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Strengthening Understanding and Engagement with China's Air Force

General Mark A. Welsh III, USAF
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Since the historic coming together of China and the United States in 1972, this strategic relationship has benefited both our nations and fostered an unprecedented period of peace and prosperity in the Asia Pacific region. Our relationship with China, however, has had its ups and downs over the past four decades. In recent years, growing distrust and increasing misperception have made the need to improve lines of communication between our two governments and militaries all the more urgent.

Recently, we traveled to China at the invitation of the Chinese government. This was the first visit for a U.S. Air Force Chief of Staff in 15 years. The visit was constructive and substantive in its outcomes, and our hope is that it will lead to future exchanges that foster greater understanding and transparency between our two air forces.[1] The visit came in the wake of several milestones achieved between our two countries this year, the most important being the June 2013 summit meeting between Presidents Obama and Xi in California, where both leaders affirmed the need for greater understanding between our two nations and our two militaries. Together with other important recent military exchanges such as Chairman Dempsey's visit to China and People's Republic of China (PRC) Defense Minister Chang's visit to the United States, our visit was part of a larger effort to improve understanding between our two armed forces as well as reduce military-to-

military friction. We look forward to continuing these efforts well into the future.

Continuing exchanges with China will not be at the expense of the strong relationships the United States enjoys with key partners and allies. Indeed, improved relations between China and the United States are not a zero sum dynamic. There is wide agreement among our friends and allies that a constructive relationship between the United States and China is fundamental to the continued stability and prosperity of the Asia Pacific and the world.

As America's security interests are global, we are keenly aware of China's growing importance on the world stage and support its constructive contributions to world peace and prosperity. Not only has China risen to become the world's second-largest economy but also this year marked the first time the PRC imported more oil from the Arabian Gulf than the United States. China therefore, just as we do, has a vested interest in maintaining uninterrupted and secure international trade and flow of energy.

Our shared security interests include fundamental concerns for both our nations, with nuclear nonproliferation high on the list. China shares our objective for North Korean and Iranian denuclearization, knowing the destabilization that would ensue in Asia and the Middle East should nuclear weapons be allowed to proliferate. While we may sometimes disagree on the means to achieve our shared goals, it is evident China recognizes that nuclear proliferation is contrary to its national interests.

Both of our countries share a deep appreciation for history. Even before the United States entered the Second World War, American and Chinese airmen fought and died side by side as part of the famed Flying Tigers. The combined endeavor continued throughout that war and contributed greatly to our eventual victory. Many of our fliers in China were downed in enemy-held territory, and they owed their survival to the Chinese villagers who were well aware of the sacrifices Americans were making in support of China in its darkest hour. If you

visit China's aviation museum in Beijing, the Pacific Aviation Museum on Ford Island in Honolulu, or museums in Kunming, Chongqing, or those in other Chinese cities dedicated to the Flying Tigers, you will see tributes to the bravery of American and Chinese airmen in that difficult war. The legacy of the Flying Tigers lives on today within our Air Force through the 23rd Fighter Group located at Moody Air Force Base, Georgia.

Our Chinese hosts made clear their appreciation for the historical context of our visit from the very beginning of our meetings. The importance China placed on our visit and on improving our Air Force engagement efforts was underscored by People's Liberation Army Air Force (PLAAF) Commander, General Ma Xiaotian, when he welcomed us at the Diaoyutai State Guesthouse. There, General Ma pointed to the historical significance of the venue, where President Richard Nixon and Premier Zhou Enlai ended over two decades of hostile relations between our two countries in 1972, and where subsequent U.S. Presidents were hosted. This venue, General Ma said, was appropriate given the importance that his government placed on improving relations between our militaries and our air forces. Our meetings with Vice Chairman of the Central Military Commission, General Xu Qiliang, and other senior People's Liberation Army (PLA) and PLAAF officers were similarly cordial, candid, and substantive.

Both sides agreed that as two of the largest economies in the world, we should have no illusions as to the dangers that conflict in this region would pose to our respective nations, let alone global security writ large. As our discussion turned to regional issues of concern to both our countries and to other nations in Asia, our delegation emphasized the need to take great care in managing differences in the Asia Pacific. Both sides underscored the need to resolve disagreements between all countries in a diplomatic and peaceful way.

We conveyed to our hosts the increasing complexity in our interactions and engagements, the potential for miscalculation or misunderstanding, and the need for more transparency, cooperation, and famil-

iarity with each other's procedures and processes. We addressed the growing frequency and proximity at which both the Chinese and U.S. militaries operate in international waters and in the airspace above the maritime domain. We also highlighted the importance to both of our nations of maintaining the highest levels of safety and professionalism in our military interactions. We can and must do better at managing friction.

Our week-long itinerary was full, as we traveled from Beijing to Tianjin and Hangzhou, then to Hong Kong via Shenzhen. While in Beijing, we held meetings at the Ministry of Defense and visited the PLA's Aviation Museum, Aviation Medicine Research Institute, Capital Air Defense Command Center, and National Defense University. In addition, we conducted base visits to Yangcun Air Base in Tianjin, Jianqiao Air Base in Hangzhou, along with Shek Kong Air Base and PLA Garrison in Hong Kong.

Although most of these sites had previously been visited by U.S. defense and military officials in the past, we could see the changes that have taken place in the PLAAF over the years. For example, during the last China visit 15 years ago, then-USAF Chief General Michael Ryan was shown a fleet of J-8 II fighters, perceived at that time as the most advanced fighters in the PLAAF inventory. During our visit, we watched the much more capable J-10 in a flying exhibition performed by the PLAAF's Bayi performance team along with JH-7s on a low-altitude flying exercise. Though we were not shown China's J-20, it is no secret that China continues work toward fielding fifth-generation fighters in the not-too-distant future. Along with providing us a chance to inspect these more sophisticated platforms and weaponry, our Chinese briefers described the efforts of the PLA/PLAAF to improve recruitment, training, and retention.

There is little doubt that China's air force will continue to modernize and serve as an increasingly important component of China's military. The role of the PLAAF has been prominent in operations from the evacuation of PRC nationals from Libya to the delivery of disaster-relief

supplies both within and outside China. Another telling indicator of the growing role the PLAAF is playing in China's military modernization is the appointment of an Air Force General, General Xu Qiliang, to be the first Air Force Vice Chairman of China's Central Military Commission. This visit, therefore, had significant implications for our air-force-to-air-force relations. As our two air forces begin to renew and regularize engagements in the areas of humanitarian assistance and disaster relief, USAF/PLAAF participation under the Military Maritime Consultative Agreement, flight safety, aviation medicine, and student exchanges between our educational institutions, both sides agreed that we must do more to foster understanding. *Air and Space Power Journal–Chinese*, now entering its seventh year of publication, continues to serve as a forum for the exchange of airpower concepts between our two air forces. These initiatives can succeed only if done in the spirit of reciprocity and transparency through continuous air force engagements that will allow opportunities to exchange views on the international security environment while improving understanding. We were pleased that our discussions in China marked a positive step in that direction.

During our President's most recent meeting with President Xi at the G20 Summit in St. Petersburg just before our trip to China, both leaders reaffirmed their commitment, as President Obama succinctly stated, "to build a new model of great power relations based on practical cooperation and constructively managing our differences." President Obama also underscored America's long-standing policy toward China that the United States welcomes the continuing peaceful rise of a China that plays a stabilizing and responsible role not just in the Asia Pacific but around the world.[2] Our national leaders clearly understand that relations between our two nations are essential not only to our respective self-interests but also to the interests of the region and the world at large.

The United States Air Force and the People's Liberation Army Air Force both seek engagement that aims to both support this shared vi-

sion and build upon our past record of air-force-to-air-force interaction. It is imperative that our two nations work to ensure continued stability and security in the Asia Pacific into the 21st Century. A sustained and substantive military-to-military relationship between our two countries will be important to achieving that end. ✪

Notes

1. The visit took place 24–30 September 2013. "CSAF Begins Counterpart Visit in China," U.S. Air Force, 25 September 2013, accessed 18 October 2013, http://www.af.mil/News /ArticleDisplay/tabid/223/Article/467207/csaf-begins-c ounterpart-visit-in-china.aspx.
2. "Remarks by President Obama and President Xi of the People's Republic of China before Bilateral Meeting," White House, 6 September 2013, accessed 18 October 2013, http:// www.whitehouse.gov/photos-and-video/video/2013/09/06/president-obamas-bilateral -meeting-president-xi-china#transcript.

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NATO Air Command–Afghanistan

The Continuing Evolution of Airpower Command and Control

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T he evolution of cooperation between air and ground forces over the last 12 years in Afghanistan has been continuous and dynamic. What began in 2001 as special operators on horseback calling in precision air strikes from distantly based aircraft has transitioned to the 9th Air and Space Expeditionary Task Force–Afghanistan (9 AETF-A). The command and control (C2) of airpower in Afghanistan remains agile, providing airpower effects at the right place and time. This article offers the perspective of the senior US / North Atlantic Treaty Organization (NATO) Airman on the ground in Kabul and describes the latest developments in airpower C2 in Afghanistan.

The Evolution of Air Command and Control in Afghanistan: From the ACCE to the Five-Hatted Commander

The Five Hats of the Commander

The **air component coordination element (ACCE)**, the combined force air component commander's (CFACC) representative to the commander of the International Security Assistance Force (ISAF), ensures that the latter has a direct link to the combined air operations center (CAOC).

The **9 AETF-A commander** holds operational control and administrative control of all US Air Force forces in the Combined Joint Operations Area–Afghanistan as the senior US Air Force Airman, with the exception of special operations forces.

The **US Forces–Afghanistan (USFOR-A) deputy commander for air** works air issues associated with USFOR-A as the senior US Airman.

The **ISAF Joint Command (IJC) deputy chief of staff for air** works NATO air issues as the senior NATO Airman.

The **NATO Air Command–Afghanistan (NAC-A) commander**—the senior NATO Airman in Afghanistan—holds limited operational command and control of NATO air forces. Additionally, the commander is responsible for NATO airports of debarkation and the development of the Afghan Air Force.

Although the toppling of al-Qaeda and Taliban forces in 2001 undeniably showcased the benefits of air and ground forces working together, occasional turbulence occurred between the components as the mission in Afghanistan evolved. After noting significant disconnects in air/ground integration in 2002's Operation Anaconda, leaders on both sides of the air/ground disconnect realized that the ad hoc C2 arrangements used in the earliest days of Operation Enduring Freedom would no longer be sufficient to cope with the increasing complexity of our operations.[1] To bring additional airpower expertise into forward planning efforts, the US Air Force introduced the ACCE in 2003. Initially presented as a small team of operational-level air planners led by a brigadier general, the ACCE served as the CFACC's forward liaisons, charged with coordinating airpower planning and execution between

the US and ISAF headquarters in Afghanistan and the CAOC. After initial experiments basing the ACCE in Regional Command East, a decision was made in 2007 to place it in Kabul with the ISAF and USFOR-A commander, where it remains today.

The ACCE concept was applied both to Afghanistan and Iraq, improving the ability of the CFACC to assess the requirements of the supported commanders there and then to recommend the best apportionment of theater airpower to the commander of US Central Command. The ACCE helped improve air and ground integration in both cases, but having only a liaison role did not give the senior Airman on the ground a "seat at the table" in key headquarters meetings. As a result, in 2009 the CFACC, Lt Gen Mike Hostage, delegated limited operational control to the ACCEs, giving the forward senior Airman more authority to organize, plan, and direct local Air Force forces, a concept captured by his comment "I will cash any check my ACCE writes."[2] In 2010 this "empowered ACCE" gained more responsibility as the 9 AETF-A, creating a two-star command position with operational and administrative control of all US Air Forces Central forces in Afghanistan.[3] The 9 AETF-A staff concentrated on short-term and midterm plans with the US and NATO commanders in Afghanistan while the CAOC controlled planning and execution of the daily air tasking order (ATO). This remains the current division of responsibilities between the 9 AETF-A and CAOC.

In May 2011, the 9 AETF-A commander assumed the additional title of deputy commander for air, USFOR-A, and later was incorporated into the ISAF chain of command as the deputy chief of staff for air under the IJC. This gave the ACCE / 9 AETF-A commander his third and fourth "hats," respectively, putting the various related US and NATO air support responsibilities under the purview of the same Airman.[4] The 9 AETF-A commander also maintained both a direct liaison link to the CFACC and C2 of various "over the horizon" capabilities from bases outside Afghanistan.

Why We Need Airmen Forward

Key Airmen need to be located with the ground forces they support. Even in an age of increasing connectedness, automation, and distributed operations, some vital elements of collaboration cannot be performed solely through secure satellite communications, radio, phone calls, e-mail, collaborative tools, and video teleconferences from distant headquarters. This is true for several reasons.

Because We Are Human

Despite advances in technology, collaborative planning still depends on the strength of trust formed through personal relationships, with the strongest psychological ties formed in person. At the most basic neurological level, trust between people forms not only through what they say but also through a number of subtle social cues that cannot be faithfully transmitted over or detected in distributed communications. Consequently, communication challenges that sometimes persist for days and weeks in repeated e-mail exchanges can often be resolved in mere minutes by putting the right people in the same room together. Lacking the foundation of this personal connection, we often form unhelpful stereotypes of others that do not aid the formation of trust. This is most concisely expressed by a popular critique of distributed planning captured in the expression "virtual presence equals actual absence." The 9 AETF-A provides trusted agents in various locations (Headquarters ISAF, Headquarters IJC, and USFOR-A) who can work one-on-one with their counterparts in the other components, helping them understand both air capabilities and requirements in the same locations where key decisions are made.

Because Not All of the Needed Information Will Be Discussed in the Video Teleconference

Chance meetings and interactions are often the catalyst for the creative ideas and connections necessary for accurate problem identification and problem solving. Such serendipitous connections usually re-

quire the physical presence of individuals. These interactions occur completely outside formally scheduled meetings and events, creating new opportunities to find the missing piece of the puzzle in surprising and unexpected places—a recipe for innovation throughout human history.[5] Living in the same place as the forward commanders and planners delivers this beneficial effect by hastening the discovery of emerging issues through using the diverse expertise of members of the entire joint and combined force for adaptive advantage as they solve those problems together. As we have found through practical experience living in Headquarters ISAF, oftentimes the people we meet in the dorm, gym, chapel, or dining hall supply the social inroads and information needed to stay abreast of rapidly changing events.

Because Having Operational-Level Airpower Experts Involved Early in the Joint/Coalition Planning Process Creates a Win-Win Situation

Most joint staffs are manned with personnel who have experience with airpower under the concept of combined arms. However, fewer are familiar with the organizational complexities of generating and delivering airpower at the operational and theater levels. ACCE planners led by a senior Airman offer this expertise and can directly assist the staffs in which they are embedded with activities such as problem framing, strategy development, operational design, plans production, and requesting both local and theater air capabilities. This situation brings credibility and trust into the joint planning process from both directions—joint staffs benefit from the Airman's perspective, and Airmen gain a better appreciation of how their efforts can contribute to the overall joint campaign. When ISAF planners have questions about over-the-horizon support to the coalition, 9 AETF-A Airmen are there on the spot with the expertise and connections to answer them.

Understanding the Gaps
between Tactical and Operational Airpower Planning

Perhaps the greatest benefit of the current 9 AETF-A construct is the connection it creates between local tactical and theater operational-level air planners, correcting a problem that had sometimes stymied effective air and ground coordination in the past. From the start of Enduring Freedom, Battlefield Airmen such as joint tactical air controllers, battlefield weather officers, and air liaison officers were embedded with tactical units in the field. These Airmen served as an immediate source of airpower expertise to local ground commanders, giving them advice on tactical airpower and connecting them to the request process for tactical air support. Under this construct, however, during the initial planning of ground operations, direct communications between the tactical Airmen on the ground and the operational-level air planners at the CAOC were missing. An understanding of two key aspects of airpower reveal why this was a problem.

Airpower Is Inherently Flexible in Tactical Execution, within the Constraints of Physics and Human Endurance

One of the asymmetric advantages of airpower over most surface forces is that it can be rapidly flexed to new mission taskings and area assignments during execution, within the limits of geography, weather, fuel, deliverables, and the endurance of the crew. In the 9 AETF-A, we constantly advocate for a theater and Combined Joint Operations Area–Afghanistan perspective to overcome the tendency to think of air capabilities as tied to specific regional commands—a geographic paradigm that doesn't apply to theater air assets.

The Operational Planning and Logistics That Make the Tactical Flexibility of Airpower Possible Are Not As Flexible As the Tactical Execution of Individual Missions, and Establishing Them Requires Significant Time and Coordination

Many details have to come together to put an air-support mission overhead, including answering the following questions at the appropriate levels of authority:

- How much air support can we balance between various areas of operations across the theater, and is the risk in uncovered areas acceptable to the joint force commander?

- What supporting capabilities do we need (e.g., intelligence, surveillance, and reconnaissance [ISR], personnel recovery, electronic attack, aerial refueling, communications relay, airborne C2, space and cyber support, etc.)? Do we need to pre-position any of them before the mission can begin?

- Will we require surge operations to meet the support requirement, and do maintenance schedules and crew duty cycles need readjusting? How long can surge operations be sustained in terms of consumables and crew duty cycles / operational and safety limits?

- Can other joint forces provide support (e.g., carrier-based aircraft, Marine Corps excess air)? What lead time is necessary to apportion them to the ATO and position them for execution?

- What aerial refueling plan will we need to support the concept of operations, and should we first establish an "air bridge"?

- Does the operation require us to readjust sustainment from intertheater or intratheater airlift, redeploy Battlefield Airmen, and so forth?

These are but a few of the considerations that go into an operational air scheme of maneuver, normally handled by operational-level planners at the CAOC. The better the operational planners understand the sum total of air support requests in a specific time period, the sooner

they can work across the multiple agencies needed to bring all of these moving parts together. Like the tip of an iceberg, a single sortie overhead is only a very small part of the total airpower effort dedicated to generating it. The earlier that operational-level planners receive notice of what will happen on the ground, the sooner they can position the total available assets to support the effort. This fact will be especially important in Afghanistan as organic assets reposition, potentially increasing the requirements for over-the-horizon air, space, and cyber support.

