2014-1

Strategy for Intelligence, Surveillance, and Reconnaissance

Jason Brown
Colonel, USAF

AIR FORCE RESEARCH INSTITUTE PAPERS

Report Documentation Page

Form Approved
OMB No. 0704-0188

1. REPORT DATE	2. REPORT TYPE	3. DATES COVERED
DEC 2014		**00-00-2014 to 00-00-2014**

4. TITLE AND SUBTITLE	5a. CONTRACT NUMBER
Strategy for Intelligence, Surveillance, and Reconnaissance	5b. GRANT NUMBER
	5c. PROGRAM ELEMENT NUMBER
6. AUTHOR(S)	5d. PROJECT NUMBER
	5e. TASK NUMBER
	5f. WORK UNIT NUMBER
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) **Air University,Air Force Research Institute,155 N. Twining St., Bldg. 693,Maxwell AFB,AL,36112-6026**	8. PERFORMING ORGANIZATION REPORT NUMBER
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)	10. SPONSOR/MONITOR'S ACRONYM(S)
	11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT
Approved for public release; distribution unlimited

13. SUPPLEMENTARY NOTES

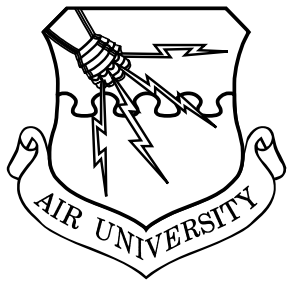
14. ABSTRACT

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT **unclassified**	b. ABSTRACT **unclassified**	c. THIS PAGE **unclassified**	**Same as Report (SAR)**	**38**	

AIR UNIVERSITY

AIR FORCE RESEARCH INSTITUTE



Strategy for Intelligence, Surveillance, and Reconnaissance

Jason M. Brown
Colonel, USAF

AFRI Paper 2014-1

Air University Press
Air Force Research Institute
Maxwell Air Force Base, Alabama

Project Editor
Belinda L. Bazinet

Copy Editor
Carolyn J. Burns

Cover Art, Book Design, and Illustrations
Daniel Armstrong

Composition and Prepress Production
Nedra O. Looney

Print Preparation and Distribution
Diane Clark

AIR FORCE RESEARCH INSTITUTE

AIR UNIVERSITY PRESS

Director and Publisher
Allen G. Peck

Editor in Chief
Oreste M. Johnson

Managing Editor
Demorah Hayes

Design and Production Manager
Cheryl King

Air University Press
155 N. Twining St., Bldg. 693
Maxwell AFB, AL 36112-6026
afri.aupress@us.af.mil

http://aupress.au.af.mil
http://afri.au.af.mil/

AFRI AU PRESS
AIR FORCE RESEARCH INSTITUTE

Library of Congress Cataloging-in-Publication Data

Brown, Jason M., Col.
Strategy for intelligence, surveillance, and reconnaissance / Jason M. Brown.
pages cm — (AFRI paper ; 14-1)
Includes bibliographical references.
ISBN 978-1-58566-246-3
1. Military intelligence—United States. 2. Military surveillance—United States. 3. Afghan War, 2001—Military intelligence—Case studies. 4. Iraq War, 2003–2011—Military intelligence—Case studies. 5. Military reconnaissance—United States. I. Title.
UB251.U5B76 2014
355.3'432–dc23

2014026409

Published by Air University Press in December 2014

Air Force Research Institute (AFRI) papers and other scholarly Air University studies provide independent analysis and constructive discussion on issues important to Air Force commanders, staffs, and other decision makers. Each paper can also be a valuable tool for defining further research. These studies are available electronically or in print via the AU Press website at http://aupress.au.af.mil/.

Contents

About the Author

Col Jason M. Brown is a US Air Force intelligence officer and currently commands the 693rd Intelligence, Surveillance, and Reconnaissance Group, Ramstein Air Base, Germany. He graduated from Texas A&M University with a bachelor of arts in journalism. He also holds a master of strategic studies from Air University, Maxwell AFB, Alabama, and a master of military studies and a master of operational studies from the Marine Corps University, Quantico, Virginia. He is a graduate of the Air Force Weapons School, the Marine Corps Command and Staff College, the Marine Corps School of Advanced Warfighting, and the Air War College. He previously commanded the 13th Intelligence Squadron (Distributed Ground System–2) at Beale AFB, California, and served in the Office of the Under Secretary of Defense (Intelligence) as the military assistant to the director, Department of Defense Intelligence, Surveillance, and Reconnaissance Task Force.

Executive Summary

In this paper, I draw upon the US experiences in Iraq and Afghanistan to highlight key lessons for integrating intelligence, surveillance, and reconnaissance (ISR) operations into military campaigns and major operations. I point out how the US military's adherence to a Cold War–era collection management doctrine creates obstacles for ISR integration. This system of managing competing requirements as a basis for ISR operations has proven ineffective repeatedly in military operations due to the emphasis on collection statistics that do not account for operational realities.

I argue that a strategy-oriented approach that balances ISR ends, ways, and means will more effectively meet commanders' needs and expectations. Using this approach, I suggest means by which commanders can steer the vast, organizationally complex ISR enterprise toward problem solving over production. A vital part of that process is articulating the commander's intent for ISR that links campaign goals to intelligence problem sets, ISR roles and missions, and ISR objectives.

By comparing ISR in Iraq and Afghanistan, I identify the advancements in resourcing, organization, and procedures that made considerable impacts on the battlefield. Using these lessons, I make practical recommendations on how commanders and staffs should organize and operate to effectively execute an ISR strategy.

Introduction

As we learned to build an effective network, we also learned that leading that network—a diverse collection of organizations, personalities, and cultures—is a daunting challenge in itself. That struggle remains a vital, untold chapter of the history of a global conflict that is still under way.

—Gen Stanley A. McChrystal
"Becoming the Enemy"

We don't have a collection problem, we have a precision problem.

—Lt Gen Michael T. Flynn
"ISR in Counterinsurgency
Capability Area Deep Dive"

In the Information Age, strategy has never been more difficult or more important. Military campaigning is now a struggle among multiple hyperconnected groups to learn and influence faster than others. Because tactical actions increasingly have strategic consequences, military forces must anticipate how their actions could influence groups and how the actions of others could influence those same groups.[1] Generating relevant intelligence has become increasingly difficult, as the demands for both precise action and force protection multiply. Modern technology simultaneously challenges and enables intelligence, surveillance, and reconnaissance (ISR) operations. It provides a direct connection between analysts and consumers separated by thousands of miles but leads to ever-changing sources and methods for coping with complex operating environments and compressed decision cycles.[2]

In the last 10 years, numerous reports have highlighted many obstacles to the integration of ISR in military campaigns and major operations.[3] The root cause of these difficulties is adherence to a centralized Cold War collection management doctrine focused on production rather than goals and objectives.[4] This Industrial Age paradigm is not agile enough to meet the challenges of military operations in the Information Age. A strategy-oriented approach that balances ISR ends, ways, and means will more effectively meet commanders' needs and expectations.

Although not specifically defined in doctrine, the US military uses the term *ISR strategy* frequently. In this paper, I propose that the purpose of ISR is to increase decision makers' understanding of and ability to influence an

environment and the relationships that exist within it; ISR helps decision makers anticipate change, mitigate risk, and shape outcomes. ISR strategy, therefore, is a set of ideas that integrates organizations and balances ends, ways, and means in pursuit of that purpose.[5] I will define the problem current collection management doctrine creates for implementing ISR strategy. I will then propose an alternative framework for ISR strategy, using a commander's intent for ISR as a method to balance ends, ways, and means. Finally, I will offer practical recommendations for commanders and staffs regarding how to organize and operate to effectively implement ISR strategy.

