

J O I N T F O R C E Q U A R T E R L Y

JFQ



03
Spring

TENTH ANNIVERSARY YEAR

A PROFESSIONAL MILITARY JOURNAL

Report Documentation Page				Form Approved OMB No. 0704-0188	
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE 2003		2. REPORT TYPE		3. DATES COVERED 00-00-2003 to 00-00-2003	
4. TITLE AND SUBTITLE Joint Force Quarterly. Number 34, Spring 2003				5a. CONTRACT NUMBER	
				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) National Defense University, 260 Fifth Avenue (Building 64, Room 2504), Fort Lesley J. McNair, Washington, DC, 20319				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 Same as Report (SAR)	18. NUMBER OF PAGES 148	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

Bradford E. Ableson • Robert B. Adolph, Jr. • Francis W. A'Hearn • M.E. Ahrari • C. Kenneth Allard • Jacob Amidror
Ewan W. Anderson • Gary Anderson • Dale Andradé • David J. Andre • C.P. Ankersen • John F. Antal • Robert M. Antis
David A. Armstrong • A.J. Bacevich • John R. Ballard • Martin Antonio Balza • Jason B. Barlow • Jeffrey G. Barlow
D. Sean Barnett • Roger W. Barnett • Charles L. Barry • Brooks L. Bash • Donald R. Baucom • Thomas G. Behling
Maggie Belknap • Trevor J. Bender • Drew A. Bennett • Sumner Benson • Alvin H. Bernstein • Richard K. Betts

JFQ Contributors— 1993–2003

Stephen Biddle • Price T. Bingham • Hans Binnendijk • James R. Blaker
Dennis J. Blasko • Barry M. Blechman • Jeremy M. Boorda • John R. Boulé II
Christopher M. Bourne • Steven W. Boutelle • Wyn Q. Bowen • Paul Bracken
Pamela J. Brady • Linda S. Brandt • Alan L. Brown • James B. Brown
John S. Brown • Vic Budura • Carl H. Builder • Harold E. Bullock
Shannon L. Callahan • John E. Campbell • Steven L. Canby

Charles N. Cardinal • Ted Galen Carpenter • Nevin P. Carr, Jr. • Luiz Paulo Macedo Carvalho • Lawrence E. Casper
Bruce Castka • Jeffrey L. Caton • Paul G. Cerjan • Young-Koo Cha • Peter W. Chiarelli • Richard A. Chilcoat
Stephen J. Cimbala • Donald Chisholm • Kang Choi • Daniel W. Christman • John L. Cirafo • James R. Clapper, Jr.
Claudia H. Clark • Paul C. Clark, Jr. • Wesley K. Clark • Patrick L. Clawson • John S. Clay • Archie R. Clemens
A. Denis Clift • Mark Clodfelter • Dan Coats • Edward M. Coffman • Matthew W. Cogdell • Christopher Coglianese
Eliot A. Cohen • William S. Cohen • Bernard D. Cole • Ronald H. Cole • John M. Collins • Joseph J. Collins • John P. Condon
Richard M. Connaughton • Thomas M. Cooke • John A. Cope • Ralph A. Cossa • Jim Courter • Philip Cox • Conrad C. Crane
T. Frank Crigler • David B. Crist • Robert W. Critchlow • Audrey Kurth Cronin • Patrick M. Cronin • Seth Cropsey
John J. Cusick • Erik J. Dahl • R.A. Dallaire • Robert J. D'Amico • Leo J. Daugherty III • Jacquelyn K. Davis • Craig A. Deare
Nigel de Lee • Hugh De Santis • Michael C. Desch • James E. DeTemple • Donald C. DeVries • Steve E. Dietrich
Vincent P. DiFronzo • Anne M. Dixon • Peter J. Dombrowski • Michael B. Donley • William M. Donnelly
Michael D. Doubler • Kevin J. Dougherty • Robert A. Doughty • Wayne A. Downing • Thomas A. Doyne • Steven R. Drago
Vincent M. Dreyer • John B. Driscoll • George M. Dryden • Charles J. Dunlap, Jr. • Brian J. Dunn • Jonathan T. Dworken
Joseph J. Eash III • Antulio J. Echevarria II • Charles M. Edmondson • Luigi R. Einaudi • John Howard Eisenhower
Bruce C. Emig • Peter C. Emmett • Thomas E. Erstfeld • John L. Esposito • Howell M. Estes III • Michael Evans
Michael W. Everett • Dana Eyre • Thomas B. Fargo • William N. Farnen • David T. Fautua • Stephen A. Ferrando
Robert H. Ferrell • Stephen J. Ferrell • Edward C. Ferriter • Ronald Filak • Michael J. Finnegan • Uldric L. Fiore, Jr.
Michael E. Firlie • Michael P. Fischerkeller • John T. Fishel • James R. Fitzsimonds • Edward M. Flanagan • Susan J. Flores
Michèle A. Flournoy • Bernard Flowers • Ronald R. Fogleman • Gregory D. Foster • Brian E. Fredericks • Lawrence Freedman
Chas. W. Freeman, Jr. • Norman Friedman • Markus V. Garlauskas • David P. Garner • Harold W. Gehman, Jr.
Dietrich Genschel • Gian P. Gentile • D.M. Giangreco • Douglas M. Gibler • Bates Gill • Jeffrey L. Gingras
Joseph E. Goldberg • Jonas L. Goldstein • Lyle J. Goldstein • Richard W. Goodale, Jr. • John Gordon IV • John W. Gordon
Aryea Gottlieb • Janice M. Graham • David L. Grange • Howard D. Graves • Colin S. Gray • William H. Gregory
Ivelaw L. Griffith • Thomas E. Griffith, Jr. • Alan L. Gropman • John R. Groves, Jr. • Arsenio T. Gumahad II
Ivars Gutmanis • Eugene E. Habiger • Hal E. Hagemeyer • Richard P. Hallion • Irving L. Halter • William P. Hamblet
Joel E. Hamby • Grant T. Hammond • Larry Hanauer • Roger Handberg • Peter Harrington • John B. Haseman
Charles H. Hash • Timothy B. Hassell • Anthony Haugrud • John S. Haven II • Charles F. Hawkins • James A. Hazlett
François L.J. Heisbourg • David S. Henderson • Dennis B. Herbert • Mark Herman • George C. Herring • Peter F. Herrly
Holger H. Herwig • James A. Higgs • John Hillen • Jay E. Hines • Scott M. Hines • Wade P. Hinkle • Ralph M. Hitchen
Franklin D. Hitt, Jr. • Joseph P. Hoar • Albert R. Hochevar • F.G. Hoffman • Melinda Hofstetter • Leonard D. Holder, Jr.
Edward E. Holland • Thomas C. Hone • Richard D. Hooker, Jr. • Guy R. Hooper • Donna L. Hopkins • Hal M. Hornburg
Gary C. Howard • Russell Howard • James C. Howe • Timothy D. Hoyt • Mark M. Huber • James M. Hudson, Jr.
Shannon M. Huffman • Samuel P. Huntington • Marcus Hurley • Patricia Insley Hutzler • James C. Hyde • Gordon D. Issler
David Jablonsky • Jonathan E. James • David E. Jeremiah • Dana J. Johnson • Jay L. Johnson • Karlton D. Johnson
Rodney L. Johnson • W. Spencer Johnson • Joan Johnson-Freese • Mark A. Johnstone • David C. Jones • Frank L. Jones
Jeffrey B. Jones • Synthia S. Jones • Robert G. Joseph • George A. Joulwan • Frederick W. Kagan • Herbert C. Kaler
Ilana Kass • Douglas J. Katz • Thomas A. Keaney • Patrick N. Kelleher • Jay W. Kelley • Frank B. Kelso II
Michael R. Kennedy • James Kievit • Timothy D. Kilvert-Jones • Jiylul Kim • Ted Kim • Kerry L. Kimble • Cole C. Kingseed
Bruce R. Kitchen • John J. Klein • Jerry G. Kline • Richard H. Kohn • Jeff S. Kojac • James C. Kraska • Michael D. Krause
Andrew F. Krepinevich, Jr. • Walter Kross • Charles C. Krulak • Daniel T. Kuehl • Richard L. Kugler • Robert B. Kupiszewski
Renee Lajoie • Geoffrey C. Lambert • Benjamin S. Lambeth • John B. LaPlante • Charles R. Larson • James A. Lasswell

continues on inside back cover—



55th Signal Company (James P. Johnson)



U.S. Navy (Shane McCoy)



U.S. Air Force (Raheem Moore)



2nd Marine Division Combat Camera (Timothy A. Pope)

A Word from the Chairman

The dogmas of the quiet past are inadequate to the stormy present. The occasion is piled high with difficulty, and we must rise with the occasion. As our case is new, so we must think anew, and act anew. We must disenthrall ourselves, and then we shall save our country.

—Abraham Lincoln

This year marks the 10th anniversary of the foremost professional military journal in the world dedicated to joint warfighting. General Colin Powell inaugurated *Joint Force Quarterly* in 1993 in response to profound change in the national security environment. He encouraged its readers to think in innovative ways and contribute provocative ideas.

My predecessors nurtured *JFQ* to spur debate. Although the collapse of the Berlin Wall provided a tremendous impetus for change, the journal has emerged as a forum for examining critical ideas on joint warfighting in the last decade. Debates over the maturation of jointness have been prompted by the experience of Desert Storm, Provide Comfort, Deliberate Force, Restore Hope,

Allied Force, Southern Watch, Northern Watch, Enduring Freedom, and Iraqi Freedom. These operations have also informed the discussion of the revolution in military affairs and myriad ways to transform the Armed Forces to meet the challenges of the 21st century.

Those contributors who rose to the occasion and shared their ideas in the pages of *JFQ* illustrated the wisdom of Lincoln's dictum on dogma. They demonstrated the potentiality of creative thinking. The journal has been instrumental in stimulating new ideas among military professionals and defense analysts.

In fighting the global war on terrorism, joint warfighting remains as important as ever. Both

(continued on page 4)



- 1 A Word from the Chairman**
by Richard B. Myers
- 6 New Contingencies, Old Roles**
by Samuel P. Huntington
(issue 2 / Autumn 1993)
- 12 UNAMIR: Mission to Rwanda**
by R.A. Dallaire and B. Poulin
(issue 7 / Spring 1995)

Chairmen and Publishers of Joint Force Quarterly



22 Colin L. Powell



66 John M. Shalikashvili



94 Henry H. Shelton



134 Richard B. Myers

- 18 A War That Was Not Left to the Generals**
by Eliot A. Cohen
(issue 8 / Summer 1995)
- 23 Innovation: Past and Future**
by Williamson Murray
(issue 12 / Summer 1996)
- 34 Taking Stock of Goldwater-Nichols**
by James R. Locher III
(issue 13 / Autumn 1996)
- 42 The Impact of NBC Proliferation on Doctrine and Operations**
by Robert G. Joseph
(issue 13 / Autumn 1996)
- 50 Keeping the Strategic Flame**
by Carl H. Builder
(issue 14 / Winter 1996–97)
- 60 The Second Revolution**
by James Stavridis
(issue 15 / Spring 1997)
- 67 Grenada, Panama, and Haiti: Joint Operational Reform**
by Ronald H. Cole
(issue 20 / Autumn/Winter 1998–99)
- 76 Making the Joint Journey**
by William A. Owens
(issue 21 / Spring 1999)
- 80 Why Strategy Is Difficult**
by Colin S. Gray
(issue 22 / Summer 1999)
- 87 Graduated Pressure: President Johnson and the Joint Chiefs**
by H.R. McMaster
(issue 23 / Autumn/Winter 1999–2000)

PHOTO CREDITS



The front cover displays the identification badge of the Joint Chiefs of Staff and the seals of the Army, Navy, Marine Corps, Air Force, and Coast Guard. The back cover features a panorama of operational scenes from Iraqi Freedom: F-16CJs during sandstorm (36th Communications Squadron/Terry L. Blevins); Marine battery preparing to open fire (1st Marine Division, Combat Camera/ Kevin R. Reed); USS *Harry S. Truman* being replenished by USNS *John Lenthall* (USS *Harry S. Truman*/Chris Stoltz); and OH-58Ds being readied for mission (55th Signal Company/Kyran V. Adams).

**95 Interdependent Maneuver
for the 21st Century**

by Antulio J. Echevarria II
(issue 26 / Autumn 2000)

**104 Nanotechnology in a New Era
of Strategic Competition**

by Shannon L. Callahan
(issue 26 / Autumn 2000)

112 Lessons of Desert Storm

by Barry R. McCaffrey
(issue 27 / Winter 2000–01)

**119 Special Operations Forces
after Kosovo**

by Charles J. Dunlap, Jr.
(issue 28 / Spring/Summer 2001)

**126 Lessons from the War
in Kosovo**

by Benjamin S. Lambeth
(issue 30 / Spring 2002)

**135 Strengthening Security
at Home**

by Michèle A. Flournoy
(issue 31 / Summer 2002)



This special tenth anniversary issue of *Joint Force Quarterly* presents a selection of articles previously published in the journal. Since the appearance of the inaugural issue in Summer 1993, almost 600 authors have contributed a range of feature articles and reviews. The contributions reprinted herein thus represent only a small fraction of the literature dedicated to fostering joint culture within the Armed Forces that has become the hallmark of *JFQ*. No attempt has been made to update or otherwise amend the articles in this anniversary issue. Similarly, the biographical details accompanying them reflect the rank or position of the authors at the time the articles were originally published. All contributions are reproduced with original pagination and issue markings at the bottom corner of each page. However, a ring folio number # has been added which corresponds to the accompanying table of contents.

JFQ

Joint Force Quarterly

Stephen J. Flanagan

Director
Institute for National Strategic Studies
Editor-in-Chief

Martin J. Peters, Jr.

Production Coordinator

Robert A. Silano

Director of Publications
Institute for National Strategic Studies
Editor

Calvin B. Kelley

Copy Editor

Lieutenant Colonel Peter L. Hays, USAF

Executive Editor

William A. Rawley

U.S. Government Printing Office
Art Director

JFQ is published for the Chairman of the Joint Chiefs of Staff by the Institute for National Strategic Studies, National Defense University, to promote understanding of the integrated employment of land, sea, air, space, and special operations forces. The journal focuses on joint doctrine, coalition warfare, contingency planning, combat operations conducted by the unified commands, and joint force development.

The opinions, conclusions, and recommendations expressed or implied within are those of the contributors and do not necessarily reflect the views of the Department of Defense or any other agency of the Federal Government. Copyrighted

ISSN 1070-0692

portions of this journal may not be reproduced or extracted without permission of copyright proprietors. An acknowledgment to *Joint Force Quarterly* should be made whenever material is quoted from or based on its contents.

This publication has been approved by the Secretary of Defense. All previous issues have been published electronically and are available over the Internet at the address indicated below. Paid subscriptions to *JFQ* are offered through the U.S. Government Printing Office.

The editors invite articles and other contributions on joint warfighting, interservice issues that support jointness, and

topics of common interest to the Armed Forces (see page 144 for details). Please direct all editorial communications to:

Editor, *Joint Force Quarterly*
ATTN: NDU–NSS–JFQ
300 Fifth Avenue (Bldg. 62)
Fort Lesley J. McNair
Washington, D.C. 20319–5066

Telephone: (202) 685–4220 / DSN 325–4220
Fax: (202) 685–4219 / DSN 325–4219
e-mail: JFQ1@ndu.edu

http://www.dtic.mil/doctrine/jel/jfq_pubs/index.htm

Gen Richard B. Myers, USAF
Publisher

ADVISORY COMMITTEE

Lt Gen Michael M. Dunn, USAF ■ *National Defense University*
Chairman

BG David A. Armstrong, USA (Ret.) ■ *Office of the Chairman*

LTG George W. Casey, Jr., USA ■ *The Joint Staff*

MG Reginald G. Clemmons, USA ■ *National War College*

A. Denis Clift ■ *Joint Military Intelligence College*

RADM David R. Ellison, USN ■ *Naval Postgraduate School*

BG Mark P. Hertling, USA ■ *The Joint Staff*

BG James T. Hirai, USA ■ *U.S. Army Command and General Staff College*

Col Craig S. Huddleston, USMC ■ *Marine Corps Command and Staff College*

MG Robert R. Ivany, USA ■ *U.S. Army War College*

Col Ronald R. Ladnier, USAF ■ *Air Command and Staff College*

MajGen Harold Mashburn, Jr., USMC ■ *Industrial College of the Armed Forces*

MG Kenneth J. Quinlan, Jr., USA ■ *Joint Forces Staff College*

Maj Gen Bentley B. Rayburn, USAF ■ *Air War College*

RADM Rodney P. Rempt, USN ■ *Naval War College*

Col John H. Turner, USMC ■ *Marine Corps War College*

EDITORIAL BOARD

Stephen J. Flanagan ■ *National Defense University*
Chairman

Richard K. Betts ■ *Columbia University*

Col John M. Calvert, USAF ■ *Joint Forces Staff College*

Stephen D. Chiabotti ■ *School of Advanced Air and Space Studies*

Eliot A. Cohen ■ *The Johns Hopkins University*

COL Robert A. Doughty, USA ■ *U.S. Military Academy*

LtCol Thomas J. Felts, USMC ■ *Marine Corps War College*

Aaron L. Friedberg ■ *Princeton University*

Alan L. Gropman ■ *Industrial College of the Armed Forces*

COL Timothy S. Heinemann, USA ■ *U.S. Army Command and General Staff College*

CAPT Chester E. Helms, USN ■ *Naval War College*

Mark H. Jacobsen ■ *Marine Corps Command and Staff College*

Daniel T. Kuehl ■ *Information Resources Management College*

Thomas L. McNaughton ■ *The RAND Corporation*

Kathleen Mahoney-Norris ■ *Air Command and Staff College*

William H. J. Manthorpe, Jr. ■ *Joint Military Intelligence College*

John J. Mearsheimer ■ *The University of Chicago*

LTG William E. Odom, USA (Ret.) ■ *Hudson Institute*

Col Thomas C. Skillman, USAF ■ *Air War College*

COL Robert E. Smith, USA ■ *U.S. Army War College*

LtGen Bernard E. Trainor, USMC (Ret.) ■ *Harvard University*

Col Gary West, USAF ■ *National War College*

A WORD FROM THE CHAIRMAN

(continued from page 1)

U.S. and allied servicemen and women are not just debating the best means to conduct joint operations—they are living them each day in far-flung corners of the world.

Joint warfighting is now the baseline of how we conduct business. Coordination with other Federal agencies, allied governments and militaries, and nongovernmental organizations is here to stay. But the field remains open for discussing national security policy, operational strategy, military integration, and other issues as well as joint matters.

Although younger men and women in uniform have become accustomed to operating in a joint environment, we cannot afford to fall into the trap of treating our current way of fighting as dogma. Joint warfighting and doctrine are constantly changing. The transformation of the Armed Forces requires hard thinking. We must continually reevaluate our progress and challenge every notion we feel comfortable with. Comfort leads to complacency, which we cannot afford. The threat to the Nation and our liberties is real. Spirited debate should never stop as we continue striving for excellence.

Military transformation is largely an intellectual process—and the pen is a forceful way of breathing life into that process. I urge you to continue to use *JFQ* as a forum to challenge conventional thinking and develop future strategies and concepts for joint warfighting.

Enjoy reading the selection of articles published over the last decade that are reprinted in this 10th anniversary issue. I congratulate the contributors and the editorial staff for making the journal an influential venue for exchanging ideas on jointness. And I thank the many hands that helped it reach this milestone. But it is not the time to rest on our laurels. I urge readers and contributors alike to keep those great ideas flowing into *JFQ*—let's continue to actively debate those ideas essential to fighting and winning America's wars.

