cohen's decision to revoke General Schwalier's promotion and more generally by numerous policy clashes that General Fogleman feared made him a liability to the Air Force.

At least eight Naval War College classes that I taught have studied the Downing, Record, and Cohen reports, and almost all of the students have been torn in their judgments: Army and Marine Corps officers—experienced in force-protection priorities—had the harshest criticism of the 4404th's leaders; Air Force officers—familiar with the demands of combat flight operations—tended to praise those leaders for all they had accomplished in force-protection efforts; Navy, Coast Guard, and international (naval) officers—accustomed to accountability, regardless of culpability, as part of their services' culture—usually acquiesced in General Schwalier's loss of promotion. But such responses were by no means uniform because everyone felt the tension between strict accountability for what occurs in or to one's command and blameless—even commendable—performance of one's leadership duties.

With regard to "lessons learned," *Khobar Towers* is only indirectly helpful. Since it focuses on what the 4404th's leaders *did* for force protection, the book does not discuss other measures they might have pursued, one of the thorniest of which deals with how far senior mili-

tary officers can push operational concerns into political levels. For instance, the 4404th's leaders twice asked the Saudi government to extend the northern perimeter from 100 feet to 400 feet away from Building 131; each time, according to former secretary of defense William Perry, "the answer was not now, not yet" (p. 34). What should a one-star commander do in such circumstances? (Of note, investigators concluded that, given the size of the blast, a 400-foot separation likely would have had no effect in reducing the number of lives lost and personnel wounded.)

Additionally, the book proves only indirectly helpful for lessons learned because, according to its account, everyone in the Khobar complex and air base; Central and European Commands; Washington, DC; and the home air bases of most personnel at Khobar (Patrick and Eglin) performed magnificently. This may well be true. Nevertheless, one plainly has difficulty knowing how to do better in the absence of any record of individual mistakes, systematic (e.g., training) failures, or command oversights (e.g., doctrinal or procedural blind spots). Consequently, the reader must work harder to appreciate the existence of critical difficulties (finding an up-to-the-minute command roster, for instance) and the recognition and handling of unanticipated challenges (establishing and operating adequate mass-emergency medical and mortuary facilities; locating, identifying, and supporting wounded personnel taken to various off-base hospitals; and almost instantly staffing crisis centers at home bases). *Khobar Towers* records very well how individuals and organizations reacted to the consequences of the attack; readers who have military responsibilities should study their actions to learn lessons for the future.

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Into the Sun: Novels of the United States Air Force by Phillip S. Meilinger. Imprint Publications (http://www.imprint-chicago.com/home.html), 207 E. Ohio Street, no. 377, Chicago, Illinois 60611, 2011, 255 pages, $29.95 (softcover), ISBN 978-1-879176-47-8.

Readers of *Into the Sun*, an attractive compendium by one of our airpower giants, Phil Meilinger, will be surprised to learn that so many novels about airpower exist. The book includes well over 100 titles, pared from a list of more than 400. To keep the number manageable, the author selected only those about the US Air Force, excluding foreign fiction; the many fine Army, Marine Corps, and Navy novels; books of a commercial, civilian, or romantic nature; "techno-thrillers" (such as those written by Tom Clancy); and juvenile works.

Since I haven't spent much time reading fiction, I had doubts about my qualifications to review this book. As a military and airpower historian, I felt perpetually challenged by the prospect of reading all the nonfiction in my collection, let alone the literally thousands of attractive studies in the Air University Library. Then, when I saw Meilinger's list of novels dealing with air warfare, I was surprised by how many I had read and/or seen in their movie versions. On that point, the inclusion of *Catch-22* on the reading list for 2012 compiled by the chief of staff of the Air Force (CSAF) is fortuitous insofar as it tops Meilinger's selections for "Europe: The Bombers," the segment of his book on World War II bomber operations.

I fully understand the importance of airpower novels. Fictional studies have the immensely useful quality of digging into issues, enriching with nuances, and eliciting human emotions not developed in works of nonfiction. *Into the Sun* assists average airpower fans who wish to sample this genre by offering one- or two-page accounts of novels, thus piquing their interest and helping them decide what to read in full. Meilinger chose these books with two important criteria in mind: (1) themes unique to and thoroughly conversant in airpower practices, and (2) novels that were "reasonably truthful, entertaining, enjoyable or educational—and preferably all four" (p. 2).

Arrangement of the novels follows a natural chronological order connected to the major wars and combat of the twentieth century. The first section, "World War I," includes a novel by William Faulkner, one of America's most famous authors. The many books on World War II appear in four sections: "Europe: The Bombers," "Europe: Fighters and POWs," "The Pacific: Fighters and Bombers," and "World War II: The Home Front." Among the famous writers and their works included therein are Len Deighton, *Bomber*; John Hersey, *The War Lover*; Martin Caidin, *The Last Dogfight*; and James Gould Cozzens, *Guard of Honor*. In section 6, "The Korean War," Meilinger features James Salter's *The Hunters* (also on the CSAF's 2012 reading list) and James A. Michener's *Sayonara* (many of us saw the movie). *Thunderchief* by Don Henry appears in section 7, "Vietnam: Fighters and Bombers," and section 8, "Vietnam: The Other Wars," highlights Mark Berent's series of books, including *Rolling Thunder* and *Phantom Leader*. (A former CSAF wanted to include one of Berent's books on his reading list, but he thoughtfully relented when someone reminded him about its use of salty language and descriptions of sexual activity.) The final section, "The Cold War and Beyond," leads off with another James Salter novel, *Cassada*; it also features a trilogy—*Roaring Thunder*, *Supersonic Thunder*, and *Hypersonic Thunder*—by Walter Boyne, one of our great American airpower advocates and a regular commentator on the *History Channel*.

When I read through many of the excellent summaries of these airpower novels, I was disappointed by the omission of a title that I expected to see in this volume. Then, of course, I remembered that many of the fine accounts of the Air Force story in the past century—like the one I had in mind—were not novels but studies written by historians and memoirs by Airmen. Most of them reflected Meilinger's intent, in that they offer the important human dimension—emotions such as loneliness and fear, the constant companions of all warriors—and they deal with issues and doctrine that constantly underlay both airpower employment and flight in general. Clearly, if readers wish to criticize the author's selection, they should compile their own list and

start a debate about the rationale for including those titles. In the meantime, *Into the Sun* is a great book to have on your bookcase.

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