In the past, with only the tactical Battlefield Airmen tied into ground planning, operational-level planners usually got no more than 48 hours warning of major ground operations, the typical turn in time for joint air support requests (formerly known as air support requests). This was not enough time to perform the actions needed to coordinate all of the requests when significant air support was needed or when multiple disaggregated ground efforts resulted in an aggregate major effort for the air component. Such a situation was partly to blame for disconnects in air and ground planning experienced during Anaconda in 2002 and periodically afterwards in subsequent operations even after the ACCE was introduced to the theater. Battlefield Airmen had situational awareness of pending ground operations but no familiarity with the full range of capabilities that the CAOC could bring to bear, given sufficient warning time to prepare logistics and coordination at the operational level. Operational planners were not warned of pending requests until it was too late, with joint tactical air strike requests arriving 24 hours after the air operations directive for the ATO period had already been issued, forcing them to rework most of their prior logistics planning in crisis mode. Something had to change.

Bridging the Gaps

Bringing more NATO Airmen into the higher headquarters planning staffs has been one of the most important ways we have closed some of the gaps between ground and air planning. In the ISAF's early days,

the air task force in Headquarters ISAF was a small staff led by a NATO two-star Airman, established primarily to handle intratheater airlift with as few as four dedicated sorties per day. As the insurgency in Afghanistan grew, the ISAF grew to counter as well, and the IJC emerged to coordinate war fighting between the various regional commands. Under the IJC, the two-star deputy chief of staff for air position was created, along with an associated staff of rotary- and fixed-wing planners led directly by a one-star director for coalition air operations. This staff of NATO Airmen plays a crucial role in coordinating among the IJC, regional commands, and tactical execution of air operations controlled from the CAOC and the air support operations center. The same senior Airman oversees the entire continuum of air operations in support of the coalition.

Under the current 9 AETF-A construct, Battlefield Airmen of the 504th Expeditionary Air Support Operations Group (EASOG) also report to the 9 AETF-A commander. The practical results of this merger of operational and tactical Airmen under the same AETF roof have been overwhelmingly positive. By having the EASOG commander involved in the weekly 9 AETF-A commander's battle rhythm, warning time for pending air support request surges has increased to weeks instead of the 48 hours typically available in the past. Response times for troops in contact usually average less than eight minutes, and the CAOC now often receives weeks of warning time to plan the air support of major ground operations. This enhanced communication and warning creates a win-win situation for both air and ground forces, allowing us to bring to bear the full weight of both local and over-the-horizon airpower effects for our US and coalition operations, preventing a repeat of the disconnects from past operations.

Asymmetric Advantage from Airmen on the Battlefield

As coalition forces reduce their operational footprint throughout Afghanistan, air base defense will become increasingly important. Our Battlefield Airmen bring critical skills needed to link our defense capabilities, as highlighted by a recent incident at Bagram Air Base, where Airmen patrol the surrounding area in mobile "Reaper" teams. In this case, the team encountered an improvised explosive device outside the base and while working with explosive ordnance disposal to disarm it, came under direct fire from insurgents. The Airmen were able to immediately contact the joint defense operations center at Bagram, coordinate between multiple ISR air and ground-based assets to maintain positive identification of the attackers, and direct A-10 strikes against the insurgents' position within minutes, removing a threat to both the base and the surrounding community before the enemy had the opportunity to evade and attempt future attacks. This example highlights the advantages of having Battlefield Airmen specifically trained to connect and coordinate multiple air and ground systems, proactively defeating threats before they can be employed against the air base.

NATO Air Command–Afghanistan: The Next Evolution

Prior to 2013, coalition responsibilities for security and training were maintained under two separate commands—the IJC and NATO Training Mission–Afghanistan, respectively. With the announcements of Milestone 2013 and Tranche 5 last June, the Afghan National Security Forces assumed the lead for security in Afghanistan. In accordance with the ISAF commander's 2013 posture statement to the Senate Armed Services Committee, the focus of the remainder of the ISAF mission and of Resolute Support, the proposed NATO follow-on mission, is to provide security force assistance to the Afghan security forces, helping to ensure that their hard-fought security gains remain sustainable and irreversible.[6]

To assist in the development of the Afghan Air Force, the 9 AETF-A commander is assuming a new role as the commander, NATO Air

Command–Afghanistan (NAC-A) (see the figure on the next page). The commander, NAC-A will retain all of the roles and responsibilities of the IJC deputy chief of staff for air but will transition from being part of the IJC staff into a new command subordinate to the IJC. Under the NAC-A, the commander will assume responsibility for the Afghan Air Force security force assistance mission. The commander, NAC-A will oversee the current NATO Air Training Command–Afghanistan, which will maintain its name and mission under the new command. This new command structure offers a significant functional advantage by placing all NATO and US air operations under the purview of the same senior Airman in-theater. Thus, it unifies the entire NATO air enterprise but still provides the immediate link to over-the-horizon air capabilities supplied by the CFACC. Given the need to keep the number of troops on the ground as low as possible, the consolidation of these functions brings the maximum amount of capability forward at the lowest possible price in terms of Airmen's boots on the ground.
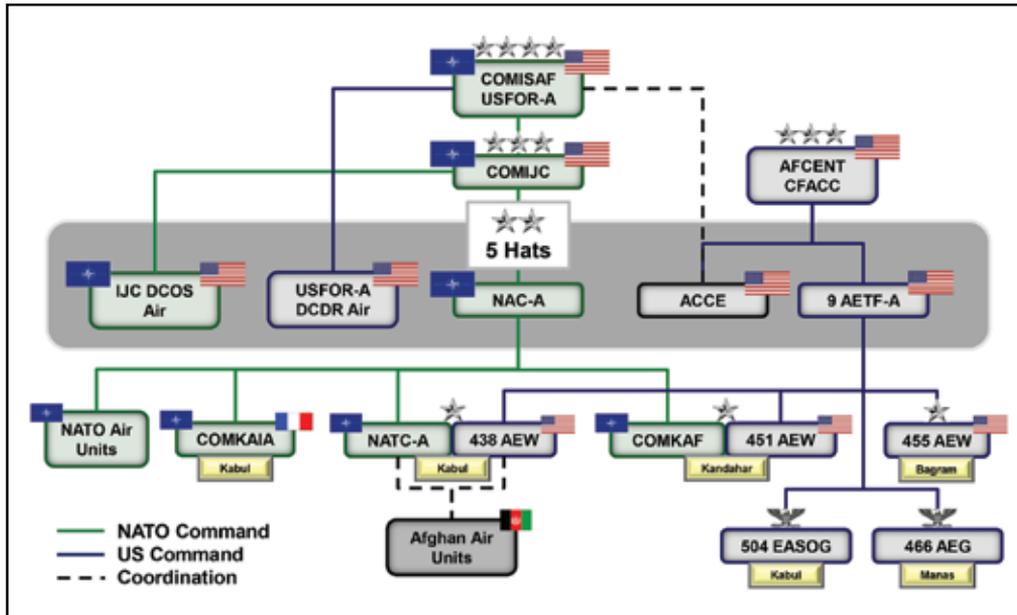
9 AETF-A – 9th Air Expeditionary Task Force–Afghanistan
ACCE – Air Component Coordination Element
AEG – Air Expeditionary Group
AEW – Air Expeditionary Wing
AFCENT – US Air Forces Central
CFACC – Combined Force Air Component Commander
COMIJC - Commander, International Security Assistance Force Joint Command
COMISAF – Commander, International Security Assistance Force
COMKAF – Commander, Kandahar Airfield
COMKAIA – Commander, Kabul International Airport

DCDR – Deputy Commander
DCOS - Deputy Chief of Staff
EASOG – Expeditionary Air Support Operations Group
IJC - ISAF Joint Command
ISAF – International Security Assistance Force
KAIA – Kabul International Airport
NAC-A – NATO Air Command–Afghanistan
NATC-A – NATO Air Training Command–Afghanistan
USFOR-A – US Forces–Afghanistan

Figure. Commander, NAC-A "Five Hat" construct

With the shift to the NAC-A, giving air support to the coalition will remain our primary focus, but we will add a new major responsibility: providing security force assistance to the Afghan Air Force. Although the air force will always be proportionally small compared to the size of the rest of the Afghan National Security Forces, its progress thus far has been real and measurable. In the last year, the Afghan Air Force has conducted casualty evacuation, air assault, and aerial transport and resupply; moreover, it is growing initial capabilities in ISR and the delivery of aerial fires. These capabilities buttress the confidence and capability of the other Afghan forces it supports, acting as a force multiplier for morale as well as physical capability on the battlefield.

The Rise of the Afghan Air Force

Growing a professional air force is no easy task. It requires aircraft, air bases, suitable maintenance facilities, proper airspace for training, and—above all—sufficient human capital to support the myriad of activities associated with aviation. The Afghan Air Force has made significant strides in reaching this goal and has already conducted numerous missions in casualty evacuation, aerial resupply, air assault, aerial fires delivery, and human remains recovery—some of them with all-Afghan crews. Its growing capabilities are helping to bolster the confidence and effectiveness of the rest of the Afghan National Security Forces.

Closing Thoughts

There is no single, perfect solution for C2 in a complex, constantly changing coalition environment—change itself is the only constant. Knowing this, we can intentionally design our C2 structures to be adaptive, anticipating the pace of change. The AETF/ACCE construct does exactly this and leverages the one constant lesson learned over more than a decade of continuous coalition operations in Afghanistan: nothing is more effective for building trust between commanders and staffs than face-to-face communication. Maintaining a small presence of Airmen forward with operational joint planning expertise is the best way to build solid relationships based on mutual understanding, trust, respect, and shared experience. Even when we disagree on the approach or emphasis, these connections—as well as the cross-organizational communications they enable—help to keep us moving united in the same direction. The commander, NAC-A will preserve the best practices learned in NATO and improve on them as we move forward into Resolute Support. ✪

Notes

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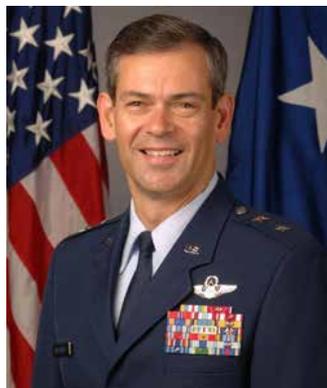
Maj Gen Kenneth S. Wilsbach, USAF

Major General Wilsbach (BS, University of Florida; MS, Embry-Riddle Aeronautical University; MS, Naval Command and Staff College; MA, Industrial College of the Armed Forces) is the commander, 9th Air and Space Expeditionary Task Force–Afghanistan; commander, NATO Air Command–Afghanistan; and the deputy commander for air, US Forces–Afghanistan. In these command roles, he oversees three air expeditionary wings and two expeditionary groups consisting of more than 6,900 Airmen. He also advises and assists with joint expeditionary tasked / individual augmentee taskings in the Afghanistan combined joint operating area and ensures the optimal integration of air and space power in support of Headquarters International Security Assistance Force (ISAF) and Operation Enduring Freedom missions. Lastly, as the commander, NATO Air Command–Afghanistan, he is responsible for developing the Afghan Air Force. In addition to these three command functions, Major General Wilsbach serves as the Central Command combined force air component commander's personal representative to the ISAF commander as the air component coordination element liaison and serves on the ISAF Joint Command staff as the deputy chief of staff for air. He has commanded a fighter squadron, an operations group, and two wings. General Wilsbach is a command pilot with more than 4,000 hours in multiple aircraft, primarily in the F-15C, and flew 31 combat missions in operations Northern Watch and Southern Watch.

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Employing Intelligence, Surveillance, and Reconnaissance

Organizing, Training, and Equipping to Get It Right

Capt Adam B. Young, USAF

> *We stand at the cusp of a new era in military operations in which the speed of information, advancements in technology, networking of our organizations and mind-set of our people will directly shape the success or failure of our future military activities. The foundations of our achievement will hinge on the ability to sense, know, decide, and act ahead of our adversaries on a global scale. These technologies and challenges have trumped the buffer of geography that historically afforded us the luxury of time to think and act, demanding that we alter our ISR farmer-culture mind-set and begin to act more like hunters.*
>
> —Lt Gen David A. Deptula, USAF, Retired
> Col Mike Francisco, USAF, Retired

Effective employment of intelligence, surveillance, and reconnaissance (ISR) in today's complex and time-dominated operating environments is more critical than ever before. Though no

easy task, the orchestrated use of ISR sensors and capabilities "can provide policymakers with information on military capabilities of foreign countries, the location of key defense and industrial sites, indications of the presence of weapons of mass destruction, and information on the plans of foreign leaders and terrorist groups."[1] Tactical fighting units also rely on ISR for timely information concerning enemy locations and actions that allows them to maneuver adequately and accomplish their missions. This is especially true in the hunt for high-value individuals, which is extremely dynamic in nature and heavily dependent upon ISR.[2] It is not surprising, then, that tactical-, operational-, and strategic-level commanders would rarely execute a military operation in the absence of ISR minimum-force requirements. In fact, ISR has become so critical to our nation's combat operations that without it, the probability of success greatly diminishes. Therefore, the Department of Defense (DOD) must move forward smartly, quickly, and jointly—not only in acquiring ISR systems but also in defining *how* they will be employed and who is qualified to conduct the ISR orchestra.[3] In this regard, the DOD finds itself behind the power curve because joint and service-specific guidance or employment standards simply do not exist at a level necessary for such an important mission.

Although ISR is typically the first request of combatant commanders "prior to and upon the initiation of military operations," we lack the procedures to guide tactical-level employment, as mentioned above.[4] Guidance such as this is vital for mission success and should provide procedures and techniques for the effective and purposeful integration of ISR assets at the tactical level, where ISR can make its most valuable contributions. This article goes beyond the scope of an asset's employment manual, addressing instead how the entire ISR enterprise should be integrated as a symphony rather than as a single instrument. In all fairness, joint doctrine has attempted to address ISR operations in Joint Publication (JP) 2-01, *Joint and National Intelligence Support to Military Operations.*[5] Although that document does an admirable job of capturing general collection-management operations and principles of ISR operational-level command and control (C2), it offers little of use

to the tactical fight. Herein lies the problem. In contrast to ISR, the close air support (CAS) mission set does not suffer from the same deficiency. In fact, an entire publication—JP 3-09.3, *Close Air Support*—is dedicated to the employment and execution of CAS at the operational *and* tactical levels. Furthermore, JP 3.09.3 includes employment guidance for uniquely skilled service members dedicated to CAS control—something not found in the control of ISR.[6]

Because mission demands remain in both current overseas contingency operations and in preparation for any future conflict, uniquely trained intelligence forces must expertly leverage the entire ISR enterprise if we wish to retain the operational advantage. Further, commanders should have full confidence in their assigned ISR force, and training should no longer occur *during* combat operations, as has been the case over the last decade. Toward that end, this article advocates that specific training (prior to arrival in-theater) and qualifications be immediately instituted for personnel involved in controlling ISR assets and their sensors. Specifically, it argues for the joint development of ISR tactical controllers (ITC) and seeks to convince senior military leaders to establish and impose a joint qualification for the real-time, tactical control of ISR assets. The article also recommends adoption of a CAS-like framework for joint and service-specific doctrine, training, and, ultimately, the execution of ISR tactical control. This will occur primarily at the tactical level of warfare although the effects at this level will directly affect operational and strategic objectives. In this regard, the article further recommends that ISR C2 evolve to facilitate effective employment across all spectra and that an adequate ISR-specific C2 structure be established. Lastly, it addresses artificial seams between operations and intelligence forces and continues the transition of ISR forces from farmers to hunters.[7]

Current ISR Doctrine/Guidance/Employment/Evolution

Through technological advances and Airmen's ingenuity, we can now surveil or strike any target anywhere on the face of the earth, day or night, in any weather. A more challenging issue today—and for the future—is determining and locating the desired effect we want to achieve. Because ISR capabilities are at the core of determining these desired effects, ISR has never been more important during our 60 years as an independent service. ISR has become the foundation of Global Vigilance, Reach, and Power.

—Gen T. Michael Moseley, USAF, Retired

Recent conflicts have forced the United States to deal with targets that emerge and expose themselves only for short periods of time.[8] The nature of this target set demands the existence of an effective and efficient ISR system to ensure that the right sensors are at the right place, at the right time.[9] Defining *effective and efficient ISR system*, however, remains a work in progress since the scope of the ISR enterprise is exponentially larger and tremendously more complex than launching a balloon to conduct reconnaissance of enemy troop positions. Today's ISR enterprise includes technologically complex vehicles and sensors that demand trained experts to employ them. Thus, effectiveness in analyzing and controlling the unique, complex, and substantial volume of ISR data and assets demands the integration of a competent and skilled ISR controller throughout the entire process. This is especially true for real-time ISR control because mission demands are extremely dynamic and time sensitive. Toward that end, the DOD must continue to evolve and ensure that training programs, doctrine, employment guidance, and personnel are postured to meet this problem set.

Recent analysis of the conflicts in Afghanistan and Iraq by the RAND Corporation reveals that "commanders are often unaware of how their ISR assets are being employed and that they are perhaps not being used to their full potential."[10] This observation alone raises the question of what the DOD is doing about this problem. To date and over the last decade with increasing frequency, ISR training blocks and semi-

nars have sprouted, primarily in intelligence channels; however, joint doctrine, guidance, and procedures for ISR employment have yet to materialize into usable, tactical-level guidance. Again, as previously stated, JP 2-01 is a step in the right direction, but it falls short in terms of offering ISR guidance for use at the tactical level. Moreover, with regard to the services—specifically, the Air Force as the largest provider of theater airborne ISR—ISR tactical employment guidance is only loosely defined.[11] Although Air Force Doctrine Document (AFDD) 2-0, *Global Integrated Intelligence, Surveillance, and Reconnaissance Operations*, released in 2012, and the *Theater ISR CONOPS*, released in 2008, are both helpful documents that address the concepts of planning, organizing, and employing ISR, they offer little to the tactical driver of assigned collection assets.[12] In the final analysis, these documents simply do not contain the level of detail found in JP 3-09.3.

