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Wilderness Guide

Intelligence for the Commander in Bosnia

Commander Lawrence N. Ash, U.S. Navy

THE NATIONAL SECURITY STRATEGY OF engagement and enlargement ties the future prosperity of the United States to a seemingly chaotic outside world, declaring that “we simply cannot be successful in advancing our interests . . . without active engagement in world affairs.”¹ For the American armed forces this has meant involvement as a coalition partner in military operations other than war (MOOTW) and the emergence of the combined joint task force (JTF) as a primary vehicle for operations. The nation’s intelligence community has taken on the tough job of reducing the uncertainty that task force commanders must face.

The development of intelligence support to commanders of Bosnia peace operations today presents a useful case study for assessing how far the community has come and what it should do in the future to support coalition MOOTW. The considerable American efforts in Bosnia since 1992 have been grounded in sound doctrine that covers, in effect, the entire intelligence cycle;² however, this fact is not immediately apparent because no doctrine has been promulgated specifically for coalition MOOTW. The intelligence community created its support structure for Yugoslavia *ad hoc*, as an amalgamation drawn from a large body of doctrine written for three different arenas: the operational level of war, MOOTW, and multinational operations. Its experience points to the need for a new category of doctrine, and to its major precepts—including the idea of the intelligence community as a “wilderness guide.”

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The author wishes to thank Commander Herbert A. Loughery, USN, Intelligence Officer (N-2) of the Surface Warfare Officers School Command, for his contribution as an advisor during the preparation of an earlier version of this article.

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Support to the Operational Commander

Since the task force commander is the key to the success of a mission, intelligence largely takes the form of operational-level support to him. From his unique vantage point, the commander must make decisions on how best to employ tactical forces to achieve desired strategic military aims.³ He can accomplish this only if intelligence informs him of enemy centers of gravity and of vulnerabilities he can exploit. Such awareness comes from intelligence that reflects a fundamental understanding of the enemy "at all levels—from the soldier to the nation."⁴ In Bosnia, three main tenets of operational intelligence support have been of primary importance: creating an organization that is responsive to the commander's requirements and produces timely and accurate finished intelligence; emphasizing the application "downward" of national and operational intelligence resources; and building communications "connectivity" to disseminate intelligence up and down echelons.

The headquarters of the U.S. European Command laid the foundation for a strong intelligence organization for the Balkans as early as the spring of 1992, when it established the forty-person JTF Planning Cell to begin contingency preparations. Three of its personnel were assigned to intelligence issues; they paved the way for the modest J-2 (or joint intelligence) staff element of JTF PROVIDE PROMISE, which conducted the first U.S. humanitarian mission in Bosnia.⁵

The director of the supporting Joint Intelligence Center in Naples, Italy, Commander Herbert Loughery, USN, has described the growing-pains of the PROVIDE PROMISE intelligence organization: "I cannot over-emphasize . . . the importance of a capable and powerful intelligence organization resident with the commander. In the early stages of the JTF PROVIDE PROMISE deployment to Naples, Italy, the concept of intelligence operations called for a light intelligence footprint [i.e., presence] forward. . . . Very quickly, it became apparent this . . . was inadequate. . . . Repeated short-fused planning efforts required extensive intelligence support which could not easily be tasked to a remote site and received in time to be of use to the Commander."⁶ Only such a strong, on-scene organization could provide the clear and detailed knowledge of a situation that a commander must have. An anecdote about a false alarm illustrates the point: "We could find no supporting evidence for a Bosnian Serb buildup in the Posavina Corridor in preparation for an offensive [in early 1994]. Nevertheless, the story had developed a life of its own . . . and multiple bits and pieces of . . . information from operational reporting and technical means were drawn to it like a magnet. . . . Close coordination with [the] U.N. Protection Force (UNPROFOR) and in particular Bosnia-Herzegovina Command, allowed us to

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refine the original unevaluated information and eventually debunk the theory of General [Ratko] Mladic's master stroke."⁷