Let me iterate that challenge which General Powell provocatively stated in the inaugural issue of the journal: "Read *JFQ*. Study it. Mark it up—underline and write in the margins. Get mad. Then contribute your own views. We want to hear from you. We need to hear from you. For it is only you and your buddies who can make *JFQ* one of the most thoroughly read and influential journals in our profession."

RICHARD B. MYERS
Chairman
of the Joint Chiefs of Staff



THE JOINT STAFF
WASHINGTON, DC

ENCLOSURE 1

Reply ZIP Code:
20318-0300

DJSM-792-92
2 July 1992

MEMORANDUM FOR THE PRESIDENT, NATIONAL DEFENSE UNIVERSITY

Subject: Joint Warfare Initiative

1. This memorandum confirms the intent of the Chairman of the Joint Chiefs of Staff that NDU should refocus the Institute for National Strategic Studies (INSS) toward joint and combined warfare, including production of a journal devoted to these themes.

in the beginning

...develop a coordinated implementation plan to include milestone, schedules, and organization required for the publication of a new joint journal with the first issue due in May 1993. Also address the following in your plan:

(1) The prime target population will be majors or lieutenant commanders and lieutenant colonels or commanders.

(2) The title of the journal will be short, simple, and memorable to capture the reader's attention.

(3) Proposals for CJCS review of the journal cover, layout, and content, designed to showcase the integral role of joint and combined warfare in the operation of the US Armed Forces.

(4) Proposed distribution of the journal.

(5) Include as a recurring feature of the journal a joint force commander's section that highlights current joint and combined operations, doctrine, tactics, techniques, and procedures occurring within combatant commands, joint task force, and service components.

(6) Include the Vice Director, Operational Plans and Interoperability (J-7), as the Joint Staff member on the journal's board....

RUDOLPH OSTOVICH III
Major General, US Army
Vice Director, Joint Staff

Lowering food
supplies near
Maleel, Somalia.



Air Force officer treating
injured Somali.

Joint Combat Camera Center

New Contingencies, OLD ROLES

Joint Combat Camera Center (Terry C. Mitchell)

By SAMUEL P. HUNTINGTON

Few issues are more important than the roles and missions of the Armed Forces in the post-Cold War era. We are in the midst of major changes in the structure of the international system and of serious challenges to national security. This is not, however, the first time the Nation has faced such challenges. At the birth of the Republic we had to establish the military and naval forces to deal with threats from Europe. With the end of the Napoleonic era our national defense changed dramatically as did the Armed Forces. This situation remained fixed in its essentials until the close of the 19th century when America emerged as a world power. At that time the Nation consigned the Indian-fighting Army

and the commerce-protecting Navy to history and in their stead created an Army designed for big wars and a Navy for big battles. That system served us well throughout two world wars. But by the late 1940s with the advent of the Cold War we needed a new Defense Establishment. Now *that* conflict is over, and once again the Nation must debate the nature of our national interests and the roles of the Armed Forces, just as earlier generations did in 1784, 1815, 1898, and 1946. In effect, we have to move on to a fifth phase of American defense policy.

Nontraditional and Nonmilitary

The term *nontraditional roles* obviously implies a distinction between traditional and nontraditional military roles. The traditional roles of the Armed Forces will presumably continue, but in this fifth phase of American military history the services will perform new nontraditional roles. Some new roles

This article is based on an address delivered on December 1, 1992 to a symposium on "Non-Traditional Roles for the U.S. Military in the Post-Cold War Era" which was sponsored by the National Defense University in Washington, D.C.

have evolved, others have been promoted by the Congress, in particular by Senator Sam Nunn, the Chairman of the Senate Armed Services Committee. It is largely due to his leadership that the Defense Authorization Act of 1993 encouraged the Armed Forces to conduct an anti-drug campaign targeted at inner-city youths, to provide role models for youth and health care to underserved communities, and to address domestic ills by improving the environment and economic and social conditions. In a speech in the Senate, Senator Nunn stated:



Joint Combat Camera Center (Marv Lynchard)

Unloading flour at Wajir, Kenya, during Operation Provide Relief.

While the Soviet threat is gone, at home we are still battling drugs, poverty, urban decay, lack of self-esteem, unemployment, and racism. The military certainly cannot solve these problems. . . . But I am convinced that there is a proper and important role the Armed Forces can play in addressing these pressing issues. I believe we can reinvigorate the military's spectrum of capabilities to address such needs as deteriorating infrastructure, the lack of role models for tens of thousands if not millions of young people, limited training and education opportunities for the disadvantaged, and serious health and nutrition problems facing many of our citizens, particularly our children.¹

These clearly seem to be nontraditional roles. But are they really? The fact is that there are almost no conceivable roles in this new phase of our history that the Armed Forces have not performed in the past. The distinction to be made is not between traditional and nontraditional roles but between military and nonmilitary roles or, more precisely, between combat missions and non-combat missions. The purpose of the Armed Forces is combat: to deter and defeat enemies of the United States. That is their principal role or *raison d'être*, the justification for expending the resources needed to establish and maintain them. Forces created to perform that role, however, can be—and have been throughout our history—employed in noncombat, nonmilitary uses.

For over three decades the United States Military Academy at West Point trained all of the Nation's engineers, civilian as well as military. Throughout the 19th century the Army engaged in the economic and political development of the country. It explored and surveyed the West, chose sites for forts and planned settlements, built roadways, and developed waterways. And for years the Army performed roles that now are performed by agencies like the National Weather Service and the Geological Survey. In the latter part of the last century, the Army Signal Corps pioneered the development of the telegraph and telephone. The Navy was equally active in exploration and scientific research. Naval ships explored the Amazon, surveyed the coastlines of North and South America, laid cables on the ocean floor, and gathered scientific data from around the world. They also policed the slave trade. Naval officers negotiated dozens of treaties and oversaw lighthouses, life-saving services, coastal surveys, and steamboat inspection. The Army ran civil governments in the South during Reconstruction and at the same time governed Alaska for ten years. It was, of course, frequently called upon to intervene in labor strikes and domestic unrest. The Army Corps of Engineers constructed public buildings and canals and other civil works including the Panama Canal. Soldiers helped to combat malaria in Panama and cholera, hunger, and illiteracy in Cuba, Haiti, and Nicaragua. They also established schools, built works projects, promoted public health, organized elections, and encouraged democracy in those countries. In the 1930s the Army took on the immense task of recruiting, organizing, and administering the Civilian Conservation Corps.

After recent hurricanes in Florida and Hawaii many people hailed the superb contributions of the Armed Forces to disaster relief as evidence of a *new* role. Nothing could have been more incorrect. The services have regularly provided such relief in the past. As an official Army history puts it, in the decades of the 1920s and 1930s, "The most conspicuous employment of the Army within the United States . . . was in a variety of tasks that only the Army had the resources and organization to tackle quickly. In floods and blizzards and hurricanes it was the Army that was first on the spot with cots, blankets,

Samuel P. Huntington is the Eaton Professor of the Science of Government and Director of the John M. Olin Institute for Strategic Studies at Harvard University. Among his many acclaimed publications is *The Soldier and the State: The Theory and Politics of Civil-Military Relations*.



Guardsman securing a food distribution center in the wake of Hurricane Andrew.



Destruction caused by Hurricane Iniki on Kauai, Hawaii.

DOD

and food.”² This has been true throughout our history. It is hard to think of a nonmilitary role without precedent for such roles as American as apple pie.

Future Roles and Missions

Throughout our history, however, nonmilitary roles have never been used to justify maintaining the Armed Forces. The overall size, composition, and organization as well as recruitment, equipping, and training of the services have been based on our national interests and the missions—the combat missions—to be performed. In this fifth phase of American defense policy the roles of the Armed Forces remain as important as ever. There are three roles that present themselves today.

Maintaining Superiority. For the first time in sixty years, no major power, no rival, poses a national security challenge to the United States. We need defense policy and the capability not to contain or deter an existing threat as was the case during the Cold War, but rather to prevent the emergence of a new threat. To accomplish this goal, we must maintain a substantial, invulnerable nuclear retaliatory capability and deploy forces in both Europe and Asia to reassure allies and to preclude German or Japanese rearmament. We must also maintain both technological and maritime superiority, and provide a base for the rapid and effective development of a new enhanced defense capability if a major threat should begin to emerge.

Regional Security. Significant threats exist to our national interests in Southwest and East Asia, and we must have the capability to deal with them as we did in the Gulf War. To deter or defeat regional aggression the United States needs light and heavy land forces, tactical aviation, naval and Marine forces designed to fight from the sea against enemies on land, and the sealift and airlift to deploy forces rapidly to the scene of combat. Ideally the United States should be able to fight the equivalent of the Gulf War. Secretary of Defense Les Aspin’s “Option C” purportedly would provide this capability. Whether in five years the Armed Forces will be able to mount an operation like Desert Storm against an enemy similar to Iraq remains to be seen.

Our decisive victory in the Persian Gulf, however, makes it unlikely that we will be able to repeat that victory. Major regional aggressors in the future are likely to possess and use nuclear weapons. This reality was reflected in the reply of the Indian defence minister who, when asked what lesson he drew from the Gulf War, said: “Don’t fight the United States unless you have nuclear weapons.”³ Likely aggressors—North Korea, Iran, Iraq, et al.—are intent on acquiring nuclear weapons. But until they get them the probability of stability in their respective regions is reasonably high. Once they do acquire these weapons, however, the likelihood they will use them is high. In all probability the first sure knowledge the world will have that such powers possess a usable nuclear weapon will be the explosion

of a weapon on the territory of one of their neighbors. Such an act is likely to be accompanied by a massive conventional offensive to quickly occupy Seoul, Saudi oil fields, or whatever other target the aggressor has in mind. That is the most serious type of regional threat that we may confront, and perhaps the most probable.

Coping with that kind of aggression will place new demands—nontraditional demands—on the Armed Forces. They will have to fight an enemy who has a small number of nuclear weapons and little or no inhibition to use them. To deter this first use by a rogue state, the United States will have to threaten massive retaliation, possibly nuclear. The principal role of Strategic Command in the coming years will be to maintain nuclear peace in the Third World.

Foreign Internal Defense. The Armed Forces may have to intervene quickly and effectively in countries important to our national security interests in order to restore a government to power that has been overthrown, remove a hostile regime, protect American lives and property abroad, rescue

hostages, eliminate terrorists, destroy drug traffickers, or engage in other actions which normally fall under the rubric of low intensity conflict. Whether or not a state is aggressive or pacific, reasonably decent or totally threatening, depends overwhelmingly on the nature of its government. President Clinton has appropriately said that the promotion of democracy should be a central, perhaps even the central, theme of U.S. foreign policy. In those areas critical to our national security, the United States has to be prepared to defend governments that are friendly and democratic and to overthrow those that are unfriendly and undemocratic.

This requirement also emphasizes a new role for the Armed Forces: targeting dictatorships and their leaders.

In the Gulf War, the U.S.-led coalition degraded by more than 50 percent the capability of the Iraqi military, and also brought Iraqi society to a virtual standstill. But that

it is hard to think of a nonmilitary role without precedent for such roles are as American as apple pie

tremendous use of force failed to eliminate the true villains of peace, Iraq's government. The elimination of Saddam Hussein was an established U.S. objective, although not one endorsed by the

United Nations, and it was not achieved. Indeed, during the last decade, we have attempted to eliminate three hostile dictators: Khadafi, Noriega, and Saddam Hussein. We only succeeded in the case of Noriega, and that took time and caused us some embarrassment because it involved a tiny country about which American intelligence must have been the best in the world. Targeting and incapacitating dictatorial governments will be an important role for the Armed Forces in the coming years, and it is one with respect to which our capabilities are now sadly deficient.

Future Challenges

Besides the military roles which the Armed Forces can expect to perform in the post-Cold War world, what are the appropriate nonmilitary—or civilian—roles that loom on the horizon? As indicated previously, these roles have been historically numerous and diverse, and no reason exists to suggest that they will not be continued. Future missions could involve the following:

- ▼ domestic activities as highlighted by Senator Nunn and in the Defense Authorization Act
- ▼ humanitarian assistance at home and abroad when welcomed by local governments
- ▼ peacekeeping at the invitation of the parties involved in the conflicts.

There is another type of mission—one about which questions have arisen—illustrated by the crisis in Somalia. Should the Armed Forces provide humanitarian assistance in those situations where such efforts are likely to be opposed by one or more of the conflicting parties? Clearly some form of international authorization, presumably approval by the United Nations, is a prerequisite

Nontraditional Roles

What do the Armed Forces need in order to carry out nontraditional roles? More training, equipment? New doctrine? Different organization? Nontraditional roles are really crisis response roles. It is fine to call a role nontraditional, but one also ought to talk about crisis response.

The military is taught to respond to crises, to make decisions when all the facts are not in. This is what service schools teach: to take action under pressure, work as a team, and troubleshoot; to organize, reorganize, establish task forces, and do task reorganization and tailoring. So in many respects the military is already prepared, no matter what the service: Army, Navy, Marine Corps, Air Force, or Coast Guard. Some additional training may be needed, but one should not get hung up on the idea that somehow a whole new force is needed.

—General John R. Galvin,
USA (Ret.)

it is morally unjustifiable and politically indefensible that members of the Armed Forces should be killed to prevent Somalis from killing one another

for action by the United States. This occurred with the precedent-breaking U.N. Security Council Resolution 688 that authorized intervention by U.S., British, and French forces in order to protect the Kurds in northern Iraq. The United Nations has also given approval to deploy outside military forces in Bosnia as well as in Somalia to assist with the provision of humanitarian assistance to the innocent victims of civil war and anarchy.

Defining the Limits

The goal of our involvement in such situations is presumably to ensure that relief supplies reach the intended beneficiaries. This means that the Armed Forces should be able to act militarily to prevent or eliminate hostile action against efforts to deliver relief supplies. While that is certainly an appropriate response, there is a need to define the limits of U.S. involvement in such missions, and this gives rise to two problems.

First, so long as the conditions in the country concerned remain violent, external military force will be required to ensure that food and medical supplies reach their intended recipients. If the United Nations is unable to provide those forces, this could mean an extended if not indefinite American commitment. This is not a Gulf War-type situation where it was possible to drive the invading Iraqi forces out of Kuwait and then pack up and go home. In the case of Bosnia it could mean waiting for the South Slavs or other conflicting parties to resolve their differences by political or military means before extricating ourselves. And that could take a very, very long time.

Second, there is the problem of becoming an active participant in the conflict in the country concerned. One or more parties in that conflict may perceive

any outside involvement as a hostile act. Thus by deploying American troops, from the viewpoint of the local combatants, we become the enemy. Inevitably while we are there for humanitarian purposes our presence has political and military consequences. The United States has a clear humanitarian interest in preventing genocide and starvation, and Americans will support intervention to deal with such tragedies within limits. When Somali clans or Slavic factions fight each other, we may attempt to mitigate the horrendous consequences that flow from the violence. Under such circumstances the Nation may even accept some American casualties. But the United States has no interest in which clan dominates Somalia, or where boundary lines are drawn in the Balkans. Americans will not support intervention which appears to be directed towards political goals. It is morally unjustifiable and politically indefensible that members of the Armed Forces should be killed to prevent Somalis from killing one another.

The Armed Forces can and should, if it is appropriate, be put to a variety of civilian uses, including domestic social and economic renewal, humanitarian and disaster relief both at home and abroad, and peace-keeping operations. The military should only be given military missions which involve possible combat, however, when they advance national security interests and are directed against a foreign enemy of the United States.

The possible nonmilitary roles of the Armed Forces have recently received a good amount of attention. Arguments have been made that the military should be organized and trained in order to perform such roles. A proposal has been made, for instance, that a

Roles, Missions, and Functions

The terms *roles*, *missions*, and *functions* are often used interchangeably, but the distinctions among them are important. Roles are the broad and enduring purposes for which the services were established by Congress in law. Missions are the tasks assigned by the President or the Secretary of Defense to the combatant commanders in chief (CINCs). Functions are specific responsibilities assigned by the President and the Secretary of Defense to enable the services to fulfill their legally established roles. Simply stated, the primary function of the services is to provide forces that are organized, trained, and equipped to perform a role—to be employed by a CINC in the accomplishment of a mission.

—From the Chairman's "Report on the Roles, Missions, and Functions of the Armed Forces of the United States".

Relief mission arriving in support of Operation Provide Relief.

Joint Combat Camera Center



Joint Combat Camera Center (Daniel R. Hart)

unified command should be established for humanitarian assistance operations. In a somewhat similar fashion, a commission of former government officials has proposed creating a military command headed by a three- or four-star officer to provide support for U.N. peacekeeping operations and to develop doctrine, carry out planning, and train U.S. forces for such operations. The United States, another group argued, "should retain and promote officers whose expertise includes peacekeeping, humanitarian administration, and civilian support operations. . . ."⁴

Such proposals are basically misconceived. The mission of the Armed Forces is combat, to deter and defeat enemies of the United States. The military must be recruited, organized, trained, and equipped for that purpose alone. Its capabilities can, and should, be used for humanitarian and other civilian activities, but the military should not be organized or prepared or trained to perform such roles. A military force is fundamentally antihumanitarian: its purpose is to kill people in the most efficient way possible. That is why nations have traditionally maintained armies and navies. Should the

military perform other roles? Absolutely, and as previously stated they have done so throughout our history. Should these roles define the Armed Forces? Absolutely not. All such roles should be spillover uses of the Armed Forces which can be performed because the services possess the organization, training, and equipment that are only maintained to defend the Nation.

JFQ

NOTES

¹ Public Law 102-484, October 28, 1992, sections. 376, 1045, and 1081; Sam Nunn, *Congressional Record*, vol. 138, no. 91 (June 23, 1992), p. S 8602.

² Maurice Matloff, editor, *American Military History* (Washington: Government Printing Office, 1969), p. 413.

³ Quoted in Les Aspin, "From Deterrence to Denuding: Dealing with Proliferation in the 1990s," Memorandum, February 18, 1992, p. 6.

⁴ Carnegie Endowment for International Peace and Institute for International Economics, Memorandum to the President-Elect, Subject: "Harnessing Process to Purpose" (Washington: Carnegie Endowment for International Peace, 1992), p. 17; Thomas G. Weiss and Kurt M. Campbell, "Military Humanitarianism," *Survival*, vol. 33 (September–October 1991), p. 457.

UNAMIR

Mission to Rwanda

By R. A. DALLAIRE and B. POULIN

In early 1993, the U.N. Secretary General drew attention to the tragedy befalling Rwanda. In June the Security Council passed resolution 846 authorizing a U.N. Observer Mission Uganda-Rwanda (UNOMUR) which began operations in July with approximately a hundred military and civilian personnel. Its primary task was to ensure that no military assistance reached the Rwandan rebels—the Front Patriotique Rwandais—across the Uganda border. In August, the belligerents signed the Arusha peace agreement which, it was hoped, would bring peace. Its goals included installing a broad-based transitional government (BBTG); establishing transitional institutions; deploying a neutral international force; withdrawing all foreign troops; integrating the gendarmerie; disengaging, disarming, and demobilizing both parties; and protecting the expatriate community. The

goals were intended to culminate in elections some twenty-two months later.