JP 2-01, "Joint and National Intelligence Support to Military Operations"

The most recent release of JP 2-01 does an excellent job of beginning to address the complexity of ISR operations but falls short at guiding tactical execution. Chapter 3, "Intelligence Operations," the most relevant one for this discussion, provides guidance in planning and direction, collection, processing and exploitation, analysis and production, dissemination (PCPAD) and integration, evaluation and feedback.[13] Its 60 pages or so are too general for incorporation at the tactical level and don't come close to reaching the level of usable guidance found in JP 3-09.3. In fact, the only paragraph dedicated to execution guidance notes that "the unit" will determine how to execute a "mission type order."[14] Although the guidance to use such an order may seem wise in theory, the fact remains that the majority of forces requesting and consuming ISR usually know very little beyond full motion video. Even in this discipline, unit knowledge about control and collection optimization remains primitive. This negates the synergy of stacking multiple and unique ISR assets together to carry out a common mission since the controller lacks the know-how to employ them effectively. Further,

when units attempt to address their intelligence gaps through ISR, assignment of an asset to a unit can generate a great deal of frustration as the ISR asset operators and the supported unit struggle to understand each other's intent or full capability. This common problem could be mitigated through training and mandating the presence of a qualified ISR controller who would conduct the mission type order. This would not only diminish mutual levels of frustration but also ensure utilization of the appropriate ISR sensor to address the appropriate intelligence gap. In the final analysis, though, JP 2-01 simply does not come close to the level of detail necessary for ISR control at the tactical level.

AFDD 2-0, "Global Integrated ISR Operations"

AFDD 2-0, which addresses planning, organization, and employment, seeks to deliver usable guidance for ISR employment, but it is primarily concerned with the operational and strategic levels (especially the operational-level C2 of ISR through the air and space operations center [AOC]), offering practically no guidance for tactical-level execution. As the C2 arm for the joint force air component commander, the AOC is tasked with both direction and planning for ISR *and* with execution supervision of ISR operations.[15] Under the AOC construct, ISR planning and tasking occur in the ISR division. Although the division performs an important task, its collection managers are typically more concerned with ensuring that an asset has a collection deck along with the appropriate processing, exploitation, and dissemination team than in vetting the ISR target, ensuring that the supported unit will use the asset responsibly, or confirming that there is someone qualified *on the other end* to control the full range of complex collection assets assigned. This differs considerably from the requirements on the CAS side of the house in that all joint terminal attack controllers (JTAC) must be qualified prior to putting in a call for fires. Nonetheless, once an asset receives tasking via the air tasking order, it falls to the combat operations division to oversee its mission execution at the operational level.[16] This occurs by means of the senior intelligence duty officer team that over-

sees the execution of the plan created in the ISR division by responding dynamically through the retasking of ISR assets as the battlefield evolves and seeing that the appropriate processing, exploitation, and dissemination plan is in place.[17] It is important to note that, depending on the number of ISR assets overseen, remaining tactically engaged in collection missions is rarely feasible, especially in theaters that routinely have more than 10 ISR assets operating simultaneously as the workload becomes too great. Thus, unless an individual is specifically tasked to perform a tactical controller role under the senior intelligence duty officer team, the latter should not direct tactically assigned assets since it is fulfilling an operational C2 role in practice and doctrine. In sum, AFDD 2-0 contains excellent information on coordination of ISR from the combatant commander to the operational level, as well as on ISR units and exploitation centers, but it includes no guidance on how ISR control will or should occur at the tactical level.

"Theater ISR CONOPS" and the ISR Liaison Officer

The *Theater ISR CONOPS* document "provide[s] a foundation for a theater ISR concept of operations" and improves "integration of ISR into joint operations enabling rapid decisions based on actionable intelligence."[18] It also highlights the requirement of synchronizing all actions and efforts with the commander's operational objectives while ensuring continuous planning and assessment throughout. Lastly—and arguably most importantly—by addressing and supplying guidance to the ISR liaison officer (ISRLO), the document gives form to a concept that came into practice just years earlier.

The idea of embedding a liaison officer as a tactically smart subject-matter expert within an organization to augment or improve tactical employment is not new. In fact, from an airpower perspective, air liaison officer (ALO)–type positions have been utilized as far back as World War II with the goal of properly integrating airpower with Army maneuver.[19] It should come as no surprise, then, that over the last decade, as ISR began a dramatic increase in importance from lower-

echelon tactical units up to senior leaders, a similar type of development would occur.[20] Thus, in 2006 when the Air Force—"the largest military provider of surveillance and reconnaissance"—took the initiative to embed ISR professionals into select Army division-level units as ISRLOs, a truly beneficial evolution began.[21]

ISRLOs are charged with solving the twofold problem of ground forces not effectively utilizing Air Force ISR assets and Air Force ISR operating squadrons not effectively pushing information to ground forces due to limited understanding of ground maneuver.[22] For example, if a ground unit not well versed in the collection, optimization, and control of full motion video is allocated this type of asset to support a particular operation, then it will likely misuse or underuse the asset. In this regard, the ISRLO would be responsible for assisting in the training of the ground unit (during combat operations) to use ISR efficiently and effectively. ISRLOs, however, are typically assigned to division-sized units and therefore cannot be present at all subordinate-unit locations with enough frequency to ensure adequate training of the entire division's intelligence teams. Further, despite their tasking to facilitate support to end users during all phases of collection, they operate under the direction to "not act as terminal controllers."[23] Who, then, is on the pointed end of the spear? Or who is actually conducting ISR terminal control? In truth, the answer to this becomes, "It depends," concluding that there is, in fact, no standard position. This is where the program falls short and differs greatly from the ALO program in CAS wherein ALOs hold a specific qualification to control terminal fires (as the subject-matter experts assigned). Thus, even though ISRLOs assist their assigned Army division units in requesting ISR and see that they follow proper request channels, select the correct sensors, provide training, and so forth, they are not—and should not be (according to written guidance)—involved in tactical-level execution.

ISR Tactical Controllers

If the ISRLO and AOC are not postured to tactically control ISR assets and if no mandatory, joint solution yet exists, has anyone figured out how ISR tactical control is best executed? On the conventional and co-alition side, the answer again is, "It depends," or a de facto "No." Alternatively, the special operations community quickly realized the need for a trained ISR controller, leading to the emergence in the last decade of the ISR tactical controller. Likely due to its special operations context, the ITC has yet to make its way into mainstream joint documents. From a service perspective, one finds references to the ITC only in unique tactics documents and only in one service-specific instruction—Air Force Instruction 10-410, *Operations Planning: Presentation of Air Force Special Operations Forces*. However, that document offers nothing more than a loose explanation of the ITC: "The 11 IS [11th Intelligence Squadron, an Air Force Special Operations Command unit] also trains and deploys enlisted or officer ISR Tactical Coordinators [equivalent to the ITC] . . . that embed at the lowest tactical level to plan, task, control, and execute ISR operations."[24] Beyond this Air Force instruction, guidance at the joint level is sparse, and although tactical, service-level documents make reference to the ITC, nothing exists at a level similar to CAS.

Despite the lack of joint guidance, the special operations community has proven the ITC's effectiveness in combat operations, and regular rotations continue to be filled. The program as it was created exists mainly in special operations channels, and its demonstrated effectiveness suggests it should be adopted in principle and applied in the conventional joint and/or coalition environments. Under the special operations forces construct, the ITC is known as the "individual responsible for acting as the conduit between the supported unit commander and his supporting ISR assets."[25] In other words, the ITC *drives* or controls assets in real time as the ISR subject-matter expert to find, fix, and track targets on behalf of his or her assigned commander. The ITC also typically resides in the tactical operations center, working in

direct concert with the supported task force or unit. This placement is of fundamental importance because the ability to synchronize operations is critical—physical separation of the ITC from the supported unit may hinder the desired effects. Clearly, the special operations community has led the way in quickly adapting to a tactical need. Due to the ITC's success in combat, US Special Operations Command and Air Force Special Operations Command are pushing for the "professionalization" of the ITC force.[26] This is a major step forward for the ITC program in special operations, but the general-purpose force has yet to incorporate this critical function. The question then becomes, how does the *entire* joint force move forward?

Applying the CAS/JTAC Framework for ISR Control

Historically, airmen on the ground have provided the "airmanship" necessary to integrate airpower with ground operations.

—Maj Robert G. Armfield

Today, the Air Force is tasked with providing ISR to a growing set of missions, from the global fight against terrorist organizations to humanitarian-relief efforts around the globe, while remaining postured to support major combat operations should the need arise.[27] With these responsibilities in mind, the establishment of an ITC program under formal doctrine and guidance, one that conveys the employment art of ISR and an understanding of how to leverage the entire ISR enterprise, is vital to the success of taskings to come. This section builds from the foundation of the current state of ISR and begins to incorporate a CAS/JTAC framework as a way of proposing a baseline for the ITC program. Much of this proposal stems from JP 3-09.3.

It is important to understand that lessons learned from the evolution of CAS can and should be applied directly to ISR. From the beginnings of CAS in World War I to the formation of the air support party (later the tactical air control party), it became clear that integrating a CAS-

trained Airman across multiple levels as part of the application of airpower was critical to success. This, then, is the first lesson learned that should be applied to ISR—*Uniquely skilled and trained ISR personnel must become directly involved in the execution of ISR*. Next, with the creation of the ALO and JTAC positions, the community recognized the importance of qualification standards that are mandatory and not simply nice to have. This is the second lesson learned—*ITCs must be uniquely qualified to employ their skill set*. In turn, these two lessons should form the baseline for future ITC programs; however, if ISR is to truly benefit from the wisdom that CAS can provide, then we must also analyze the C2 structure.

In the 1980s, the Air Force renewed its effort "to provide the Army with the best possible service" by utilizing the theater air control system (fig. 1).[28] This system aligned tactical air control parties down to the battalion level and gave higher headquarters guidance from the air support operations center (ASOC). Ultimately, though, under this system the Air Force embedded experienced Airmen where they were needed and ensured that Army counterparts had qualified personnel to control airborne fires with the maneuver units they supported. This is the third lesson learned that needs to be applied—*ISR controllers must be integrated into an appropriate C2 structure that guarantees the most effective use of ISR*.

A2C2 - Army airspace command and control
AAGS - Army air-ground system
ACCE - air component coordination element
AOC - air and space operations center
ASOC - air support operations center
AWACS/CRC - Airborne Warning and
   Control System / control and reporting center
BCD - battlefield coordination detachment
EOC - expeditionary operations center
FAC(A) - forward air controller (airborne)

GLO - ground liaison officer
GP - group
JARN - joint air request net
JFC - joint force commander
JSTARS - Joint Surveillance Target Attack Radar System
SQN - squadron
TACP - tactical air control party
TACS - theater air control system
WG - wing

Figure 1. Air Force theater air control system. (Reprinted from AFDD 3-03, *Counterland Operations,* 11 September 2006 [incorporating change 1, 28 July 2011], 52, http://static.e-publishing.af.mil/production/1/lemay_center/publication/afdd3-03 /afdd3-03.pdf#ProtectedMode=1.)

   The last lesson learned for application to ISR comes directly from the many joint and service-specific doctrine documents that deal with CAS. Although ample guidance exists, JP 3-09.3, *Close Air Support,* consisting of 275 pages dedicated to the execution of CAS, remains the most appropriate for this discussion. As a joint doctrine document, it does not stop at the operational level but offers detailed guidance for CAS execution, communications procedures, planning, considerations for munitions employment, aircraft differences, the effects of weather,

and the like. Such detail is a testament to the CAS community and the extent of its evolution over the last 50 years. Nonetheless, this leads to the final lesson learned that we should apply to ISR—*ISR must have appropriate joint and doctrinal guidance to facilitate the conduct of tactical-level execution.*

Recommendations

With such capacity for ISR, the difficult guesswork on what hostile forces are around the corner, on the roof, or over the wall is substantially reduced for our ground forces. This capability is absolutely vital at all levels of conflict— strategic, operational, and tactical.

—Gen Norton A. Schwartz, USAF, Retired

To move forward jointly and smartly in the execution of ISR, the DOD should immediately adopt a CAS/JTAC methodology and framework that focus on the previously described lessons learned. The framework should be accompanied by clearly defined certification and qualification criteria similar to those of the current JTAC model. Further, it should include specific employment guidelines, training requirements, certification guidance, personnel-placement instructions, and C2 directions to shape and field ISR professionals as ISR hunters. Toward that end, the Air Force, as the service lead and executive agent for the joint ISR community, should begin drafting a joint publication to guide ISR employment at a level similar to that found in JP 3-09.3. Further, incorporating a tactical publication for joint ISR employment from the Air Land Sea Application Center would add greatly to this effort. Such a joint document, one that comprehensively defines ISR tactical employment, will equip ISR hunters with the means to leverage the global ISR enterprise, increase the effective use of ISR sensors, ensure mission success, and protect friendly forces, among other key objectives. This guidance should also clearly define the ITC as the lowest echelon controller and mandate the strict enforcement of qualification minimums and guidelines; again, only qualified and trained profes-

sionals should perform ISR tactical control. By doing so, commanders will never question whether or not an individual has the appropriate training and qualifications prior to controlling ISR assets in combat.

ISR Tactical Controller Defined

Similar to a JTAC, an ITC should be a qualified service member who, from a forward or reachback location, directs the employment of ISR assets. ITCs should come from officer and enlisted intelligence backgrounds since having a basic knowledge of intelligence will ensure a common footing for training programs and add to an ITC's capability. These individuals should understand the entirety of the "find, fix, track, target, engage, and assess" and PCPAD models but should primarily operate in the "find, fix, track" and "collection" portions.[29] Lastly, the DOD should recognize qualified ITCs as personnel authorized to perform ISR tactical control. They must also be able to perform, execute, and exhibit the following mandatory requirements:

1. Know the enemy situation and location of friendly units.
2. Know the supported commander's target priority, desired effects, and timing of . . . [ISR].
3. Know the commander's intent and applicable ROE [rules of engagement].
4. Validate [and prosecute] targets of opportunity.
5. Advise the commander on proper employment of . . . [ISR] assets.
6. Submit immediate requests for . . . [ISR].
7. Control . . . [ISR] with supported commander's approval.
8. Deconflict . . . [and manage ISR sensors for maximum advantage over the enemy].
9. Provide initial . . . [ISR assessment after operations for follow-on targets and battle damage assessment].[30]

A new joint publication, JP 2-09.3, *ISR Tactical Control*, that integrates these nine core responsibilities for full compliance should be utilized as a baseline for topic guidance and should include areas such as organization and fundamentals, C2, planning and requesting, and preparation and execution.[31]

Placing the ISR Tactical Controller and Evolving the Air Support Operations Center

Based on this proposed doctrine and guidance for the ITC, these positions will be optimally employed at the tactical level of warfare. Although qualified ITCs can also operate at higher levels of warfare, including the operational and strategic, they will provide real-time influence and prove most effective at the tactical level. For ISR employment, this article suggests a structure similar to the theater air control system, which would place ITCs (if predominantly a ground campaign) at each battalion, brigade, division, and corps level, complete with a C2 node similar to the ASOC's and subordinate to the AOC (fig. 2).
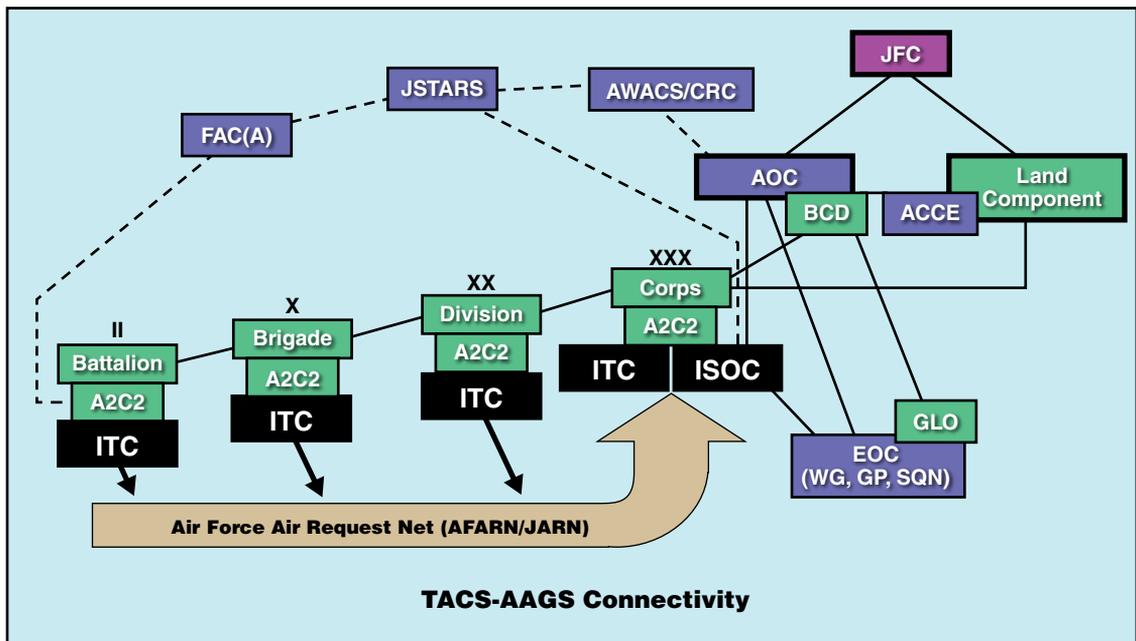
ISOC - ISR support operations center
ITC - ISR tactical controller

Figure 2. Placement of ISR tactical controllers. (Adapted from Air Force Doctrine Document 3-03, *Counterland Operations*, 11 September 2006 [incorporating change 1, 28 July 2011], 52, http://static.e-publishing.af.mil/production/1/lemay_center /publication/afdd3-03/afdd3-03.pdf#ProtectedMode=1.)