Operational intelligence support normally places a premium on strategic or national-level sources of intelligence to satisfy the commander's requirements. This is especially the case in the planning stages, before troops are committed and credible tactical intelligence starts to flow in from the field.⁸ Accordingly, today the Implementation Force (IFOR) and Allied Rapid Reaction Corps (ARRC) headquarters in Sarajevo include U.S. National Intelligence Support Teams composed of agency representatives who "know exactly what the commander needs [because] they see him every day. . . . They can reach back . . . right into . . . Washington, pull out the information, and pass it directly."⁹ The National Reconnaissance Office has also distributed a convenient "Fact-Pack," a computer disk that contains the latest imagery of the entire country of Bosnia.¹⁰

The operational commander relies heavily upon effective dissemination of intelligence to convey his view of the battlefield to both seniors and subordinates, particularly in the realm of indications and warning. Advanced and expensive technology has allowed such "connectivity" in Bosnia. For instance, the Joint Defense Intelligence Support System (JDISS) has made a tremendous contribution with its ability to transfer a high volume of any kind of digitized information, including full-motion video, over a network called the Joint Worldwide Intelligence Communication System. The U.S. forces in Tuzla and the IFOR/ARRC headquarters both have JDISS terminals, and a system called "Localized Operational Capability-Europe" extends this network to other Nato forces. Great strides have been taken since the summer of 1995. Specifically, "when Captain [Scott F.] O'Grady [USAF] was shot down [in an F-16 over Serb-held territory on 2 June 1995], threat warning information reached him about a minute late. . . . Improvements have been made . . . so that kind of . . . information will get there . . . in time."¹¹ There had been a tendency in both the Naples and Sarajevo intelligence operations to focus on supporting the respective commanders and their planning staffs internally, to the detriment of external support to commanders by "getting the word out."¹²

Support to MOOTW

The vagaries of military operations other than war make intelligence support problematic in a number of ways: the enemy may be unknown, ambiguous, or not actually exist; tactical intelligence assumes a dominant role, at times making national assets useless; and resources required for the mission are invariably scarce at some level. Such problems can easily lead to the kinds of frustration and pessimism expressed with regard to operations in Bosnia: "Troops were

introduced . . . in order to maintain a peace that did not exist, in the hope of imposing a peace that could not be imposed."¹³ The inescapable facts remain, though, that political leaders have assigned the mission in Bosnia, and, however difficult, the military must make the best of the situation.

Conflicts such as Yugoslavia's cannot be easily classified, and in them the "enemy" can never be clearly identified.¹⁴ This struggle for equilibrium among the "South Slavs is not ancient, unless the term ancient encompasses the end of the 19th century, and it is not religious, although religion has played a part. The current conflict is primarily ideological and political."¹⁵ The MOOTW task force commander must grasp such ground truths of the "human terrain";¹⁶ to do so he requires intelligence that provides insight into "the cultural, social, political, and historical conditioning which define legitimacy and coercion."¹⁷ Otherwise, he lacks the knowledge necessary to protect his forces or exert leverage upon the local situation.

Intelligence must assess potential adversaries and provide specific indications of their intent to prevent surprise and offensive actions against friendly forces.¹⁸ The commander's priority for intelligence becomes more "Who's targeting us?" than "Whom are we targeting?" Much of the information-gathering must, therefore, be directed toward the civilian population, terrorist groups and their sympathizers, and evidence of foreign involvement.¹⁹ Counter-intelligence assumes great importance. Specifically in Bosnia, senior intelligence managers have become acutely "aware of the counter-intelligence threat posed by [the] association . . . with foreign elements in this environment, and are taking appropriate action about it."²⁰

National intelligence products, however timely they may have become in Bosnia, remain geared to strategic, conventional threats, and for MOOTW they generally pale in importance compared to tactical, particularly human, intelligence (or HUMINT). The commander needs detailed, police-type intelligence often obtainable only through a "cop on the beat" and a highly developed HUMINT network. Accordingly, the intelligence organization needs as many regional experts and linguists as it can find. Moreover, intelligence collection plans must not overlook such lucrative overt sources as refugee interviews or the news media, and they should not neglect data concerning war criminals, whose prosecution can become a symbol of the mission's legitimacy.²¹ The human-intelligence network in Bosnia is in a highly advanced state; it drew upon the experience of the humanitarian operation in Somalia, which was "the precursor to what we're doing in Bosnia in terms of interaction between Defense, Central Intelligence, and perhaps other agencies involved in gathering HUMINT."²²