The Problem: Root Cause and a Cure

The history of the U-2 spy aircraft in Operation Iraqi Freedom illustrates challenges related to ISR strategy. Shortly after the start of the 2003 Iraq War, improvised explosive devices (IED) began taking their toll on coalition forces, causing the US military to spend billions of dollars and dedicate countless resources toward defeating these threats. This included tasking reconnaissance aircraft to find IEDs prior to detonation.

Intelligence collection managers at the Multi-National Corps–Iraq (MNC-I) headquarters routinely tasked the U-2 to conduct change detection, a technique using two images taken at different times to determine changes on the ground. In theory, if an insurgent planted an IED in the time between the two images, an analyst could detect a change on the second image and report the possibility of an IED.[6] Because the collection managers treated all counter-IED requirements equally, MNC-I "peanut butter spread" U-2 coverage throughout Iraq.[7] As a result, the U-2 could not capture the second image required for change detection until four to five days after the first, while insurgents detonated IEDs within hours of planting them. Also, analysts within tactical units had to submit most collection requests no later than 72 hours in advance of the U-2 mission, long before units planned and executed missions involving ground movement. Finally, collection managers at MNC-I discouraged U-2 operators and analysts from interacting directly with ground units for fear the units would circumvent their rigid collection request process. Consequently, U-2 operations did not integrate with the tactical ground operations they were meant to support.[8] The result was little to no evidence that the U-2 change-detection technique found any IEDs. Despite this lack of evidence, collection managers, concerned more about the percentage of satisfied requirements than flaws in ISR strategy, continued to task the U-2 to hunt for IEDs via change detection for nearly five years.[9]

This U-2 example illustrates a decades-old systemic problem with ISR. During the Cold War, limited availability of collection assets and an Industrial Age approach to intelligence production favored long-term indication and warning problems focused on large-signature collection targets such as Soviet tank divisions. As a result, a system of managing competing requirements emerged that worked well for static environments but failed to adequately integrate ISR operations into dynamic military operations. Markus V. Garlauskas, an Army intelligence specialist, described the doctrinal struggles of ISR, stating that "every iteration of warfighting doctrine since World War II has held expectations for intelligence that were not fully met. . . . This was highlighted most notably with AirLand Battle, which required quickly finding and selecting targets deep in enemy territory in rapidly changing situations. . . . Desert Storm revealed that effectively tracking key mobile targets, a major component of AirLand Battle, was a remote goal."[10]

While a lack of analytic and collection resources contributed to ISR problems, it did not explain why many of the same issues persisted despite a massive infusion of ISR resources into Iraq and Afghanistan.[11] In 2010 the Department of Defense ISR Task Force (ISR TF) conducted a study on the utility of ground moving target indicator (GMTI) platforms, such as the E-8C Joint STARS, in Afghanistan. The study found the utility was "moderate to low"—not because GMTI was inappropriate for the operating environment but because there was not an effective organizational framework to integrate ISR operations to optimize intelligence and tactical effects for the war fighter.[12]

The following describes how the doctrinal collection management process essentially works. An analyst believes a specific intelligence discipline, such as GMTI, can identify a signature related to a particular collection target. The analyst submits a collection request for the specific intelligence discipline against the target, which is validated, deconflicted, and prioritized by collection managers. A collection manager then tasks an asset to collect the requirement based on the priority ranking and the frequency with which analysts need information about the collection target.

The ISR TF discovered many drawbacks to this process. First, analysts and collection managers rarely had the appropriate understanding of ISR capabilities to determine the feasibility of requirements. Analysts submitted requirements based on limited ISR training prior to deploying, and collection managers throughout the validation process often rubber-stamped requirements. For example, analysts would submit GMTI requirements over cities, failing to recognize GMTI platforms' inability to distinguish moving targets in the clutter of an urban environment. Analysts and collection managers rarely consulted with platform experts when submitting requirements or at

any other time prior to collection. Second, there was little incentive for time-constrained analysts to remove older requirements from the collection management system. Collection managers provided little oversight on purging the system of stale requirements, yet they would grow frustrated if their change detection requirements had a 35 percent satisfaction rate.[13] The third problem was that requirements were rarely prioritized to focus ISR on the most important task at any given time. For example, if five different units had counter-IED requirements in the system, all requirements likely had the same priority, even though four out of the five may not have planned any ground movement during the collection cycle. Lastly, there was little to no feedback to determine if intelligence collection was meeting commanders' expectations. The system focused on whether ISR resources "satisfied" the requirement, which meant collection occurred, not that collection actually met the commander's intent. Analysts, collectors, and consumers rarely interacted directly, and ISR planners expended more energy on administering requirements than planning to meet commanders' objectives.[14]

In Afghanistan, Iraq, Haiti, and Libya, intelligence leaders and analysts eventually realized it was not viable to submit formal intelligence requirements and then hope all the pieces would arrive at the right time.[15] Military units achieved ISR success by focusing less on managing requirements and more on ends, ways, and means. In other words, they succeeded when they thought through objectives and concepts to allow commanders to arrange ISR resources in time, space, and purpose.

For example, units found some success in countering IEDs by refocusing ISR from locating the devices to understanding the insurgent network behind them. To meet the *ends* of protecting troops from IED attack, ISR planners adjusted the *ways* from threat warning to targeting and adjusted the *means* from route scans to manhunting. This new approach required phasing and layering ISR resources against the right targets at the right time. For example, in early 2012 one Marine unit dedicated 80 percent of its ISR resources to studying insurgent network patterns and linkages. This shift against routine procedures of route scans and patrol overwatch required a great deal of restraint by the unit commander to allow time for ISR efforts to generate targeting intelligence. In this case, the Marine unit learned that the path to force protection was indirect and was only obtainable by carefully thinking through the ISR strategy that would achieve the commander's goals.[16]

The Marines' success juxtaposed with the ineffective Industrial Age requirements-based processes illustrates the need for new thinking about ISR strategy. With that in mind, ISR planners should recognize that strategy is "the continuous process of matching ends, ways, and means to accomplish

desired goals within acceptable levels of risk."[17] The Marines succeeded because they adjusted ISR ends, ways, and means to achieve their commander's intent. Rather than impose an ISR construct meant for static warning scenarios, commanders must emulate the Marines' example and create processes that generate similar effects throughout a joint force engaged in a campaign. Other war fighting functions, such as joint fire support, have a solid foundation and track record for achieving that purpose—that is, integrating the ends, ways, and means related to that function with the overall campaign strategy.[18] The next section describes a similar process to integrate ISR strategy in a campaign.

Developing the Commander's Intent for ISR

The goal of an ISR strategy should be to create a problem-centric versus a requirements-centric approach to operations. In other words, analysts, platform operators, and consumers should state the problems they need to solve, not simply what requirements they have to satisfy. Success in any military operation requires commanders and their staff to unify the ISR enterprise in support of campaign goals. Articulating intent—the traditional method commanders use to establish unity of effort for organizationally complex operations—is the necessary but often overlooked step to focus ISR strategy.