Unfortunately, the UNOMUR mandate to prevent weapons from entering the country did little to abate human suffering. In fact, the situation continued to deteriorate because of the massive displaced population, drought, famine, poor public health, and declining national revenues. Large refugee influxes from Rwanda into neighboring Burundi were also a chief concern. Accordingly, the Security Council adopted resolution 872 in October 1993 authorizing a contingent consisting of some 2,500 military personnel known as the U.N. Assistance Mission for Rwanda (UNAMIR).¹

UNAMIR had a multifaceted mandate and a concept of operations with four phases. The first phase (October 5, 1993–January 4, 1994) promoted the installation and opera-

Summary

Efforts by the United Nations to intervene in Rwanda illustrate how hesitancy and impotence on the part of some sovereign nations leave victims of many humanitarian disasters contemptuous of the international community. The U.N. Observer Mission Uganda-Rwanda (UNOMUR) braved a disintegrating political situation that generated masses of refugees and fueled deep ethnic tensions compounded by drought and famine. A new mandate established the U.N. Assistance Mission for Rwanda (UNAMIR) which achieved some of its goals, especially in coordinating humanitarian aid with civilian agencies. But the late arrival of personnel, scant resources, and a lack of international resolve led to a view of the United Nations as a paper tiger and contributed to the death of a half million people. While withdrawal would have been tantamount to endorsing genocide, the lesson of Rwanda is too-little-too-late from a world organization with serious faults.

The views expressed in this article are the authors' and do not necessarily reflect those of the Canadian Department of National Defence, the Canadian Government, or any agency of the United Nations.



the mission and the Rwandans fell victim to inflated expectations that the United Nations could not fulfill

The Globe and Mail, Toronto (Corrine Dufta)

Maj Gen Dallaire (right) with fellow peacekeepers and friends.

Major General R. A. Dallaire is Deputy Commander of the Canadian Army; he was chief military observer for UNOMUR and commanded UNAMIR; Captain B. Poulin serves as African regional officer in the Directorate of International Policy, Canadian Department of National Defence.

tion of a BBTG. Specifically, it assisted in ensuring the security of Kigali as well as demilitarizing the area in and around the city, helping in mine clearance, providing security for repatriation of Rwandan refugees and displaced persons, coordinating humanitarian assistance in conjunction with relief operations, investigating alleged noncompliance with provisions of the peace accord, and monitoring security leading to democratic elections. The second phase (January 5–April 4, 1994) involved preparations to disengage, demobilize, and integrate government and rebel

forces. The third phase (January 5–April 4, 1995) was to be characterized by the actual disengagement, demobilization, and integration of both parties. The last phase (January 5–November 4, 1995) called for providing security in the run up to elections. Interestingly, the operation also saw an unprecedented degree of cooperation with civilian agencies that had the front-line job of providing humanitarian aid which resulted in an attractive and cost-effective way of facilitating the operation and advancing the spirit of Arusha.

The Mission

At first glance the UNAMIR mandate seemed feasible, and the force did acquit itself well, all things considered. Several constraints made it clear, however, that the mandate and timetable jeopardized the ability of UNAMIR to fulfil its mission as originally en-

M-113A2 rolling onto ramp at Entebbe, Uganda.



The Chairman visiting U.N. contingent.

Combat Camera Imagery (Lemuel Cassilas)



Canadians arriving via Air National Guard C-5 Galaxy.

Combat Camera Imagery (Marvin Krause)

Combat Camera Imagery (Chris U. Putnam)

visaged. For example, the October 4 resolution called for some 2,500 U.N. personnel, yet the force did not completely arrive until late February. To further complicate matters, some arrived without minimum equipment.

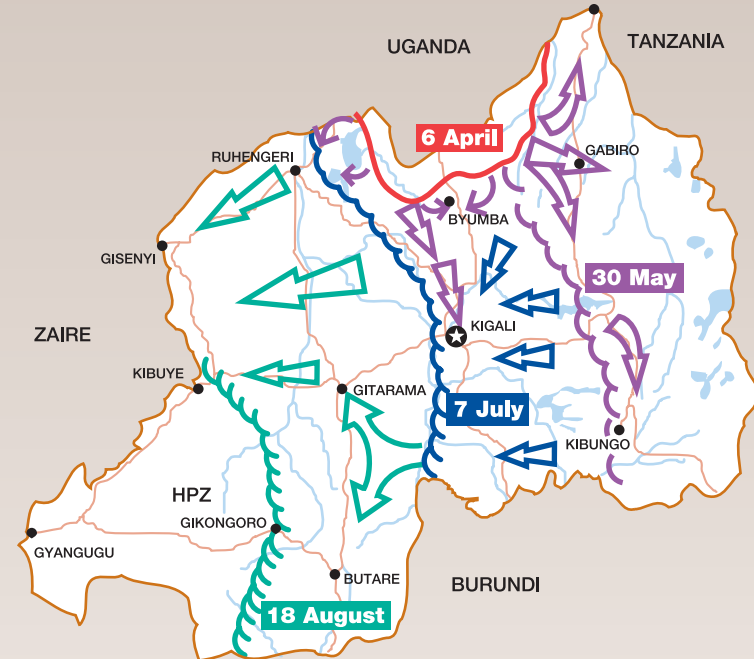
This problem was partly due to the overall pressure under which the United Nations had to respond to a number of international crises during 1992–93 without a commensurate expansion of resources from member states, and also due to the limited field operations staff in the Department of Peacekeeping Operations (DPKO) at the United Nations. In the case of Rwanda, this resulted in problems over deployment time and budget, not to mention the paucity of air transport (both fixed-wing and rotary). Such deficiencies weakened the effectiveness of UNAMIR

in mediating as well as reconciling differences among the two parties and also precluded developing and implementing a structured peace process. In other words, the mission and the Rwandans which the operation was intended to secure fell victim to inflated expectations that the United Nations could not fulfil. This explains in part how a classical peacekeeping mission degenerated into a resumption of the conflict and how new human rights abuses based on political decapitation degenerated into genocide.

Raising the Stakes

The first signs of this crisis surfaced in April 1994 when the Rwandan president died under mysterious circumstances in a plane crash. Fighting broke out among government forces followed by murders as the situation rapidly gave way to increasing lawlessness, violence, and mass killing across most of the country. The hands of the United Nations were also tied; and since it possessed no power akin to that of a sovereign state, it could only act with the consent of the international community under the auspices of

Rwanda: The Rebel Advance



Source: Canadian National Defence Headquarters

Refugee/Displaced Persons Camps



Source: Canadian National Defence Headquarters

were engaged in a civil war and UNAMIR had only 2,500 poorly trained troops. At best, U.N. presence provided local security for the roughly 20,000 Rwandans caught between the lines, helped preserve truces and cease-fires, assisted both civilian agencies and non-governmental organizations (NGOs), held ground, and prepared the way for a new force and an increased humanitarian effort.

The situation was also exacerbated by decisions on the part of some contributing countries to either withdraw military personnel from UNAMIR unilaterally or not amend the mandate under what were significantly changed circumstances, namely a state of war instead of peace. Thus as the United Nations debated a new mandate and increases in personnel, the UNAMIR force—with little or no ammunition and barely a third of the minimum operational equipment needed in theater, hardly any defense stores, and one of its major contingents (Belgians) deliberately being targeted by one of the warring factions—actually decreased from 2,500 to 450 troops through a decision by the Security Council which reinforced the impression of the United Nations as a paper tiger.

Despite these setbacks, a complete withdrawal from Rwanda was out of the question since the belligerents would have perceived it as a green light for a more deliberate, intolerable escalation of hostilities. It became clear that the term *international community* had become a pejorative for both sides. Ironically, while U.N. credibility was being eroded daily by its ineffectiveness in the face of massacres and ongoing fighting, it remained the only conduit for the two sides to communicate and for an objective projection of the Rwandan situation around the world. Also, unlike other international organizations, the United Nations and the International Committee of the Red Cross held firm.

The Response

The international community finally responded to the request by the Secretary General and approved expansion of the U.N. mandate and operations in Rwanda. The Security Council passed resolution 918 in May followed by resolution 955 in June which authorized a UNAMIR force of 5,500 troops with

the Security Council. As long as the individual members of this body procrastinated and pursued national agendas, the organization remained relatively powerless. Consequently, little could be done to deter fighting from spreading throughout the country given that some 60,000 government and rebel soldiers

a more proactive humanitarian protection and support mandate. In fact, the mandate provided for creating secure areas to protect refugees and displaced persons, supporting and securing the distribution of relief supplies, and imposing an arms embargo against Rwanda. It also called for an immediate cease-fire and end to violence.

But once again the required personnel and equipment were not forthcoming. For instance, the United Nations was not given assets to counter the inflammatory broadcasts from the nominally independent Radio Télévision Libre des Mille Collines which was controlled by the so-called interim government. These broadcasts were largely responsible for spreading panic that, in turn, drove large numbers of people to refugee camps in neighboring states, thereby spreading instability throughout the region. The broadcasts also excited the Hutu population to take up arms against Tutsis and Hutu moderates to exterminate them and, also, regularly targeted UNAMIR in general and its senior officials in particular. This last development raised tensions between U.N. personnel and the large Hutu population, which complicated the mediation process. It also should be pointed out that the broadcasts discouraged survivors from returning to their homes in Rwanda and should have been jammed. The United Nations should have aired counter-broadcasts to give the population a clear account of what was actually happening as it did in Cambodia. Yet, unlike Cambodia, no country came forward to offer jamming or broadcasting assets.

Another example of the lack of resources was the refugee camps. There was no concerted effort by the international community to disarm refugees or segregate extremists from the general population which moved across the border into the camps. It was clear that aside from refugees in and around Goma, most refugees and certainly a majority of displaced persons in the southwest were victims of world apathy. This benign neglect was caused by the media which as a whole opted to dispatch their reporters to Goma, which helped alleviate the misery there at the expense of the rest of the country. Second, with only aid to Goma being publicized, protagonists interested in destabi-



French soldiers
watching materiel
being unloaded.

Combat Camera Imagery (Andy Dunaway)

lizing Rwanda spread the word that one must flee the country to obtain the means to survive, from food to medical care.

Ironically, the net effect of providing aid to this area was a continual increase in the already large numbers of refugees arriving there and considerable tension in the southwest that could have resulted in another exodus of more than a million Rwandans towards Bukavu. Needless to say, these developments further strained the already scant resources. Finally, this concentration of aid hampered the U.N. effort to convince the same refugees to go home and displaced persons to stay.

French-led coalition forces did stabilize the southwest; but that temporary intervention must be compared with the lack of support which the U.N. mission received in attempting to get the revised UNAMIR operation off the ground for a second time. It would have been preferable to see these efforts channelled differently, say towards the UNAMIR mission itself. If this had occurred, the entire operation would have been shorter and more effective.

In hindsight the international community reacted too late to the burgeoning refugee situation and too late to stop genocide. Moreover, the refugee camps, concentrated in extremely precarious locations and replete with extremists, will play a key role in Rwanda's future. They will hinder the Rwandan government from re-establishing itself to the point where it can deal with the challenges of the present, let alone those of the future.

In August 1994 a cease-fire was declared, albeit unilaterally by the rebel side. Continued reluctance by the international community, however, either to help or to direct the United Nations to be more proactive in areas surrounding Rwanda will be disastrous. The inability of various commissions (for example,

genocide and human rights) to safely conduct a balanced investigation of the camps akin to that inside Rwanda, and a lack of technical and financial support for the new government to create

a semblance of a judicial process, gendarmerie, civil service, and schools, will only increase the chances of failure and suffering. The major difference this time, however, is that if the situation is not rectified the whole region will be affected as opposed to only Rwanda.

The international community must be capable of responding operationally, administratively, and logistically to humanitarian crises like Rwanda rapidly and effectively. Organizing a plans and policy branch within the United Nations to conduct forward planning and providing the staff for contingency planning would be useful. One should bear in mind that an embryonic cell exists in DPKO with many similar features, and it might fit the bill if expanded. Along with these measures, the United Nations needs greater access to resources for field operations, possibly through something similar to a NATO mobile force to which member countries contribute troops on a rotational basis for one or two years. A small permanent headquarters staff could be deployed to the field with standard operating procedures and contingency planning, together with

earmarked forces that have undergone combined exercises with integrated communications equipment.

U.N. headquarters, for its part, needs authority to rapidly respond to crises with a mission-specific implementation plan developed by an adroit, reconstituted political staff. The bottom line is that sovereign nations must adapt to the new world by allowing the United Nations to do things that they do not or cannot do individually for various geopolitical reasons. This would facilitate a response to an unfolding crisis in weeks rather than months. By the same token, this approach would help preclude repeating the lesson of Rwanda, where a terrible price was extracted because the response had to be improvised.

JFQ

NOTE

¹ UNOMUR was administratively integrated into UN-AMIR at that time; it was disbanded in September 1994 with most of its personnel and equipment transferred to UNAMIR.

the international community must be capable of responding to humanitarian crises rapidly and effectively

A War That Was Not Left to the Generals

By ELIOT A. COHEN

There were two men at the top who really fought out and finally agreed on the major moves that led to victory. They were Franklin Roosevelt and Winston Churchill. They really ran the war . . . we were just artisans building definite patterns of strategy from the rough blueprints handed to us by our respective Commanders in Chief.

—William D. Leahy

It was more than a pious deference to senior politicians that led Admiral Leahy to give the credit for war leadership to Franklin D. Roosevelt and his great colleague, Winston Churchill. Rather, the sober truth was that Roosevelt, and to an even greater measure Churchill, exercised a directive, forceful control of a kind that most members of the defense establishment today would find unusual—and perhaps improper. They prodded subordinates, questioned their orders, and on occasion drove them into paroxysms of either anger or despair. Yet the end result was better strategy, not merely better democracy.

The most notable example of assertive control in the United States was FDR's insistence on invading North Africa in 1942, a move vehemently opposed by his main military advisors, General George C. Marshall

and Admiral Ernest J. King. Both favored an assault on occupied France in 1943, not a diversion to a secondary theater in 1942. Both suspected machinations by the British and were contemptuous of the President's argument that action somewhere in the European theater of operations—even North Africa—was essential to the politics supporting the strategy of Germany First. Yet Roosevelt was right. Indeed, he was even more correct than he knew, since it appears unlikely in retrospect

that an invasion in 1943 would have succeeded against a *Wehrmacht* not yet bled white by the Red Army or a *Luftwaffe* not yet shattered by the Army Air Forces and the Royal Air Force.

Churchill, who actually never overruled his generals in such a dramatic and irrevocable fashion, once remarked to one of the most valuable members of his wartime team, General Hastings Ismay, that the extent to which the generals had been discredited in World War I meant that in World War II their successors could not pretend to be professionally infallible.

In practice, this view did not translate into arbitrary reversals of the generals' orders by Churchill, or grand and impracticable designs of the kind in which Adolf Hitler indulged. But it did mean that Churchill would subject his generals and admirals to a merciless cross-questioning about military minutiae.

One illuminating example is that of Operation Victor, an anti-invasion exercise held in January 1941, which suggested that the British army would have a difficult time holding off a German onslaught. In March, after reading exercise reports, Churchill interrogated the Chiefs of Staff:

1. In the invasion exercise Victor two armoured, one motorised, and two infantry divisions were assumed to be landed by the enemy on the Norfolk coast in the teeth of heavy opposition. They fought their way ashore and were all assumed to be in action at the end of 48 hours.

Churchill would subject his generals to a merciless cross-questioning about military minutiae



**Taking Cover from
Strafing Fire on Arawe
Beach by David
Fredenthal.**

2. I presume the details of this remarkable feat have been worked out by the staff concerned. Let me see them. For instance, how many ships and transports carried these five divisions? How many armoured vehicles did they comprise? How many motor lorries, how many guns, how much ammunition, how many men, how many tons of stores, how far did they advance in the first 48 hours, how many men and vehicles were assumed to have landed in the first 12 hours, what percentage of loss were they debited with? What happened to the transports and store-ships while the first 48 hours of fighting was going on? Had they completed emptying their cargoes or were they still lying in shore off the beaches? What naval escort did they have? Was the landing at this point protected by superior enemy daylight fighter formations? How many fighter airplanes did the enemy have to employ, if so, to cover the landing places?

Churchill observed sardonically, "I should be very glad if the same officers would work out a scheme for our landing an exactly similar force on the French coast at the same extreme range of our fighter protection and assuming that the Germans have naval superiority in the Channel."

A spate of memoranda back and forth ensued, with the commander of British home forces, General Alan Brooke, stoutly defending the exercise and Churchill rebutting his arguments one by one. Two points stand out. First, in part based on his assessment of the difficulty of invasion Churchill was willing to risk diverting scarce armor to North Africa, where it could make all the difference in the spring and summer of 1941; second, he ultimately appointed the dour Brooke as the Chief of the Imperial General Staff and later as the Chairman of the Chiefs of Staff Committee.

Eliot A. Cohen is professor of strategic studies at the School of Advanced International Studies of The Johns Hopkins University. His books include *Citizens and Soldiers*, *Military Misfortunes*, and *Gulf War Air Power Survey*.

The examples of Roosevelt's and Churchill's assertive civilian control could be multiplied. The American decision to aid Britain in 1940; the timing, weight, and direction of the Combined Bomber Offensive; the allocation of resources for combating the U-boat menace in the North Atlantic—all bore the imprint of assertive civilian leadership.

A great deal of friction resulted, and more than one senior military figure contemplated resignation in despair and outrage. Nor were the civilians always in the right: indeed, it is a mark of their good sense that they yielded, on almost all occasions, to military argument that met the test of massive and ruthless common sense. But the war was run by politicians who knew that the ultimate responsibility for victory or defeat rested with them, and who acted accordingly.

The current models of civil-military relations are very different. We think of either civilian micro-management, à la Vietnam, or a supposedly hands-off and out-of-the-way handing over of strategic responsibilities to the military in the Persian Gulf. Both views

are historically inaccurate, but what counts here is the legend more than the reality. A Roosevelt or Churchill would not have given a Westmoreland a free hand to pursue a wasteful, destructive, and politically unsustainable strategy of search and destroy, nor would he have allowed a Schwarzkopf to negotiate an armistice without guidance on the peace terms to be exacted at the end.

In part, the situation of World War II leaders was simply very different: the margin between success and failure was much narrower. American strategists of that war, unlike those of late, had to allocate military resources that were scarce and difficult to replace. The Army, after all, ended up deploying almost every available division overseas, leaving no strategic reserve in the United States. Here were real strategic choices.

Civil-military relations in the Axis states were either corrupted by one-man rule as in Italy and Germany or nonexistent as in Japan, a military dictatorship throughout



Fighter in the Sky (Solomon Islands, 1943) by Tom Lea.

The Life Collection of World War II Art, U.S. Army Center of Military History



Landing Operations
by David Fredenthal.

The Life Collection of World War II Art, U.S. Army Center of Military History

**Roosevelt knew that
generals could make dis-
astrous military mistakes,
not merely political ones**

the war. Only among the Anglo-Saxon powers—and oddly, to a lesser extent, in Stalinist Russia—did civilians engage military subordinates in prolonged and orderly argument, a dialogue of unequals but a dialogue nonetheless. In the course of that dialogue civilians learned when to accept professional opinions proffered by their military subordinates and when to question or discard them. Indeed, their very understanding of professional judgment differed from that of today.

Roosevelt and Churchill knew full well that generals could, in the nature of things, make disastrous military mistakes, not merely political ones. They discriminated clearly between those generals whom they regarded as operationally talented and operationally incompetent and had no hesitation about sacking the latter. Both would have rejected the view, currently prevalent in some circles, that a politician can no

more exercise critical judgment about a campaign plan than about the procedure to follow for open heart surgery.