Since operations other than war typically occur in isolated locations, commanders can rarely draw upon the marshaled intelligence assets of a mature

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theater, and they are seldom allocated abundant resources of their own. Joint doctrine acknowledges that “individuals assigned to observer groups may receive little or no support.”²³ By definition falling “short of war,” these undertakings do not merit total intelligence community commitment. “We don’t have a lot of intelligence . . . capabilities at work [in Bosnia] that we did . . . in the desert [DESERT STORM]. . . . This is not war. This is peace and peace enforcement, . . . not large maneuver forces in active conflict.”²⁴

In Bosnia, however, commanders are fortunate to have at their disposal much of a highly developed European theater intelligence infrastructure, ranging from the combined Joint Analysis Center in Molesworth, England, to complete automated storage and retrieval systems.²⁵ Their vulnerability lies in having their relatively small and fragile task force infrastructure overwhelmed by the massive influx from outside intelligence resources. Accordingly, modest but highly evolved forward intelligence organizations provide the precise “filtering” needed to avoid breakdowns and bottlenecks. The commander depends on there being “the right man in the loop at the right moment” to fuse data into a constantly evolving “big picture” and provide feedback to refine subsequent requirements.²⁶ Nothing enhances the task force’s local legitimacy and respect more than a demonstrated ability to locate proper targets accurately, and, where necessary, make “punishment fit the crime” both in severity and rapidity.²⁷ Good intelligence can make even modest firepower effective; poor intelligence can cause harm. Missing one’s target wastes firepower; hitting the wrong target or causing collateral damage can alienate those whom one seeks to protect or impress.²⁸

Support to Multinational Operations

Multinational aspects of intelligence support expand what is done on the joint level with respect to crossing organizational bounds and promoting teamwork. As joint doctrine has it, both arenas pose “similar needs—to present an adversary a seamless force and . . . [to provide] unity of effort of multiple-force efforts.”²⁹ It is a testament to the progress being made in jointness by the U.S. armed forces that the multinational intelligence support measures in Bosnia sprang onto the scene fully formed. They reflect close adherence to the several principles of multinational intelligence support: adjusting to national or international organizational-culture differences; providing unity of effort; coordinating intelligence sharing; arranging complementary intelligence operations; and establishing liaison exchanges.³⁰

Sun Tzu said, “Know the enemy and know yourself,” but one must also know his coalition partners.³¹ The key to allowing for national or organizational differences is to identify and understand them, particularly as they concern

perceptions of a given situation, or of intelligence itself. For example, differing views on the nature of ethnic conflict in Bosnia could easily lead to misunderstandings and clashing expectations. "For the Americans, ethnic conflicts are social problems, not territorial issues. Yet for the Europeans, ethnic problems have a completely different meaning. Everyone abhorred the violence in Yugoslavia. But the Europeans instinctively understood what the fighting was all about."³² Europeans, that is, see that "the struggle for national identity cannot be separated from any movement for democracy and human rights."³³ Widespread awareness of these different outlooks within the coalition significantly enhances common and consistent interpretation of intelligence; users can make proper allowances based upon which partner produced it.

The very existence of intelligence creates a problem in dealing with the United Nations and nongovernmental organizations, both of which are typically concerned during peace operations with maintaining an impartial and non-threatening profile. A U.S. Marine officer who served briefly in late 1993 with UN forces deployed to The Former Yugoslav Republic of Macedonia reports that he "found 'U.N. culture' completely alien to our traditional method and practices in providing intelligence support to commanders. . . . 'Intelligence' itself is a dirty word, replaced by the euphemism 'information.'"³⁴ He might have been surprised to learn that American joint doctrine provides (perhaps misguidedly) for such de-emphasis of intelligence in peace operations: "Once deployed, the commander's authority to conduct intelligence operations may be severely restricted; therefore, the intelligence section may have to be submerged in the force structure."³⁵ In his work with the UN in Bosnia, Commander Loughery observed that the organization "makes no formal provision in peacekeeping operations for an organic 'intelligence' capability and the sensitivities over 'military information' activities are very real, although not nearly as sensitive as when operations in the former Yugoslavia first kicked off."³⁶