According to Army general Martin Dempsey, the chairman of the Joint Chiefs of Staff (CJCS), intent is one of the basic principles of mission command, which is the operating construct "critical to our future success in defending the nation in an increasingly complex and uncertain operation environment."[19] Mission command provides leaders dispersed throughout an organization or among many organizations with the ability to take initiative based on an understanding of the purpose and goals of an operation. However, reaching that understanding requires more than writing down a purpose, method, and end state. The CJCS *Mission Command White Paper* states, "Shared context is a critical enabler of . . . intent. In mission command, intent fuses understanding, assigned mission, and direction to subordinates. Commanders will be required to clearly translate their intent (and that of higher leaders) to their subordinates and trust them to perform with responsible initiative in complex, fast-changing, chaotic circumstances."[20] The key to intent, therefore, is to establish shared context. Col Lawrence Shattuck, US Army, retired, states, "It is not enough to tell subordinates what to do and why. When situations permit, commanders should explain how they arrived at the decision. Explaining the rationale helps subordinates understand and develop similar patterns of thought."[21]

Communicating intent is not just a top-down method to establish unity of effort. ISR operations over the last decade have demonstrated the importance of explaining intent to higher headquarters and outside organizations. Maj John Ives, the J2 for Combined Joint Special Operations Task Force–Afghanistan (CJSOTF-A), explained how his team sold the ISR strategy for village stability operations (VSO) to establish shared context among higher headquarters collection managers and supporting ISR organizations:

> Fearing our phased nonkinetic collection requirements, taken individually, would go uncollected, the J2 ISR team briefed the plan in its entirety to the [higher headquarters] collection managers (CM). The briefing flowed from the operational macro view of CJSOTF-A's mission to the tactical micro view of a village stability platform, followed by the comprehensive collection plan as it related to the phases of VSO expansion. . . . Linking the purpose of the collection plan to the individual requirements proved highly productive and informative. The CMs recognized the overall long term phased collection plan as both sustainable and feasible. . . . We determined our audience and developed a briefing that displayed, from macro to micro, how the operation worked. Most importantly, we presented the collection plan as Phase 0 or I in the overall scheme of maneuver—linking requirements to specific operation maneuvers. Every stakeholder, support organization, and decision maker needs to know how the collection plan sets the stage for the successful completion of the mission. For example, "If we don't get hyperspectral collection at point X NLT D-5 to deny activity, we have to commit forces to that area, which pulls from the main effort." With this method, we showed how the operation's execution hinged on certain intelligence functions. This increased non-unit ownership and cooperation throughout the community. We cannot underestimate the sense of duty inherently present in the people associated with the mission. Knowing how they fit in the larger picture makes people very focused on mission success. Putting a face to our requirements ensured their successful accomplishment.[22]

All of this suggests that ISR strategy must start by framing the problem, setting mission expectations, and outlining objectives in a way that will guide the activities of disparate groups and organizations at all levels toward a common purpose.

Moving beyond Priority Intelligence Requirements

The doctrinal method for guiding ISR is through commander-approved priority intelligence requirements (PIR), which are products of the analytical processes that support decision making.[23] PIR began as questions ground commanders would ask about enemy forces when they reached a decision point during offensive maneuvers. These questions would guide intelligence staffs to develop specific collection requirements to answer these questions.[24] Combatant commands adopted PIR as a means to guide strategic-level ISR operations (i.e., are the Soviet tank divisions mobilizing?). When military

forces attempted to adopt PIR at the operational level, the decision points disappeared and the questions became stagnant and less precise. As PIR developed into broad, unconstrained questions, analysts and commanders did not consider ISR capabilities and limitations when developing the questions. In other words, they often asked questions that had little to no chance of being answered (i.e., where are the IEDs?).

Broad, unconstrained questions lead to unfocused activities, which create vulnerabilities. J. Richard Hackman described a series of simulations that pit a team of intelligence professionals (a "blue team") against a "red team" that carried out a terrorist strike against a city. Hackman noted the red team consistently won because they had a focus and purpose as a result of being on the offense. The blue team, with no idea what the red team was planning, began flooding the simulation controllers with broad questions and consequently drowned in data as the controllers answered. Hackman concluded that the blue team had to reorient itself from defense to offense to succeed. The blue team had to determine what it would do if it had the red team's capabilities and resources. As Hackman stated, "Just that simple cognitive change can reorient members toward the specific information that has the greatest potential analytic payoff."[25]

PIR is not an effective mechanism for guiding ISR in major military campaigns.[26] Still, doctrine establishes PIR as the foundation for plans, orders, and concepts of operation that guide ISR resourcing and employment.[27] Within those directives, commanders must move beyond PIR and focus the ISR enterprise by explaining problems, roles and missions, and objectives in a way that establishes shared context and communicates intent.

Framing Intelligence Problems

Commanders and their ISR staffs must understand *what* they are trying to accomplish before they determine *how* to accomplish it. This starts by examining the campaign goals in order to determine the problems ISR operations must solve. The challenge for ISR in recent campaigns is the lack of a common framework for approaching the problem to consistently drive collection and analysis. From the 1970s through the 1990s, the defense intelligence community had a clear system for profiling potential adversaries in the form of orders of battle overlaid with capability assessments. While this machine was adequate for conventional conflicts, it was virtually meaningless to the past decade's operations, and no framework has clearly arisen to replace it.[28] Intelligence problems have become campaign specific; therefore, planners must make the

effort to frame unique problems and not rely on peacetime organizational inertia to define the categories for analysis and collection.

As Hackman asserts, a red teaming effort is a valuable tool for breaking down the complexity of the operating environment in order to provide focus. That effort can provide planners manageable categories of intelligence problem sets (IPS) to focus ISR planning.[29] Planners must avoid making IPS an order of battle by another name. Categorizing with proper nouns (people, places, and things) can result in analytic gaps; therefore, analysts and planners should focus on behavior and intent as the criteria to define IPS. For example, in assessing threats to air operations, an intelligence organization spends a great deal of time studying an integrated air defense system (IADS). What the organization may overlook is the adversary's primary objective, or end—not to shoot down aircraft but to prevent getting bombed. While the organization may pursue this goal by defending its airspace using its IADS, it will likely use other ways and means to achieve the goal—cyber attack or poisoning the airbase water supply, for example. The most appropriate IPS in this scenario would be *adversary attack of our airpower*. This ends-ways-means red-teaming drill can provide the analytic framework for a campaign and the starting point for focusing ISR.

Once planners identify IPS, they can then determine where and how to leverage the ISR enterprise by asking a series of questions. What are the capabilities and limitations for ISR against each IPS? What IPS is most relevant in the pursuit of campaign goals? How thin can planners spread resources among IPS while still effectively supporting the campaign? In answering these questions, planners should consider five roles and missions for ISR that emerged in the last decade: understanding the environment, targeting, operational assessment, threat warning, and operations overwatch.[30] The commander must effectively balance these roles and missions by identifying their priority, weight of effort, and phasing within the campaign.

Ranking Roles and Missions

Historically, ISR has been decisive when focused on the right roles and missions at the right time. The US Navy was victorious during the Battle of Midway primarily because signals intelligence and aerial reconnaissance provided awareness of Japanese operations (threat warning) and reaction to Navy deception efforts (operational assessment). During the Korean War, the effort US intelligence took to analyze the site of the Inchon landing (understand the environment) enabled the strategic surprise of the amphibious operation. Efforts to understand and destroy key components of air and air defense

capabilities were the decisive factors in both the Six Day War and Operation Desert Storm (targeting).[31] In the fight against terrorist organizations, targeting efforts have been critical but also counterproductive when commanders engage in "whack-a-mole" strategies that lose sight of the strategic end state.[32] As with the IED example, an inappropriate ISR focus can detract from meeting campaign goals.

Much of that misdirection stems from the inherent tension between ISR roles and missions, particularly those that require operational and tactical patience (understanding the environment, operational assessment, and targeting networks) and those requiring short-term support (threat warning, operations overwatch, and targeting specific threats). The counter-IED examples show how competition for assets between roles and missions requires commanders to make clear choices. If commanders do not clearly articulate priorities between roles and missions, planners inevitably revert to spreading resources thin, primarily to support short-term operational needs—while potentially making ISR ineffective for all missions. As Marine captain Devaunt Z. LeClaire states, "Using an ISR asset exclusively to support operations is 'robbing Peter to pay Paul' in that planning based on sound information and intelligence is not possible without robust collections."[33] Choosing to focus ISR on a single problem set does not guarantee success, however. When commanders focus on roles and missions where ISR is ineffective (threat warning for IEDs), they siphon resources away from roles and missions where ISR succeeds (targeting the network).