The upshot was civil-military relations fraught with conflict. Today commentators view conflict as something dysfunctional and dangerous, forgetting that it characterizes many successful governments at war. Who recalls, for example, that General William Tecumseh Sherman refused to shake the hand of Secretary of War Edwin M. Stanton at the Review of the Armies held at the conclusion of the Civil War? No doubt the unequal, tension-ridden dialogue between civilian and military leaders took a heavy psychological, even physical, toll on the participants. But in the end it was an essential ingredient for victory—and in all likelihood will be so again in the future.

JFQ

General Colin L. Powell, USA

Chairman of the Joint Chiefs of Staff

(October 1989—September 1993)

Our soldiers know that they are the best on the battlefield; our sailors know that they are the best at sea; our airmen know that they are the finest in the skies; our marines know that no one better ever hit the beach. But every one of these men and women also knows that they play on a team. They are of the team and for the team; “one for all and all for one,” as Alexandre Dumas put it in The Three Musketeers. We train as a team, fight as a team, and win as a team.

Joint Force Quarterly . . . is the most recent addition to this effort. Its purpose is to spread the word about our team, to provide for a free give-and-take of ideas among a wide range of people from every corner of the military. We want the pages of JFQ to be filled with the latest word on joint issues—from warfighting to education, from training to logistics. We want the discussion of these joint issues to get a thorough airing, to stir debate and counterargument, to stimulate the thinking of American men and women serving on land, at sea, and in the air. We want JFQ to be the voice of the joint warfighter.

—JFQ, Issue 1 (Summer 1993)



U.S. Army (Jeff Wright)

INNOVATION: Past and Future

By WILLIAMSON MURRAY

Mid-air refueling,
Rockwell Field,
California.

DarkStar UAV.



U.S. Air Force Historical Center

We have entered a period of uncertainty where threats are indeterminate even as changes in technology accelerate. Rapid innovation—apparent in the impact of stealth and precision weaponry in the Gulf War—appears likely to continue. Yet the Armed Forces are not apt to receive anything close to the resources enjoyed during the Cold War. With less money and greater ambiguity on the nature of opponents and wars in the future, we must innovate. Recent case studies of innovation in a similar period—the 1920s and 1930s—when

military institutions confronted great international uncertainty, relatively low support, and substantial technological change, offer views on how one might view innovation in the next century.¹

Many difficulties confront historians in drawing guidance from the past. It is impossible to replicate conditions of war in peacetime, while war itself is so permeated with fog and friction that it is difficult for military organizations to determine what has actually happened on the battlefield.² Since we prepare for and fight war in the real world rather than on computers, military innovation and adaptation reflect the complexity of that reality—one in which, as science increasingly reveals, chance and nonlinear factors dominate. For the analyst of innovation, complexities of the

Williamson Murray currently holds the Major General Matthew C. Horner chair of military history at Marine Corps University and is professor of history emeritus at The Ohio State University.



Naval Historical Center

Higgins ramped
landing boat, 1941.

process make it extraordinarily difficult to recover the past in a simple, digestible form. Relations among technological innovations, fundamentals of military operations, and changes in concepts, doctrine, and organization that drive innovation are essentially nonlinear. Changes in inputs such as weapon systems—large or small—may not yield proportionate changes in outputs or combat dynamics. And the impact of changes on doctrine or the education of an officer corps is almost incalculable.

Reading the past requires understanding how interactions actually work.

Since the 1950s, research from fields as diverse as meteorology, ecology, physics, and mathematics has uncovered numerous dynamic systems so simple as to represent virtual paragons of deterministic, clockwork mechanisms; yet they can give rise to long-term behavior so complex as to be literally unpredictable or chaotic. It now appears that stable systems with simple and predictable dynamics are in fact the exceptions in nature rather than the rule. And most crucially, the local randomness of nonlinear systems is basic: gathering and processing more information with better algorithms and computers cannot, even in principle, make the unpredictability go away.

The implications of these developments sug-

gest that the world as a whole does not work in a mechanistic, deterministic fashion; that complex social interactions such as military innovation or actual combat do not reduce to simple linear processes; and that the study of human affairs—the interplay of thousands of independent variables—is more of an art than a science. The process of innovation in military institutions and cultures, involving myriad actors, complex technologies, and uncertainties of conflict and human relations, forms a part of this world and is no more subject to reductionist solutions than any other aspect of human affairs.

An Evolutionary Phenomenon

With the possible exception of the British air defense system developed by Hugh Dowding during the late 1930s, an innovation that flew in the face of airpower theories, bringing new ideas and concepts of fighting to fruition was a long process in the interwar years. This suggests that effective military innovation is evolutionary rather than revolutionary. To the British and French in summer 1940, the unfolding of German exploitation tactics, *Blitzkrieg* warfare, doubtless appeared as revolutionary. But to Germans involved in the process since the 1920s it seemed evolutionary.

While the degree of alteration on a year-to-year basis can be relatively small, gradual and cumulative change can be dramatic over time. The contrast between French and German tactical systems could not have been more striking in May 1940, but innovations that led to this breaking point took two decades. However gradual the changes, a chasm existed between how these two forces thought about, prepared for, and executed on the battlefield.

Evolutionary innovation depends on organizational focus over time rather than guidance by one individual for a short period. Military leadership can affect the process through long-term cultural changes rather than short-term decisions. Interwar development of armored warfare offers some perspectives. The most influential leaders were Lord George Francis Milne of Britain and General Hans von Seeckt of Germany. Milne was the more willing to see the army of the future in terms of armored forces. He not only supported armored maneuvers with scarce funds but told his senior officers in the 1920s:

It is up to us to find some means of bringing war back to what it was when the art of generalship was possible. The only means of doing this is to increase mobility on the battlefield. Now that is the point of the initiation of the armored brigade—to revive the possibility of generalship.³

Seeckt, though interested in motorized warfare, never got to that point. In 1928 he cautioned the *Reichswehr* officer corps that he did not foresee motorized soldiers entirely replacing horsemen.

But the significant issue is that Seeckt fostered a culture of innovation through the kind of officer corps he created in the early 1920s and the institutional values he inculcated. His officers developed doctrinal concepts based on past as well as current experience.⁴ In 1920 he established 57 committees to study the lessons of World War I.⁵ This effort produced the basic *Reichswehr* interwar doctrine manuals that had such influence on the *Wehrmacht*. This is an important point. There is an old axiom that generals prepare for the last war. In

**evolutionary innovation
depends on organizational
focus over time rather than
guidance by one individual**



Launching
USS Lexington, 1925.

F4B-1 taking off
from USS Lexington.

Naval Historical Center



F6Cs and T3Ms aboard
USS Lexington off
San Diego, 1928.

Naval Historical Center

Naval Historical Center

fact most military organizations show little interest in studying the lessons of even recent conflicts. Rather, they ignore the past or look to another paradigm. But the Germans were different.

Based on the *Reichswehr* study, Werner von Fritsch and Ludwig Beck—who became the army commander and the chief of the great general staff, respectively, when Adolf Hitler came to power—wrote *Die Truppenführung* in 1932, the chief army doctrine manual that the *Wehrmacht* used with such effect during World War II. The values Seeckt imparted to the *Reichswehr* placed a high value on analysis of changes in doctrine, tactics, and technology. In other words he created an ideal climate for innovation.

Milne, on the other hand, took over the British army well after World War I. That force had done little to examine its experience in the war, and Milne would not begin such an effort until his last year as the chief of the imperial general staff (IGS). Moreover, the regimental system

put little value on professional study of war.⁶ Consequently, Milne's influence was wholly personal and dissipated rapidly in the 1930s after his retirement and a series of unimaginative leaders took control. These officers, particularly Field Marshal Archibald Montgomery-Massingberd (Milne's successor), effectively sabotaged his initiatives.⁷ It thus appears that long-term decisions which affect the culture and values of the officer corps are crucial to innovation, while it is difficult for a single individual to institutionalize change.

Launching *USS Nautilus*,
Mare Island Navy Yard,
1930.



Curtiss OC-1 Falcon.



Naval Historical Center

Naval Historical Center

Success in Innovation

Despite difficulties, some military institutions did innovate with success during the inter-war period. Others, however, failed dismally. The factors that led to success thus show what will be conducive to future innovations. Perhaps the most crucial factor is military culture. One might define military culture as the sum of intellectual, professional, and traditional values possessed by an officer corps. It is key to how officers assess the external environment and respond to threats. It is also crucial in how forces prepare for combat and innovate.

As suggested above, the German officer corps met many of these criteria. They in effect incorporated innovations in armored warfare through a comprehensive and realistic understanding of modern warfare. Steady and incremental improvement in tactics as well as doctrine resulted

in mechanized forces with capabilities well beyond those of other European armies. Essential to this success was the German ability to conceptualize the operational as well as tactical levels of war in doctrinal writings.

Thus *Die Truppenführung* provided the army with a coherent framework for thinking about future battlefields. It not only offered a means of integrating the traditional branches—artillery and infantry—but latitude to incorporate evolving concepts of armored war and close air support within a doctrine aimed at fighting mobile, decentralized battles. Since German officers took doctrine manuals seriously they could comprehend the larger picture of combined arms. Once exposed to the possibilities of armor in the Polish campaign, many skeptics were converted.

Moreover, there was honest reflection on future developments. For example, the German high command and general staff subjected army performance in Poland to a searching analysis in which operational success was not the major criterion. In Britain, on the other hand, Montgomery-Massingberd in the early 1930s suppressed the Kirk report on the performance of the British army in World War I because it was critical. That would have been inconceivable in Germany.

**since German officers took
doctrine manuals seriously
they could comprehend
combined arms**



Naval Historical Center

P-39N, 1943.

This culture of critical examination transcended the learning processes about the last war. Throughout the late 1930s one sees the same pattern as the Germans conducted exercises and then combat operations. In all cases they continued to critically assess what had occurred in the field. Thus they learned from mistakes. Key to their approach was the treatment of errors in using new equipment or procedures. They saw mistakes as a learning experience, not a cause for reproof.

During this period German army culture provided for trust and honesty among command levels. Commanders were not afraid to admit that their units had problems. The *Anschluss* is a good illustration of this process, as the occupation of Austria in March 1938 indicated weaknesses throughout the participating units. After-action reports from battalion to army level became ever more critical of troop performance, training, and discipline in higher levels of command.

But cultural problems robbed Germans of the advantages gained in tactical and operational innovations. The most brilliant battlefield success could not make up for logistic and intelligence systems that failed to function in the modern world. Given the contempt on the part of their officer corps for these crucial areas—the *Luftwaffe* and navy were as bad as the army—the Germans were unable to engage in prolonged struggle. If tactical innovations gave the *Wehrmacht* an advantage early in World War II, they could not triumph over gross mistakes in strategy, logistics, and intelligence made largely as a result of military culture.

German officers were not alone in benefiting from a culture that encouraged innovation. Carrier aviation in the U.S. Navy offers lessons about successful military change in the interwar period.

Navy culture created a realistic relationship between annual exercises and education and wargaming at the Naval War College. Developments in carrier aviation largely rested on academic processes. The college designed summer fleet problems, the fleet executed them realistically, then a careful evaluation funneled the results back to Newport. Finally the college, well connected with the fleet, kept officers informed on developments in naval aviation and concepts for employing it. Moreover, the Navy sent its best officers to the Naval War College.

The realism and imagination of the war-games at Newport are particularly striking. As early as 1923, a game involved a blue fleet of five aircraft carriers against an opponent with four. While some games cast carriers in the mundane role of spotting for a battlefleet, the blue forces launched a strike of two hundred aircraft armed with bombs and torpedoes which crippled enemy carriers and a battleship. As Steven Rosen observed in his study of innovation:

Most important, concepts essential in the conduct of carrier war were worked out. The necessity of massing aircraft for strikes was highlighted. Rather than assigning aircraft to each battleship to act as its eyes, they were launched and kept in the air until large numbers could be assembled for an independent strike. The need for a coherent air-defense plan to coordinate the use of defensive aircraft was emphasized, and the commander of the red fleet was faulted for failing to come up with such a plan.⁸

The Navy approach to wargaming was similar to that of the German army. Neither used exercises or games to justify current revealed doctrine or exclude possibilities not popular among senior officers. In other words, exercises and games aimed at those questions that one might ask, not at solutions. In peacetime they were educational. In war they showed possibilities. The most important German game for crossing the Meuse, for example, held in March 1940, did not resolve whether *Panzer* spearheads should make the breakthrough by themselves or wait for the infantry.⁹

Perhaps the greatest interwar contribution which military culture made to innovation was in allowing officers to use their imaginations. Where that did not exist or military colleges inculcated an absolutist doctrine—as in the French army or at the U.S. Army Air Corps Tactical School—the result was flawed military innovation.

Failure to Innovate

Italians were the least successful innovators of the interwar period. While Anglo-American

**the most glaring message
of World War I was that the
bomber only got through
under fighter escort**

and German historians once blamed Italian failures on ethnic characteristics, recent scholarship has placed it where it belongs—on an officer corps that failed its nation and soldiers.¹⁰ A remark by General Ubaldo Soddu suggests the pervasive culture of the Italian military: “When you have a fine plate of pasta guaranteed for life, and a little music, you don’t need anything more.”¹¹ Any staff or war college that emphasizes golf and “getting in touch with the family” is not about to provide the intellectual climate for innovation.

Evidence throughout the interwar period suggests a wide-scale pattern of failing to innovate which reflects a larger problem of military effectiveness. As one commentator on the performance of military institutions from 1914 to 1945 noted:

Thus in the spheres of operations and tactics, where military competence would seem to be a nation’s rightful due, the twenty-one studies [on separate national military experiences] suggest for the most part

over the fleet air arm and the loss of most naval airmen to the RAF in 1918 made innovation almost impossible, at least compared to events in the United States and Japan.

Distinct barriers to innovation appeared throughout the 1930s. Perhaps the most obvious is a willful desire to discard history or twist it to justify current doctrine and beliefs. In 1924 the British air staff explicitly rejected the past in a memorandum to the chiefs of staff committee which argued that the force attacking an enemy nation:

... can either bomb military objectives in populated areas from the beginning of the war, with the objective of obtaining a decision by moral effect which such attitudes will produce, and by the serious dislocation of the normal life of the country, or, alternatively, they can be used in the first instance to attack enemy aerodromes with a view to gaining some measure of air superiority and, when this has been gained, can be changed over to the direct attack on the nation. The latter alternative is the method which the lessons of history seem to recommend, but the air staff are convinced that the former is the correct one.

This dismissal of history reflected the attitudes of most air forces in those years. Unfortunately for crews in World War II, the lessons did matter. The most glaring message of World War I was that the bomber only got through and back under fighter escort. Yet there was a pervasive belief in the RAF and the U.S. Army Air Corps that long-range fighters were not needed, possible, or relevant to strategic bombing. Air combat had repeatedly stressed during World War I that air superiority was essential to all air operations, particularly bombing. Without fighter support, attacking aircraft took prohibitive losses. But it took innumerable Schweinfurts and Nurembergs before air staffs of the next war awoke to that fact.

If military organizations sometimes ignore the past, they can also misuse it. The French, seeing the disasters that resulted from offensives in 1914, 1915, and 1917, wrote off any approach to offensive warfare other than their stylized, tightly controlled “methodical battle.” Their defeat in 1940 displayed the quality and inevitability of a Greek tragedy; but it is hard to see how they could have developed another attitude on offensive operations. Nevertheless, the French interpretation was basically flawed and historically inaccurate. During the late 1930s General Maurice Gamelin exacerbated a faulty doctrine by shutting off all debate within the French army.

More difficult to explain is the reaction of most navies to the unrestricted submarine warfare during World War I. In retrospect, Germany almost broke Britain’s sea lines of communications in 1917. Yet when the war was over, the



U.S. Army Military History Institute

France, 1918.

*less than general professional military competence and sometimes abysmal incompetence. One can doubt whether any other profession in these seven nations during the same periods would have achieved such poor ratings by similarly competent outside observers.*¹²

Misuses of History

Failing to innovate is more than simple incompetence. Some military institutions may have compelling reasons not to innovate or circumscribe possibilities. In the case of the development of British carrier aviation, the arguments



XAF radar antenna,
USS New York, 1938.



Testing radar on board
USS Leary, 1937.

Naval Historical Center

Naval Historical Center

Kriegsmarine wrote the U-boat off as a major weapon and based its hopes entirely on rebuilding a high sea fleet of battleships (and virtually no carriers). Ironically, in 1936 Admiral Karl Doenitz and his chief engineer pushed the naval high command to support development of U-boats with a higher underwater speed—what would eventually become the Walter U-boat. But senior admirals displayed no interest in technology for a form of naval war they had dismissed.¹³ The Royal Navy also wrote off the submarine. On the basis of their victory in World War I and their development of sonar, the British gave up on antisubmarine warfare and threw themselves entirely into ensuring that Jutland would never happen again.

But the Japanese made the most amazing misuse of submarines despite their “long lance” torpedo, the finest undersea weapon of the war. In the face of the lessons of World War I and the Battle of the Atlantic in 1940–41, they failed to

attack U.S. sea lines of communications. At the same time they devoted few resources to protecting their own commerce. In the end they lost their merchant shipping to U.S. submarines while inflicting hardly any damage on enemy shipping.

Rigidity

One fact of life in many organizations that has had a ominous influence on the institutional capacity to innovate is rigidity. It appears in many areas, especially doctrine. There are reasonable explanations for French offensive doctrine remaining rigid throughout the interwar period. Harder to fathom is why it stayed so fixed in regard to defensive warfare.

The French also believed the Germans could not and would not ultimately perform radically differently from their own forces. They refused to recognize that an enemy had other options and might exercise them. It was mirror imaging of the worst sort. Immediately after the defeat of France in 1940, historian Marc Bloch (a French reserve officer who observed the collapse at highest levels), identified one major cause of this disaster: “our minds [were] too [in]elastic for us ever to admit the possibility that the enemy might move with the speed which he actually achieved.”¹⁴

This inflexibility was aggravated by an institutional bias against feedback that contradicted existing doctrine or preparations. Exercises aimed at inculcating “revealed truth” into units—not at adapting doctrine to real life. There was little learning since the high command had all the answers.



U.S. Air Force Historical Center

Parachuting over
Brooks Field, Texas,
1926.

the interwar period reveals the need for officers to be educated and encouraged to innovate

The British army showed no greater interest in growing from exercises and had no effective system to disseminate lessons learned through its units. Even during the war there is little evidence that they incorporated battle experience in training.¹⁵ There was ample data from the Middle East, but Home Forces appeared to pay virtually no attention to it. Divisions working up for combat had to innovate and adapt almost on their own. Hence tactical innovation came on the battlefield—a most expensive teacher. An armor officer in North Africa described the results:

*Other officers told me of how they had seen the Hussars charging into the Jerry tanks, sitting on top of their turrets more or less with their whips out. "It looked like the run-up to the first fence at a point-to-point," the adjutant described it. The first action was very typical of those early encounters involving cavalry regiments. They had incredible enthusiasm and dash, and sheer exciting courage which was only curbed by the rapidly decreasing stock of dashing officers and tanks.*¹⁶

Such rigidity led organizations to shut off alternative paths. The belief that bombers would always get through led airmen to minimize the potential of the *Luftwaffe* to interfere with bomber operations. For the Royal Air Force and U.S. Army Air Forces, it meant minimizing technological support to aid the accuracy of attacks at night and in bad weather. The measure of air effectiveness thus became the number of sorties flown or targets attacked, tonnage of bombs dropped, and acres of cities destroyed. Air war had become an end in itself, and real measures of effectiveness simply failed to interest most air commanders.