The best way to unify intelligence effort is to mandate a common overall picture. Since different staffs have their own requirements, this does not necessarily end all duplication of effort. The problem arose in intelligence support for air strikes in Bosnia: the existence of "distinct U.S. and NATO staffs supporting the same commander . . . frequently resulted in tension. . . . Air strike and close air support are NATO and not U.S. . . . missions. The target selection and approval process does not necessarily follow U.S. guidelines and requires U.N. participation. This means independent NATO target lists, which must be supported by high quality imagery and target graphics. These in turn must be displayed to the U.N. decision makers during the final target-board process."³⁷ Despite frustrations along the way, however, developing a free flow of raw data and intelligence among partners pays dividends in achieving consistency. "This is not a one way stream of intelligence . . . from the U.S. to NATO and the U.N.

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We frequently gained far more from receiving their reporting or comparing notes. This is critical when there are two Commanders who must have a common view . . . of the battlefield. What conclusions they draw from this view is another matter."³⁸

Since one has to give something in order to get something in return, intelligence sharing primarily concerns devising efficient ways to package and release intelligence in a manner that protects sensitive or fragile sources (that is, "sanitizes" it). Joint doctrine directs that intelligence "must be formatted clearly and at an appropriate classification level to ensure its releasability to all operational forces involved. Authority to downgrade classification or to sanitize information . . . should be provided to the appropriate operational echelon."³⁹ Implementing this precept in Bosnia entailed tremendous effort but has become a major success. "Early on, the entire Intelligence Community . . . put together . . . a big matrix . . . [that] lays out the different kinds of intelligence, how it can be either sanitized or directly released. . . . If you go into the Russian brigade commander's plot and compare it . . . to the American brigade commander's plot, it ought to be the same information. . . . On the Russian commander's plot, it will have a lot more of 'here's the fact without the source.' . . . It's working pretty smoothly."⁴⁰ The process has been refined to the point that what used to take days to release now moves quickly. Imagery, for example, is released in an hour and a half, and "we'd like to make it faster."⁴¹ At some point, language itself becomes the only major impediment to sharing common knowledge. Fortunately, English is widely used and understood throughout IFOR. Even the Russians, former enemies and now partners, are getting their text messages in English, with no apparent loss of effectiveness.⁴²

Joint doctrine reasons that "because each nation will have intelligence system strengths and limitations or unique and valuable capabilities, the sum of intelligence resources and capabilities of the nations should be available for application to the whole of the intelligence problem."⁴³ All partners can contribute intelligence, ranging from counter-intelligence, best provided by host nations or local entities, to the sophisticated technical data the United States characteristically brings. In Bosnia, "the United States is certainly the major intelligence source for U.S. forces. Each nation has its own responsibility to provide intelligence support to its own forces within the coalition. It's a shared arrangement. Other countries are making a substantial contribution [but] the United States [is] the primary supporting agency for a good deal of IFOR."⁴⁴

Before Nato ground forces arrived, "the intelligence operation in Bosnia [was] largely one of intensive [U.S.] imagery and photo reconnaissance coupled with operational reporting from UNPROFOR, [the] U.N. High Commissioner for Refugees, and NGOs [nongovernmental organizations]."⁴⁵ Specifically, there was extensive reliance upon easily released U.S. aerial reconnaissance data

collected by U-2 aircraft and tactical sources, including "a specially configured P-3 Orion with a high-resolution electro-optical imaging capability placed at Bosnia-Herzegovina Command's disposal with a ground station at the Sarajevo headquarters for the downlinking of real-time still video."⁴⁶ The products of U.S. unmanned aerial vehicles and the Joint Surveillance and Target Attack Radar System were also valuable.⁴⁷ Less exotic but still vital American technological contributions to intelligence support included high-speed, high-capacity photocopiers and also a powerful information storage-and-retrieval system with a rapid, full-text search engine, known as the Electronic Collateral Support System (ELCSS). "ELCSS became the most valuable tool at our disposal. . . . Many NATO and U.N. officers felt the U.S. had access to a magic pool of intelligence that was not being shared. In reality, the NATO intelligence organizations were receiving largely the same information, but they had no efficient means of archiving it and retrieving information in support of research and planning."⁴⁸

The United States still depends upon the tactical observation reports of partners, as well as on their geopolitical insights and other special expertise. Just as American aircraft carrier and amphibious intelligence officers in the Adriatic Sea have called on the U.S. Army for extra personnel to help interpret ground order-of-battle imagery, U.S. IFOR intelligence elements rely on allies to fill shortfalls.