Another dilemma commanders face when developing an ISR strategy is whether to strengthen ineffective ISR roles and missions. While attempts to strengthen ISR capabilities for threat warning against IEDs were mostly ineffective, efforts to reorient ISR toward understanding the environment in Iraq and Afghanistan—the population in particular—while simultaneously improving targeting capabilities against insurgents were vital in pursuit of counterinsurgency (COIN) objectives. Adding additional remotely piloted aircraft (RPA) to the Libya operation improved NATO targeting capabilities, helping lead to Muammar al-Qadhafi's demise.[34]

Determining which roles and missions to emphasize or strengthen requires a constant evaluation of the enterprise's capabilities, coverage, capacity, and constraints. ISR planners can use these "4Cs" throughout the development of ISR strategy by asking the following questions about specific resources and the enterprise as a whole:

- Are the available resources capable of dealing with the problem sets?

- Is the capacity sufficient to cover the timelines related to the IPS operating scheme?
- Does the enterprise have adequate coverage, both geographically and within the networks analysts are trying to understand?
- What constraints prevent the ideal employment of resources?

The answers to these questions can help commanders develop obtainable and relevant objectives for ISR.

Stating ISR Objectives

Joint doctrine defines an objective as "a clearly defined, decisive, and attainable goal toward which every operation is directed."[35] Using campaign goals, IPS, roles and missions, and the 4Cs as a foundation, commanders can develop ISR objectives that provide focus and direction to operational and intelligence efforts. ISR objectives can also provide a basis for resource development, deployment, apportionment, and allocation. Staffs struggle with these activities because collection requirements provide the foundation for ISR resourcing decisions. Requirements are difficult to regulate, which inevitably leads to an ever-increasing demand for resources and a misrepresentation of needs and risk. The U-2 was continually tasked to conduct change detection, for example, because the requirement satisfaction rate was always low, and collection managers felt they needed to fix this shortfall. If, instead, the ISR staff used an objective such as "Provide threat warning for convoys by delivering intelligence to ground units of probable IED locations," U-2 change-detection missions would have received appropriate scrutiny when they did not produce results—or put another way, when the ways and means did not achieve the ends. ISR objectives that flow from commander's intent and appropriately defined IPS provide a better foundation for ISR assessment.

Objectives provide a common terminology to prioritize the things a commander must *know* with what he must *do*. This is important for working through the competition between roles and missions (i.e., should planners pull resources off targeting missions to conduct operations overwatch?). As the roles for all types of resources continue to blur—traditional fire and maneuver assets gathering intelligence, for example—objectives offer a clear process to prioritize both operational actions and intelligence collection for infantry squads, fighter pilots, RPA crews, and cyber operators alike. Successfully achieving campaign goals increasingly depends on the military's ability to integrate intelligence and operations to a degree where they become mutually supporting.[36] Finally, objectives provide a foundation for implementing

mission command through mission type orders (MTO) within an ISR enterprise.[37] MTOs convey purpose and intent and facilitate the interaction between ISR consumers, platform operators, and analysts.[38] This is the surest way to establish shared context within the organizationally complex ISR enterprise.

The four components of a commander's intent for ISR—campaign and operational goals, IPS, roles and missions, and objectives—are the foundation for ISR strategy. Intent is more than a way to establish shared context and unity of effort; it is an investment. Hackman observed during his study of intelligence teams, "An up-front investment in developing a performance strategy that takes explicit account of a team's task requirements, its performance context, and the outcomes it is charged with achieving can generate substantial dividends later."[39] The largest dividend of intent is the foundation it establishes for leading the ISR enterprise. As organizations become more connected and operations become more complex, leadership in implementing intent matters infinitely more than management.

Implementing ISR Strategy

In addition to a conceptual framework, commanders and their staffs require a practical method to develop and carry out ISR strategy given Information Age capabilities and challenges. Iraq provided an example of a central planning staff exercising tighter controls to regulate and synchronize ISR in an attempt to deal with emerging organizational and operational complexity.[40] Centralized ISR planning as part of a joint operational planning process may work well in the early phases of a campaign and in high-risk scenarios; however, as operations progress, the ISR enterprise will naturally disaggregate organizationally, structurally, geographically, and procedurally.[41] Headquarters staffs attempting to control diversified and distributed processes and organizations can stifle the ISR enterprise's ability to adapt to changing conditions in a campaign. How should ISR strategy evolve to allow planners at different levels to creatively employ ISR resources to achieve operational and campaign objectives? Despite lessons from Iraq and Afghanistan, joint doctrine still emphasizes a centralized method for developing ISR strategy, failing to account for the complex command relationships or the increasingly collaborative nature of ISR planning that affects the full spectrum of operations.[42] Rather than focus on centralized planning, commanders should concentrate on synchronizing ISR strategy teams at multiple echelons and components through appropriate resourcing, relationships, and processes.

While not using the term *ISR strategy teams*, in recent campaigns formal or working groups emerged within organizations to flatten hierarchical

structures and integrate expertise to improve ISR operations. Commanders and their staffs can discern practical methods to integrate these teams by specifically examining ISR strategy improvements between the height of operations in Iraq (2006–2008) and Afghanistan (2010–2012). There were significant differences between each campaign that account for these improvements. Because Afghanistan is more rural than Iraq, smaller units owned larger areas, which led to lower ranks leading more fluid operations. This dynamic led commanders to more heavily rely upon and integrate their intelligence staff into planning processes. Suddenly platoons operated like special operations teams, demanding to be treated with some level of maturity in their decisions and to be given more freedom to interact with ISR units once International Security Assistance Force Joint Command (IJC) allocated resources.[43] Another factor impacting planning integration was the heavy coalition presence in Afghanistan versus Iraq. Coalition partners, in particular the British, used more flexible planning structures than the US-dominated organization in Iraq.[44] Eventually, there was also a much larger armada of ISR assets available to units in Afghanistan compared to Iraq, which improved integration at the tactical level.[45] However, the most important lessons on ISR strategy from Afghanistan are not related to ostensible situational advantages but rather come from structural and procedural improvements that reduced friction, promoted planning integration, and encouraged operational creativity.

Identifying the Lessons

Policies related to overcoming fractures between organizations became the catalyst for improvements in ISR strategy. At various points in recent campaigns, tension and friction occurred whenever planners could not agree on appropriate ISR processes, as the commander in Iraq, Gen Raymond Odierno, revealed in a 2008 article. Odierno stated that "because of the diverse and complex needs of commanders in a COIN environment, our brigade combat team (BCT) commanders need to 'own' not only their organic ISR assets but also theater- and corps-level systems for given periods based on the corps commander's priorities. External agencies do not have the perspective, agility, or grasp of the full range of ISR systems in theater to responsively integrate ISR assets into COIN operations."[46]

This excerpt reflects the debate between MNC-I and the Combined Forces Air Component commander over ISR planning policies. Although General Odierno accurately identified a lack of perspective of external agencies, MNC-I did not recognize that ISR integration was far more complicated than "owning" assets or establishing supported/supporting relationships. For

instance, the earlier change detection example showed MNC-I's failure to effectively grasp the 4Cs of ISR strategy. General Odierno discussed a mechanism that overcame some of this tension: "One initiative that has helped tactical commanders in Iraq integrate theater ISR assets into their operations is the presence of Combined Air Operations Center (CAOC)/Combined Forces Air Component Command (CFACC) ISR liaison officers (ISRLO) at division headquarters. Providing these Air Force subject matter experts as advisors to division staff sections and as key members of the intelligence-operations team has been a combat multiplier. It would also be extremely helpful to have these experts at BCT level to provide the CAOC and related organizations with insight into the operations they support."[47] Embedding ISRLOs into units created a de facto ISR strategy team that effectively flattened much of the hierarchal planning process. While General Odierno did not acknowledge the full purpose or potential of ISRLOs, he recognized the need to deploy them to lower echelons where the proverbial rubber met the road. This would eventually become the policy in Afghanistan.