Certainly the most rigid interwar military was the Soviet army. Stalin's purges ensured the loyalty of Soviet military institutions. Most innovation ceased and the officer corps chased after mindless conceptions of revolutionary war which severely damaged its capacity to fight and made it incapable of grasping how the *Wehrmacht* would fight. The outcome was the most catastrophic defeat in history in terms of human losses. The Soviets escaped its consequences only because of the appalling strategic and political misjudgments of their opponent.

Implications

There are some parameters for successful innovation. First, one must not think in terms of individuals—future Mitchells, Dowdings, Guderians—in furthering change. The interwar period reveals the need for officers to be educated and encouraged to innovate—a far larger problem than finding one innovative officer. Education and values are basic factors in innovation. Professional military education (PME) was vital to change in the interwar years and will be more so in the future if it provides the broad conceptual context that innovation requires.

In the larger picture, educational values among officers require an intellectual and physical commitment. Only a willingness to think through the business of war allows leaders to perceive the long-term potential of innovation. Moreover, officers must have connections with, and an understanding of, civilian technologies dominated by innovation. Military institutions must judge future war realistically. Here the muddy boot world of exercises and lifelike wargames lies at the heart of effective innovation. The development of German armor doctrine and close air support and of American and Japanese carrier aviation shows the relationships among education, doctrine, wargames, and exercises. When military organizations and high commands "knew" the answers and drove the solutions, the results were sometimes disastrous in stifling innovations.



U.S. Air Force Historical Center

B-9 bomber.

What does the past imply for those who will innovate during periods of low budgets, major technological changes, and uncertain strategic conditions? First, specific, detailed plans to enhance innovation are probably a nonstarter. Courses on it at staff and war colleges will offer little, and creating innovation specialties may only attract those interested in a safe career rather than crusaders for change. Efforts to institutionalize innovation will inhibit rather than foster the process. Change demands officers in the mainstream of their professions, with a prospect of reaching the top ranks, who have peer respect and will take risks. The bureaucratization of innovation—particularly in the current framework of the U.S. military—guarantees its death.

How then to encourage it? The best route appears to be to foster change in service cultures. But one can only achieve cultural changes over the long haul, not a traditional American approach.

Areas where the Armed Forces might push the process are listed in conclusion.

- The services must think in terms of fighting real opponents, with real capabilities and real strategic and political objectives. Exercises and gaming must take place within concrete scenarios against realistic opponents

who can truly challenge blue forces. Such scenarios must examine the impact of innovative approaches on all three levels of war: strategic, operational, and tactical.

- The services must rethink their operational tempo and the number of annual exercises. The value of exercises, particularly when resources are short, lies not just in their conduct but their planning and lessons-learned analysis. The latter must involve more than reports no one reads, but rather rethinking doctrine, training, and education at every level. The value of exercises ultimately depends on the preparedness of participants to think through what went well and what did not.

- The services must ensure that lessons learned focus on more than validating doctrine and processes. During the interwar period the French sought seriously to examine World War I and learn from exercises. But they also created a system that narrowly constrained exercises and study and that ensured the sanctioned approach would again prove. They learned what made generals and staff officers happy, a clear case of self-fulfilling prophecy, at least until the Germans arrived on the banks of the Meuse.

- At every level the services must think in discrete measures of effectiveness. They need to consider exactly what they wish to do to an opponent. And as war changes, they will require new measures and methods. Above all, the services must foster a climate of military professionalism.

■ The services also need to rethink PME. Much interwar innovation depended on relations between the staff and war colleges and the world of operations. Unfortunately, the Armed Forces lost much of their belief in PME following World War II despite the testimony of Eisenhower and Spruance who credited their days at Leavenworth and Newport for their success. But any attempt to encourage cultural changes and foster intellectual curiosity demands better PME. It also requires that education remains central throughout an officer's career. One may not create another Seeckt or Dowding and manage his career through the ranks, but one can foster military culture where those so promoted have imagination and intellectual grounding to support innovation.

■ Finally, the services must encourage greater familiarity with nonlinear analyses. A heavy emphasis on engineering, which is prominent in the officer acquisition procedure of three services, reflects a mind set that is not conducive to innovation. While some suggest that the military needs more engineers to encourage nonlinear thinking, they are wrong. In fact what the services lack are biologists, mathematicians, and historians. Presently most senior officers think of innovation the way the *Luftwaffe* did during World War II, in quantitative and qualitative terms of techniques and platforms rather than conceptually.

JFQ

NOTES

¹ See Williamson Murray and Allan R. Millett, *Military Innovation in the Interwar Period* (New York: Cambridge University Press, 1996). This article was adapted with permission of the publisher from a chapter in the above book. The author would like to acknowledge the assistance of Barry Watts in preparing the article.

² Despite claims that technological change will stop friction, there is compelling evidence to the contrary. See Barry Watts, "Friction in the Future," in *Brassey's Mershon American Defense Annual, 1996–1997* (Washington: Brassey's, 1996).

³ B.H. Liddell Hart, *The Memoirs of Captain Liddell Hart*, vol. 1 (London: Cassell, 1965), p. 129.

⁴ Williamson Murray, "Armored Warfare: The British, French, and German Experiences," in *Military Innovation*.

⁵ James S. Corum, *The Roots of Blitzkrieg, Hans von Seeckt and German Military Reform* (Lawrence, Kans.: University Press of Kansas, 1992), p. 37.

⁶ Brian Bond, *British Military Policy between the Two World Wars* (New York: Oxford University Press, 1980).

⁷ Harold Winton, *To Change an Army: General Sir John Burnett-Stuart and British Armored Doctrine, 1927–1938* (Lawrence, Kans.: University Press of Kansas, 1988), pp. 130–31.

⁸ Steven Peter Rosen, *Winning the Next War: Innovation and the Modern Military* (Ithaca, N.Y.: Cornell University Press, 1991), p. 69.

⁹ Heinz Guderian, *Panzer Leader* (Washington: Zenger, 1979), p. 71.

¹⁰ MacGregor Knox, *Mussolini Unleashed, 1939–1941, Politics and Strategy in Fascist Italy's Last War* (New York: Cambridge University Press, 1982), p. 16.

¹¹ *Ibid.*, p. 57.

¹² John H. Cushman, "Challenge and Response at the Operational and Tactical Levels," in *Military Effectiveness*, volume 3, *World War II*, edited by Allan R. Millett and Williamson Murray (London, Allen and Unwin, 1988), p. 322.

¹³ John Terraine, *The U-boat Wars, 1916–1945* (New York: Putnam, 1989), p. 617.

¹⁴ Marc Bloch, *Strange Defeat* (New York: Norton, 1968), p. 45.

¹⁵ Williamson Murray, "British Military Effectiveness," in *Military Effectiveness*, vol. 3, pp. 90–135.

¹⁶ Robert Crisp, *Brazen Chariots* (New York: Ballantine, 1960), p. 32.



1st Combat Camera Squadron (James E. Lotz)



55th Signal Company (Cory Montgomery)



USS Seawolf (John E. Gay)



U.S. Marine Corps

what they've said in JFQ

*it is hard to think of a nonmilitary role without precedent for
such roles are as American as apple pie*
—Samuel P. Huntington

*the mission and the Rwandans fell victim to inflated
expectations that the United Nations could not fulfill*
—R.A. Dallaire and B. Poulin

*Roosevelt knew that generals could make disastrous
military mistakes, not merely political ones*
—Eliot A. Cohen

*evolutionary innovation depends on organizational focus over
time rather than guidance by one individual*
—Williamson Murray

*to achieve more efficient use of defense resources, Congress
looked to the Chairman*
—James R. Locher III

*advanced courses on proliferation and counter-
proliferation reach only a small fraction of students*
—Robert G. Joseph

Taking Stock of GOLDWATER- NICHOLS

By JAMES R. LOCHER III

“One of the landmark laws of American history” is how Congressman and later Secretary of Defense Les Aspin described the Goldwater-Nichols DOD Reorganization Act. Speaking as the chairman of the House Armed Services Committee in 1986, Aspin added, “[This law] is probably the greatest sea change in the history of the American military since the Continental Congress created the Continental Army in 1775.” Because he was known for colorful, dramatic assertions, many saw this claim as political overstatement. The Pentagon, which did not favor the legislation, not only dismissed Aspin’s characterizations but held an opposite view. Secretary of Defense Caspar Weinberger and service leaders had resisted reorganization legislation throughout a bitter, five-year battle with Congress.

Despite DOD attitudes, Aspin and his colleagues on the two Armed Services Committees had high expectations for Goldwater-Nichols. Senators Barry Goldwater and Sam Nunn, leaders of defense reform, recognized that implementation of massive changes in the largest bureaucracy in the Free World would take time. They predicted that meaningful implementation of many changes, especially cultural ones, would require five to ten years. The act’s tenth anniversary presents an

opportunity to judge whether the results have matched expectations. Comparing the performance of the defense establishment over the last decade against objectives for the Goldwater-Nichols Act provides a useful yardstick for assessing the law’s contributions.

Objectives

Congress expressed its intent in the act’s policy section. The overarching concern focused on the excessive power and influence of the four services, which had precluded the integration of their separate capabilities for effective joint warfighting.

The House’s leading specialist on defense reorganization remarked: “The overwhelming influence of the four services . . . is completely out of proportion to their legally assigned and limited formal responsibilities.”¹

With its desire to create a more appropriate balance between joint and service interests as a backdrop, Congress declared eight purposes for the act, the last having two parts:

- to reorganize DOD and strengthen civilian authority
- to improve the military advice provided to the President, National Security Council, and Secretary of Defense

The Honorable James R. Locher III was a professional staffer with the Senate Committee on Armed Services and served as assistant secretary of defense for special operations and low intensity conflict.



DOD (R.D. Ward)

- to place clear responsibility on the commanders of the unified and specified combatant commands for the accomplishment of missions assigned to those commands

- to ensure that the authority of commanders of unified and specified combatant commands is fully commensurate with the responsibility of those commanders for the accomplishment of missions assigned to those commands

- to increase attention to strategy formulation and contingency planning

- to provide for the more efficient use of defense resources

- to improve joint officer management policies

- otherwise to enhance the effectiveness of military operations and improve DOD management and administration.

Civilian Authority

In its mid-1980s examination of defense organization, Congress found numerous obstacles precluding exercise of effective civilian authority, particularly by the Secretary of Defense. Many members of Congress agreed with a former defense official's summation of the Secretary's position: "His real authority is not as great as it seems, and his vast responsibilities are not in reality matched by commensurate powers."²

In a congressional report entitled *Defense Organization* published in 1985, the Secretary's efforts were seen as "seriously hampered by the absence of a source of truly independent military

the Joint Chiefs provided the Secretary with watered down advice

advice." The Joint Chiefs logrolled on issues of concern to one or more services and provided the Secretary with watered down advice. This forced the Office of the Secretary of Defense to carry the full burden of challenging the services, individually and collectively, on policies and programs. *Defense Organization* assessed the negative outcome:

*The natural consequence has been a heightening of civil-military disagreement, an isolation of OSD, a loss of information critical to effective decisionmaking, and, most importantly, a political weakening of the Secretary of Defense and his OSD staff. The overall result of interservice logrolling has been a highly undesirable lessening of civilian control of the military.*³

Confusion concerning the roles of the service secretaries ranked next on the congressional list of problems hampering the authority of the Secretary of Defense. In creating the position of Secretary of Defense, the National Security Act of 1947 never specified the relationship of the new office to the service secretaries. The bitter postwar controversy over military unification precluded settling this

issue. The 1947 law preserved considerable independence for the civilian heads of the military departments. Although subsequent amendments strengthened the Secretary's power and staff, the act did not prescribe his relationship to service secretaries. Not surprisingly, the civilian heads of services devoted considerable energy to advocating service positions, often at the expense of the Secretary's broader agenda.

Numerous Goldwater-Nichols prescriptions addressed these problems. Three stand out. First, desiring to leave no doubt as to the authority of the Secretary, Congress stated in the report's language, "The Secretary has sole and ultimate power within the Department of Defense on any matter on which the Secretary chooses to act." Capitol Hill designed this provision to end claims by defense officials to jurisdictions that were independent of the Secretary's authority.

Second, in designating the Chairman as the principal military adviser, Congress envisioned him becoming an ally of the Secretary with a common department-wide, nonparochial perspective. This change sought to provide the Secretary with independent military advice and also end the civil-military nature of past Pentagon disputes.

Third, the law specified the responsibilities of the service secretaries vis-à-vis the Secretary of Defense. In prescribing relationships among the most senior civilian officials, Congress filled a void that had existed for nearly forty years.

Civilian authority has been strengthened. Goldwater-Nichols has empowered the Secretary to effectively lead and manage DOD. Former Secretary Dick Cheney found that the act "significantly improved the way the place functions." Of continuing service arguments against the act, Cheney commented in an interview which appeared in *Proceedings* in May 1996:

I know each service wants to do its own thing, with its own authority. The fact is that [DOD] is difficult enough to run without going back to a system that, in my mind, served to weaken the civilian

*authority of the Secretary and the President in terms of their ability to interact with and use that organization. I think Goldwater-Nichols helped pull it together in a coherent fashion. . . .*⁴

Some critics claim that the Chairman's more influential role undermines civilian authority. Two groups have made this argument: those who are genuinely concerned about the health of civil-military relations and those who would like to regain a greater degree of service influence. Both groups are off the mark. Although Goldwater-Nichols increased the role of the Chairman, it carefully ensured that the Secretary could use his vast powers to control the Nation's top officer. One analysis of this controversy concluded, "No evidence exists to suggest that civilian control of the military, properly understood, has atrophied. The President and Congress determine policy, from force structure and acquisition to the use of military force."⁵

Military Advice

In 1982 the Chairman, General David Jones, testified that, "the corporate advice provided by the Joint Chiefs of Staff is not crisp, timely, very useful, or very influential." Recalling the pre-Goldwater-Nichols era, another

former Chairman, Colin Powell, pointed out in his recent memoir, *My American Journey*:

Almost the only way the chiefs would agree on their advice was by scratching each other's back. Consequently, the sixteen-hundred-member Joint Staff that worked for the JCS spent thousands of man-hours pumping out ponderous, least-common-denominator documents that every chief would accept but few Secretaries of Defense or Presidents found useful. . . . In my judgment, this amorphous setup explained in part why the Joint Chiefs had never spoken out with a clear voice to prevent the deepening morass in Vietnam.

In answer to the problem of inadequate military advice, Congress crafted some of the most far-reaching provisions of Goldwater-Nichols. The act made the Chairman the principal military adviser, transferred duties to him previously performed by the corporate Joint Chiefs, and assigned new duties. To assist him, Congress created the position of Vice Chairman as the second-ranking military officer. Last, Congress gave the Chairman full authority over the Joint Staff.

The quality of military advice has greatly improved according to its principal recipients. The most comprehensive assessment of post-1986 military

advice concluded that the act "has made a significant and positive contribution in improving the quality of military advice."⁶ Cheney found that having the Chairman as principal military adviser "was a significant improvement" over the "lowest common denominator of whatever the chiefs collectively could agree upon." Higher civilian authority has not accepted lingering criticism from the services that their views are now under represented, especially in operational matters.

Clear Responsibility

Congress found the operational chains of command to be both confused and cumbersome. The roles of the Secretary and Joint Chiefs in the chain were uncertain. Despite the removal of the military departments

the act prescribed the chain of command as running from the President to the Secretary to the CINC

from the chain of command in 1958, the chiefs retained de facto influence over combatant commands, adding to the confusion.

To achieve its objective of placing clear responsibility on CINCs, Capitol Hill clarified the chain to each commander and emphasized that all were responsible to the President and Secretary for the performance of assigned missions. The act prescribed the chain of command as running from the President to the Secretary to the CINC. The Joint Chiefs, including the Chairman, were explicitly removed.

Opinion is universal that this objective of Goldwater-Nichols has been achieved. Senior officials and officers repeatedly cite the benefits of a clear, short operational chain of command. Reflecting on the Gulf War, General Norman Schwarzkopf said, "Goldwater-Nichols established very, very clear lines of command authority and responsibilities over subordinate commanders, and that meant a much more effective fighting force." As Secretary of Defense William Perry later said to the Senate Committee on the Armed



Reviewing final plans for Haiti invasion, September 1994.

DOD (R.D. Ward)

Empowering Eisenhower's Concept

In 1982, a Marine witness warned the Subcommittee on Investigations of the House Armed Services Committee that acceptance of measures under consideration to reorganize the Joint Chiefs would be tantamount to creating a "general staff system." The most far-reaching proposal which was then being contemplated would have made the Chairman an adviser in his own right instead of merely a spokesman for the chiefs. The hearings and legislative proceedings that eventually led to passage of the Goldwater-Nichols Act continued for four more years. During that time, Congress rejected all proposals to create a general staff. But with enactment of the law, it decisively rejected the existing DOD structure. What organizing concept did Congress embrace?

De Jure Organization

While the answer was not explicitly stated in hearings, reports, or debate, Congress harked back to the concept proposed under the Eisenhower administration in 1958 to guide reorganization. The National Security Act of 1947 resulted in what President Eisenhower described as "little more than a weak confederation of sovereign military units." The amendments of 1949, 1953, and 1958 sought to overcome unworkable arrangements. As part of the 1958 amendments, the President proposed and Congress approved the bifurcation of DOD into administrative and operational chains of command. A review of the act as amended in 1958 reveals that both the President and Congress shared a concept of just how they intended to organize the defense establishment.

Congress created DOD to replace the originally loose-knit National Defense Establishment. By 1958 the Secretary of Defense had metamorphosed in law from a weak general overseer to the most powerful official with "authority, direction, and control" over all DOD. Below him, the law created two chains of authority, one to military departments and another to joint elements. Military departments were to prepare forces for combat—*organize, train, and equip*—and provide logistic, administrative, and other support. They were thus charged with "maintaining" the Armed Forces.

The law made the joint side responsible for employing the forces provided by the military departments. The Joint Chiefs, assisted by the Joint Staff, would provide advice to the President, Secretary, and National Security Council as well as conduct military planning and related activities.

CINCs, who headed unified and specified commands consisting of combat forces provided by the services, were made responsible for military missions assigned by the President—winning the Nation's wars and coping with lesser contingencies. At those echelons below the CINCs were "employing" and "maintaining" chains of authority that split under the Secretary but were rejoined.

De Facto Organization

This description of the post-1958 de jure organizational model shows that it is remarkably similar to that found in law today. If Congress was satisfied with the legislative model of DOD it established by 1958, why was the Goldwater-Nichols Act needed? The answer is that what exists in law does not necessarily exist in fact.

Prior to 1986—despite the de jure model—DOD was dominated by the services, which had been traditionally responsible for planning and warfighting as well as preparing our forces for war. The services were unwilling to relinquish operational functions to a joint system. They continued to dominate both the maintaining and employing sides of DOD. The services exercised vetoes over JCS advice and controlled the weak unified commands. As a consequence, joint institutions failed to become strong and effective.

Making de Facto de Jure

With Goldwater-Nichols, Congress again tried to realize the legislative model that emerged in 1958. Though some titles of the act modified the military departments and defense agencies, the most fundamental provisions were designed to strengthen joint positions and organizations. The act designated the Chairman as the principal military adviser, established a Vice Chairman, created a joint personnel system, and empowered CINCs. It attempted to make de jure and de facto more nearly one and the same.