Liaison personnel are the linchpins of multinational intelligence support. They facilitate intelligence exchange and coordination, smooth over rough spots, and build trust, resilience, and flexibility into an inherently difficult process. Accordingly, when it was decided to start sending intelligence to the Russians in Bosnia, "a cell of persons" was immediately stationed with them.⁵⁰ On the negative side, liaison personnel pose risks. They create a temptation "for skip-echelon tasking . . . and reporting . . . [which] undermines the . . . Commander's prerogative in ensuring [that] his view of the battlefield is articulated in reporting from his headquarters."⁵¹ At worst, they could be spies. Nonetheless, liaison has become a prominent feature of Bosnia multinational operations. U.S. forces not only send liaison officers to previously unheard-of places but allow foreign ones into some of the innermost sanctums. Old barriers are coming down at amazing speed: "There was an issue [about] foreign intelligence officers riding in U.S. reconnaissance aircraft—the RC-135, the P-3 aircraft—that are out there in theater. . . . It's always a delicate question to bring coalition partners actually on board the airplanes. This kind of thing in the past would take weeks to resolve—messages, phone calls. We had all the right people around the VTC [video teleconference] and solved it in about three minutes."⁵²

The Intelligence Community as Wilderness Guide

Our intelligence support mechanisms are obviously well engaged in Bosnia, but one still wonders if the community is missing something fundamental. Perhaps, in the puzzling and unfamiliar Yugoslav setting, what intelligence specialists lack is the unifying and focusing doctrinal effect of a simple conceptual foundation. It is an important matter, because the need is likely to arise again. Fortunately, a suitable role model exists. Since the mission is a journey of sorts through the wild post-Cold War landscape, the intelligence community should, by dint of its expertise and resources, be a "wilderness guide." The Boy Scouts of America provide a convenient contemporary model for ready examination in their "High Adventure" program "canoe guide."

The canoe guide (or "interpreter," as the Scouts now say) "acts as a resource person for the skills pertaining to camping and wilderness canoeing. He is a specialist with the equipment and food carried on canoe trips, [and he] . . . has had training in the history of the canoe country and the special safety practices to be observed."⁵³ He takes groups of six or seven teenagers and one or two adult leaders on nine-day canoe treks in the wilderness of the Minnesota Boundary Waters and the Canadian backcountry. He knows that the key to a successful trip is less his mastery of wilderness technique (important as that may be) than his ability to mold a group into a competent and confident crew. He must first gain their trust, then educate them, assign responsibilities according to individual ability, and instill a desire to cooperate and a sense of pride in the expedition.

The guide is a coach but also a player. In the wilderness, some jobs do not lend themselves to delegation, being too critical to the welfare of the entire crew to entrust to anyone but the expert. These might include navigation, certain aspects of food preparation, or radio communication with the base camp. Still, the guide cannot paddle and portage every canoe; he must ultimately depend, even for his own well-being, upon the successful performance of every crew member. Moreover, the guide is subject to the authority of the crew's adult leader, who may not be an experienced camper. The guide's challenge, therefore, is to facilitate without being overbearing, teach without patronizing—to lead through tact, perseverance, and inspiration. His effective performance is essential to the success of the trip, but he is not a one-man show.

The intelligence community fulfills the support function of a canoe guide. The community may not know a given territory precisely, but it can rely upon its technical, analytical, and organizational capabilities to establish an effective support structure. The intelligence community earns the trust and confidence of commanders by providing useful, objective intelligence; one of the quickest ways to lose credibility is to report what is politically expedient rather than what

is actually happening. However, the real secret to success lies in educating commanders and coalition partners on, and drawing them into, the intelligence process. The commander can then drive operations more effectively, having articulated his intelligence requirements better; and allies start contributing valuable intelligence of their own. Every situation is different in detail, but with the community's great capability, the differences can be accommodated. After four years of gearing up, it is the leadership role of "wilderness guide" that the intelligence community has in effect embraced in Bosnia. The community can expect to assume that same assertive, and yet restrained, leadership posture in similar missions in the future—and it can shape its doctrine accordingly, today.