At the height of operations in Afghanistan, commanders made two key structural improvements that enhanced ISR strategy compared to Iraq. First, the United States dedicated more manpower, including ISRLOs, to ISR planning at multiple echelons, including the regional command (RC) level and below. ISRLOs who demonstrated expertise and leadership received continuous praise from ground commanders and were critical to integrating ISR capabilities from various components and agencies in support of their host units. Second, Afghanistan offered greater incentives for planners to think through ends, ways, and means rather than flooding the system with requirements. While headquarters in both Iraq and Afghanistan conducted regular joint collection management boards in order to allocate resources, the board in Iraq focused on the number of operations and requirements as a means to justify allocation, but the board in Afghanistan encouraged analytic rigor in its allocation process. Subordinate units in Afghanistan more often had to explain not simply *what* they needed but also *how* they would employ ISR resources.

The introduction of the ISR MTO concept, which provided tactical units greater flexibility in executing operations and an organizational construct to share operational context, offered another incentive to integrate strategies. IJC required detailed coordination and planning before approving ISR MTOs. In short, higher headquarters in Afghanistan focused more on prioritization, and units were more likely to receive resources and/or more flexibility when they invested intellectual capital in ISR strategy instead of simply submitting requirements. This second structural improvement (designing a system that

encouraged better planning) could not have happened without the first improvement—resourcing units with the right people to carry out that planning.[48]

Building the Team

Given these lessons, how should ISR strategy teams organize and operate? Depending on the nature of the campaign, level of headquarters, and phase of operation, some ISR strategy teams will be ad hoc, while others will be formal and enduring. When building ISR strategy teams, leaders must take into account specific functions and characteristics. Most importantly, ISR strategy teams must include the right mix of analysts, capability experts, and consumers from throughout the commander's staff and external organizations who have the right planning, critical thinking, and leadership abilities.[49] An ISR strategy team optimally should be located within an existing staff structure, operations center, or fusion center that ensures (1) the integration of ISR with other war-fighting functions, (2) access to the commander to ensure the team understands his or her intent, and (3) the ability to break the monotony of a "battle rhythm" when necessary.[50]

Describing how special operations task forces designed their ISR planning teams in Iraq and Afghanistan, Lt Gen Michael Flynn, US Army, wrote in 2008, "The organizational imperative was simple: get the best people and bring them together face to face in a single location collaborating on a target set while orchestrating reach-back support to their national offices."[51] But what if face-to-face interaction is not feasible? Organizational and logistical constraints may lead to a distributed ISR strategy team facilitated by modern technology. While not always ideal, there were numerous examples in Afghanistan where a distributed construct worked when members were determined in launching planning efforts, building relationships, and remaining relevant.[52] Building a team that includes the right leaders and experts, with the right interpersonal skills, whether formal, ad hoc, face-to-face, or distributed, is the foundation for ISR operational success.

Effective teams must include active leadership and expertise to break through the inherent imperfection of processes, technology, and organizational structure. Simply relying on formal, impersonal processes will not sufficiently focus the enterprise to solve a unit's intelligence problems. ISR strategy teams must address challenges through leadership, tradecraft, policy, and technology—in that order. Too often, commanders and staffs approach problems in the reverse. As Lt Col Timothy Oliver, USMC, who served five tours in Iraq and as an intelligence battalion commander in Afghanistan, asserts, "Any success or failure of intelligence stems from the same source as

other types of military failures, from the leadership. Intelligence must be an 'all hands' effort, and commanders, consumers, and producers all must drive this process and insist on its success."[53]

Fostering Relationships

ISR strategy consistently succeeds when team leaders overcome the challenges of multiorganizational complexity and lack of unity of command by building solid personal relationships. Alternatively, poor relationships directly contribute to ineffective ISR strategy as General Odierno's article implied. Because every commander's level of confidence and perception of risk is linked to ISR, competition for resources between organizations can quickly become personal. Trust can easily break down when teams begin to stereotype along organizational lines and argue over command relationships. Trust depends on selecting knowledgeable team members who can break down cultural and organizational barriers in pursuit of mission accomplishment and installing the right leaders to direct their efforts.

Barriers inherent in formal command relationships should not provide an excuse for failing to invest the time and energy necessary to create the trust required within the ISR enterprise. Leaders overcome barriers and create trust by demonstrating transparency, empathy, and competence. Major Ives provides an example: "Our ISR team's proficient grasp of collection management created a mutual trust with the IJC ISR planners. Over the next few days, our two teams worked hand-in-hand towards a theater-wide effort supporting the original purpose of the focus area collection without disrupting the IJC priority collection plan for ongoing named operations."[54] He illustrates the success well-resourced teams had when operating within a system that incentivized both competence and interaction. Valuing competence and creating trust resulted in a virtuous circle that reinforced itself over time, leading to a willingness to accept greater risk to obtain greater payoff in future ISR operations.

Testing the Process

Trust alone, however, will not deliver success. ISR strategy teams must also build an effective structure and process to meet mission requirements. Other than identifying the need to integrate effectively within operational planning processes, any other prescriptive guidance on the effort to develop ISR strategy would likely not apply across a broad spectrum. Leaders must avoid making the campaign fit a doctrinal process, and must instead design a process to fit

the campaign. That said, planners should apply several tests to any ISR strategy-development process.

First, does the process minimize and scrutinize assumptions? Unlike fire and maneuver capabilities, ISR does not have an adequate test and evaluation process. As a result, ISR planners rely heavily on assumptions about capabilities versus collection targets. Minimizing these assumptions requires an ongoing red-team effort combined with adequate operational assessments to continuously evaluate assumptions. Planners may assume a sensor is adequate for finding IEDs but must develop a feedback loop that focuses on the interplay of enemy and friendly activities to determine the assumption's validity.

Second, does the process minimize gaps and seams in a way that creates a problem-centric ISR enterprise? An evolving campaign will naturally disaggregate ISR, and teams must work through the disaggregation by refining the process to make the enterprise act as a whole. Organizing constructs including ISR objectives, MTOs, or a find-fix-finish-exploit-analyze targeting model can provide the synchronization needed for a problem-centric approach.[55]

Third, does the process provide checks and balances needed to ensure the ISR strategy is feasible, acceptable, and relevant? The challenge for higher-level headquarters is to develop an ISR strategy that uses resources effectively but also provides units the flexibility to innovate in addressing IPSs. An unregulated requirements-based system can lead to a waste of resources when units pad their requirements to obtain a baseline of allocated assets or submit requirements without considering the 4Cs. These unfiltered requirements require oversight to optimize available resources and comply with the theater commander's priorities. IJC attempted to rein in uncontrolled requirements submission by designing and communicating a prioritization and weighting scheme to subordinate units. IJC required each unit to provide the rationale for ISR requests and then worked with the units to optimize the ISR enterprise in support of legitimate, high-priority requirements. IJC also used an assessment process to ensure units used resources in accordance with priorities during execution. This method represented both a prioritized and collaborative ISR strategy. As Major Ives illustrated, teams at multiple echelons collaborated to develop ISR strategy in parallel to develop transparency and trust to make the system function effectively.

Finally, does the process allow for resources to quickly mass and disperse with a minimal amount of friction? Losing ISR resources to another unit or mission often creates a significant emotional event for commanders and staffs, exacerbating tensions. This can cause staffs at multiple levels to expend energy on organizational knife fights instead of future planning. Organizations can overcome this friction when the commander's intent is adequately

developed, updated, and communicated so that subordinate commanders perceive that the allocation decisions are consistently in line with campaign goals. IJC's prioritization and weighting scheme enabled massing and dispersal while limiting friction, because ISR stakeholders at all levels understood that IJC made its allocation decisions in line with commander's priorities.