Because Goldwater-Nichols emphasized joint institutions, one could regard jointness as the animating characteristic of defense organization. That would be a mistake. If jointness were the basic organizing principle, a general staff with a single chain of authority might be the concept for DOD. Congress focused on joint institutions to achieve a counterpoise to the services suggested in the legislative model. The balance between maintaining and employing—input and output—serves as an organizing principle. Eisenhower conceptualized, and the law had anticipated, this balance in 1958. Twenty-eight years later, the Goldwater-Nichols Act made it possible.

—Archie D. Barrett
Principal Deputy Assistant Secretary of the
Army for Manpower and Reserve Affairs

Services, "All commentaries and after-action reports on [Desert Shield/Desert Storm] attribute the success of the operation to the fundamental structural changes in the chain of command brought about by Goldwater-Nichols."

Commensurate Authority

Congress found the combatant commands to be weak and unified in name only. They were loose confederations of powerful service components. The services used *Unified Action Armed Forces* to strictly limit the authority of CINCs and give significant autonomy to service component commanders. This situation had prevailed throughout the postwar period as evidenced by a Blue Ribbon Defense Board report in 1970 that found unification of "either command or the forces is more cosmetic than substantive."

To correct this violation of command principles, Congress specified the command authority of CINCs. The Goldwater-Nichols Act addressed the command functions of giving authoritative direction, prescribing the chain of command, organizing commands and forces, employing forces, assigning command functions to subordinate commanders, coordinating and approving aspects of administration and support, selecting and suspending subordinates, and convening courts-martial.

In prescribing the authority of CINCs, Congress modeled the law on the authority which the military had traditionally given to unit commanders. Initial service claims that the legislation would make combatant commanders into warlords quickly vanished as the soundness of balancing authority and responsibility at CINC level—in line with military tradition—became apparent. It is now widely agreed that Goldwater-Nichols has achieved its objective of balancing the authority and responsibility of the combatant commanders. The effective performance of these commands in operations and peacetime activities provides convincing evidence in support of this judgment.

A minority view urges increased authority for the combatant commanders through a greater role in resource allocation. Not wanting to overly divert these

commands from their principal warfighting function, Congress intended that the Chairman and Joint Staff would be activists on behalf of the commands' resource needs. This approach still appears preferable to any scheme that would require greater involvement by the combatant commands.

Strategy Making and Planning

The two Armed Services Committees determined that planning in DOD was underemphasized and ineffective. Such planning was often fiscally unconstrained, and strategy and resources were weakly linked. Contingency plans had limited utility in crises, often because they were not based on valid political assumptions.

To increase attention to strategy making and contingency planning,

to achieve more efficient use of defense resources, Congress looked to the Chairman

Congress formulated four principal provisions. First, it required the President to submit an annual report on the national security strategy. Second, it instructed the Chairman to prepare fiscally constrained strategic plans. Turning to contingency planning, Goldwater-Nichols required the Secretary to give written policy guidance for the preparation and review of contingency plans. This guidance would provide the political assumptions for planning. The fourth provision prescribed a role for the Under Secretary of Defense for Policy in assisting the Secretary in his work on contingency plans. Congress intended this last prescription to overcome the jealous guarding of contingency planning by the Joint Chiefs which had precluded sufficient staff support for meaningful review and direction by the Secretary.

The Goldwater-Nichols Act has increased attention to both strategy making and contingency planning. The quality of strategy documents has varied, but in every case their value has been superior to their pre-Goldwater-Nichols predecessors. The new national military strategy, which envisioned fighting two major regional conflicts nearly simultaneously, provided a

timely, thoughtful strategic response to the end of the Cold War.

Progress on contingency planning was modest until recently. OSD has been inconsistent in performing its responsibility to prepare contingency planning guidance. The continuing reluctance of the Joint Staff to reveal contingency plans—both deliberate and crisis—to civilian officials has blocked appropriate collaboration. Although DOD has surmounted these problems lately, the required interaction between policy and operational planners is not yet assured.

Resource Use

Testimony before Congress revealed that vague and ambiguous DOD objectives permitted service interests rather than strategic needs to play the dominant role in shaping resource decisions. The Secretary's resource management was also weakened by the lack of an independent military assessment of service programs and budgets.

To achieve its objective of providing for more efficient use of defense resources, Congress looked to the Chairman for an independent military perspective that had been lacking. Capitol Hill formulated six new resource-related duties for him. Two of the most important were advising the Secretary on priorities for combatant command requirements and on how well the programs and budgets of the military departments and other DOD components conformed with strategic plans and CINC priorities. The Chairman was also empowered to submit alternative program and budget recommendations to the Secretary.

Implementation has not achieved the potential of the Goldwater-Nichols reforms with the exception of General Powell's effective use of his resource advisory role in formulating the Base Force. Reducing the Cold War force structure by 25 percent represented the most significant and difficult resource issue faced by the Pentagon over the last decade.

Despite that critical contribution, Chairmen have seldom provided definitive resource advice to Secretaries of Defense. Recent developments could alter this. Admiral William Owens, while serving as Vice Chairman, instituted a number of innovative changes to improve the support by the Joint Requirements Oversight Council (JROC) to the Chairman's formulation of resource advice. Creating joint warfighting capability assessments represents a dramatic advancement in analyzing service programs against mission requirements.

Unfortunately, the JROC process could be misused. If instead of informing the independent advice of the Chairman JROC were used to prenegotiate issues in the old logrolling fashion, the military would come full circle to the wasteful, pre-Goldwater-Nichols days. Such an approach also raises the possibility of the services locking arms on significant resource issues to politically overpower the Secretary and Congress. If the Chairman permits these activities and surrenders his independent perspective, he will abandon the intentions of Goldwater-Nichols. As use of JROC in improving resource advice advances, the Secretary must guard against such unfavorable practices.

Joint Officer Management

The 1985 report on *Defense Organization* concluded that, "military officers do not want to be assigned to joint duty; are pressured or monitored for loyalty by their services while serving on joint assignments; are not prepared by either education or experience to perform their joint duties; and serve for only a relatively short period once they have learned their jobs." Viewing the Joint Staff and headquarters staffs of unified commands as the most important military staffs within DOD, Capitol Hill found this situation to be intolerable.

Title IV of Goldwater-Nichols established procedures for selection, education, assignment, and promotion of joint duty officers. Congress and DOD fought the last Goldwater-Nichols battles over these provisions. The services resisted a joint officer personnel system since they knew that loss of absolute

control of officer promotions and assignments would weaken their domination of the Pentagon. Congress was equally determined since it had concluded in *Defense Organization*, "The current system results in incentives to protect service interests rather than to think in joint terms. Joint thinkers are likely to be punished, and service promoters are likely to be rewarded."

The joint officer incentives, requirements, and standards prescribed by the act have notably improved the performance of those selected to serve in joint duty assignments. Secretary Cheney judged in his recent interview in *Proceedings* that the requirement for joint duty "prior to moving into senior leadership positions turned out to be beneficial." He also felt that as a result of joint officer policies "the Joint Staff is an absolutely vital part of the operation."

General Schwarzkopf found the same result in his command. Of his subordinates during the Gulf War, he told the Senate Committee on Armed Services, "the quality of the people that were assigned to Central Command at all levels changed dramatically as a result of Goldwater-Nichols."

These positive results were achieved despite indifferent implementation of the joint officer provisions by OSD and the Joint Staff. The failure over the last decade to develop a DOD directive to govern the joint officer management program confirms a lack of commitment on the part of top civilian and military organizations. The services were not indifferent. They made vigorous efforts to minimize the impact of the legislation on their interests. Senior joint officers—the beneficiaries of improved joint staffs—took little interest in the issue. The Chairman when Goldwater-Nichols was enacted, Admiral William Crowe, later wrote of his unfavorable view of title IV:

... the detailed legislation that mandated every aspect of the "joint corps" from the selection process and the number of billets to promotional requirements was, I believe, a serious mistake that threatened a horrendous case of congressional micro-management. In this instance the chiefs were unanimous in their opposition, and I agreed with them wholeheartedly.⁷



Advancing on Iraqi position during Desert Storm.

U.S. Army (Joel M. Torres)

Not surprisingly, Joint Staff implementation of title IV was sympathetic to attitudes of the services for many years.

Congress had hoped that the department, after several years of implementing title IV, would conceptualize a better approach to joint officer management. That has not occurred. The Goldwater-Nichols objective of improving joint officer management has been achieved, but DOD still lacks a vision of its needs for joint officers and how to prepare and reward them.

Operational Effectiveness

For forty years after World War II, service separateness denied the defense establishment the unity to conduct joint warfare. In 1983 Secretary James Schlesinger described the problem:

*In all of our military institutions, the time-honored principle of "unity of command" is inculcated. Yet at the national level it is firmly resisted and flagrantly violated. Unity of command is endorsed if and only if it applies at the service level. The inevitable consequence is both the duplication of effort and the ultimate ambiguity of command.*⁸

As was pointed out in *Defense Organization*, "operational deficiencies evident during the Vietnam War, the seizure of the *Pueblo*, the Iranian hostage rescue mission, and the incursion into Grenada were the result of the failure to adequately implement the concept of unified command." Congress focused efforts on providing

CINCs with sufficient authority to both ensure unity of command during operations and effectively prepare for assigned missions. The act also assigned the Chairman responsibility for developing joint doctrine and joint training policies.

The overwhelming success of Just Cause and Desert Shield/Desert Storm revealed the extent to which the act had unified the Armed Forces. Shortly after the Gulf War, an article in *Forbes* noted, "The extraordinarily efficient, smooth way our military has functioned in the Gulf is a tribute to [Goldwater-Nichols], which shifted power from individual military services to officials responsible for coordinating them."⁹ The *Washington Monthly* added, "Goldwater-Nichols helped ensure that this war had less interservice infighting, less deadly bureaucracy, fewer needless casualties, and more military cohesion than any major operation in decades."¹⁰

Commenting on the impact of Goldwater-Nichols over the past ten years, Secretary Perry said in a speech last summer honoring Senator Sam Nunn, "It dramatically changed the way that America's forces operate by streamlining the command process and empowering [the Chairman] and the unified commanders. These changes paid off in . . . Desert Storm, in Haiti, and today in Bosnia."

Joint doctrine and training have experienced more modest progress. Of

the first generation of joint doctrine, the Commission on Roles and Missions of the Armed Forces critically declared in its 1995 report, *Directions for Defense*, "In many cases, it represents a compendium of competing and sometimes incompatible concepts (often developed by one 'lead' service)." The designation of U.S. Atlantic Command (ACOM) as joint force integrator, trainer, and provider has great potential for enhancing military operations. To date, parochial attitudes of the services and some geo-

parochial attitudes of the services and some geographic CINCs have hamstrung ACOM performance

graphic CINCs and weak support by the Joint Staff have hamstrung ACOM performance.

Management and Administration

Many of the provisions of Goldwater-Nichols focused on improving DOD management and administration. But in adding this objective Congress had in mind specific structural problems that were hindering sound management. These included excessive spans of control, unnecessary staff layers and duplication of effort, continued growth in headquarters staffs, poor supervision of defense agencies, and an uncertain division of work among defense components.

The Secretary's span of control especially concerned Congress. Forty-one senior officials and officers, excluding his deputy and staff, reported directly to him. To reduce this span, the act required the Secretary to delegate supervision of each defense agency and field activity to an OSD official or the Chairman. The Chairman's role as overseer of the unified commands also helped to lessen the Secretary's supervisory burdens.

Other provisions consolidated certain functions in service secretariats, limited the number of both deputy chiefs and assistant chiefs on the service staffs, reduced by 15 percent the size of the headquarters staffs of military departments including general

and flag officer positions, and cut some other staffs by 10 to 15 percent.

Goldwater-Nichols remedies for these management problems were largely ineffective. The defense bureaucracy remains far too large. Duplication of effort is still a problem. DOD also lacks a concept for the appropriate division of work among its major components.

In the broad sweep of American military history, the recent years have been remarkable for the frequency and scope of significant achievements and successes by the Department of Defense. Superb leadership played an important role as did the development of doctrine, training, education, and materiel that preceded the passage of the Goldwater-Nichols Act. Nevertheless, a significant body of evidence and numerous public assertions by senior defense officials and military officers argue that the act enormously contributed to the positive outcomes of recent years.

During the last decade, Goldwater-Nichols attained most of the objectives established for it, helping to transform and revitalize the military profession in the process. The act validated former Secretary Schlesinger's prediction that, "Sound structure will permit the release of energies and of imagination now unduly constrained by the existing arrangements." In some areas, developments inspired by the act are still evolving and adding more luster to the law's accomplishments. In a few others, the accomplishments still leave much to be done.

Secretary Perry used an historic yardstick in praising the law: "... [Goldwater-Nichols] is perhaps the most important defense legislation since World War II." And, while serving as Vice Chairman, Admiral Owens saw the legislation in even larger terms: "Goldwater-Nichols was the watershed event for the military since [World War II]." Those assessments by Perry and Owens do not reach back as far as Congressman Aspin's; but it is clear that, in accord with congressional expectations, the Goldwater-Nichols Act has profoundly enhanced the joint warfighting capabilities of the Armed Forces.

NOTES

¹ Archie D. Barrett, *Reappraising Defense Organization* (Washington: National Defense University Press, 1983), p. xix.

² John G. Kester, "The Office of the Secretary of Defense with a Strengthened Joint Staff System," in *Toward A More Effective Defense*, edited by Barry M. Blechman and William J. Lynn (Cambridge: Ballinger, 1985), p. 187.

³ U.S. Congress, Senate, Committee on Armed Services, *Defense Organization: The Need for Change*, committee print, Senate report 99-86, 99th Cong., 1st sess., 1985, p. 620.

⁴ "About Fighting and Winning Wars—An Interview with Dick Cheney," *U.S. Naval Institute Proceedings*, vol. 122, no. 5 (May 1996), p. 33.

⁵ Mackubin Thomas Owens, "Civilian Control: A National Crisis?" *Joint Force Quarterly*, no. 6 (Autumn/Winter 1994-95), p. 83.

⁶ Christopher Allan Yuknis, "The Goldwater-Nichols Act of 1986—An Interim Assessment," in *Essays on Strategy X*, edited by Mary A. Sommerville (Washington: National Defense University Press, 1993), p. 97.

⁷ William J. Crowe, Jr., *The Line of Fire* (New York: Simon & Schuster, 1993), p. 158.

⁸ U.S. Congress, Senate, Committee on Armed Services, *Organization, Structure and Decisionmaking Procedures of the Department of Defense*, hearings before the Committee on Armed Services, 98th Cong., 1st sess., 1983-1984, part 5, p. 187.

⁹ Malcolm S. Forbes, Jr., "Fact and Comment," *Forbes*, vol. 147, no. 6 (March 18, 1991), pp. 23-24.

¹⁰ Katherine Boo, "How Congress Won the War in the Gulf," *The Washington Monthly*, vol. 23, no. 10 (October 1991), p. 31.

This may be the last piece of legislation that I will have the honor to offer for consideration by the Senate. If it is, I will have no regrets. I will have had the privilege of serving in the Senate on . . . the day that our soldiers, sailors, airmen, and marines were given the organizational and command arrangements that will enable them to effectively accomplish their vital missions. . . .

—Barry M. Goldwater
September 16, 1986

Barry M. Goldwater represented Arizona in the Senate for 30 years. A major general in the U.S. Air Force Reserve, he was the Republican Presidential candidate in 1964 and served as chairman of the Senate Armed Services Committee during the debates on defense reorganization.



Bill Nichols, a Democrat from Alabama's 3rd district, died while serving his eleventh term in Congress. A combat veteran of World War II, he chaired the Investigations Subcommittee of the House Armed Services Committee during its 1983–86 work on military reform.

[This bill] fulfills the aims of President Eisenhower, who said almost three decades ago, "Separate ground, sea, and air warfare are gone forever. . . . Strategic and tactical planning must be completely unified, combat forces organized into unified commands. . . ." Congress rejected President Eisenhower's appeals in the 1950s. Today, 36 years later, we can now report: mission accomplished.

—Bill Nichols
September 11, 1986



Donning protective gear during Desert Storm.

U.S. Army

THE IMPACT OF **NBC Proliferation** on Doctrine and Operations

By ROBERT G. JOSEPH

**on balance, our words on
countering the NBC threat
have been stronger than
our deeds**

[Editor's Note: From October 1994 to September 1995, the Center for Counterproliferation Research at the National Defense University held a series of workshops to examine how service doctrine, operational concepts, and capabilities take into account the threat from the proliferation of nuclear, biological, and chemical weapons (NBC). The workshops represented the first time that the majority of constituencies in the defense establishment that are responsible for evaluating and designing military responses to proliferation were assembled. Collectively, the workshop series involved more than four hundred participants drawn primarily from the services but also included members of policy,

intelligence, research and development, and other organizations. Perhaps most unique, the workshops included broad participation from planners, operators, and trainers from all the services. Although the workshop recommendations, detailed in a number of reports, covered several broad areas—national military strategy, defense policy, and military capabilities—the central purpose of the series was to enlighten the operational context. Presentations, discussions, and gaming focused on service capabilities for joint and coalition warfare in NBC environments. This article presents those findings that are most germane to the further development of joint and service NBC doctrine.]

NBC proliferation is recognized as a serious threat across the operational spectrum—from the deployment of forces to post-hostility activities. References to NBC—frequently aggregated under the rubric of weapons of mass destruction (WMD)—appear often in policy and capstone statements such as the national military strategy and *Joint Vision 2010*.

At present NBC is also mentioned in service doctrine (for example, Army Field Manual 100-5 and Air Force Manual 1-1) as well as in more technical manuals on detection, decontamination, individual protection, and biological warfare/chemical warfare (BW/CW) shipboard defense. Aspects of the NBC threat are also the focus of joint doctrine publications, foremost among them Joint Pub 3-11, *Joint Doctrine for Nuclear, Biological, and Chemical (NBC) Defense*, which provides a general overview of NBC defense operations.

Furthermore, counterproliferation is being embedded in the planning process, as evidenced by the missions and functions study completed by the

Joint Staff in spring 1996. In addition, the geographic CINCs have been charged with implementing counterproliferation policy in their areas of responsibility. They are in the process of developing counterproliferation contingency plans to define how they intend to conduct counterproliferation operations. The Joint Staff is also working with the CINCs to assist them in identifying and developing those capabilities which they will need to accomplish their counterproliferation objectives.

As a framework for military counterproliferation operations takes shape, the Joint Staff and services are focusing on the doctrine, operational concepts, and training to better prepare our forces for operations in an NBC environment. Furthermore, on the policy level, the recent establishment of the Counterproliferation Council chaired by the Deputy Secretary of Defense illustrates high level interest in the NBC threat and the commitment to respond to that threat.

The above responses begin to address many deficiencies identified in the workshop series. Overall, the findings suggest that the response to the threat has been uneven. There are pockets of strength, such as procurement of passive defense capabilities at the individual level. There are also more recent areas of progress, mostly programmatic and focused on technology solutions, such as developing light-weight suits and improving our detection capabilities. But on balance, our words on countering the NBC threat have been stronger than our deeds.

The workshops surfaced a number of weaknesses in the areas of doctrine, force structure, training, and education. Identifying these weaknesses and recommending improvements were the main focus of this work. In that context, it should be noted that weaknesses do not mean that the joint community and services have failed to address the challenge. No one should expect them to have resolved all of the difficult problems associated with this complex and growing threat. That said, solutions will be found only when existing vulnerabilities are acknowledged and the Armed Forces begin to think comprehensively about how to overcome them.