"An important function of all intelligence echelons is to benefit from significant operations, training, and intelligence experience."⁵⁴ The U.S. intelligence community has done that in Bosnia, with excellent results. The experience has blazed a new path, marking these basic tenets of doctrine for intelligence support to the coalition MOOTW task force commander: create an organization that is responsive to the commander's requirements and produces timely and accurate finished intelligence; apply national and operational intelligence resources to tactical and local needs; build communications up and down echelons to disseminate intelligence; acknowledge that the enemy may be unknown, ambiguous, or not even exist; be aware that tactical intelligence assumes a dominant role, at times to the total exclusion of national intelligence; expect resources—at least of certain kinds—to be scarce, and make due provision; adjust to national or international organizational-culture differences; achieve unity of effort; share intelligence; conduct complementary operations; establish effective liaison; and, in general, play the facilitating role of "wilderness guide."

Now is the time to codify the Bosnia experience for future use. The coherence that such doctrine could lend to intelligence support would enable commanders to orient forces quickly and take effective action early. Intelligence support based on doctrine along the lines described would do what it is supposed to do—show the commander the forest by guiding him through the trees.

Notes

1. U.S. President, Policy Statement, *A National Security Strategy of Engagement and Enlargement* (Washington: February 1995), p. 33.

2. U.S. Joint Chiefs of Staff, *Joint Doctrine for Intelligence Support to Operations*, Joint Pub 2-0 (Washington: U.S. Govt. Print. Off. [hereafter GPO], 5 May 1995), p. II-2, defines the "intelligence cycle" as the process by which information is converted into intelligence and made available to users; it comprises planning and direction, collection, processing, production, and dissemination.

3. Michael L. Warsocki, "Intelligence within Operational Art," *Military Review*, March-April 1995, p. 45.

4. *Ibid.*, p. 48.

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5. Allan L. Mink II, "JTF Planning Cell: Initial Response to the Yugoslavia Crisis," *Military Review*, March 1994, p. 69.
6. Herbert A. Loughery (Cdr., USN), "The Crisis in Former Yugoslavia: Intelligence Support to and Coordination with Coalition Forces," unpublished briefing script, U.S. Naval Surface Warfare Officers School, Newport, R.I., 1995, n.p. Cdr. Loughery served from May 1993 until July 1994 as the director of the Joint Intelligence Center for JTF PROVIDE PROMISE, the U.S. intelligence organization directly supporting the commander responsible for U.S. and Allied operations in the former Yugoslavia.
7. Ibid.
8. Warsoski, p. 45.
9. U.S. Dept. of Defense, "Intelligence Support to Operation JOINT ENDEAVOR," background briefing, Washington, 18 January 1996.
10. Ibid. The senior intelligence community briefer added that "one of the intelligence outfits in-theater built 'Trip Tiks' just like you would get from 'Triple A'" (that is, the American Automobile Association).
11. Ibid.
12. Loughery.
13. Jonathan Eyal, "The War in Yugoslavia: Some Preliminary Lessons," *RUSI Journal*, April 1995, p. 32.
14. Ibid., p. 31.
15. Ivo Banac, "The Fearful Asymmetry of War: The Causes and Consequences of Yugoslavia's Demise," *Daedalus*, Spring 1992, p. 143.
16. Larry E. Cable, "Getting Found in the Fog: The Nature of Interventionary Peace Operations," unpublished manuscript, University of North Carolina at Wilmington: December 1995, p. 9.
17. Ibid.
18. U.S. Joint Chiefs of Staff, *Joint Tactics, Techniques, and Procedures for Peacekeeping Operations*, Joint Pub 3-07.3 (Washington: GPO, 29 April 1994), p. J-2.
19. Ibid.
20. "Intelligence Support to Operation JOINT ENDEAVOR."
21. Joint Pub 3-07.3, p. J-5.
22. "Intelligence Support to Operation JOINT ENDEAVOR."
23. Joint Pub 3-07.3, p. J-1.
24. "Intelligence Support to Operation JOINT ENDEAVOR."
25. Loughery.
26. Edward A. Smith, "Putting It through the Right Window," U.S. Naval Institute *Proceedings*, June 1995, p. 39.
27. Nathan Leites and Charles Wolfe, Jr. (the RAND Corp.), *Rebellion and Authority: An Analytic Essay on Insurgent Conflicts* (Chicago: Markham, 1970), p. 137.
28. Ibid., p. 138.
29. Joint Pub 2-0, p. VIII-2.
30. Ibid., p. VIII-3.
31. Sun Tzu, *The Art of War*, reproduced in Thomas R. Phillips, ed., *Roots of Strategy: The Five Greatest Military Classics of All Time* (Harrisburg, Penna.: Stackpole Books, March 1985), p. 28.
32. Eyal, p. 32.
33. Banac, p. 169.
34. Raymond J. Leach, "'Information' Support to U.N. Forces," *Marine Corps Gazette*, September 1994, p. 49.
35. Joint Pub 3-07.3, p. J-1.
36. Loughery.
37. Ibid.
38. Ibid.
39. Joint Pub 3-07.3, p. J-2.
40. "Intelligence Support to Operation JOINT ENDEAVOR."
41. Ibid.
42. Ibid.
43. Joint Pub 2-0, p. VIII-5.
44. "Intelligence Support to Operation JOINT ENDEAVOR."
45. Loughery.
46. Ibid.
47. "Intelligence Support to Operation JOINT ENDEAVOR."
48. Loughery.
49. Ibid.
50. "Intelligence Support to Operation JOINT ENDEAVOR."