Placement of ITCs in an ASOC-like structure should permit the AOC to evolve and include a separate ISR support operations center (ISOC). Doctrinally, the ASOC is charged with coordination of preplanned and immediate CAS and normally executes tactical control of joint fires available for tasking. The ISOC would execute a similar mission but concentrate instead on the employment of ISR, doing so in close coordination with the ASOC and other C2 elements.[32] Note that having two separate chains of command is critical and that no attempt should be made to put the ISOC under the current ASOC command structure since such an arrangement would create a conflict of interest that hinders ISR when multiuse assets are operating on the battlefield. Thus, establishment of an ISOC with a command structure similar to the ASOC's would allow both C2 arms to report directly to the AOC, which could arbitrate between competing demands and ensure that the commander's objectives are met. Lastly, an ISOC would facilitate a direct tie into ground (or maritime) units while maintaining flexibility and responsiveness to the C2 of ISR in carrying out any mission.[33]

Conclusion

Over the last decade, the conduct of warfare has changed dramatically with the infusion of real-time ISR. Although the concepts of ISR as we know it have been in place for centuries, the speed at which information is processed *and* required on the battlefield today, along with the vast quantity of ISR available, resembles nothing in the past. Commanders from all services have become reliant on ISR professionals to find, fix, and track targets; indeed, without reliable ISR, many commanders will not execute operations. In the absence of modern ISR capabilities, we could not have conducted countless successful operations or removed many high-value individuals from the battlefield. Further, our forces would have faced much greater risks. In light of these developments, the DOD has done an excellent job of acquiring ISR systems and fielding them on the battlefield. However, it has not enjoyed the same level of success in establishing guidance, training,

and standards for ISR employment at the tactical level. Despite the many key developments in ISR employment (ISRLOs, ITCs employed as part of special operations teams, operational authorities, etc.), we still lack legitimate joint guidance. One can only speculate about how many lives would have been saved and enemies removed had such guidance existed. We must remedy this deficiency, capture lessons learned, and employ ISR on an equal footing with CAS. Any future conflict will demand this evolution. Employing uniquely trained *and* qualified ISR tactical controllers must become the standard, not the exception. Our success in the full range of military operations will depend upon these skilled ISR hunters who give our enemies no quarter as they find, fix, and track them day or night, at any place and at any time. ✪

Notes

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2. Maj James Bilby (US Air Force), in discussion with the author, 9 April 2013.

3. This article goes beyond the pilots, exploiters, and sensor operators, examining the tactical-level controllers tasked to orchestrate a multitude of unique ISR assets assigned to collect against a particular target or support a specific mission.

4. Air Force Doctrine Document (AFDD) 2-0, *Global Integrated Intelligence, Surveillance, and Reconnaissance Operations*, 6 January 2012 (hereafter AFDD 2-0, *Global Integrated ISR Operations*), [ii], http://static.e-publishing.af.mil/production/1/af_cv/publication/afdd2-0/afdd2-0.pdf.

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18. Headquarters US Air Force Intelligence Directorate, *Theater ISR CONOPS*, 1.

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20. Chizek, *Military Transformation*, 1–9.

21. Ibid., 13; and Lt Col Rachel A. McCaffrey, *Reciprocally Embedding ISR Liaisons to Build Unity of Effort* (Carlisle Barracks, PA: US Army War College, 2010), 14, http://www.google.com/url?sa=t&rct=j&q=&esrc=s&frm=1&source=web&cd=1&cad=rja&ved=0CCwQFjAA&url=http%3A%2F%2Fwww.dtic.mil%2Fcgi-bin%2FGetTRDoc%3FAD%3DADA518135&ei=HUVxUq74M7XMsQSO8ICwDA&usg=AFQjCNFI6fHPDGVn-QpGidQlGVyF433LqA.

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28. Maj Raymond O. Knox, *The Terminal Strike Controller: The Weak Link in Close Air Support* (Fort Leavenworth, KS: School of Advanced Military Studies, US Army Command and General Staff College, 14 November 1988), 17, http://www.google.com/url?sa=t&rct=j&q=&esrc=s&frm=1&source=web&cd=2&cad=rja&ved=0CC4QFjAB&url=http%3A%2F%2Fwww.dtic.mil%2Fcgi-bin%2FGetTRDoc%3FAD%3DADA208256&ei=SwlwUt7GF8nrkQfg1YAw&usg=AFQjCNHikMcG-MSpF_Rj0yZVNO6HhKV6AA.

29. "Find, fix, track, target, engage, and assess" is used here, but in practice the ITC should adopt the targeting style of his or her attached unit, which could include "find, fix, finish, exploit, and analyze." Capt Jerry Gay (US Air Force), in discussion with the author, 7 April 2013.

30. JP 3-09.3, *Close Air Support*, II-9.

31. Ibid.

32. Ibid., II-7.

33. I am grateful to Capt Jerry Gay, whose advice was pivotal in helping me work through the conclusions for this proposed C2 structure.

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You Can't Win If You Don't Play

Communication—Engage Early, Engage Often

Lt Col Aaron D. Burgstein, USAF

The Maginot Line, the legendary series of defenses built after World War One by the French to thwart any German invasion plan, seemed like a good idea at the time. That war had been characterized by trench fighting and static lines of defense that killed thousands, if not hundreds of thousands, of soldiers on both sides. During World War Two, enemies—in this case the Germans—would hurl themselves futilely against the Maginot Line's impregnable series of fortifications. Meanwhile, the French Army would have time to mobilize and strike a decisive counterblow. This plan of "genius" was an utter failure. Daring, speed, combined arms, and a well-thought-out plan of attack flanked and defeated the Maginot Line—negating the expensive, static, and ultimately worthless fortification.

Like kinetic warfare, communication should be an offensive tool, not a static line of defense. By seizing the initiative, employing the combined-arms approach of visual information (VI) (photo and broadcast), print, social media, and nontraditional forms of communication, an organization can attack in depth, using multiple paths to produce nonkinetic results, prepping and shaping the battlefield to attain the desired effect. An organization that gains early control of the information battlespace can shape not only that domain but also many others and increase the odds of mission accomplishment.

The Importance of Communication

It is not possible to communicate nothing. As pointed out by Cliff Gilmore, a Marine Corps public affairs strategist, "everything one does communicates something to somebody, somewhere."[1] Gilmore postulates three truths of communicating. First, no one can lead without communicating. Second, not communicating is impossible. Third, people cannot communicate without influencing those in the communication process.[2] But *why* is communication important?

Strategist Colin Gray said that "war and peace is really a mind game."[3] This insightful comment explains why one must communicate before, during, and after conflict. According to Carl von Clausewitz, war is "an act of force to compel our enemy to do our will."[4] Essentially, it comes down to making people do what one wants them to do—by destroying the enemy's power of resistance, which Clausewitz defined as "*the total means at his disposal* and *the strength of his will*" (emphasis in original).[5]

The will of the people is the essence of warfare. Convincing the enemy that his fight is hopeless and that he would be better off agreeing to his opponent's demands or conforming to his ideals will result in victory. In other words, one can overcome the enemy psychologically. Indeed, Clausewitz declared that "psychological forces exert a decisive influence on the elements involved in war."[6] As has often been ar-

gued—and to paraphrase Rear Adm Alfred Thayer Mahan—lesser soldiers with good weapons can often be beaten by better / more highly motivated soldiers with lesser weapons.[7]

Communication is also an important way of motivating forces. Soldiers involved in a mission they believe in tend to be more mission- and service-focused. Max Boot notes that Army reenlistment rates during the Bosnia and Kosovo operations were the highest the Army had seen in years.[8] Psychological reinforcement helps make those forces stronger. A powerful army without the will to carry out its operations is almost useless. That same army, with moral and psychological strength behind it, can achieve great things.

Further complicating matters is the existence of multiple communication fronts, even battlefields. Different publics require different approaches. What works well with one may have the opposite effect on another. The trick lies in breaking the code of communicating effectively. For something so "normal" and important as communicating, it's easy to run the gamut of communication success—or failure.

The Good

The Berlin airlift offers one of the best examples of a good communication effort on multiple levels. During the early stages of that effort, Air Force leaders recognized the value of public relations, making sure to include writers and reporters in the action. Gen William Tunner described the situation as "terrific public relations potential. . . . This is the greatest opportunity we have ever had."[9] Although Tunner may have been speaking specifically about air transport, his comment applied equally to the US policy of supporting West Berlin against communist action. The airlift, with all of its attendant publicity, was "a disaster for Joseph Stalin and his foreign policies by providing graphic evidence of Soviet ruthlessness and inhumanity."[10] More importantly, it helped swing American public opinion towards an alliance with Western European nations—something not assured before the blockade and hugely successful airlift.[11]

As the airlift gathered acclaim for its humanity and international co-operation, the concurrent B-29 deployment to Europe proved equally important. The thinking was that the deployment of these theoretically nuclear-capable bombers would show the Soviets "that the West meant business."[12] Roger G. Miller observes that it represented a serious demonstration of American commitment, showing the United States' dedication to the defense of Western Europe.[13] That these planes were not actually the nuclear-capable version is immaterial because the bulk of the world's population—perhaps even the majority of Soviet leaders—did not know this. The deployment provides a good example of communicating with the adversary. In the late 1940s, there was no stronger message than the atomic bomb, so the public movement of B-29s would certainly attract attention.

The Bad

On 5 February 2003, Secretary of State Colin Powell, testifying before Congress, made the case that Iraq had weapons of mass destruction. At that time, Secretary Powell fully believed in the evidence he presented and argued for war with Iraq. This scenario became an example of an initially effective communication engagement that turned bad and damaged US credibility. During the invasion and subsequent occupation, the fact that no such weapons were found undermined both the United States' justification for the invasion and international/coalition support; it also harmed Powell's personal reputation, casting doubt on his integrity.[14] Powell was devastated: "I'm the one who presented it on behalf of the United States to the world, and [it] will always be a part of my record."[15] Building a coalition with inaccurate facts is a poor course of action.

The Ugly

The creation and announcement of Africa Command present a good example of an ugly communication effort. On 6 February 2007, the White House publicized the command's appearance in "a two-line . . .

announcement that said everything and nothing."[16] Dr. J. Peter Pham, director of the Atlantic Council's Michael S. Ansari Africa Center and a member of Africa Command's Senior Advisory Group from its inception, had his first inkling that something was amiss in the communication arena when African defense attachés began asking him for information. Rather than brief any of them, the United States had informed only attachés of the North Atlantic Treaty Organization. The Africans eventually received a briefing—about 10 days later—but this failure to communicate had already proven a "costly mistake."[17]

Even worse was the dearth of information about the new command. Rather than having access to readily available answers (e.g., from public affairs guidance), African leaders and newspapers were left to their own devices in terms of gathering information about Africa Command. From the onset, an obvious lack of communication jeopardized the mission to create peace and stability. "No one was authorized to speak about the command," said Pham. "So even the simple questions weren't answered. This created an aura of mistrust that exists to this day."[18]

The "Hunker Down" or "Maginot" Method of Communication

Today's commanders understand that reactive public affairs provides no real added value toward the accomplishment of our missions. In order to be effective in our operations, we need the ability for our communications to be proactive or as we call it, "effects-based communication."

—Lt Gen William B. Caldwell IV
Former spokesperson, Multi-National Force–Iraq

Sometimes the reactive mode is appropriate—even called for. In those cases, the standard "response to query" format supplies a pre-thought-out series of possible questions and answers for use if needed (e.g., before announcing a major operation or significant change to an organization). This tool is ready when the questions begin and offers to

individuals speaking for the organization a preapproved set of guide-lines and key points upon which to base their answers.

Generally, classified information is not pushed to either the public or the media. In most cases, people understand this policy. Even though the actual classified information cannot—and should not—be released, one can still confirm the obvious and provide an answer.

What are the downsides to adopting a reactive course of action? For one, by doing so, one is also playing catch-up by default. Instead of leading with statements, thoughts, and positions, thereby establishing the narrative, a reactive team constantly responds to whatever the "adversary" says or does. If the Taliban declare that US forces have killed innocents, then America finds itself in a constant state of denial, trying to prove its innocence. Put more succinctly, "If you don't define the narrative, someone else will."[19] News cycles are dynamic and powerful. Whoever releases information first "scoops" the competition, forcing the less ambitious organization into a reactive posture of always struggling to defend itself and respond to what is said about it instead of expressing its own messages.

Just as importantly, such a defensive posture can easily diminish an organization's credibility. Instead of discussing all of the good things it does, it must use most of its energy, efforts, and communication to counter negative statements. By constantly playing catch-up and letting the opponent lead, the organization discusses negative aspects in the bulk of its messages, both incoming and outgoing, and further harms its reputation.

In its battles with Israel, Hamas recognizes the latter as the stronger military power and designs its strategy accordingly. If it cannot win a conflict militarily, then it wants have the upper hand in terms of its portrayal.[20] Thus, both Hamas and Israel strive to get their messages out first. By seizing the high ground in communication through quickly releasing information and communicating to its audiences, an organization automatically puts its adversary on the defensive.

Seizing the Offensive

The bravest are surely those who have the clearest vision of what is before them, glory and danger alike, and yet notwithstanding, go out to meet it.

—Thucydides

Communication works for those who work at it.

—John Powell, film score composer

Communication should be an intrinsic part of the battle plan, traceable to a leader's lines of operations. Engaging during mission analysis provides enough lead time to plan in parallel and synchronize key leadership-engagement opportunities through the media, broadcast release, and so forth. Too often, public affairs is relegated to an annex and added as an afterthought after all the planning is completed. That approach will not win a communication engagement and can prove detrimental to the overall plan as the organization struggles to play catch-up. Rather, communication must be part of the plan from conception through realization—but how?

Like reactive communication and the Maginot Line, the proactive method is akin to World War One's famed blitzkrieg, which so handily defeated those static lines. Although the combined-arms approach is indeed a vital part of a proactive communication plan, it is much more than that. The blitzkrieg, also known as "lightning war," was fast and of short duration. Such tactics may work in some instances, but they are not the basis for a solid, comprehensive communication strategy, which must take a long-term approach.

Who makes a proactive communication strategy work? According to journalist Willy Stern, "General and flag officers must empower subordinate officers."[21] If senior leaders aren't talking, then junior leaders have no example to follow—to actually get out and talk to both their own people and their adversaries. Thus, it is crucial that senior leaders set the stage by communicating—often. They then serve as role mod-

els to the subordinates who won't feel as threatened by communicating. Nor will they worry about being in front of their leaders if those individuals lead from the front. Moreover, senior leadership must *empower* those junior leaders to communicate rather than follow a zero-defect mentality. Allowing these leaders to take a little risk encourages them, and others, to communicate.[22]

As Gen David Petraeus, former commander of the International Security Assistance Force, outlined in his counterinsurgency guidance, the vital nature of communication demands that one do it correctly:

> Be first with the truth. Beat the insurgents and malignant actors to the headlines. Preempt rumors. Get accurate information to the chain of command, to Afghan leaders, to the people, and to the press as soon as possible. Integrity is critical to this fight. Avoid spinning, and don't try to "dress up" an ugly situation. Acknowledge setbacks and failure, including civilian causalities, and then state how we'll respond and what we've learned.[23]

Openness and honesty are only part of the equation. Communication needs to be timely, accurate, and truthful. But how do modern communicators carry out their mission?

Make It Strategic

"You want a strategic, well thought out plan, where everything reinforces everything else."[24] To be truly strategic, one should plan in advance and persuade international partners to cooperate and help spread the narrative. Franklin D. Kramer, former assistant secretary of defense for international security affairs, recommends answering five questions to start the plan: (1) What's the message? (2) Who are the audiences? (3) Who are the communicators? (4) What are the channels to communicate? (5) What is the desired end state?[25] Though great tools for planning a communication strategy, these questions need modification for today's and tomorrow's environment. Moreover, these steps are linear but planned in such a way that they become mutually reinforcing. Rather than figuring out the messages first, one should begin by defining the end state or intent of the project.

What Is the Intent and/or End State?

Normally, the communication intent or end state is based upon supporting the operational goal. The entire team must determine the best way to match the operational and communication goals to attain synergy; otherwise, people will be communicating just to hear themselves speak. As part of designing the overall battle plan, one should identify the desired end state and factor it into the communication plan. The plan needs to include an operational goal linked with the communication goal, a method of communicating, and—just as importantly—a public with whom to engage.

What's the Message?

Now that one knows what to talk about, the next question should address the messages that help further that aim. What is the communicator trying to convey? What is the goal of the operation supported by this communication? However, it's more than just what to say. It's with whom to communicate and how best to do so.

Who Are the Publics?

The term *public* is used here instead of *audience*, which receives information. Communicating seeks to engage in a dialogue with various publics. Importantly, this step determines with whom to communicate—something not as easy as it may seem. It is simple to pick "US military" or "adversary X" as a group, but one must keep in mind that multiple publics almost always exist. The fact that a message is directed at one does not imply that others won't receive it. For the purposes of basic planning, however, the key publics must be identified and prioritized. Who is the message intended to reach?

Who Are the Communicators?

Once the publics are defined, the next—and equally crucial—step involves determining the spokespeople. One must not limit them to the

standard US public affairs types but seek out who can and will make the greatest impact. Who has the most legitimacy? If, for example, the United States wants to communicate with a host nation's people, then why use American spokespeople if the local leadership is ready, willing, and able to communicate more effectively?

What Are the Channels to Communicate?

Just how will the message be conveyed? By means of television, radio, social media? It's not enough to say, "We'll tell them." One must identify a method of communication.

It is also important to consider whether to communicate in multiple languages. One can gain much by ensuring that messages to foreign nationals are conveyed in local languages and terms as opposed to a tongue that they may not understand. At this point, the combined-arms approach, discussed later in this article, comes in. Moreover, this is why it is vital to know what the goals and messages are. By coordinating these elements, one can work them together to best take advantage of the strengths of each communication medium. But what are these mediums? What weapons systems does the communicator have at his or her disposal?

Plan for Formal Assessments

Although not included with the five questions above, assessing how a communication effort is or is not progressing represents an essential part of any operation. Recurring assessments of communication plans allow commanders to determine if they have produced the intended effects. Moreover, they provide valuable feedback regarding the target publics and changes in behavior or attitude. Finally, assessments are worthless unless one learns from them and adapts. By assessing an operation and then adjusting, based on lessons learned, one can make the next round of communication efforts much more effective.

Using the Combined-Arms Approach to Attack in Depth

As discussed earlier, the method of communication represents one of the key elements to identify and then use. Today, more than ever, the United States is fortunate enough to have a vast network of communication tools at its disposal. No longer are communicators restricted to press conferences and releases. A truly savvy communicator can draw upon the power of combining public affairs assets in a synergistic manner to bring about truly powerful results. The combined-arms approach blends VI, print, social media, and nontraditional methods to create an in-depth effort to communicate with varied publics around the world.