Doctrine

For purposes of the workshop series, *doctrine* was defined as how we think about the conduct of war and the principles for conducting operations. The definition found in Joint Pub 1, fundamental principles that guide the employment of forces in support of national objectives, is entirely consistent with this working definition.

One deficiency common to service doctrine is the failure to understand how an enemy may employ NBC against us. Lacking such knowledge, doctrine is silent on this point; hence, concepts of

Chemical attack exercise at Camp LeJuene.



U.S. Marine Corps (C.D. Clark)



Decontaminating F-15 during exercise.

enemy NBC use are absent from the relevant documents and operational publications mentioned ear-

lier. In general, NBC concerns are confined either to very broad statements about the threat and need to plan against “weapons of mass destruction” or to detailed technical data on how to put on mission oriented protective posture (MOPP) gear and wash down contaminated ships. Between these extremes—doctrine, tactics, techniques, and procedures (TTP) for combat in various scenarios—there exists a relatively blank page on which we must focus our attention.

Only by embedding enemy use concepts in doctrine can the Armed Forces develop courses of action above the individual and small unit level to counter the NBC threat to U.S. forces. More specifically, because doctrine does not take into account enemy NBC employment concepts, we also lack TTP needed to overcome key vulnerabilities identified by operators and planners. These vulnerabilities include protection of facilities such as ports and prepositioning depots, large groups of personnel, and essential equipment and supplies; decontamination capabilities for large areas and sensitive materiel such as airfields and aircraft; and handling contaminated casualties and cargoes. Moreover, without such concepts,

we miss an opportunity to take advantage of the vulnerabilities in an enemy’s NBC posture.

Adversary employment concepts for conventional conflict are recognized as essential for the development of service and joint doctrine and operating principles for conventional defensive as well as offensive operations. Concepts of enemy conventional operations are fully embedded in doctrine, force development, and training. Failure to develop and embed similar concepts relating to NBC may expose forces in the field and fleet to risks that could have been mitigated had likely employment concepts been understood and corrective action taken.

Force Structure

A number of workshop participants emphasized the need to remedy identified shortfalls in force structure, especially for forces that would be called on for crisis response. Some questioned whether sufficient mobile detection vehicles were being acquired. Similar questions were raised about the biological integrated detection system (BIDS), and specifically its emerging employment concept which emphasizes forward deployment of scarce assets. Others questioned the planned level of on-hand stocks of MOPP gear in light of the requirement for possible suit changeouts every other day for forces and critical civilians needed to prosecute an operation abroad in a BW or CW environment.

Chemical Biological Incident Response Force (CBIRF) washing down M-93 FOX.



U.S. Marine Corps (C.D. Clark)

Participants also stressed the risks associated with the current heavy reliance on Reserve NBC defense units, again as with BIDS, particularly in contingencies such as Desert Shield that do not have the luxury of a buildup period. This would be especially true if the adversary were to use NBC early to deter the United States from intervening by posing the prospect of high casualties.

Finally, some participants questioned the organizational designs of service NBC-related units. For instance, in the Army (which has the preponderance of these units) the design of division level chemical companies appears to be incompatible with current responsibilities (such as smoke generation and NBC decontamination) which may be required simultaneously under foreseeable operational circumstances. In high tempo combat, commanders may be forced to limit the use of smoke as a battlefield obscurant to enhance force protection in favor of time-urgent decontamination. Because there are few of these specialized units in the force structure, commanders may be faced with an unacceptable dilemma. A similar circumstance may occur with Air Force civil engineering units assigned both base maintenance and aircraft and base decontamination missions. The question is not whether units need to be dual tasked but whether the current assignment of tasks, based on the Cold War model of conflict in Europe, is the most rational for regional NBC contingencies, and whether

these units have been properly prepared for their secondary NBC defense roles.

In this context, one related point that came up repeatedly was the assertion by Air Force representatives that the Army was responsible for decontamination of large areas, such as air bases. Army participants consistently responded that they had neither the mission nor the capability.

Training

Perhaps the most critical requirement for deterring NBC use, and for successful operations should deterrence fail, are forces fully trained across the NBC threat spectrum. Training converts theory into practice by preparing forces to accomplish their mission in an operational environment. While recognizing a number of improvements that have been made in establishing training standards and programs to enhance NBC readiness, such as training NBC defense experts from all services at Fort McClellan, this is an area of particular weakness.

Throughout the workshops the planners, operators, and even trainers themselves cited shortfalls in their own individual and unit training experiences. Most of those cited have been previously documented, such as in the DOD annual NBC warfare defense report to Congress and

by the General Accounting Office. These deficiencies deal with inadequacies in such basic but central areas as the inability to handle CW and BW casualties, improper wearing of masks, and the inability to operate detection equipment. Such inadequacies—which reflect the current concentration of training on individual protection and specialized units—are the subject for corrective action.



U.S. Marine Corps (C.D. Clark)

Evacuating exercise
"victims".

However, participants identified other key training shortfalls. At present, primary service guidance on NBC attempts to ensure that personnel maintain their proficiency in taking individual protective measures like donning protective garb. Specialized NBC defense units have adequate guidance to perform their unique technical functions such as decontamination. However,

training guidance is inadequate for producing the proficiency needed to operate in regional NBC environments

there is inadequate guidance within the services or from operational chains of command that defines tasks, conditions, or standards for more complex NBC activities

such as operational planning to minimize the potential effects of enemy NBC use. Even at highly instrumented Army combat training centers (CTCs) there are not adequate models or templates to train soldiers against likely enemy NBC use in future conflicts. The commanders of units undergoing training essentially determine the scope and nature of NBC play, if any, to be included in the scenarios by CTC controllers and opposing forces.

During the workshops service representatives candidly discussed difficulties encountered in training for operations in NBC environments

under current threat conditions. Training guidance within the services and combatant commands is inadequate for producing the proficiency needed to operate in regional NBC environments. Notably absent is useful staff training for developing combat campaigns and courses of action for operations involving an NBC-armed enemy.

All services need more realistic NBC events incorporated into individual, unit, and staff training. Current simulations, which form the basis of much individual and unit training, do not realistically depict potential NBC use in likely combat and non-combat contingencies. There was consensus that existing models and simulations inadequately portray the types of environments that could result from the NBC proliferation threat and, specifically, that its impact on land, sea, and air operations—as well as civilian populations—is routinely understated in wargames. One reason is that current models are not capable of providing essential information about CW and, especially, BW effects. In workshop games, red players saw NBC capabilities as important weapons to assail U.S. vulnerabilities and to reduce the significance of U.S. conventional technological superiority. The same players, when cast in the role of blue planners, consistently minimized the difficulties of operations in NBC environments.

Many participants also noted that there has been insufficient NBC play in joint and combined exercises. While measures are being undertaken to enhance joint training, little progress has been made in exercising with potential coalition partners. Yet coalition operations will likely be the norm for regional conflict. It is clear that, despite the deficiencies of U.S. forces in the NBC area, they are relatively better equipped and trained to operate in NBC environments than the forces of many if not all allies and potential coalition members. Therefore, combined exercises and training could provide a useful foundation for operations in the event of an actual conflict. It is essential to work in advance with allies in the region to ensure cooperation when hostilities begin.

On a more anecdotal basis, discussions in the workshops pointed to the potentially harmful effects of current NBC training practices. For example, most Army participants affirmed that they had trained for CW events. As the conversation developed, however, it became clear that the CW uses against which they trained were almost always limited and discrete events in a broader exercise. In almost every experience, U.S. forces were able to go around or through such use with little effect on operational tempo. Two explanations were given for why the play was structured in this

fashion: first, the chemical event could not be allowed to derail the larger exercise, and second, the commanders who believed they would be graded on the overall results of the exercise could not let the CW play affect the outcome.

If these observations reflect widespread practice, one must ask whether such experiences do more harm than good if they lead to a false sense of complacency that a clever enemy could exploit.

Education

A consensus of workshop participants from all services indicated that professional military education (PME) will be key to overcoming the NBC challenge in the long run. Put simply, in a

advanced courses on proliferation and counterproliferation reach only a small fraction of students

proliferated world involving regional conflict, future leaders must think differently about deterrence and defense. Senior service colleges have made notable progress in designing advanced courses on proliferation and counterproliferation. They reach only a small fraction of students, however. Most important, core curricula at these institutions require added emphasis on the political-military and operational implications of the NBC threat. At the intermediate and precommissioning levels, where student exposure to NBC issues is cursory at best, even more must be done.

To strengthen PME, the Counterproliferation Center at the National Defense University has designed a counterproliferation awareness game—in which players act as both red and blue team members on the operational level—that was used for the first time in April 1996 by the National War College. Other senior service colleges have expressed interest in adopting the game. This tool will also help inform us about enemy use concepts and, in turn, assist in developing doctrine.

NBC Challenges

Taken together, the workshop findings suggested a clear bottom line from which obvious challenges emerge. The first is to better know the enemy. Here, we need to think differently about intelligence requirements and tailor assets to the operational needs of the supporting services and combatant commands, placing more emphasis on enemy NBC operational concepts, employment doctrines, and capabilities. At the same time, it is essential to recognize that, although important, better intelligence alone is not sufficient.

Another promising tool is the creation of dedicated NBC red teams with the authority to challenge conventional thinking—both in terms of enemy use and U.S. responses. It is especially useful to have in place a disciplined process with dedicated professionals for critically examining alternative courses of action and capabilities. This tool can be applied by operators, planners, and trainers across a broad spectrum of activities, from identifying critical intelligence and counterforce capabilities for early deployment to planning for civil-military emergency response cooperation in contingency theaters of operation.

In the near term, interactive gaming can also be effective. Forcing U.S. planners and operators to think like the adversary is invaluable. The process can generate insights about issues that military planners and operators could face when confronting an NBC-armed opponent.

Finally, we need to think about NBC differently than we did in the East/West context. Today the likelihood that NBC will be used against us is much greater. A number of factors explain this. In the bipolar Cold War context, regional states were less free to pursue their own aggressive political, ideological, and in some cases religious objectives through the use of force. The current lack of discipline is compounded by the fact that proliferation

Biological Weapons Effects: What We Know				
LEVELS \ TYPES	"Real World" Data	Exercise Data	Experimental Data	Studies, Models, Simulations
People	●	●	●	●
Small Units	●	●	●	●
Divisions and Above	●	●	●	●
"Systems" (ports, airfields, etc.)	●	●	●	●
Civilian Populations	●	●	●	●

● Little or no reliable information ● Incomplete or nonconclusive information ● Generally good information/accepted as reliable

Chemical Weapons Effects: What We Know				
LEVELS \ TYPES	"Real World" Data	Exercise Data	Experimental Data	Studies, Models, Simulations
People	●	●	●	●
Small Units	●	●	●	●
Divisions and Above	●	●	●	●
"Systems" (ports, airfields, etc.)	●	●	●	●
Civilian Populations	●	●	●	●

is occurring in regions of vital interest to the United States, regions in which we have security commitments and forward-based forces.

In addition, within a regional context, the prospects for traditional deterrence succeeding—



U.S. Marine Corps (C.D. Clark)

Treating "casualty" under NBC exercise threat.

that is deterrence based on retaliation and punishment alone—are problematic and in fact are more likely to fail for several reasons: the absence of such conditions as mutual understandings and effective communications, the risk-prone strategic personalities of regional adversaries we are likely to confront, and the asymmetric nature of deterrence in a regional contingency where U.S. survival is not at risk but the enemy likely sees his own at stake, or at least that of his regime. This could prompt him to use NBC with little concern about the consequences.

Perhaps most significant is that the employment concepts of regional adversaries are also likely to be much different than those assumed about adversaries in the past. In this context, NBC capabilities are seen as weapons of the weak against the strong, as the only arms that can overcome the conventional superiority of the West. They are not seen as weapons of last resort, but rather weapons of choice to be threatened or used early in a conflict for political and psychological as well as military purposes. For this reason, understanding enemy concepts of use is central to the U.S. response to proliferation.

The second challenge is to better know ourselves. We will not have fully met it until we understand the effects of BW/CW on operations involving U.S. and coalition forces and develop appropriate concepts of operations based on solid

doctrine. A survey of existing data by the center indicates several major gaps in our knowledge base, such as effects of BW and CW use on units above the battalion level, on key nodes such as ports, and on civilian populations.

The accompanying illustrations (shown on the previous page) provide an overview of some of those weaknesses. The green symbols indicate that we have generally good data on the effects of CW on individual soldiers. This applies particularly to physically fit males because relatively little information exists on women. The red symbols tell us where we have very little or no reliable information about the effects of BW and CW, for example, on large unit operations.

The third challenge is to fully train and educate the force. Several suggestions have been covered earlier, from developing standards for larger units and complex tasks, to creating more realistic models for games and simulations, to the extensive use of red teams.

The fourth and final challenge is to design and equip forces to meet the new realities of the NBC threat. Key to this effort is integrating materiel and non-materiel initiatives. Since 1994, the U.S. Government has issued a Counterproliferation Review Committee report with details on the required technology initiatives, but non-materiel initiatives remain scattered. Not until a companion volume on non-materiel initiatives is prepared, and comprehensive doctrine developed, will there be essential guidance for defining the way we equip, train, and fight in an NBC conflict. **JFQ**

1st Combat Camera Squadron (James D. Mossman)



U.S. Air Force



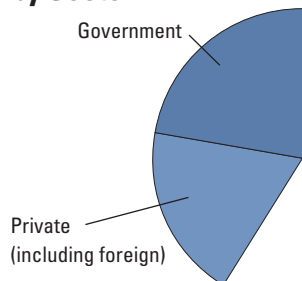
1st Marine Expeditionary Unit (Fidencio J. Hernandez)

USS Seawolf (John E. Gay)

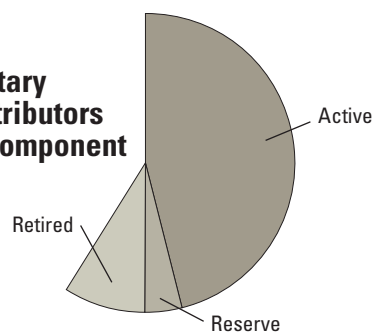


who writes for JFQ?

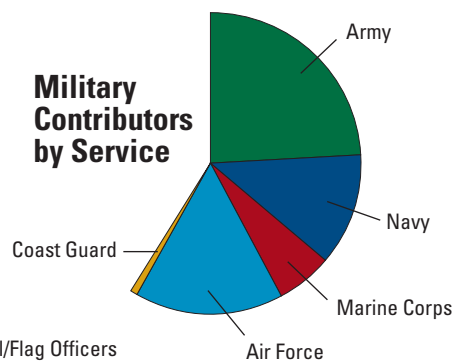
Civilian Contributors by Sector



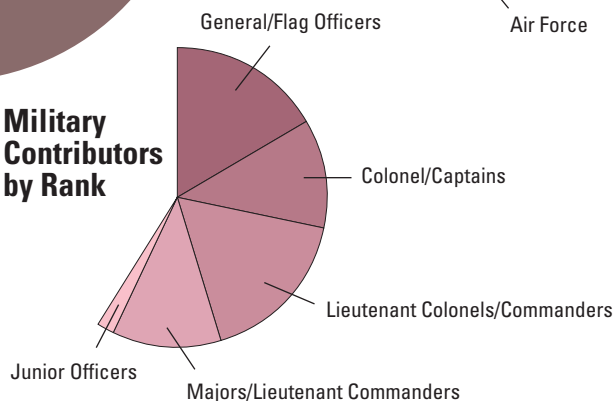
Military Contributors by Component



Military Contributors by Service



Military Contributors by Rank



A total of 594 individual authors have been published in *Joint Force Quarterly* over the last ten years. Collectively they have contributed 642 feature articles and book reviews. Approximately one out of every three unsolicited manuscripts submitted has been selected for publication in the journal. (For details on contributing to *JFQ*, see page 144.)



U.S. Air Force Historical Center

Keeping the Strategic Flame

By CARL H. BUILDER

B-17s on daylight raid over Germany.

Strategic thinking by the American military appears to have gone into hiding. Planning on the tactical and operational levels flourishes, but the strategic level is largely discussed in historical terms rather than as current art. Three decades ago, strategic thought burnt bright in the sanctuary of the national security temple. And for three decades prior to that—back to the 1930s—strategic theorizing dominated military debates in this country.

What happened? We cannot blame the demise of the Soviet Union since the strategic flame began to dim during the 1960s, a quarter century before most people believe the Cold War ended. It cannot be a decline in the defense budget, for we spend about the same amount in real terms today as at the height of strategic thinking in 1955.¹ Some may blame the Vietnam War when the military every bit as much as our civilian leadership seemed to lose its strategic compass. But the cause may lie deeper in military institutions. And even if it should be found, that may not motivate a revival of strategic thinking, for few lament its absence today.

Carl H. Builder is a senior staff member with the RAND Corporation and author of *The Icarus Syndrome*, an analysis of airpower theory in the evolution of the Air Force.

I would like to pursue three sets of questions about this paucity of strategic thinking:

- What is strategic thinking? How can it be distinguished from other kinds of military thought?
- What happened to strategic thinking? What caused its flame to wax and now wane?
- Why should we mourn the absence of strategic thinking today? What will it take to rekindle the flame?

I will argue that the strategic flame must be rekindled and kept alive. It has gone out twice before in this century to the Nation's detriment.

The Strategic Idea

The familiar terms *strategic* and *tactical*—which act as bookends on either side of the term *operational*—have accumulated lots of baggage in this century, and some of it must be jettisoned at the outset. The best way to do that is to start over. General Glenn Kent, the legendary Air Force analyst, sometimes admonished those who were

about to brief him that they could define terms in any way they wished, but he would hold them strictly to their definitions. To avoid

confusion, he urged briefers to use simple dictionary definitions. For the terms *strategic* and *tactical*, the ordinary dictionary definitions are close enough and strip away some of the baggage that encumbers them in military usage. But to sharpen the differences, a distinction should be made between strategic and tactical as separate kinds of endeavors (see figure 1). Note that these differences between strategic and tactical do not refer to types of weapons (nuclear or conventional), their range (intercontinental or theater), or the ways in which military power is applied (force, logistical, or surveillance).

Joint Vision 2010 is a current illustration of thinking tactically

These distinctions beg for some comparison with the term *operational*, which lies between strategic and tactical. By contrast with the other two, the operational enterprise has as its objective *providing the means*—getting the right things in the right amount to the right place at the right time. This operational quality of the American military has long been the envy of the world. Repeatedly during this century it has moved large land, naval, and air forces, set them up, and made them fully functional halfway around the globe. It required more than logistics or support. It meant knowing which units to send where and when in order to create complex military forces that could fight as well as defend and support themselves—precisely as they were organized, trained, and equipped to do—from the first to the last forces sent.

If the operational thinking of our military is secure and without peer, and if tactical thinking has come to the fore, strategic thought has been all but abandoned. The difficulty lies in seeing the strategic side of national security increasingly as the province of politicians and diplomats while the operational and tactical sides belong to the military, free from civilian meddling (for some evidence of this development, consider the examples outlined in figure 2).

The current demand by the military for well-defined objectives is eloquent evidence of how far our thinking has drifted toward the tactical domain. The insistence on operationally planning based on enemy capabilities, while tactically prudent, is the antithesis of strategic thinking, which should concentrate on enemy vulnerabilities. Although defeating enemy forces may sometimes be necessary to achieve our objectives, it is not always the Nation's or the military's best option.