When designing processes to develop ISR strategy, commanders and staffs should consider important lessons from Iraq and Afghanistan that demonstrate the need for dedicated development teams at multiple levels and components to continually refine ISR strategy. Investment in leadership, manpower, relationships, and balanced processes is critical to making these teams effective. This focus provides the best method to ensure shared context and expertise throughout the enterprise. It also overcomes the disaggregation inherent in the requirements-based collection management process. As General Flynn concludes, "If we do more synchronized planning with greater rigor right from the start, using our operations planning process, we can provide our subordinate units greater flexibility and less uncertainty. At the end of the day, we achieve success in combat when subordinate units collectively understand the mission and higher commands have properly resourced them for success. Then and only then can they accomplish a well-synchronized campaign plan."[56]

Conclusion

ISR strategy should provide clear, focused direction and create a shared context that orients the ISR enterprise toward problem solving over production. Articulating intent, as the CJCS asserts, is the best method to achieve these aims. The commander's intent for ISR should define intelligence problems and identify the critical ISR roles and missions to address those problems based on the capabilities, coverage, capacity, and constraints of available resources. Intent must guide the enterprise and joint forces toward achieving specific ISR objectives that support campaign goals. In short, intent balances the ends, ways, and means of ISR operations and facilitates leaders' efforts to integrate intelligence and operations in ways modern military campaigning demands.

The key to developing and implementing ISR strategy is finding ways to move organizations, relationships, and processes toward collaboration, trust, and incentives. During recent operations, leaders created ISR strategy successes when they overcame organizational inertia and doctrinal restrictions that impeded integration. This happened when leaders focused teams of experts at multiple echelons on ISR strategy. These teams balanced the needs of lower-level commanders with campaign goals and reduced the friction

between organizations that inevitably occurs in operations involving life and death.

ISR's role in building confidence and reducing risk naturally leads to competition over resources. Less successful attempts to reduce pressure and friction in recent campaigns included throwing resources at problems or spreading resources evenly among organizations without adequately balancing ISR ends, ways, and means. The struggle to counter IEDs offers an example of how organizations can obsess over numbers while losing sight of operational realities. The last decade drove significant discovery learning on ways to make ISR relevant in high-tempo operations. Joint forces must codify the hard lessons learned on evolving ISR processes that reduce friction and increase timeliness while retaining a focus on priorities and effectiveness. Failure to do so will mean future commanders and their staffs will once again spend energy and resources chasing white whales instead of developing winning ISR strategies.

When faced with Information Age challenges and their impact on ISR operations, many still insist better adherence to collection management doctrine and processes is the answer. Departure from proven doctrine has certainly led to disaster for military forces in the past. However, joint ISR doctrine has yet to prove itself in major operations without significant modification by commanders and their staffs. If there is one fundamental flaw in current joint doctrine, it is this: ISR is *managed*, while other forms of operation are *led* . . . and doctrine that relies on management over leadership will fail time and again in the heat of battle.

Notes

(All notes appear in shortened form. For full details, see the appropriate entry in the bibliography.)

1. Krulak, "Strategic Corporal." The former Marine Corps commandant's seminal article remains one of the best descriptions of the modern operating environment.

2. Brown, "Rethinking the Network," 32–34.

3. Patrick W. Lueb, Department of Defense ISR Task Force (ISR TF), interview by the author, 15 October 2012. Lueb is the lead action officer for the ISR TF mission management project, which began in 2010 after an ISR TF study on the effectiveness of ground moving target indicator (GMTI) in Afghanistan. Based on the results of the study, Gen James E. Cartwright, the vice chairman of the Joint Chiefs of Staff, directed the ISR TF to lead a doctrine, organization, training, materiel, leadership and education, personnel, and facilities change recommendation, or DCR, to improve ISR mission management. I was the lead project officer for the doctrine and organization working group for the DCR effort. The ISR TF found several documents, including reports from the Government Accountability Office (GAO-12-396C, GAO-11-224C) and 2010 Joint Forces Command ISR Summit, that highlighted similar integration challenges identified during the GMTI study.

4. Deptula and Brown, "A House Divided," 5–15. General Deptula and Major Brown describe the inadequacies of Industrial Age intelligence processes in the Information Age and argue to replace them with integrated ISR functions.

5. This is my own definition of ISR strategy, which was crowd-sourced from several colleagues' suggestions.

6. Rick Atkinson, "There Was a Two-Year Learning Curve . . . and a Lot of People Died in Those Two Years," *Washington Post*, 1 October 2007, accessed 10 September 2012, http://www.washingtonpost.com/wp-dyn/content/article/2007/09/30/AR2007093001675.html.

7. Price, "Close ISR Support," 156.

8. Downs, "Rethinking the Combined Force Air Component."

9. Atkinson, "There Was a Two-Year Learning Curve." Also, I had detailed knowledge of U-2 and other ISR operations in Iraq and Afghanistan between 2004 and 2010. I coordinated ISR operations for Iraq and Afghanistan from the CAOC in Qatar in 2004 and 2006 and forward deployed to Iraq and Afghanistan for ISR planning and strategy forums several times between 2004 and 2009. I commanded an intelligence squadron that planned U-2 missions in Iraq and Afghanistan from 2008 to 2010. See also US House of Representatives, *Hearing before Committee on Armed Services*. According to the Honorable John J. Young, Jr., "Synthetic Aperture Radar Coherent Change Detection (SAR CCD) enables tactical users to detect minute changes in terrain due to human activity or develop a persistent picture of activities within an area of interest. Currently, SAR CCD requires post mission processing and extensive human analysis to develop a product that is time late and not easily accessible by tactical decision makers."

10. Garlauskas, "Intelligence Support for Military Operations," 105.

11. Between 2008 and 2012, the ISR TF directed the increase of ISR resources in Iraq and Afghanistan totaling over $11 billion.

12. Lueb, interview.

13. This is a synopsis of a discussion I had with MNC-I collection managers in August 2008 regarding the ineffectiveness of change detection.

14. Lueb, interview. The GMTI study concluded that most of the current ISR effort, particularly at the joint task force level, focused on asset allocation and requirement administration rather than planning to meet objectives.

15. Col Rachel A. McCaffrey, chief, ISR division at the Poggio Renatico Combined Air Operations Center (CAOC) 5 for Operation Unified Protector, e-mail to the author, 20 January 2013. McCaffrey provided remarkable insights (and editing skills) for this paper, which I greatly appreciated.

16. Lueb, interview. Lueb cited a lessons learned report from 2nd Battalion, 9th Marines for their role in Operation Psarlay Taba. See Harper, "Marines, ANA in Marjah"; and Lopez, "Video."

17. Air Force Doctrine Document 1, *Air Force Basic Doctrine*, 4.

18. Joint Publication (JP) 3-09, *Joint Fire Support*, chap. 2; and US Joint Forces Command, *Joint Fires and Targeting Handbook*, chap. 2.

19. Dempsey, *Mission Command White Paper*, 3.

20. Ibid., 5.

21. Shattuck, "Communicating Intent and Imparting Presence," 71.

22. Ives, "Back to Basics."

23. JP 2-01.3, *Joint Intelligence Preparation of the Operational Environment*, I-10.

24. McDonough and Conway, "Understanding Priority Intelligence Requirements," 18.

25. Hackman, *Collaborative Intelligence*, 19.

26. Lueb, interview. Commanders turned to other criteria including named operations (Afghanistan) and lines of operation (Haiti) as the primary guiding mechanism for ISR operations.

27. JP 2-01, *Joint and National Intelligence Support to Military Operations*, III-8.

28. Chris Whitlock, former president, National Interest Security Company and Edge Consulting, e-mail to the author, 2 November 2012.