51. Loughery.

52. "Intelligence Support to Operation JOINT ENDEAVOR."

53. Boy Scouts of America, *1996 Northern Tier Crew Trip Planning Guide* (Ely, Minn.: Northern Tier National High Adventure Programs, Boy Scouts of America—The Charles L. Sommers Wilderness Canoe Base, 1995), p. 23.

54. Joint Pub 2-0, IV-14. The reference adds, "The Joint Universal Lessons Learned System should be used fully to document intelligence lessons learned." There are several JTF planning lessons-learned concerning Bosnia in the data base.

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This Issue's Cover

Grace Brewster Murray Hopper joined the U.S. Navy in 1943 and was assigned to a project that would produce one of the first large-scale computers. The first woman to receive a Ph.D. in mathematics from Yale, a developer of the famous COBOL program, an inventor of the first practical software compiler, and coiner of the programming term "bug" (on an occasion when the problem turned out to be an actual moth), she was recalled to active duty from retirement to impose order on the Navy's proliferating programming languages. In 1983 she was promoted to rear admiral by special presidential appointment. By her final retirement at age seventy-nine on 14 August 1986, after forty-three years' service, she had become not only the Navy's foremost expert in programming languages—credited with making it possible for computers to respond to words, not only numbers—but also an important role model for women. (Her message: "Be innovative, open-minded, and give people the freedom to try new things.") In 1991 she would become the first woman awarded the National Medal of Technology. Admiral Hopper passed away on 1 January 1992 and was buried at Arlington National Cemetery.

The artist pictures her as a lieutenant commander in 1955 (in a photograph made available by the kindness of the Admiral's brother, Roger Murray). The collage presents images selected by Ms. Mikosh-Johnson as representing aspects of Grace Hopper's life and contributions.

Joan Mikosh-Johnson, who served five years in the Navy as an illustrator and draftsman, is a Visual Information Specialist at the Naval War College. She is also a freelance graphic artist and illustrator, specializing in logos, advertising designs, and paintings for stores, jewelry and clothing manufacturers, and publications. Her collage, in part comprising scanned images, was produced entirely by PC, using Corel-Draw and Corel Photo-Paint 5 software. Ms. Mikosh-Johnson gratefully acknowledges the technical support of Electrician's Mate First Class Kenneth Bridges, Jr., USN, of the Naval Education and Training Center, Newport, R.I., Training Resource Media Center, and also the assistance of Elizabeth Dickason, assistant editor of *Chips* (published by the Naval Computer and Telecommunications Area Master Station Atlantic).