US Air Forces Central Command (AFCENT) serves as a prime example. It runs a multifaceted communication shop out of its combined air operations center in Southwest Asia. The command's public affairs office (AFCENT/PA), led by Lt Col Sean McKenna at the time of this writing, communicates the Air Force and coalition story, but "the methods and audiences vary widely. Thus, each communication element must be keenly aware of the intended target of each AFCENT/PA product and understand how best to reach that particular audience. Consequently, most of our internal products (video, photos, and print stories produced by AFCENT/PA) are repackaged and direct-marketed to (largely stateside) media interested in the focus of the story."[26]

Visual Information (Photo/Video/Broadcast)

A picture is worth a thousand words

VI, used by the military to tell the story of its operations, has been around as long as humans have captured the moment in drawings and paintings or even sewing and weaving. Modern VI traces its roots to photographs of the American Civil War. Today, the military fields a large, highly skilled force of photographers and broadcasters in a network that spans the globe. Using still photography and video to document both combat and humanitarian operations, these teams are es-

sential to narrating in the visual medium. If the audience has only a minute, conveying the message with a photo or a 30-second video clip is much easier than doing so by almost any other means.

Take for example the US response to the recent disaster in Haiti. A large VI team deployed both to Haiti and to bases that supported operations. In this deployed role, team members captured images of relief efforts, heroism at all levels, and international cooperation—releasing them not only to the public but also, and more importantly, to the media. In one memorable case, Air Force broadcasters shot video of C-17s dropping food supplies to the Haitians, copying these images to DVDs and distributing them to various news agencies deployed to Haiti. This footage led the *CBS Evening News* that night, appearing online and in print form in multiple publications—including *Time Magazine*'s special Haiti edition—telling the story to an audience potentially numbering in the millions.[27] Nevertheless, VI does not stand alone. Photographers and broadcasters can and do work in close conjunction with print journalists.

Print

> The printing press is the greatest weapon in the armory of the modern commander.
>
> —T. E. Lawrence

Like VI, print has existed for as long as people have recorded events. Present-day commanders have a variety of means to communicate via print. The best known are newspapers—from the local base paper to the *New York Times* or the *Times of India*.

The most effective part of print communication is that it allows the writer to delve into more detail than in other mediums. The inclusion of greater background, depth, and content about any subject can prove especially useful in describing complicated situations or, just as usefully, working in conjunction with VI to offer a more comprehensive narrative.

True, portraying events by means of traditional print, such as newspapers or magazines, isn't nearly as fast as the visual realm. Many print publications are produced daily, which of course leads to lags in communicating news. However, that liability is offset by the fact that (1) print's detail can more than make up for a slight delays and (2) with the rise of the Internet, print has gone online and become much more timely, competing with the 24-hour televised news cycle.

Social Media

> *I never realized that when I signed up for my Facebook account that I was signing up to finish Mubarak.*
>
> —Hisham Kassem
> Egyptian journalist and publisher

In late 2012, Air Force staff sergeants Chris Pyles and Bradley Sisson, broadcasters working at the Defense Media Activity, created a new social media news program designed to "change the way the military communicates with its audiences."[28] Their social-media-only show, though still under development, has garnered much complimentary feedback in its limited run. Intended to deliver news of interest in a humorous manner and to combat the traditional "passive" method of receiving information by engaging the audience, the show makes for an interactive and engaging experience—a key attribute in today's communication environment, in which more than half of the US population gets its news from the Internet.[29] Furthermore, nearly one-third of Americans younger than 30 depend upon social media for news.[30] Additionally, for those concerned about the humorous aspects of a news program, one must note that even as far back as 2009, nearly a quarter of Americans aged 18–29 got their news from satirical sources such as the *Daily Show* or even *Saturday Night Live*.[31]

As Sergeant Sisson observes, "everyone has opinions and thoughts, so why not listen to them, talk to them? We are at an adolescent stage of social media communication, and things will change *very* quickly in the next couple of years on how audience members consume and in-

teract with their information."[32] A recent poll by George Washington University found that during the 2012 election, nearly two-thirds of voters believed that social media was at least on par with, if not of a higher quality than, traditional media outlets. The numbers were even higher for those under 25 years of age.[33]

But social media entails more than simply engaging with the American public. It has a wartime mission as well. Recently, *Yahoo! News* ran a story about a 26-year-old lieutenant in the Israel Defense Forces who is running a "virtual smackdown" against Hamas by using Facebook and Twitter.[34] His team's mission is to employ social media to fight the war of worldwide public perception, responding to Hamas posts, countering their claims, and showing the world the other side of the story. Doing so is vital, for as Michael Oren, Israel's ambassador to the United States, points out, "Hamas . . . has a media strategy. Its purpose is to portray Israel's unparalleled efforts to minimize civilian casualties in Gaza as indiscriminate firing at women and children, to pervert Israel's rightful acts of self-defense into war crimes."[35]

Nontraditional

I come here for a simple reason, on behalf of the president and myself, to say thank you. Thank you not only for saving thousands of lives. Thank you for making America look as good as we are.

—Vice President Joseph Biden, after the tsunami in Japan

We're putting the band back together.

—Jake Blues

Many nontraditional methods of communication are already in place, ranging from humanitarian operations to teaming with foreign militaries to military bands. One of the more innovative programs under way—the Navy's Africa Partnership Station, which began in 2007—seeks to "bring partnerships into action through cooperation among many different nations and organizations."[36] Perhaps not considered a

"communication" effort, communication is nevertheless occurring through this partnership, which permits the United States to engage with African publics in a personal manner.

Also not generally perceived as such, visits by hospital ships to remote parts of the world, as well as full-scale responses to disasters such as tsunamis, earthquakes, and nuclear incidents, are other communication events. Providing relief while at the same time engaging with multiple publics offers a prime opportunity to communicate—and, even more importantly, a chance to ensure that actions match words.

Often neglected in discussions of communication is the important role of military bands both at home station and deployed. In US Central Command, the Air Force Band "functions as an element of soft power in support of the US national security strategy, leveraging its unique access and reach to interact with audiences where a traditional U.S. military presence would be much more difficult to achieve."[37] These uses of the band, whether directed towards military morale and civilian education or utilized in a more general soft power role, can pay huge dividends.

In Central Command's area of responsibility, military communicators worked with US embassies to schedule and even fund

> targeted engagements in the communities. This happened on several occasions, including several Fourth of July weekend performances in two strategic, and rarely visited, CENTCOM priority nations—Egypt and Jordan. Force protection concerns were mitigated in coordination with US Embassy recommendations, and the AFCENT Band performed as an "American Band" in civilian clothing, using only the band name without specific reference to AFCENT. This allowed the band to positively represent the United States and help expand upon the . . . mission and US outreach efforts even where a military presence might be less acceptable. In this way, the band's performances created a cross-cultural bridge despite language barriers while accounting for security concerns—key in supporting the widest range of areas and countries of interest.[38]

Online Considerations

The cyber world combines all of these aspects. Whatever the communication element used to engage with a public initially, there exists the very real possibility that it could go viral and become a subject of interest to people all over the world. Once released, these products can explode into online discussions that can multiply their original communication effects, reaching out to many publics at the same time. This prospect requires that a proactive communication team actively monitor the social media battlespace and engage when needed—not in a duplicitous manner to steer the conversation but as legitimate representatives correcting the record. Maintaining credibility is key in any social media engagement.

For example, a communication team could post a print story to a blog or upload photos to a website. Then, as more people begin to read and view, online discussions take place. Either through ignorance or malfeasance, people could then post and attempt to steer the dialogue away from or counter to the communication team's objectives. Others might also attempt to take their messages viral, spreading their countermessages. A proactive team watches for these events, engages and steers the conversations back on track, or at least presents its views instead of letting others take control of the narrative. "Fire and forget" is not a good option in the online world.

Multiple Paths to Reach Desired Result

You talk the talk. Do you walk the walk?

—Animal Mother, *Full Metal Jacket*

Of course, all of these areas have their strengths and weaknesses. That's why the combined-arms approach to communication is so important. By using a combination of any or all of these communication tools, one can transmit messages to a variety of publics in a myriad of ways, thereby increasing the likelihood of their reception.

The first of two keys to this eventuality lies in ensuring that these efforts are coordinated. The actions of each element of the communication plan must back up the others: "What the Public Affairs office is saying, the J5 is planning and the J3 is doing."[39] By combining the various elements, engagement with multiple publics across a wide range of venues is not only likely but possible.

Second, and in many cases more importantly, one's actions must back up one's words. *If not*, the communication effort not only is wasted but also could actually result in a loss of credibility. One of the best examples of actions not matching either words or the truth involves former Iraqi information minister Mohammed Saeed al-Sahaf during Operation Iraqi Freedom. On numerous occasions, his claims about Iraqi resistance and US forces' lack of progress were grossly inaccurate—in one case even going so far as saying that the Iraqis were beating back the Americans, who were committing suicide by the hundreds, and that no Americans were in Baghdad. Meanwhile, reporters and television crews could clearly see two American tanks behind him. Because his words did not match Iraq's actions, he lost credibility and became a source of amusement, sparking multiple websites and comedians devoted to following and humorously reporting his claims. Meanwhile, this situation could not have helped the public's perception of the regime's legitimacy.[40]

Why Do This / Make the Effort?

We need to tell the factual story—good and bad—before others seed the media with disinformation and distortion, as they most certainly will continue to do. Our people in the field need to tell our story—only commanders can ensure the media get to the story alongside the troops.

—Former Secretary of Defense Donald Rumsfeld

The pen is mightier than the sword.

—Edward Bulwer-Lytton

Communication happens. There is no changing that fact. One makes the effort of creating and executing a proactive communication strategy in order to influence and direct conversations with audiences. This issue is not intrinsic to the military.

Domino's Pizza did just that in a recent advertising campaign. Realizing that the public viewed its pizza as a quickly delivered but not overly tasty meal, Domino's went on the offensive. Instead of hunkering down and just "dealing" with the issue—and the possibility of losing money and customers—the company opened a dialogue with the public by launching a "campaign acknowledging that their pizza quality suffered and putting the fans in front of the charge to fix it."[41] This is a classic example of engaging with members of the public, involving them, and turning a potential negative into a positive.

What does Domino's have to do with the military and its communication goals? Everything. Just as engaging with the public is fundamental to the continued success of a for-profit enterprise, so is engagement—communication—key to military operations. Communication is vital leading up to, during, and supporting those operations—all aspects. Sharon Hobson, a Canadian defense reporter, commented that the Canadian Navy is doing itself a disservice by its lack of communication, even as it embarks on an expensive new shipbuilding plan: "How is the Navy going to help people understand why this kind of expenditure is necessary in a time of economic restraint?"[42] Communicating its messages is in the best interest of any organization.

As Kenneth Allard notes in his book *Warheads: Cable News and the Fog of War*,

> This was the practical side of "information operations," the understanding that information had become so fundamental to warfare that to neglect it like a toddler left unattended beside a busy highway was to guarantee that disaster had also not been left to chance. Instead what the Soviets had once called "active measures" were called for, not just to "spin" a story but to shape the larger environment where the whole yarn would be received, believed, and acted upon.[43]

Clausewitz said that "military activity is never directed against material force alone; it is always aimed simultaneously at the moral forces which give it life."[44] He goes on to discuss the three elements that comprise the trinity of war: the people, the commander and army, and the government. Although the three must work together, it is people with "the passions that are to be kindled in war" that can be manipulated.[45]

Another common saying is that the enemy gets a vote. Keeping that in mind, why not influence that vote? As mentioned above, war is a mind game; if one can convince the adversary to choose a course of action more in line with one's own plan, then all the better.

Willy Stern asserts that "every first-rate commander knows how to cultivate the media, and use the press to his (or her) advantage."[46] Conversely, the inability of a commander or the professional communicator to value and cultivate that relationship can easily lead to ceding the battlefield to the adversary. Unfortunately, the United States has a culture of playing it safe regarding communication, often with negative results: "Al Queda [*sic*] is very sophisticated at telling its story. The American military is not."[47] Finally, as defense writer Otto Kreisher observes, "People are more than willing to point out your failures. Why not take every opportunity to highlight your success?"[48]

Conclusion

When you fight an action . . . in our modern media world, you are fighting it on television! It is an extraordinary thing.

—Former Prime Minister Tony Blair

I say to you: that we are in a battle, and that more than half of this battle is taking place in the battlefield of the media. And that we are in a media battle race for the hearts and minds of our Umma.

—Ayman al-Zawahiri to Abu Musab al-Zarqawi

You can't win the media battle if you don't play.

—Willy Stern

The United States possesses vast military might. However, to be successful in its endeavors, it must also synchronize the timeliness of explanations of its actions—from budget plans to coalition operations of all shapes and sizes. This is especially true in military combat operations. As former governor Mitt Romney said during one presidential debate in 2012, "We can't kill our way out of this mess."[49] Today's environment requires a more nuanced approach in order to build support and further one's aims.

No longer can the United States afford to hunker down in a defensive stance when it comes to communicating. Today's environment demands a proactive communication effort—be it for combat operations, humanitarian relief, or informing the American public. Moreover, the goal of communicating is to engage in a dialogue; it's not a one-way deal. One doesn't talk *at* an audience; rather, one talks *with* publics.

Keeping this in mind, creating *and using* a strategic communication plan can make the United States' efforts much more effective on multiple levels. Using communication as an offensive tool rather than a defense countermeasure, while employing the combined arms approach, will enable the United States to better meet its objectives and further its narrative with multiple publics—not only prepping the battlefield but also continuing support throughout the operation and well after. In the immortal words of *Star Trek*'s Capt Jean-Luc Picard, "Engage!" ✪

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Maintaining Space Superiority

Capt Albert C. Harris III, USAF

As professionals working within the air and space community, we must understand the strategic policy environment in order to employ air and space power effectively. This includes knowing US national objectives and the ways that both national and international laws shape and constrain decision making. A commander directing in-theater air operations who observes an approaching aircraft can make a decision quickly, based on the nature of that aircraft; the engagement itself (hostile/nonhostile); and the extended set of international rules, customs, and laws that guide the overall situation. For space professionals, the strategic environment presents different, unique challenges. Complicating the issue further, those professionals must make decisions in an environment where comprehensive rule sets for operations and cooperation on the international level have not fully matured. Regardless, a commander of space forces who observes an approaching object that may present a threat to his or her satellites must still provide direction that responds to that threat.

This article discusses a dilemma faced by space professionals as they conduct complex, day-to-day space activities under a paradigm of slowly maturing international rules. It analyzes recommendations proffered on the world stage, such as implementing an international code of conduct to guide everyday space activities. Additionally, it proposes an alternative space situational awareness (SSA) approach as a means of better enabling decision making within the limitations of current international rules for these activities. This new approach, the Space Situational Awareness Trinity Theory, may offer a more appropriate means of maintaining space superiority. To frame the discussion, the article first turns to the Air Force's core function of space superiority as it reviews the background of the problem.

Background

Space superiority is "the degree of dominance in space of one force over any others that permits the conduct of operations at a given time and place without prohibitive interference from space-based threats."[1] The Air Force achieves space superiority by conducting operations that support the war fighter (space force enhancement); by conducting combat operations from, through, and in space (space force application); by conducting operations that ensure freedom in space (space control); and by conducting operations that deploy space systems (space support). According to joint doctrine for space operations, these four space mission areas "contribute to joint operations" and thus are the means by which the United States attains space superiority.[2] Since the early years of the space era, threats and issues have arisen to challenge US operations in these areas. Indeed, as declared in the *National Security Space Strategy*, these new issues come as the domain becomes increasingly competitive, congested, and contested.[3]

Space is competitive because more nations are realizing the benefits of operating there. As noted by the Organisation for Economic Co-operation and Development, "Space-faring countries have moved from being a small exclusive club relying on strong defense and aerospace industries, to a larger group of advanced and smaller developing countries with very diverse capabilities."[4] However, this rise in space activities comes with a price. In light of the number of objects in space, the effort to maintain SSA of all these systems is becoming much more complicated.

This complication occurs, in part, because of congestion in the domain. Within the space mission area of space control, SSA operations that identify and track space objects play a significant role in mitigating the risks of such a congested environment. The US-led Space Surveillance Network supplies a necessary first line of awareness of hostile and nonhostile space threats by tracking and identifying space objects. Unfortunately, the sheer volume of objects placed in orbit—whether operational or nonoperational satellites, rocket bodies, and at-

tendant space debris—raises the probability of catastrophic incidents. Such effects are stressing and outrunning some of the surveillance, tracking, and analysis capabilities of the network. More troubling, those tracking capabilities identify and track only a fraction of the on-orbit objects that could collide with others.

To some extent, this congestion is a consequence of more nations operating in space. Activities to secure the high ground for national, international, and various commercial objectives make the domain more contested. The number of sophisticated spacefaring nations is growing. It has also become apparent that not all countries with ambitions in the high frontier seek to use the medium for completely peaceful purposes. Some of them are identifying ways to counter US space capabilities to further their own national objectives. Employing such capabilities to prevent treaty compliance or to deny, degrade, or destroy space competencies of innocent parties could become destabilizing. The *National Security Space Strategy* observes that "as more nations and non-state actors develop counterspace capabilities over the next decade, threats to U.S. space systems and challenges to the stability and security of the space environment will increase."[5]

In this evolving environment, it is imperative that we expand, reinforce, and better frame international rule sets or norms for future space activities. Whether a code of conduct or more sophisticated international law, such an evolution could better guide peaceful competition in space, provide a framework for operating within a congested environment, and outline potential rules of engagement when nations must protect their national security interests. As the world becomes more reliant upon space technology and as the presence of humans in space grows, the lack of comprehensive international space law will continue to complicate American projection of space power on behalf of war fighters and peacekeepers, as well as for national, diplomatic, informational, and economic advantages.

Although international rule sets for space heretofore have been limited in scope, they should not be completely discounted. The 1967

Outer Space Treaty was a stunning, groundbreaking achievement developed and signed in the midst of Cold War tensions. In its own way, it is de-escalating the perceived need to prepare for conflict in the space domain. Other treaties and accommodations have followed, and credible organizations such as the United Nations Committee on the Peaceful Uses of Outer Space represent useful international tools in discussions about how to conduct and regulate space activities. As such, these treaties and organizations supply the foundation for the substantial guiding principles used to conduct space operations; still, they fail to go a necessary step further and fully address how nations should act when conducting daily space operations. At times, this makes it difficult to know who is operating with good intentions, who is not, and who has admirable intentions but remains ignorant of the risks to which they subject other countries. Consequently, space operators must determine if an action by another party—even by a nonmilitary entity—constitutes a threat. This highlights the fact that slowly maturing international rule sets for space activities challenge the Air Force's abilities and capacities to maintain space superiority, especially in a competitive, congested, and contested domain.