29. Headquarters USAF/A2, *Theater ISR CONOPS*, 6. I wrote the *Theater ISR CONOPS* with Lt Col Max Pearson and borrowed/evolved the concepts of intelligence problem sets (IPS), ISR objectives, and commander's intent for ISR for this paper.

30. This list of roles and missions is not outlined in doctrine but is derived from my own experience and suggestions from colleagues.

31. Elder, "Intelligence in War."

32. Brown, "To Bomb or Not to Bomb?"

33. LeClaire, "ISR Integration," 52.

34. Thomas Harding, "Col Gaddafi Killed: Convoy Bombed by Drone Flown by Pilot in Las Vegas," *Telegraph*, 20 October 2011, accessed 1 February 2013, http://www.telegraph.co.uk/news/worldnews/africaandindianocean/libya/8839964/Col-Gaddafi-killed-convoy-bombed-by-drone-flown-by-pilot-in-Las-Vegas.html.

35. See "objective" in JP 1-02, *Dictionary of Military and Associated Terms*.

36. Brown, "Fighting for Intelligence," 1–2.

37. Dempsey, *Mission Command White Paper*, 5.

38. Haley, "An Evolution in Intelligence Doctrine," 41.

39. Hackman, *Collaborative Intelligence*, 19.

40. Lt Col Stephen C. Price, ISR liaison officer [ISRLO] in Iraq from May to November 2007, e-mail to the author, 23 January 2007. This account was also based on my personal observations.

41. Long, "Operational Design and ISR," 6–9.

42. JP 2-01, *Joint and National Intelligence Support*, xii. Doctrine defines the joint intelligence operations center as the focal point for intelligence planning, collection management, analysis, and production.

43. Maj John M. Ives, e-mail to the author, 14 January 2013.

44. Lt Col Max Pearson, liaison officer, Air Force Distributed Common Ground System, deployed to the CAOC and Afghanistan from January–April 2010, e-mail to the author, 14 January 2013.

45. Maj Lee Thompson, first flight commander, MC-12W ISR exploitation cell in Kandahar, Afghanistan, from March to September 2010, e-mail to the author, 17 September 2012.

46. Odiero, Brooks, and Mastracchio, "ISR Evolution," 55.

47. Ibid.

48. The content of this paragraph was derived from numerous interviews and e-mails by the author to former members of the US Central Command (USCENTCOM), International Security Assistance Force Joint Command (IJC), and Combined Forces Air Component Command staffs. These include Price; Lt Col Michael Johanek (formerly assigned to USCENTCOM J2), interview by the author, 11 January 2013; Maj Peter Halsey, IJC deputy collection manager (CM) and CM from November 2011 to May 2012, e-mail to the author, 19 January 2013; Capt Jaylan M. Haley, ISRLO at the division and battalion levels in Regional Command–South and Regional Command–Southwest from October 2010 to April 2011, e-mail to the author, 18 January 2013; and Maj Eduardo Pires, deployed to the CAOC in Fall

2008 and to the IJC ISR division in Kabul, Afghanistan, e-mail to the author, 18 January 2013. According to Halsey, Haley, and Pires, ISR planners in Afghanistan still faced plenty of challenges. IJC allocated resources based on the priority of named operations. The regional command with operational priority was guaranteed a certain amount of resources and often did not invest in planning until after allocation. Attempts at integration were often last-minute and not nearly as effective as integration based on a more rigorous up-front planning effort to overcome ISR disaggregation. Much of this was due to ISR planners varying significantly in their knowledge, influence, and capability. While the process was not ideal, there was considerable improvement compared to Iraq, making it worthwhile to examine the policies and structure that led to those improvements.

49. Hackman, *Collaborative Intelligence*, 151.

50. While this paper recognizes there is not a one-size-fits-all construct for ISR strategy teams, I recommend readers examine the British Intelligence, Surveillance, Target Acquisition, and Reconnaissance cell. See LeClaire, "ISR Integration" and the "Joint Fires Element" concept in JP 3-09, *Joint Fire Support*, for potential organizational models.

51. Flynn, Juergens, and Cantrell, "Employing ISR," 56–61.

52. Haley, e-mail to the author. This is also based on my personal observations.

53. Oliver, "A Blueprint for Success," 82.

54. Ives, "Back to Basics."

55. Flynn, Juergens, and Cantrell, "Employing ISR," 57.

56. Flynn and Flynn, "Integrating Intelligence and Information," 4–8.

Abbreviations

BCT	brigade combat team
CAOC	Combined Air Operations Center
CFACC	Combined Forces Air Component Command
CJCS	chairman of the Joint Chiefs of Staff
CJSOTF-A	Combined Joint Special Operations Task Force–Afghanistan
CM	collection manager
COIN	counterinsurgency
GAO	Government Accountability Office
GMTI	ground moving target indicator
IADS	integrated air defense system
IED	improvised explosive device
IJC	ISAF Joint Command
IPS	intelligence problem set
ISR	intelligence, surveillance, and reconnaissance
ISRLO	intelligence, surveillance, and reconnaissance liaison officer
ISR TF	ISR Task Force
JP	joint publication
MNC-I	Multi-National Corps–Iraq
MTO	mission type order
PIR	priority intelligence requirement
RC	regional command
RPA	remotely piloted aircraft
SAR CCD	synthetic aperture radar coherent change detection
USCENTCOM	US Central Command
VSO	village stability operation

Bibliography

Air Force Doctrine Document 1. *Air Force Basic Doctrine, Organization, and Command*, 14 October 2011.

Air Force Doctrine Document 2. *Global Integrated Intelligence, Surveillance, and Reconnaissance Operations*, 6 January 2012.

Army Doctrine Reference Publication 2-0. *Intelligence*, August 2012.

Brown, Jason M. "Fighting for Intelligence: The Design of Intelligence-Led Operations." Master's thesis, US Marine Corps School of Advanced Warfighting, Quantico, VA, 2008.

———. "Rethinking the Network." *C4ISR Journal*, March 2010, 32–34.

———. "To Bomb or Not to Bomb? Counterinsurgency, Airpower, and Dynamic Targeting." *Air and Space Power Journal* 21, no. 4 (Winter 2007): 75–85.

Connable, Ben. *Military Intelligence Fusion for Complex Operations: A New Paradigm*. RAND Occasional Paper. Arlington, VA: RAND Corporation, 2012.

Dempsey, Martin E., chairman, Joint Chiefs of Staff. *Mission Command White Paper*, 3 April 2012. Accessed 1 December 2012. http://www.jcs.mil/content/files/2012-04/042312114128_CJCS_Mission_Command_White_Paper_2012_a.pdf.

Deptula, David A., and Mike Francisco. "Air Force ISR Operations: Hunting versus Gathering." *Air and Space Power Journal* 24, no. 4 (Fall 2010): 13–17.

Deptula, David A., and R. Greg Brown. "A House Divided: The Indivisibility of Intelligence, Surveillance, and Reconnaissance." *Air and Space Power Journal* 22, no. 2 (Summer 2008). Accessed 1 November 2012. http://www.airpower.au.af.mil/airchronicles/apj/apj08/sum08/deptula.html.

Downs, Michael L. "Rethinking the Combined Force Air Component Commander's Intelligence, Surveillance, and Reconnaissance Approach to Counterinsurgency." *Air and Space Power Journal* 22, no. 3 (Fall 2008): 67–76.

Duvall, Lourdes M. "Be Quick, Be Useable, Be on Time: Lessons in Agile Delivery of Defense Analytic Tools." Brookings 21st Century Defense Initiative Policy Paper. Washington, DC: Brookings, 6 June 2012. Accessed 1 February 2013. http://www.brookings.edu/research/papers/2012/06/06-defense-practices-duvall.

Elder, Gregory. "Intelligence in War: It Can Be Decisive." *Studies in Intelligence* 50, no. 2 (2006). Accessed 8 April 2011. https://www.cia.gov/library/center-for-the-study-of-intelligence/csi-publications/csi-studies/studies/vol50no2/html_files/Intelligence_War_2.htm.