Scope and Severity

Many events in space history shed light on the scope and severity of such rules. In 2007 China launched an antisatellite (ASAT) missile from the Xichang launch facility to destroy its Fengyun 1C meteorological satellite, generating 100,000 pieces of space debris that remain in orbit and threaten other space systems. Dr. T. S. Kelso reports that "the test produced at least 2,087 pieces of debris large enough to be routinely tracked by the US Space Surveillance Network."[6] In February 2009, an inoperable Russian military rocket body collided with an American communications satellite owned by the Iridium Corporation. That event sparked international concern as issues of on-orbit safety became a hot topic for international debate. Today, efforts are expanding to identify and track the associated debris from these two

collisions because they place at risk the safety of other satellites, including spacecraft intended for human spaceflight. Certainly, this is a daunting task and would be worse if these types of events occurred more frequently.

Recent incidents continue to highlight the severity of the problem. In 2011 Russia launched an interplanetary probe to retrieve soil samples from Mars. Soon after launch, the probe's propulsion system failed, leaving the vehicle uncontrollable in its low Earth orbit and slowly losing altitude. Since the failed probe contained an unspent nuclear power source, its eventual reentry into the earth's atmosphere posed a threat to any country along its orbital path. The United States and other members of the international community assisted Russia in maintaining awareness of the probe's location until it reentered off the coast of Chile.[7] Nevertheless, what would happen if a different nation experienced Russia's problem? Would the international community come together to support a rogue nation like North Korea? If not, should the community passively allow such a country to operate space systems?

These questions are important because they hint at how more fully developed international rule sets or norms for space activities could address the moral implications of conducting space operations. Arguably, nations that cannot operate safely in space or gain operational support from other nations should not conduct space operations. For instance, in early 2012, North Korea attempted to launch a satellite into space, but the launch failed and the "first stage fell into the sea 102.5 miles west of Seoul, South Korea."[8] In December of the same year, North Korea succeeded in launching a satellite into space despite the fact that before the launch, world powers condemned its efforts.[9] North Korea's provocative launches show that it cannot be trusted to conduct space operations with the space community's best interests in mind. What about the actions of near-peer space operators? China's ASAT test shows that it bears watching as well.

Furthermore, what about so-called responsible space operators? Some compulsive provocateurs suggest that the United States did not act responsibly during Joint Task Force Burnt Frost in 2008, a successful intercept of a US satellite reentering with hazardous hydrazine propellant on board. Of course, the opponents who made these claims ignored the crucial differences between the Chinese and US intercepts. Burnt Frost involved the intercept of a target satellite left in an unsustainable low Earth orbit, after which nearly all of the resulting debris burned up in the atmosphere, and the final larger pieces were consumed shortly thereafter. In addition the United States demonstrated transparency in its actions by first briefing the global spacefaring community about its intercept plans and then sharing its projections of minimal threat.

Synthesizing the issues above sheds light on a fundamental dilemma during operations in the space domain. How should an entity handle its space systems? Whether a military unit, commercial organization, or national agency, how should it operate ethically in space? What best practices should we apply, and should the spacefaring community agree to and somehow enforce more comprehensive rules? Current international rule sets for space fail to fully address how nations should act when conducting daily space operations. Although treaties and customary international law do provide guidance and principles, further refinements should be developed and shared among all space operators. The rudimentary regulations that we have followed since the Cold War are not proving themselves sufficiently flexible for the challenges of the twenty-first century.

Given this conclusion, our military commanders confront substantial uncertainties when they direct space operations. Considering the need for the capabilities delivered from space platforms, those individuals must develop a threat assessment for every space launch, satellite maneuver, reentry, and deorbit regardless of whether they are operated by domestic, foreign, commercial, or military entities. Until international rule sets mature more fully, commanders will continue to strug-

gle with the boundaries of their decisions as they conduct operations to maintain space superiority.

Efforts to Solve the Problem

The scope and severity of slowly developing international rules for space are causing the world's space powers and commercial organizations to join in an effort to identify potential resolutions. One may ask, though, why the current system fails to guide complex, everyday space operations. What motivates these players to collaborate on solving the problem? As James Rendleman points out, "Treaties, conventions, and agreements already in force regularize space activities despite their minimalist nature."[10] First, the current system of space law and customs is broad in scope and generally legally binding only to those who agree to it. Because of the ponderous aspects of international space law, the world is still experimenting with what truly constitutes morality regarding decisions about space operations.

Current trends in this "experiment" point to a growing desire for a space code of conduct in lieu of stronger international space law. Wolfgang Rathgeber, Nina-Louisa Remuss, and Kai-Uwe Schrogl observe that "a code of conduct is a non-legally binding instrument, where adhering states voluntarily commit themselves to rules of the road. It can be seen as an ultimate goal in itself, or as a stepping stone toward a legally binding treaty."[11] Essentially, such a code is less binding at first, but as more nations begin to adhere and agree to its tenets, it could eventually develop as a form of customary international law.

Examples of such a code of conduct have already been suggested in the international arena. In 2008 the European Union (EU) presented one that, it argued, would help guide space activities. After some criticism, the EU code was revised and reissued in 2010. Key elements include its encouraging of signatories to commit to using space for peaceful purposes. Voluntary subscription would also require adherence to some limited space laws, agreements, and treaties that cur-

rently exist. In terms of its impact on space superiority, the code acknowledges nations' rights to collective self-defense and strongly advocates for open communication about issues that arise during space operations.

Unfortunately, the code in its current form goes too far, potentially limiting the Air Force's space superiority operations. For instance, the proposed version calls upon nations to refrain from the intentional destruction of objects in space; to provide the larger community with notifications of satellite maneuver and malfunction; and to offer extensive transparency in their space operations and strategy.[12] These proposals may prove difficult to reconcile with valid national security interests retained by major spacefaring powers. The US State Department has acknowledged on numerous occasions that acceptance of any such code is contingent upon whether compliance is voluntary and whether it enhances the security of the United States and its allies.[13]

The EU proposal seeks transparency in space operations but remains somewhat unrealistic. If the limits and transparency measures mentioned above had been established, they might have prevented the much-needed operations during Burnt Frost; moreover, they might require the release of sensitive national security or proprietary information regarding satellite maneuvers and, in some cases, tip the hand of commanders conducting vital national security operations. In a report published in *Strategic Studies Quarterly*, Rajeswari Pillai Rajagopalan maintains that "it is naïve to assume states such as the United States and China will release information about their strategies. This is not a realistic goal in the code, because states seek to use all means available for security, including space."[14]

Although completed prior to the EU's work on a code of conduct, a 2006 study by the International Academy of Astronautics (IAA) offers a separate framework to establish effective rule sets or norms that guide activities in space. The study focuses on space-traffic management and the mechanisms that enable such a concept. Benefits include its emphasis on safe access to and freedom in space. It also iden-

tifies mechanisms for which communication can occur about pressing space issues. Instead of advocating what nations cannot do in space, the guide establishes frameworks to solve immediate problems that arise during space operations. Examples include mechanisms for safety notifications for launches, imminent collisions, and space-object reentries that could put public safety at risk.[15] For commanders who need to preserve their access to space capabilities, applying the solutions proposed in the study could enhance their decision making by supplying an international mechanism for the timely reporting of non-hostile space threats to nonmilitary entities. However, the changes sought by the study have not been realized, and it does not extensively address how nations should act in space on a daily basis. It acknowledges the shortcomings of current international space law but does not go as far as the European code of conduct in limiting the space activities of spacefaring nations.

Although the IAA and the EU are blazing a trail, the necessity for establishing rule sets and norms for space activities will continue to grow as space becomes more competitive, congested, and contested. Michael Krepon, Theresa Hitchens, and Michael Katz-Hyman write that "there is growing sentiment among space operators to develop and implement several key elements of a code of conduct, including improved data sharing on space situational awareness; debris mitigation measures; and improved space traffic management to avoid unintentional interference or collisions in increasingly crowded orbits."[16] Ultimately, this desire for new rules alone will not help space operators and their commanders solve the problems of conducting space activities. To meet future challenges, commanders and civilian leaders can take various steps to ensure national security by maintaining space superiority.

The Way Forward

The United States must lead the effort to establish a code or a set of more effective international laws that guide space activities. Current

efforts by other nations and organizations are admirable but do not effectively address the issues at hand. Additionally, given its technical capacity, vast numbers of space systems, preponderance of forces, and capabilities for maintaining space superiority, the United States is better prepared than other nations to monitor any new code or revision to international space law that addresses space activities or to establish rule sets or norms that would direct those activities.

The Department of Defense (DOD) will play a leading role while the United States presents international rule sets or norms for space activities. Specifically, "the departments of Defense and State have agreed [that] an international code of conduct should govern activities in outer space, and officials announced plans to work with the European Union to develop it."[17] Consistent with this statement, DOD Directive 3100.10, *Space Policy*, among other things, directs the department to "support the development of international norms of responsible behavior that promote the safety, stability, and security of the space domain."[18]

Reflecting this growing wisdom, the strategic environment in space has changed immensely since the Air Force first began operations, and the notion of maintaining an awareness of the space environment is receiving more emphasis. As the US government pursues the establishment of a more sophisticated international framework to guide space activities, the US military should pursue a strategy that enables implementation of that framework. Consequently, as the government's executive agent for space, the Air Force should better anticipate pending compliance with rules that will affect its space operations. To do so, it must employ a new paradigm for space operations—a Space Situational Awareness Trinity Theory.

This theory is neither a call for a new mission area nor a revelation of new tactics, techniques, and procedures (TTP) for space superiority. It is, however, a different way to frame how those TTPs are employed, and it may facilitate new ones in the future. This SSA-focused framework for space superiority includes three segments for which space missions are executed: maintaining awareness of space activities by

using ground components, maintaining awareness of ground activities by using space components, and maintaining awareness of space activities by using space components (see figure below). The segments would guide missions that utilize various capabilities to preserve space superiority. To realize the objectives within each segment, the Air Force must be aware of friendly military forces (Blue space activities), enemy military forces (Red space activities), and both commercial and foreign entities (Gray space activities). National security space operations, whether joint, coalition, interagency, or service oriented, would fuse the data received from this awareness, disseminate it, and determine the need for either offensive or defensive operations or information sharing. Regardless of whether more sophisticated international rule sets or norms for space activities are established, the SSA Trinity Theory presents a different approach by allowing the Air Force to concentrate on being aware of what occurs in space as the medium becomes more competitive, congested, and contested.
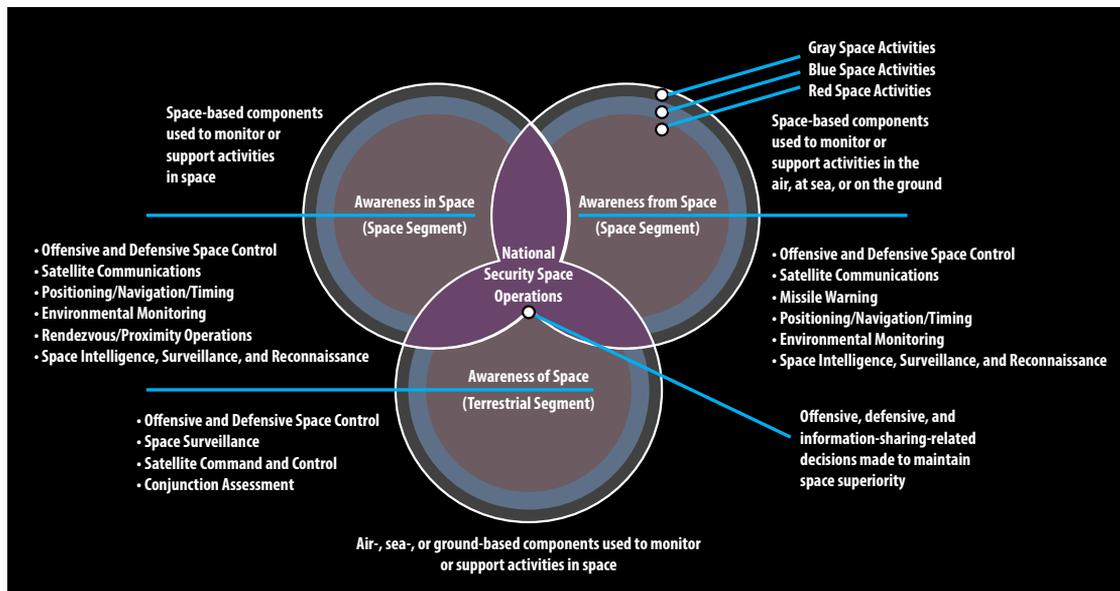

Figure. Space Situational Awareness Trinity: A new theory for space superiority

In the competitive space environment, this theory could provide a framework that compensates for the limitations of international rules and norms that guide space activities. For example, current international law for space does not restrict launches that endanger objects already on orbit. The SSA Trinity Theory's emphasis on maintaining awareness from space would guide missions in a competitive space environment, such as those that employ space assets to detect launches. Concurrently, a focus on maintaining awareness of space in this situation would guide missions that use ground assets to monitor and track the launch and determine if it threatens an object already on orbit. If a threat is real, commanders can take offensive or defensive steps to mitigate risks to a Blue asset; if not, they could pass information to the appropriate parties.

In the congested space environment, the theory makes available a framework in which air-, sea-, space-, and ground-based components used to monitor or support activities in space enable various capabilities to maintain an awareness of space. For example, the uniquely American ability to perform conjunction assessment—the process of managing the risk of on-orbit collisions—gives the United States an advantage in establishing an international code or norms for space activities, especially regarding space-traffic management. Both the European code and the IAA identify space traffic as a considerable issue for operations in space, and the IAA further acknowledges that the "US's space surveillance capabilities dominate" those of the rest of the world.[19] Having the objective of maintaining an awareness of space, missions conducted under the SSA Trinity Theory would be accompanied by the already-robust US rule sets on the strategic, operational, and tactical levels. Additionally, the theory would guide decisions that support any international effort to conduct space-traffic management.

Given an increasingly contested space environment, we need SSA-focused objectives to facilitate missions that protect the SSA capabilities of the United States or that deny, degrade, or destroy those capabilities of our enemies. If the latter cannot maintain an awareness of

space by commanding and controlling their satellites or if they cannot survey the space environment, then their ability to conduct operations in space will become severely limited. Denying, degrading, or destroying an enemy's awareness in space hinders his ability to conduct on-orbit operations; furthermore, denial of his awareness from space will cause his operations in the air, at sea, or on the ground to lose the advantage that space capabilities bring. Thus, maintaining our awareness in, from, and of space while denying, degrading, or destroying that of the enemy is critical to maintaining space superiority.

The SSA Trinity Theory, in conjunction with the US government's effort to establish an international code of conduct for space activities, will ensure that the United States is prepared to sustain space superiority for decades to come. Many events in history show the scope and severity of limited rule sets on the international level. As space becomes more competitive, congested, and contested, that scope and severity will worsen. The United States, the world's most influential voice on space matters, must lead the international effort to establish such rule sets. Moreover, as the Air Force awaits the outcome of this effort, it must remain vigilant and ensure that proper mechanisms like the SSA Trinity Theory are in place to maintain space superiority. ✪

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Revitalizing Nuclear Operations in the Joint Environment

LTC Kelvin Mote, USA

The joint planner has many conditions to consider when contemplating future threats against the United States. The vast expanse of an adversary's weapons arsenal includes improved terminal guidance systems for ballistic missiles, cyberspace operations, and space-related weapon systems. However, after 13 years of protracted counterinsurgency operations, our nation has overlooked a persistent danger that threatens our force—nuclear weapons. As various publications and deterrence symposiums have emphasized, the time has arrived for serious discourse and intellectual effort on the adversarial use of nuclear weapons and our plans to operate in a restrictive environment. Consequently, we must educate Department of Defense (DOD) personnel in nuclear operations and the redevelopment of nuclear operational doctrine to prepare the joint force for future challenges.

Strategic Context

Today, *cyberspace operations* is the "in-vogue" term to frame how the DOD should prepare for tomorrow's fight. But such operations represent only a portion of the multidomain effects from potential adversaries that we face in a 2025 scenario. According to the *Global Trends 2025* report, "The risk of nuclear weapon use over the next 20 years, although remaining very low, is likely to be greater than it is today."[1] The possibility of an enemy's using these weapons drives preparatory measures for the joint force to fight and win. As addressed in the chairman of the Joint Chiefs of Staff's *Capstone Concept for Joint Operations*, the availability of "advanced technology in the global economy means

that middleweight militaries and non-state actors can now muster weaponry once available only to superpowers."[2] The world now includes seven overt nuclear powers, one covert nuclear power (Israel), and at least three nuclear aspirants (Iran, North Korea, and Syria), making the nuclear phenomenon more global than ever.[3] During a 2009 speech in Prague, President Barack Obama acknowledged that "the threat of global nuclear war has gone down, but the risk of a nuclear attack has gone up."[4] These conditions form the baseline of the future nuclear world, which leads to a natural assumption that developing nations will not adhere to the Non-Proliferation Treaty.

Zachary Davis addressed this phenomenon as "'strategic latency,' a condition in which technologies that could provide military (or economic) advantage remain untapped" until a security need drives the weaponization of the technology.[5] For example, in a recent article in the *Times* of London, a senior Saudi official remarked that "there is no intention currently to pursue a unilateral military nuclear programme but the dynamics will change immediately if the Iranians develop their own nuclear capability. . . . Politically, it would be completely unacceptable to have Iran with a nuclear capability and not the kingdom."[6] Many countries now feel that it is in their best interest to tap into these latent technologies. The advantage in nuclear capability that US forces have enjoyed may narrow in the future. The expansion of technology, the trend of superpowers decreasing their strategic stockpile of nuclear weapons, and the complexities of deterrence against and among multistate actors all compel countries to pursue nuclear capability. *Global Trends 2030* reiterates the threat of a multipolar world, noting that efforts to deter the nuclear ambitions of North Korea and Iran will decide the future of the Non-Proliferation Treaty.[7] In parallel, these actions will also determine how the Joint Staff shapes nuclear capabilities and doctrine. Strategic planners would do well to peer into the future and adjust our nuclear capabilities to match the emerging threats that America may face.

Historical Perspective

US nuclear capability stems from more than 70 years of intellectual and operational development. At the height of the Cold War, US scholars and joint operational planners were working simultaneously on weapons development and operational art to employ effects. As we look at the complex environment that the adversary will present in the future, we realize that the DOD must reinvigorate operational concepts to deter nuclear aspirants and redevelop doctrine to operate in a nuclear environment. Thérèse Delpech, the author of *Nuclear Deterrence in the 21st Century*, perhaps one of the best studies of this phenomenon, observes that "as long as nuclear weapons are around, even in small numbers, deterrence is the safest doctrine to deal with them. This principle is easier to embrace in theory than it is to put into practice. This was true during the Cold War, and it appears to be even truer today."[8]

The terms *theory* and *practice* are synonymous with *concept* and *preparation*. There are multiple ways to address preparation for deterrence in tomorrow's fight. More importantly, we cannot assume that every action in a crisis will follow a finely calculated plan. According to Delpech, "*An era of strategic piracy* may be opening up, where *piracy* is defined as lawlessness and deception" (italics in original).[9] As a nation, we are ill prepared for the rise of nuclear aspirants and the opaque or nonexistent nuclear doctrines of those countries. The difficulty of maintaining effective deterrence depends upon the operational art to employ the effects.

An understanding of operational art, as expressed in many intermediate-level officer-education courses, stems from doctrine. For the most part, almost no current doctrine on nuclear operations is available for review by operational planners. First and foremost, the employment of nuclear weapons is controlled by the president. Since the collapse of the Soviet Union, the United States has been in a state of redefining its policy of using nuclear weapons in combat operations. Nuclear operational doctrine in the Cold War emerged from national strategic guidance opertionalized via joint and service publications. The DOD finds

itself at a crucial time when it has provided national guidance on how we would employ nuclear weapons but has not developed corresponding operational guidance. Joint Publication (JP) 3-12, *Doctrine for Joint Nuclear Operations*, the overarching joint guidance that offered a framework for nuclear operations, appeared on 15 December 1995 and was rescinded in 2006. A publication date for a revision has yet to be determined. Perhaps of even more concern is the fact that the Army's corresponding publication, Field Manual 100-30, *Nuclear Operations*, published in 1996, remains in the active duty field manual depository. More than 17 years of strategic guidance designed to help shape the Army field manual and guide Army planners is missing. Such dated publications and the absence of joint operational planning manuals contribute to the steady decline of competence in nuclear operational art within our officer corps.

Officers must understand the effects of nuclear weapons. Thirteen years of protracted counterinsurgency operations, changes in our national nuclear policy, and the rise of competing technologies have atrophied both nuclear operational concepts and knowledge of the danger that nuclear weapons pose to US forces. As we look at future conflicts, it is essential that we understand how an adversary may employ nuclear weapons and the effects that deployed forces will have to overcome.

Operational Considerations

Currently, nuclear weapons pose a threat not inherently familiar to most military planners. People who grew up in the 1980s find it easy to reflect on the destructive nature of nuclear weapons. Movies of that era depicted the magnitude of their capability, and President Ronald Reagan's Strategic Defense Initiative drove miliary strategies to supplant mutually assured destruction. However, in the post–Generation X military, officers have only limited experience with our nation's Cold War heritage. Instead, operations have focused on counterinsur-

gency and winning the hearts and minds of a population, often neglecting the full spectrum of military operations.

Although nuclear warfare sits at the far right in the spectrum of operations, we must realize what happens when an enemy employs a nuclear weapon. By its very nature, a nuclear detonation produces effects significantly more powerful than a conventional explosion. Mass for mass, a nuclear detonation is millions of times more powerful than its conventional counterpart. As highlighted in the *Nuclear Matters Handbook*, current doctrine does not capture the effects produced by a typical surface nuclear detonation.[10]

As we review operational nuclear effects, it is interesting to note the appearance of nuclear operations in joint doctrine outside the chemical, biological, radiological, nuclear, and high-yield expolsives context of force protection. The concept appears once in JP 3-0, *Joint Operations*, and twice in JP 5-0, *Joint Operation Planning*. In their more than 468 combined pages, the concept barely justifies a single page.[11]

This lack of operational effects in a nuclear environment exposes the lost operational art of planning and manuevering forces against a nuclear-capable adversary. Joint publications marginally concentrate on weapons employment and planning and do not supply a framework for a joint force planner to consider when opposing a nuclear-armed enemy. Although the employment of nuclear weapons remains at the discretion of the president, the joint force planner must be prepared to operate in a contested environment against nuclear arms in a future strategic context, as reflected by the following key points:

1. An adversary's nuclear weapons or even a credible threat of nuclear first use will have an effect across the range of military operations. US national leadership would consider the goals and desired end state of future operations in this context.

2. An enemy may consider that a limited nuclear strike offers a quick tactical victory through speed, survivability (penetration), and an increased chance of success against critical US targets in a

deployed environment (i.e., a ballistic missile strike against deployed forces).

    a. A quick strike could induce delays in the US decision-making cycle.

    b. Missile defense capabilities may be needed to counter the threat.

3. An adversary's use of nuclear weapons employed in a high-altitude burst could degrade US command and control.

4. Planners should review the employment of mass formations. A foe's use of nuclear weapons and their subsquent effects pose a high risk to massed US battle formations and forward fixed operating bases.

5. Target selection is a key consideration in escalation control in the context of operations against a nuclear-armed adversary. Inclusion of a target on the joint integrated prioritized target list requires careful target analysis, including its impact on deterrence. Planners should be prepared for senior leadership's large-target-category withholds thought necessary to maintain stability in a strategic crisis.

The inclusion of nuclear effects and the art of maneuvering against a nuclear-capable opponent give us a framework for enhanced operational effects. In a future conflict, we cannot assume that emerging adversaries will keep operations below the nuclear threshold; rather, we must manage conflict through escaltion control and de-escalation. The inclusion of these points in tomorrow's doctrine as well as an intellectual discussion on the topic will inform Joint Staff planners and offer a better framework for joint force operations.

Conclusion

The joint planner has multiple conditions to consider when contemplating threats against the United States. An adversary's weapons arse-

nal is diverse, including improved ballistic missiles, cyberspace operations, space-related weapon systems, and *nuclear weapons*. Various discussion topics indicate that the time has arrived for serious discourse and intellectual effort concerning the enemy's use of such weapons and our plans to operate in a nuclear environment. The situation demands further education of DOD personnel in nuclear operations and the redevelopment of nuclear operational doctrine in order to prepare the joint force for the challenges we face in the future. ✪

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Lieutenant Colonel Mote (BA, University of Tennessee; MS, University of Maryland) is a joint planner in Joint Functional Component Command for Global Strike, US Strategic Command, Offutt AFB, Nebraska. He is responsible for providing operational expertise in the deliberate, adaptive, and time-sensitive planning necessary to achieve national objectives. As an armor officer and information operations planner, he deployed more than 48 months in support of Operation Southern Watch and Operation Iraqi Freedom. His follow-on assignment is with the Combined Arms Center Mission Command Training Program at Fort Leavenworth, Kansas. Lieutenant Colonel Mote is a graduate of the US Army Command and General Staff College and the US Marine Corps General Staff College.

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The International Arms Trade by Rachel Stohl and Suzette Grillot. Polity Press (http://www.politybooks.com), 65 Bridge Street, Cambridge CB2 IUR, United Kingdom, 2009, 176 pages, $64.95 (hardcover), ISBN 978-0-7456-4153-9; 2009, 176 pages, $22.95 (softcover), ISBN 978-0-7456-4154-6.

In *The International Arms Trade*, Rachel Stohl, Associate Fellow at Chatham House in London, and Suzette Grillot, associate professor of political science and international and areas studies at the University of Oklahoma, describe the international conventional arms trade and the impact of these weapons throughout the world. The authors offer a brief history lesson on the arms trade from Thucydides' *The Peloponnesian War* through the present day before addressing four key points: (1) the legal supply and transfer of arms, (2) the illicit arms trade, (3) the consequences of the international arms trade, and (4) control of that trade.

In *Star Trek*, "the Ferengi, a commerce-driven race . . . [declare that] 'war is good for business' and 'peace is good for business'" (p. 42). Regardless of how well equipped a military is to defend itself, military and political leaders will always maintain that their military technology is dated, thus intensifying the international arms trade. The authors demonstrate how nations further this idea through diplomatic means, often utilizing the arms trade to gain support for their agendas. They establish this concept in explicit detail through the aftermath of the terrorist attacks of 11 September 2001, as the United States gained military access to Pakistan and, in turn, rewarded that country with arms sales.

Even though bodies such as the United Nations and European Union at times ban arms sales to certain nations, a report of 2006 demonstrated that Britain "had exported weapons to nineteen of the twenty countries listed as 'countries of major concern.' . . . Only North Korea was denied arms transfers" (pp. 64–65). Stohl and Grillot treat this issue in great detail, examining the politics, economics, and military rationalization of arms sales for each of the five permanent members of the Se-

curity Council. They also dispel any misconceptions that the reader may have about the small-arms trade, noting, for example, that "although Africa is often believed to be a major destination for small arms transfers, the continent's legal sales totalled only $25 million in 2005. The five largest small arms recipients in 2003 were the United States, Cyprus, Germany, Spain and France, but no African countries" (p. 86).

Nations do not share information regarding their legal arms sales, not to mention illicit transactions. Nevertheless, the authors examine that subject, offering such examples as the appropriation of funds by Congress and the Central Intelligence Agency to be funneled through Pakistan to aid the mujahideen in Afghanistan in their fight against the Soviets during the 1980s. Similarly, they point out that private companies are just as willing to participate in the illicit arms trade—an activity that has its consequences.

Indeed, such dealings have massive effects on both a nation and its people, primarily in the form of human security. Examples range from the obvious (death, injury, and trauma) to the less obvious (lost educational opportunities), including propagation of a culture of violence. In rare cases, arms networks lead to the use of armed child soldiers and terrorists. Despite what we hear about weapons regulations, Stohl and Grillot note that "significant loopholes have allowed terrorist networks to acquire US weapons with relative ease" (p. 132). The authors seem to assume that only war-torn nations obtain these weapons, overlooking countries that purchase arms simply as a deterrent and failing to consider the effects on their people.

Lastly, the book discusses a dizzying array of political battles between nations that attempt to control the international arms trade. On the one hand, China refuses to agree to any US arms sales to Taiwan, and Russia, flexing its power against Western hegemony, takes issue with the United States on such matters. On the other hand, regional alliances have created regulations and transparency concerning the arms trade. Ultimately, though, the fact that nations use weapons to

establish their military power would obviate any attempt to establish a body designed to govern the sale of arms.

The International Arms Trade is highly relevant and worthwhile reading for the Air Force community. I recommend this book to anyone who wishes to understand how the international arms trade works and the effects it has on a nation and its people.

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EW 103: Tactical Battlefield Communications Electronic Warfare
by David L. Adamy. Artech House (http://www.artechhouse.com), 685 Canton Street, Norwood, Massachusetts 02062, 2008, 370 pages, $119 (hardcover), ISBN 978-1-59693-387-3.

One the best compliments a reviewer can bestow upon a book is, "I finished it smarter than when I started," which is certainly the case with David L. Adamy's *EW 103: Tactical Battlefield Communications Electronic Warfare*. To place my review in perspective, I began my career many years ago in the US Army as an enlisted electronic warfare (EW) specialist. Comparing what I learned in training to the information available in this book revealed gaps in my knowledge. For example, while in the classroom, I learned that communications signals experience propagation loss over water, but the training did not address the underlying Fresnel Zone concept (p. 134). I learned to build hasty antennas and intercept baseball games as a parlor trick during field exercises but had no exposure to the fundamental mathematical calculations necessary to determine high-frequency signal propagation (p. 143). After I completed this book, the old jamming-team squad leader in me both appreciated my newfound enlightenment and winced at what seemed in retrospect only a partial EW education. Given the depth of the material, however, former apprentice EW operators such as I were not likely the target audience. Instead, *EW 103* appears

geared towards professionals with a few years of experience under their belts.

Mr. Adamy, president of Adamy Engineering, has more than 40 years' experience working in EW and teaches short courses on that subject at Australia's Defence Systems Innovation Centre Training Institute. He is a regular contributor to *Journal of Electronic Defense*, published by the Association of Old Crows (*EW 103* is based on a series of tutorials previously published in that journal). The book focuses on communications EW, excluding related radio frequency or radar concepts, which Mr. Adamy covers in his associated texts *EW 101: A First Course in Electronic Warfare* (Artech House, 2001) and *EW 102: A Second Course in Electronic Warfare* (Artech House, 2004), respectively.

The nine chapters span the full range of communication EW concepts, including communication signals types, antennas, receivers, direction finding, and communications jamming, each described in depth and clearly illustrated. One minor critique: the text does not include photographs of actual equipment. Security concerns probably limited access to photos (e.g., of receivers, interfaces, etc.), but synergizing descriptions, illustrations, and examples of "in the wild" materiel would have reinforced associated EW concepts.

While the book includes a card-stock slide rule and Microsoft Excel formulas on compact disc for quick calculations, Mr. Adamy does not skimp on explaining the underlying mathematics. Even though the decibel mathematics seem overwhelming on casual inspection, it is actually quite straightforward, given the author's lucid instruction. My only other criticism is that the mathematical questions in appendix A (pp. 275–306) are followed immediately by their respective solutions—an arrangement that reduces the challenge of working through the problems. Still, the text provides more than enough substance for building new problem sets for a classroom environment.

Certainly, *EW 103* is not a light read for a Sunday afternoon by the pool; rather, it is a comprehensive textbook and reference for serious EW operators. Indeed, it will likely seem intimidating to readers who

have no foundational training in radar, radio, or other aspects of the electromagnetic spectrum. This is not to say, however, that the book suffers from dense prose. The author treats each topic with clarity, avoids unnecessary jargon, succinctly defines the essential terminology, and even includes occasional self-deprecating humor. The overall feel of the writing lends the impression that Mr. Adamy is not simply cranking out rote technical information but providing personable, one-on-one instruction.

In sum, I assess *EW 103* as a must-read for EW professionals, especially the journeyman EW practitioner. From a cross-service perspective, I would put this text in the hands of experienced EW noncommissioned officers, new warrant officers, and senior company-grade officers. Interested readers may also want to consider Mr. Adamy's related *EW 101* and *EW 102* titles, mentioned above, to round out their EW libraries.

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Dangerous Games: Faces, Incidents, and Casualties of the Cold War
by James E. Wise Jr. and Scott Baron. Naval Institute Press (http://www.usni.org/navalinstitutepress), 291 Wood Road, Annapolis, Maryland 21402, 2010, 256 pages, $34.95 (hardcover), ISBN 978-1-59114-968-2.

The Cold War, which lasted from the end of World War II until the fall of the Soviet Union, was anything but "cold." During that time, numerous incidents occurred—ranging from strongly worded letters to actual shootings—in the air, on the ground, and at sea. Instead of discussing grand history or strategy, *Dangerous Games: Faces, Incidents, and Casualties of the Cold War* focuses on individuals—a great way to give the reader a look into some of these little-known events.

Beginning with Marine Corps engagements in China after World War II and ending with Army special forces operations in El Salvador in

1987, the authors—a former Navy aviator and an Army veteran—chronicle "hot" and "not-so-hot" actions. As one would expect, the hot actions involve actual combat, whether with Chinese Communists, U-2 flights over Cuba, or a seemingly never-ending series of incidents in Korea. The not-so-hot portion includes mysterious disappearances of attachés and military officers, Carl Brashear's heroic story, the death of Yuri Gagarin, and the tale of "Red Spy Queen" Elizabeth Bentley, described as a "lush, a leech, and a slut" (p. 16).

Each chapter begins the same way, with a brief historical introduction that sets the stage and context for the story to follow. The authors take pains to supply plenty of background information, such as the development of the U-2 or the events that led to the building of the Berlin Wall. One obscure but amusing account relates the "real-life" *Top Gun* canopy-to-canopy maneuver over Cuba between an F-4 and a MiG-21 in 1966.

Even casual readers of military history are probably familiar with many of the narratives, such as the "candy bomber" of the Berlin airlift, but a few stand out as noteworthy. The latter include the story of Hans Conrad Schumann, an East German border guard famously photographed leaping barbed wire to escape to the West (pp. 85–89), and, in particular, that of "Commander Bucher and the Second Korean Conflict, 1966–69" (pp. 127–43). Most of us have heard about North Korea's seizure of the USS *Pueblo*, but the sheer number of events that took place around that time in Korea is staggering. The yearly border incidents (up to 700)—not to mention running gunfights, special operations infiltrations of the South, assassination attempts, shoot-downs, and more—made this anything but a cold war. Of special interest to the aviation community is the detailed treatment of aerial action from 1945 to 1990, such as the downing of aircraft. The more familiar confrontations examined in these 23 pages are more than matched by the number of lesser-known incidents.

The authors have researched their material well, including 20 pages of notes and citations. However, the downside to this exhaustive docu-

mentation is that in many sections Wise and Baron cite whole pages of text, as they do with Yuri Gagarin and Carl Brashear. Granted, shorter quotations and sections help emphasize points, but this wholesale cutting and pasting impedes the overall flow of the book. Although *Dangerous Games* is not required reading for airpower historians, anyone with an interest in the Cold War—especially the minor skirmishes that flared up around its edges—will enjoy this book.

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Defiant Failed State: The North Korean Threat to International Security by Bruce E. Bechtol Jr. Potomac Books (http://www.potomacbooksinc.com), 22841 Quicksilver Drive, Dulles, Virginia 20166, 2010, 288 pages, $23.96 (hardcover), ISBN 978-1-59797-531-5.