Flynn, Michael T., and Charles A. Flynn. "Integrating Intelligence and Information: Ten Points for the Commander." *Military Review* 92, no. 1 (January–February 2012): 4–8.

Flynn, Michael T., Matt Pottinger, and Paul D. Batchelor. *Fixing Intel: A Blueprint for Making Intelligence Relevant in Afghanistan*. Center for a New American Security (CNAS). Washington, DC: CNAS, January 2010. Accessed 20 February 2012. http://www.cnas.org/node/3924.

Flynn, Michael T., Rich Juergens, and Thomas L. Cantrell. "Employing ISR: SOF Best Practices." *Joint Force Quarterly* 6, no. 50 (3rd Quarter 2008): 56–61.

Fussell, Christopher, Trevor Hough, and Matthew Pedersen. "What Makes Fusion Cells Effective?" Master's thesis, Naval Postgraduate School, Monterey, CA, 2009.

Garlauskas, Markus, V. "Intelligence Support for Military Operations." *Joint Force Quarterly*, no. 33 (Winter 2002/2003): 102–08.

Green, Jason D. "Integrating Mission Type Orders into Operational Level Intelligence Collection." Master's thesis, Joint Advanced Warfighting School, National Defense University, Norfolk, VA, 25 May 2011.

Hackman, J. Richard. *Collaborative Intelligence: Using Teams to Solve Hard Problems*. San Francisco: Berrett-Koehler Publishers, 2011.

Haley, Jaylan Michael. "An Evolution in Intelligence Doctrine: The Intelligence, Surveillance, and Reconnaissance Mission Type Order." *Air and Space Power Journal* 26, no. 5 (September–October 2012): 33–48.

———. "Revelations in Haiti: The Side Effects of New Priorities for Remotely Piloted ISR Aircraft." *Air and Space Power Journal* 25, no. 1 (Spring 2011): 45–52.

Harper, Chris. "Marines, ANA in Marjah Shift Focus to Counternarcotics." Afghanistan International Security Assistance Force, 4 July 2012. Accessed 1 February 2013. http://www.isaf.nato.int/article/news/marines-in-marjah-shift-focus-to-counternarcotics.html.

Headquarters USAF/A2. *Theater ISR CONOPS*. Washington, DC: Air Staff (Intelligence, Surveillance and Reconnaissance), 4 January 2008.

Ives, John M. "Back to Basics: Reenergizing Intelligence Operations." *Small Wars Journal* 9, no. 1 (January 2013). Accessed 18 January 2013. http://smallwarsjournal.com/jrnl/art/back-to-basics-reenergizing-intelligence-operations.

Joint Publication 1-02. *Dictionary of Military and Associated Terms*, 8 November 2010 (As Amended through 31 January 2011).

Joint Publication 2-0. *Joint Intelligence*, 22 June 2007.

Joint Publication 2-01. *Joint and National Intelligence Support to Military Operations*, 5 January 2012.

Joint Publication 2-01.3. *Joint Intelligence Preparation of the Operational Environment*, 16 June 2009.

Joint Publication 3-0. *Joint Operations*, 11 August 2011.

Joint Publication 3-09. *Joint Fire Support*, 30 June 2010.

Krulak, Charles C. "The Strategic Corporal: Leadership in the Three Block War." *Marines Magazine*, January 1999. Accessed 31 January 2013. http://www.au.af.mil/au/awc/awcgate/usmc/strategic_corporal.htm.

LeClaire, Devaunt Z. "ISR Integration: The Marine Corps Can Learn from British Forces." *Marine Corps Gazette* 95, no. 6 (June 2011): 51–55.

Long, Valerie A. "Operational Design and ISR and Zombies –or– How Operational Design Can Help to Re-aggregate Joint ISR at the Theater and Component Levels." Master's thesis, Air Command and Staff College, Maxwell AFB, AL, 2010.

Lopez, Alfred V. "Video: Perspectives on Operation Psarlay Taba: Lt. Col. Michael Styskal." Defense Video and Imagery Distribution System, 30 June 2012. Accessed 1 February 2013. http://www.dvidshub.net/video/148617/perspectives-operation-psarlay-taba-lt-col-michael-styskal.

Lykke, Arthur F., Jr. "Toward an Understanding of Military Strategy." In *U.S. Army War College Guide to Strategy*, edited by Joseph Cerami and James Holcomb, 179–85. Carlisle, PA: Strategic Studies Institute, US Army War College, 2001. Accessed 15 October 2012. http://www.au.af.mil/au/awc/awcgate/ssi/00354.pdf.

McCaffrey, Rachel A. "Reciprocally Embedding ISR Liaisons to Build Unity of Effort." Strategy research project. Carlisle, PA: Army War College, 2010.

McChrystal, Stanley A. "Becoming the Enemy." *Foreign Policy*, no. 185 (February 2011): 66–70.

McDonough, William G., and John A. Conway. "Understanding Priority Intelligence Requirements." *Military Intelligence Professional Bulletin* 35, no. 2 (April–June 2009): 16–23.

Nelson, Joseph A. "Do 'Steady State' PIRs Work in Stability Operations and Support Operations?—Answering the Commander's Intelligence and Decisionmaking Needs." *Military Intelligence Professional Bulletin* 30, no. 3 (July–September 2004): 37–42.

Odiero, Raymond T., Nichoel E. Brooks, and Francesco P. Mastracchio. "ISR Evolution in the Iraqi Theater." *Joint Force Quarterly* 6, no. 50 (3rd Quarter 2008): 51–55.

Oliver, Timothy. "A Blueprint for Success: Marine Corps Intelligence Operations in Anbar." *Marine Corps Gazette* 94, no. 7 (July 2010): 78–83. Accessed 10 September 2012. http://www.mca-marines.org/gazette/article/marine-corps-intelligence-operations-anbar.

Price, Jr., Stephen C. "Close ISR Support: Re-organizing the Combined Forces Air Component Commander's Intelligence, Surveillance and Reconnaissance Processes and Agencies." Master's thesis, Naval Postgraduate School, Monterey, CA, December 2009. Accessed 10 September 2012. http://edocs.nps.edu/npspubs/scholarly/theses /2009/Dec/09Dec_Price.pdf.

Shattuck, Lawrence G. "Communicating Intent and Imparting Presence." *Military Review* 90, no. 2 (March–April 2000): 66–72.

US Department of Defense. *Counterinsurgency (COIN) Intelligence, Surveillance, and Reconnaissance Operations*. Report of the Defense Science Board Task Force on Defense Intelligence. Washington, DC: Office of the Under Secretary of Defense for Acquisition, Technology and Logistics, 2011. Accessed 20 February 2012. http://www.fas.org/irp/agency/dod/dsb/coin.pdf.

US House of Representatives. *Hearing before Committee on Armed Services, Subcommittee on Terrorism, Unconventional Threats and Capabilities*. Statement of Honorable John J. Young, Jr., director of Defense Research and Engineering, 21 March 2007. Accessed 1 February 2013. http://www.dod.mil/dodgc/olc/docs/TestYoung070321.doc.

US Joint Forces Command. *Joint Fires and Targeting Handbook*, 19 October 2007.

Wirtz, James J., and Jon J. Rosenwasser. "From Combined Arms to Combined Intelligence: Philosophy, Doctrine and Operations." *Intelligence and National Security* 25, no. 6 (December 2010): 725–43.

Worley, D. Robert. "Asymmetry and Adaptive Command." *Military Review* 81, no. 4 (July–August 2001): 38–44.

ISBN: 978-1-58566-246-3
ISSN: 1537-3371

AFRI AU PRESS
AIR FORCE RESEARCH INSTITUTE
http://aupress.au.af.mil