International issues of nuclear proliferation, ballistic missile testing, illicit narcotics trade, illegal financial operations, and the threat of military conflict in the Pacific all share one association—North Korea. Bruce Bechtol's *Defiant Failed State: The North Korean Threat to International Security* provides an excellent examination of the multifaceted security threat that North Korea poses to the United States and the international community. A former intelligence officer in the Defense Intelligence Agency, Bechtol has lived and worked on the Korean Peninsula and has published a number of studies on security issues relating to North Korea. He currently serves as an associate professor of political science at Angelo State University. In this book, Bechtol's latest effort, the holistic approach to understanding the North Korean threat reflects his extensive experience. He considers the multiple aspects of the threat and the effectiveness of past US policy, offering clear recommendations valuable to any reader interested in international security policy or in understanding North Korea's reach and influence.

Unlike other authors writing about North Korea, Bechtol moves beyond rehashing the history and past actions of the Kim regime. In-

stead, he concentrates primarily on the last decade of Kim Chong-il's leadership, including reactions of the United States and Republic of Korea (ROK), in order to make clear recommendations for future interaction between key players on the Korean Peninsula. Bechtol uses the threat of North Korea's conventional military force as a jumping-off point for discussing its role in international security. Perhaps most useful to military readers operating in the ROK, *Defiant Failed State* explores the history of the United States' transfer of operational control to the ROK, examining key limitations, strengths, and the transfer's potential impact on deterring North Korean aggression. Bechtol stresses North Korea's effect on international stability by probing its involvement in proliferating weapons and nuclear technology to Syria, Iran, and Libya as well as terrorist organizations. Although written prior to the death of Kim Chong-il and Kim Chong-un's ascension to power in December 2011, the book analyzes key considerations and the internal power structure of the North Korean government, thereby highlighting the power transfer and hurdles that Kim Chong-un might encounter.

Bechtol's lessons concerning past US–North Korea policy failures and successes are a valuable resource for military and policy decision makers. *Defiant Failed State* is an excellent choice for any reader who wishes to grasp the far reach and influence of North Korea on international security and the implications of US policy decisions regarding the Korean Peninsula and beyond.

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A Tactical Ethic: Moral Conduct in the Insurgent Battlespace
by Dick Couch. Naval Institute Press (http://www.usni.org/naval institutepress), 291 Wood Road, Annapolis, Maryland 21402, 2010, 160 pages, $22.95 (softcover), ISBN 978-1-59114-137-2.

Dick Couch, author of *A Tactical Ethic: Moral Conduct in the Insurgent Battlespace*, is a Naval Academy graduate who served with the Navy

Underwater Demolition and SEAL teams for five years. As a platoon leader with SEAL Team One in Vietnam, he led a successful rescue of prisoners of war. He later served with the Central Intelligence Agency and taught ethics at the Naval Academy. Further, Couch is a best-selling author of several books and has frequently appeared as a military expert on syndicated television and radio programs.

In *A Tactical Ethic*, the author expresses the "belief that wrong things have taken place, are taking place, and are not being adequately addressed" (p. 4) on the battlefield. Couch recognizes that senior military leaders provide guidance on standards of conduct and ethics-related training. However, he believes that much of the value of this guidance and training is severely diminished by conditions in place at tactical units that allow dysfunctional conduct, which can spill over during combat. Furthermore, Couch observes that unethical conduct in combat can prove especially harmful to the nation's cause during counterinsurgency since keeping the moral high ground is essential to winning the hearts and minds of the populace.

Although a slim book of just six chapters, it is a bit tedious in its explanation of the problem, and the reader may find the first five chapters repetitive. Moreover, some of the author's arguments lack the scientific rigor expected when one makes conclusions about the effects of modern influences on ethical behavior. Nevertheless, Couch's experience with the subject, coupled with his anecdotal evidence, lead the reader to accept his assessment. Additionally, he unnecessarily limits the scope of his discussion of tactical ethics to male-only, small ground-combat units in the Army, Marine Corps, and special operations forces. However, during counterinsurgencies, the battle lines aren't always clear, and the definitions of combat and support units are often blurred, as the nation realized when Pfc Jessica Lynch was captured during a firefight in Operation Iraqi Freedom. Hence, *A Tactical Ethic* applies to a wider audience than initially targeted.

In the last chapter, Couch offers 10 rules of ethics (ROE) designed to create an ethical culture within tactical units and ensure proper behav-

ior during combat. The author intends that junior combat leaders incorporate these rules as part of their daily leadership to instill and reinforce appropriate behavior. The ROEs represent practical, tangible guidance that enables someone to set and communicate clear expectations of right and wrong, provide the right example, eliminate bad behavior, promote communication, and enforce compliance with ethical standards. The last two rules specifically address ways of balancing loyalty and integrity when they compete and of exercising moral will when doing so is most difficult.

Although the Air Force offers values-based training in several topics and many formats, airpower is widely viewed as a technological solution in combat. Consequently, Airmen tend to focus on technical competence rather than discuss ethical behavior during day-to-day operations. Couch's work addresses this omission head on and delivers realistic recommendations. Thus, every Airman can benefit from this work and should put *A Tactical Ethic* into practice.

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Nellis AFB, Nevada

The Tuskegee Airmen, an Illustrated History: 1939–1949 by Joseph Caver, Jerome Ennels, and Daniel Haulman. NewSouth Books (http://www.newsouthbooks.com), 105 S. Court Street, Montgomery, Alabama 36104, 2011, 232 pages, $27.95 (hardcover), ISBN 978-1-58838-244-3.

Since the end of World War II, many books, articles, exhibits, and films have told the story of the Tuskegee Airmen, the only African-American military pilots of that war. Thus, one might question why we need another book on this almost iconic group, who not only fought the Luftwaffe over North Africa and Europe—accruing a combat record at least equal to that of other US Army Air Forces (AAF) combat units with similar time in combat—but also battled prejudice and misconceptions about their abilities in the United States. Furthermore, this

work is not a "scholarly" or "academic" treatment of the Tuskegee Airmen that examines a controversial issue, such as the "never lost a bomber" myth, or sets out to prove some thesis. Yet, it fills a significant void in the existing literature on these men by offering several hundred captioned photographs depicting African-American pilots before 1941 through the postwar status of the Tuskegee Airmen to about 2010.

The authors are all professional historians who, at one time, worked together at the Air Force Historical Research Agency (AFHRA) at Maxwell Air Force Base (AFB), Alabama (as another Air Force historian, I met them on many occasions). Joe Caver began his career as an archivist for the Alabama Department of Archives and History, worked at the AFHRA for 30 years before his retirement in 2011, and now teaches history at Alabama State University in Montgomery. Jerome Ennels worked at the AFHRA from 1974 to 1977, served as the senior historian for Air University from 1977 to 2006, worked as an adjunct history instructor for Troy University from 2000 to 2005, and returned to the AFHRA in 2006. He has also coauthored a history of Maxwell AFB. Since 1982 Dan Haulman has been an Air Force historian at the AFHRA where he is chief of the Organizational History Division; he has taught history part-time at several Alabama universities and has written numerous books, pamphlets, and articles on various facets of Air Force history. Dr. Haulman is probably the foremost Air Force historian on the Tuskegee Airmen, regularly serving as a consultant regarding their history.

The book includes nine chapters divided into three parts; a chronology of key events; and some interesting statistics about the Tuskegee Airmen. Each chapter has a short introduction, followed by numerous photographs that document the history of African-American aviation before World War II, the prewar training and subsequent combat operations of the Tuskegee Airmen, and highlights of their activities after the war. Mr. Caver and Mr. Ennels selected most of the photographs and wrote the captions for them, and Mr. Ennels wrote introductions for half of the chapters. Dr. Haulman selected a handful of photo-

graphs and wrote their captions, wrote introductions for the remaining chapters, wrote the chronology, and compiled the statistics that appear near the beginning of the book.

Though not a scholarly treatise, like many of the previous works on the Tuskegee Airmen, it is indeed a valuable addition to the literature. The introduction provides an excellent summary of the achievements of African-American aviators in the interwar period, proving that they had the intelligence to fly airplanes, despite biased popular beliefs and "scientific" proof to the contrary. Toward the end of the book, Dr. Haulman's extensive chronology details the step-by-step process that resulted in creation of the 99th Pursuit (later Fighter) Squadron (FS) and the AAF flying school at Tuskegee AAF Field for the first African-American combat pilots. The chronology then offers a detailed look at the initial and advanced training for these pilots as well as combat operations of the 99 FS, 332nd Fighter Group (FG), and the follow-on 100, 301, and 302 FSs during the war. The book also covers the lesser-known all-African-American 477th Bombardment (later Composite) Group, formed toward the end of the war but too late to see combat.

The heart and most valuable feature of *The Tuskegee Airmen*, however, are the several hundred photographs, accompanied by detailed captions, that capture these aviators through all phases of their existence. They give the reader a look into the Airmen's initial and advanced training; combat operations from bases in North Africa, Sicily, and Italy; and some insight into their postwar activities. The photographs make the Tuskegee Airmen come alive as "real" people—not just words in a book—showing every aspect of their on- and off-duty military lives. From these images, readers discover that the Airmen were just like the men who served in any other aerial combat unit in World War II, with the exception of their darker skin.

Furthermore, we realize that the Tuskegee Airmen included not only the pilots who flew the aircraft but also the enlisted personnel who supported them. The photographs show the maintainers who fixed the aircraft, the armorers who loaded the ammunition for the machine

guns, and the other support people who indirectly and directly contributed to the success of the 332 FG and its constituent squadrons. Since the pilots were African-Americans, their entire administrative and combat support units had to consist of African-Americans as well. Consequently, these photographs tellingly reveal the depth of the segregation policies of the AAF and, by extension, the other military services in the 1940s.

In summary, *The Tuskegee Airmen* adds an important facet to the already extensive library about these individuals. In the typical scholarly study, readers might find a handful of photographs (if they see any at all) scattered throughout or segregated into one or two sections. This book, however, displays hundreds of them—with captions—that collectively bring to life the combat operations of the Tuskegee Airmen and provide glimpses of their training, combat support activities, and social life. The extensive collection of images and detailed chronology make this book a welcome and needed addition to the growing number of works on the Tuskegee Airmen. Scholars, military aviation enthusiasts, and general readers alike would do well to add *The Tuskegee Airmen* to their libraries.

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Red Eagles: America's Secret MiGs by Steve Davies. Osprey Publishing (http://www.ospreypublishing.com/), Midland House, West Way, Botley, Oxford OX2 0PH, United Kingdom, 2008, 352 pages, $25.95 (hardcover), ISBN 9781846033780.

Air Force intelligence officers—flying-unit intelligence officers, to be precise—hate rainy days. The flying schedule gets hosed up, pilots who had planned to slip the surly bonds wander around the squadron while they wait for the weather to clear, and invariably the call goes out for Intel to brief them on "something—anything." Rainy-day help

has arrived in the form of Steve Davies's book, *Red Eagles: America's Secret MiGs*.

Red Eagles is based on the author's interviews with roughly 40 Air Force and Navy personnel—primarily pilots—involved in the exploitation of "acquired" MiG aircraft from 1978 to 1988. It chronicles the problems and successes of a "black" program designed to acquaint America's fighter force with the flying and fighting characteristics of the MiG-17 Fresco, MiG-21 Fishbed, and MiG-23 Flogger.

Although earlier MiG exploitation programs operated under different names, "CONSTANT PEG" became the code name for the longest running of these. Beginning in 1977 with the stand-up of the 4477th Test and Evaluation Flight (prior to "acquiring" aircraft) and continuing until the 1988 stand-down of the 4477th Test and Evaluation Squadron and dispersal of the remaining MiGs, CONSTANT PEG's MiGs flew 15,264 sorties, exposing 5,930 crews to these aircraft and providing the missing element in post-Vietnam air combat training: realism. Prior to the Red Eagles' arrival and formation of the Aggressor squadrons at Nellis AFB, Nevada, F-4s tangled with F-4s for air-to-air training, F-100s with F-100s, and so on. The change to Dissimilar Air Combat Training (DACT), using the MiGs and MiG-like Aggressor F-5s, made all of this vastly more realistic and emphasized the differences between US fighter aircraft and the smaller, more maneuverable MiGs. In fact, one of the first lessons in any "exposure" to MiG aircraft was the revelation of their small size and the difficulty of acquiring them visually.

The book offers a detailed chronology of the how, where, and who of CONSTANT PEG, with backstories of the pilots gleaned from the author's interviews. Davies vividly draws the personalities of the CONSTANT PEG pilots and details both the clashes with higher headquarters and, sadly, the aircraft losses and pilot fatalities.

Beyond the personal stories, discussions about "Flying the MiG" and "Fighting the MiG"—in essence, mini-intel briefings on the MiG-17, MiG-21, and MiG-23—give the reader insight into Soviet design theory and human engineering or, in many cases, a lack thereof. For example,

Soviet fighters of that era had poor six-o'clock visibility, but a periscope (like the one described in the cockpit of a MiG-17) solves the problem even though "it took a little training to get used to it" (p. 122). Early models of the MiG-21 were short on instrumentation; the notification device for "gear up" was a stick painted like a barber pole.

These three aircraft may not comprise the first-line fighters of the Russian Federation today, but thousands of MiG-21s were built and exported around the world, and many countries still fly them—as do Syria, North Korea, and a dozen other nations. So the chances of Air Force pilots encountering these aircraft remain pretty high. Moreover, the People's Republic of China mass-produced its own version of the MiG-21 variant, the F-7, for export as well, creating numerous opportunities worldwide to see these aircraft. Up-close-and-personal static displays of the MiG-21 (and other variants from the Mikoyan-Gurevich Design Bureau) can be found at the Smithsonian, at Wright-Patterson AFB's National Museum of the Air Force, and even at the Cold War Air Museum in Lancaster, Texas.

If readers cannot find answers to certain questions in *Red Eagles,* they should keep in mind that CONSTANT PEG's transition from the black world to the white world in 1994 was only an admission of the program's existence and not the whole story. It is, however, the sum of what the author was told by the 40-odd interviewees who agreed to speak with him. Tellingly, he notes that most of CONSTANT PEG's maintainers refused his requests for interviews or failed to show up, depriving him—and the reader—of fascinating tales of reverse engineering and back-shop wizardry employed to keep the secret aircraft flyable. This is not an unusual occurrence with hitherto secret programs. When the fact that the Allies had broken the German Enigma code during World War II came to light decades later, many of those who labored in the code-breaking huts at Bletchley Park were shocked that it was now common knowledge and refused to believe that the strict oaths they had taken were essentially null and void. No one

faulted them for keeping their silence, nor should anyone think otherwise of those who won't talk about CONSTANT PEG.

What remains, though, is a fascinating tale of Air Force and Navy pilots and maintainers who operated a vital national mission in almost total secrecy. It's quite ride and quite a read.

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From Storm to Freedom: America's Long War with Iraq by John R. Ballard. Naval Institute Press (http://www.usni.org/navalinstitute press), 291 Wood Road, Annapolis, Maryland 21402, 2010, 352 pages, $37.95 (hardcover), ISBN 978-1-59114-018-4.

From Storm to Freedom is both a historical narrative and strategic analysis of political and military involvement of the United States in Iraq. Author John R. Ballard delivers a carefully assembled view of what happened with Iraq and how US conflict there fits historically with other wars in which the United States has participated, as well as a critique of the various operational strategies used by the United States in Operations Desert Shield, Desert Storm, and Iraqi Freedom.

He begins with an interesting analysis of the ways in which the Vietnam conflict played a part in shaping military thought leading up to Desert Storm. He then describes that operation—together with Desert Shield and Iraqi Freedom—in great detail, walking through the lead-up to each and critiquing both national defense strategy and unit-level tactics. Organized chronologically, the book presents the more subjective analysis near the beginning and end of the two conflicts and relates the bulk of the battles in a factual, objective manner.

The author's book-ending assessments of the decisions leading up to and following both wars are honest and well researched. Dr. Ballard supplements his work with nearly 60 pages of notes and references, and his use of numerous direct quotations lends even more credibility to both the historical and critical analyses. I consider these evaluations

the best part of the book because they brought to light a number of ideas I had not previously encountered in the media or elsewhere.

The primarily academic treatment of the battles themselves would not be particularly engaging for readers unfamiliar with ground-troop tactics and higher-level strategy. A Soldier or Marine, perhaps, would find these sections more interesting than would an Airman or civilian. Dr. Ballard includes few anecdotes of individual soldiers but pays much attention to generals and the accounts of their time commanding in Iraq. In the analysis, however, he says almost nothing about the involvement of airpower in either war—probably the book's greatest shortcoming. His background as a Marine may have influenced his coverage of airpower.

The author's discussion of the political and ideological issues concerning the wars and America's hand in them is fresh, engaging, and convincing. His connections between Desert Storm and Iraqi Freedom depart from mainstream commentary, arguing that our sanctions and massive bombing campaigns during Desert Storm so crippled Iraq that it crumbled much more easily than predicted when the United States invaded in 2003 and caused much more civilian resentment than we had anticipated. Dr. Ballard declares that the United States had been incidentally kindling an insurgency before the invasion in 2003 and that the invasion and de-Baathification decision by Amb. L. Paul Bremer inflamed it fully.

He lauds the execution of the initial military push into Iraq in both operations but strongly criticizes decision makers for not having a strategy for the following phase of the war, pointing out that it began prematurely in both cases. The author describes, without malice, excessive praise, or politicization the shortcomings and beneficial aspects of decisions made by both President George H. W. Bush and President George W. Bush prior to and during the two conflicts. I was impressed with the calm, logical, and methodical treatments of the two presidents' decisions to go to war and the aftermath thereof. Many pundits only pan the president for the way things went in Iraq; Dr. Ballard,

though, maintains that the day-to-day preparedness and external thinking of generals and ambassadors also made or broke strategy in Iraqi Freedom and that all levels of government are to blame when things go right or wrong in a conflagration between belligerents. His discussion and comparison of the various strategies used by commanding generals are clear and concise, giving the reader greater understanding of the situation in Iraq and its resolution. Although he never uses the phrase, the author describes "winning the hearts and minds" of the Iraqi people and points out that, in concert with the surge, the effort to restore communities after clearing them of insurgents allowed us to leave Iraq in good conscience.

I did note a few problems with the book, such as the lack of distinction between its notes and bibliographical references. The commingling of the plentiful bibliographical citations with the notes sometimes proved confusing. Furthermore, I was surprised by the large number of sometimes glaring typographical errors. Nevertheless, these flaws do not detract from its message, and I recommend *From Storm to Freedom* to anyone interested in a straightforward, rational discussion of military strategy and global politics as seen in the two wars in Iraq.

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