Joint Vision 2010 is a current illustration of thinking tactically. It is largely about engaging an enemy with joint forces in the future—without evident purpose beyond fighting and winning.² It could instead have been about the different ways military power, through joint capabilities, might be brought to bear on the future spectrum of national interests. The military planning posture that came out of the Bottom-Up Review at the start of the first Clinton administration is a contemporary example of operational thinking. It explained (or argued) what kinds of forces in what amounts are needed where and when for two nearly simultaneous major regional contingencies. It is difficult to find current instances of strategic thinking from within the American military.³

The strategic flame is a metaphor for the grand idea that military power can sometimes be brought to bear most effectively and efficiently when it is applied directly toward a nation's highest purposes without first defeating defending

Figure 1. Redefining Two Familiar Terms

Term	Strategic	Tactical
<i>Objective</i>	Going to the heart of the matter Going for the jugular	Dealing with the matter at hand Playing the hand dealt
<i>Focus on</i>	Ends	Means
<i>Nature</i>	Transformatory	Engaging
<i>Style</i>	Game-changing	Game-playing
<i>In the game of chess</i>	Check and mate moves	Opening and castling moves
<i>In Vietnam</i>	Why we went there: Stopping the fall of south-east Asian dominoes	What we ended up doing: Trying to defeat an opposing military force

Figure 2. Examples of Strategic and Tactical Thinking

Strategic	Tactical
What are our national interests and objectives?	What is the military objective?
What are an enemy's vulnerabilities?	What are an enemy's military capabilities?
What will it take to achieve national objectives?	What will it take to defeat an enemy's military?
How can we most quickly go to the heart of the issue?	How should we best engage an enemy's military?

enemy forces. It is an enduring idea latent in the age-old precept of seizing the enemy capital, but one which was often frustrated by the interposition of defending forces. So long as military forces were confined to the surface of the earth and limited in mobility, as was the case prior to the 20th century, strategic thinking was mostly positional—the occupation of capitals, straits, ports, etc. Seizing or occupying such critical points was a strategic objective, but access could be denied or delayed by defending enemy forces that typically had to be defeated before any objectives were achieved. Thus, winning a war became the *sine qua non* for pursuing strategic aims. Little wonder that combat was seen as a noble contest among professional warriors over a prize, which was a disarmed or vulnerable opponent finally opened to the strategic designs of the winning state, which is pure Clausewitz.

The technological achievement of flight through the air and then in space provided the first plausible opportunity to test the existing barriers to strategic objectives. Strategic thinking became militarily actionable: national objectives could be achieved directly, without first defeating enemy forces. Airmen were the earliest to see, elaborate, and promote this idea. What made airplanes distinctive from surface forces was that access to strategic objectives could be sudden—a matter of hours or minutes with little or no warning—from any direction and to any place. As with surface forces, the interposition of defenses was still conceivable but not as certain. The agility and rapidly increasing speed of aircraft made the kinematics of defenses appear much less advantageous. The advent of ballistic missiles and space technologies in mid-century made defenses against strategic actions even more remote.

The strategic thinking made actionable by planes and then missiles was controversial from the outset. It first appealed mostly to aviation-minded people such as Smuts, Douhet, Trenchard, and Mitchell; but aviators such as Chennault and Moffett were skeptical of expansive claims by air strategists. World War II demonstrated these arguments in the European and Pacific theaters.

The Idea in Practice

Over Europe in the 1940s, British and American airmen played out strategic bombardment theories with results that ranged from failure at worst to ambiguity at best. “Bomber” Harris and “Hap” Arnold structured forces and mounted bombing campaigns around their respective ideas that the aircraft would always get through and the industrial base of the enemy war machine could be destroyed by precision daylight bombardment from self-defended bomber formations. Those ideas proved disastrous to aviators who tested them over Germany. Their bomber forces were too small to overwhelm enemy defenses; and they found themselves in an age-old battle with the defenders, precisely the clash the strategic theorists had promised they could avoid.

The British took up bombing at night to evade the worst of the defenses; and the Americans found themselves in a fighter-plane battle for control of daylight skies over Germany as Chennault had warned. It had become a war of attrition even in the air. By the time the United States built up its fighter and bomber forces enough to overwhelm German air defenses, the forces were diverted to support tactical objectives for the impending invasion of Europe.⁴ Thus the theory of strategic bombardment remained either incompletely tested (to airmen) or discredited (to the critics).

In the Pacific, a strategic campaign was carried out on land, under the sea, and in the air. Because of the “Europe first” policy adopted by Roosevelt and Churchill, the Pacific war had to be fought with an economy of force, not by attrition. On the surface, MacArthur and Nimitz pursued island-hopping campaigns to seize only bases needed to close on the strategic objective of Japan. They did not attempt to defeat the enemy en masse or to push back its entire perimeter. Under the sea, American submarines closed the waters around Japan to shipping⁵ instead of scouring open seas for enemy naval forces.⁶ In the air, both MacArthur and Nimitz used their air forces tactically to support strategic island-hopping campaigns that led to air bases within practical striking range of Japan. It was Curtis LeMay who then used such bases to strategically launch aircraft over Japan.



Loading equipment for
Desert Shield.

the strategic idea appeared finally to have come of age in the 1950s

After learning that the theory behind the development of the B-29 wasn't workable, LeMay completely subverted available means to pursue strategic ends. Since the combination of daylight bombing from self-defended formations at high altitude using high-explosive bombs could not gain the desired effect, he stripped the defensive armament from B-29s and flew them at night without formations and at medium altitude to maximize their loads of incendiaries. Whatever the legality or morality of such bombing, LeMay was clearly on the way to burning down every major Japanese city when the atom bomb punctuated his campaign with an exclamation point.

The Strategic Bombing Survey,⁷ conducted following World War II to validate or refute strategic bombardment theories, did not resolve the dispute, although the atom bomb now seemed to make the argument academic. It was obvious that even a few bombers armed with these atomic weapons could be enormously destructive; and defenses able to deny all the planes access to their targets seemed all but impossible. The advent of the ballistic missile, with access times measured in minutes rather than hours, simply compounded the problem of defense against strategic actions. The strategic idea appeared finally to have come of age in the 1950s.

But the strategic stalemate of the Cold War was bypassed in a series of conflicts in which strategic objectives were tempered by larger political considerations than fighting or winning wars.

In Korea, Vietnam, and elsewhere pursuit of strategic objectives, while technically and militarily feasible, was deemed too risky in its potential impact on other foes and domestic support. Even as strategic thinking defined the broader and more vital framework of the Cold War, it seemed useless for militaries mired in conflicts where the strategic options were arrogated to their civilian leaders.

In retrospect, however, strategic thinking did reappear periodically, sometimes in stunning forms—and not just in framing and sustaining the nuclear standoff at the nexus of the Cold War. While it may have been conceived as a tactical alternative at the time, the Berlin airlift of 1948 was a strategic masterpiece. It not only fulfilled its tactical objective of feeding and fueling the populace of Berlin (that is, dealing with the matter at hand); it *transformed* the game on the strategic level. The Soviets blockaded land routes to Berlin, believing that the West would have to choose between initiating hostilities (perhaps precipitating World War III) or abandoning Berlin. Supplying Berlin by air was inconceivable to the Soviets based on their own limited experience with airlift and the failed German effort at Stalingrad. What no one on either side seemed to recognize then or now is that an airlift would turn the tables and oblige the Soviets to initiate hostilities. That was check. When the sufficiency and sustainability of the airlift became apparent, it was checkmate. Thereafter, if the blockade was to be continued the West could only gain international admiration at the expense of the Soviets.

The Cold War yielded another transformative strategic action in the Cuban missile crisis. On the strategic (game defining) level, the struggle for world opinion focused on who was telling the truth about missiles in Cuba. The United States asserted their presence and the Soviet Union denied it. Both sides had predisposed supporters in the absence of contrary evidence. The aerial reconnaissance of Cuba, clearly revealing a build-up of Soviet missiles and facilities, transformed the debate. In a dramatic moment, Adlai Stevenson, the U.S. representative to the United Nations, posted the reconnaissance photographs for all the world to see and declared that he was prepared to wait until hell froze over for the Soviet explanation of the evidence. The aerial reconnaissance and public release of the photos (unprecedented at the time) was a strategic action—the pursuit of the Nation's highest purposes without first defeating enemy forces.

Note that both the Berlin airlift and the Cuban reconnaissance utterly transformed the

East-West games being played at the time; yet strategic objectives were accomplished not by force but with military capabilities that normally support fighting forces. These cases are stunning proof that the strategic use of military power does not always take the form of military force. Indeed, cases of strategic action during the Cold War which involved the use of force are much more ambiguous in their effectiveness. They include coercive and punitive raids on Hanoi and Libya—the first to bring the North Vietnamese to the negotiating table and the second to punish Kadhafi for presumed connections with terrorism. The pertinence and impact of both actions are still argued today.

When the Flame Is Low

With the end of the Cold War and the political constraints imposed by the risks of nuclear confrontation, one might have expected a renaissance in strategic thinking in the American military. It hasn't happened. Both the Persian Gulf War and Bosnian conflict have been approached mostly in operational and tactical terms. In the Gulf, only the first rapid deployments into the theater as part of Desert Shield prior to October

1990 were unambiguously strategic, at least as defined here. Protecting oil fields south of Kuwait was our first and highest interest; and that was accomplished by force deployments, not engaging and defeating enemy

forces. Subsequent interests—ejecting the Iraqis from Kuwait and ending the threat to the region—were largely approached operationally and tactically: Iraq's air defenses were temporarily neutralized and its air force shattered. Coalition ground forces were built up until they were capable of frontal assaults on Iraqi armies that had been weakened by aerial attacks. Even the Scud missile threat was dealt with tactically—offensively in Scud hunts and defensively by Patriot missiles—to keep Israel out and the coalition together, both of which were means, not ends.

Thus the Gulf War was not dominated by strategic actions; it was mostly a demonstration of operational and tactical virtuosity—precisely the sort of opportunity our military has increasingly sought from civilian leaders since Vietnam. Moreover, subsequent actions in the Gulf have been mostly tactical: punitive strikes against an intelligence facility and air defense installations. Two air embargoes have not stopped Iraq from either using helicopters or abusing its own minorities.⁸

The strategic ends to which our military power might be applied over Iraq today are not so

clear. Hence we default to a tactical use of force: beating up the opposition. The strategic problem is the Iraqi leadership, not its people nor its military; and separating these elements for the strategic application of military power is not easy. Airpower is thus applied to tactical ends, to taking down air defenses in preparation for what—other tactical applications of airpower? This is evidence that the strategic flame has dimmed.

Curiously, the American response to the Bosnian conflict may have demonstrated more by way of strategic thinking. Dropping supplies was the direct pursuit of one of our highest interests at the time—heading off winter starvation within the Muslim enclaves—without seeking to engage opposing forces. While the air embargo over Bosnia appears to have been no more effective than efforts over Iraq, Operation Deliberate Force may have been a direct factor in ending the fighting and bringing the Serbs to the bargaining table. Moreover, it appears that the strikes in Deliberate Force were not directed so much at military forces as at intimidating their leaders. We may have to wait for history to clarify the strategic thinking involved in the run-up to the Dayton accords.

Such examples and the definition of the strategic idea might suggest deliberate exclusion of fighting or surface forces. Not so. Throughout the Cold War, fighting forces—whether land, sea, or air, nuclear or conventional, whose presence and readiness served to deter conflict—were key to the grand idea that military power can sometimes be brought to bear most effectively and efficiently when it is applied directly to the highest national interests without first defeating defending enemy forces. That grand idea does not exclude applying military power directly against opposing forces if their defeat or destruction advances national interests. There are circumstances when that could conceivably be an end in itself, without further action, such as eliminating enemy capabilities for employing weapons of mass destruction. But the cases are few. Eliminating the Iraqi Republican Guards as a power base for Saddam Hussein might have been strategic in intent, but their power rested in their loyalty to him more than their arms. Thus their defeat on the battlefield may not have been a sufficient means to that end.

Israel seems to have appreciated the strategic use of military means for its highest interests in the 1976 Entebbe raid and the 1981 strike on the nuclear reactor near Baghdad. These probes were not about defeating enemy forces or winning a war; both were direct applications of military force toward national ends—recovering hostages and thwarting hostile nuclear developments.

military power can sometimes be brought to bear when it is applied without first defeating defending enemy forces

Nevertheless, the strategic role of fighting forces began to shift when nuclear weapons and global access became feasible in the mid-20th century. This time, the seminal strategic thinking seemed to spring from civilians rather than the military. Bernard Brodie was thinking strategically fifty years ago when he observed what nuclear weapons implied: “Thus far the chief purpose of our military establishment has been to win wars. From now on its chief purpose must be to avert them. It can have almost no other useful purpose.”⁹ At about that time, George Kennan suggested that our interests would best be served by “a long-term, patient but firm and vigilant containment of Russian expansive tendencies [until] the break-up or the gradual mellowing of Soviet power.”¹⁰ These ideas on deterrence and containment remained pivotal to our thinking about national security throughout the forty-year Cold War. Of course they would be modified and elaborated over time and in light of new developments, both political and technical. Containment was embellished with massive retaliation, flexible response, and détente. Deterrence was defined by criteria of assured destruction, extended to cover allies, and eventually mocked as mad. Concepts for massive civil defense and missile defense programs disturbed, but could not displace, deterrence as the strategic core of national security. Vestiges of that core are still found in operational thinking, in explaining the purpose of military forces—to deter enemies and, if that fails, to fight and win.

With the end of the Cold War and recession of an immediate nuclear threat to our survival, tactical thinkers may have anticipated that the military could get back to its real job—winning wars. Alas, as Martin van Creveld suggests, the relevance of traditional state-on-state warfare is declining in a world where proliferating nuclear technology is an inevitable consequence of global trade:

*Slowly, unevenly but inexorably, nuclear proliferation is causing interstate war and the kind of armed forces by which it is waged to disappear. The future belongs to wars fought by, and against, organizations that are not states. . . . Unless some yet to be designed system enables states to reliably defend themselves against nuclear weapons . . . the writing for large-scale, interstate war, as well as the armed forces by which it is waged, is on the wall.*¹¹

When the Flame Dies

The strategic flame can go out. It flickered twice in the past—both before and after World War II. It died with Billy Mitchell’s court martial

and the exile of upstart Army aviators to dusty posts in Kansas or fetid jungle camps in Panama or the Philippines to atone for their radical ideas. It briefly went out again when America demobilized after World War II and before the onset of the Cold War. On both occasions we had to scramble to rekindle it and rebuild new institutions from scratch. And, to our peril, we very nearly missed rebuilding in time.

Although our experience in rekindling the strategic flame is limited, a pattern is evident. It starts with a seminal strategic idea—how military power might be more effectively and efficiently applied to pursuing national interests without necessarily engaging defending enemy forces. That idea is then translated into strategic doctrine—rules or principles about the best way military power can be forged to pursue strategic objectives. The doctrine then becomes the objective specifications for developing military capabilities and drives the acquisition of new systems. This pattern could be recognized when the strategic flame was relighted at the Air Corps Tactical School in the 1930s and in the Strategic Air Command (SAC) in the 1950s.

As war clouds gathered over Europe in the 1930s, airmen at the Tactical School at Maxwell Field began to entertain the idea of economic targeting. It was a strategic idea in the sense defined here. It presumed that an enemy might be defeated by destroying critical economic activities—factories, industries, resources—supporting its war machine. But these airmen did not know how to execute that idea at first. They had to study national economies to identify economic targets; and they had to determine how to damage or destroy such targets. Their answer was precision aerial bombardment. But they went further doctrinally. To be precise they needed a better bombsight; and to see targets they had to bomb by daylight. To gain access to targets without first defeating defending enemy forces, they would need long-range bombers that could survive by flying at high altitude in self-defended formations. That doctrine drove development of the Norden bombsight and the acquisition of the B-17 Flying Fortress. Establishment of the semi-independent Army Air Forces followed as these capabilities emerged.

Strategic thinking came first, before the capabilities were in hand. Doctrine, development, acquisition, and institution-building followed logically. It can be argued that the strategic thinking at the Air Corps Tactical School was not sound, that the theory of economic targeting was beyond the means chosen by at least another decade—it would take a breakthrough in the destructiveness of weapons. But the validity of their theory is not the test for the existence of strategic thinking. No

Berlin airlift, 1948.



U.S. Air Force

Norden bombsight.



Northrop Grumman

seminal strategic thinking came from civilians like George Kennan and Bernard Brodie

one would suggest abandoning operational or tactical thinking if it sometimes proved wrong or reached beyond available technology. Airmen in that day were thinking strategically and thus laid the foundations for American security policies for the next half century.

The very same pattern was repeated in the emergence of SAC some two decades later. As the outlines of the Cold War began to take shape in the late 1940s, America's nuclear posture was in disarray: Neither the weaponry nor means of delivery had been maintained beyond research and experimentation. This time, the seminal strategic thinking came from civilians like George

Kennan and Bernard Brodie in the concepts of containment and deterrence. The military problem was how to implement the concept of deterrence. The solution was to make the threat of nuclear retaliation to an attack on the United States so evident, quick, certain, and massive that any rational enemy would be dissuaded from making such a mistake. But again it was strategic doctrine that drove developments, acquisition, and institutions. Central to SAC was the doctrine of a single integrated operational plan, the scheme to constantly maintain trained, tested, ready nuclear forces to execute a massive, coordinated nuclear attack upon the Soviet Union. That plan drove

the development of a series of bombers and ballistic missiles, tested their crews, and argued for requisite force levels. The institution that evolved became the military centerpiece of the Cold War; and its effects are still evident in military planning and culture today. SAC wasn't conceived to defeat an enemy air force; it was designed to fulfill the Nation's highest security objective directly—to deter a nuclear attack by the visible threat of unacceptable damage through a well-coordinated retaliatory strike. Nor was the fleet ballistic missile program conceived to defeat an enemy navy;¹² it was specifically designed to fulfill that same objective directly, but with an assuredly survivable force—one which denied the enemy any plausible counterforce option. As with strategic bombardment theories of the 1930s, deterrence theories of the 1950s may seem naive or simplistic today, but they were determinants of the path that led to the present; and they arose from strategic thinking.

Why Has the Flame Dimmed?

From the beginning—when the strategic flame burned most brightly during the first half of the Cold War—some worried that a traditional test of military weapons between armies and navies could force our hand—that we could be self-deterred from being the first to use our nuclear strike forces even as we suffered a traditional defeat. The Korean war lent credence to that argument.

Hence we built up other arms—conventional or tactical to differentiate them from nuclear or strategic—and thus started a destructive division in our minds and institutions that still haunts us. Tactical weapons grew until they dwarfed their strategic counterparts; they even acquired nuclear weapons and found a niche in nuclear war plans. At great cost, they provided the United States and

its allies with an uneasy degree of security in Western Europe and Korea. A warfighting role was even found for these conventional forces in Southeast Asia until we learned to our chagrin that they became hostages that could be extracted only after we resorted once again to strategic strikes against enemy will, values, and resources.

Nevertheless, the strategic flame was much reduced by our attention to conventional arms, not by funding so much as interests. The military has once again built up large vested interests in traditional weaponry—intended to defeat their opposite number in kind, to fight and win wars—to the neglect of other capabilities (such as special operations forces) that might be more directly and adroitly applied to the Nation's highest or ultimate objectives.

In order to retain and modernize traditional arms, our military institutions have contributed

ground. So the strategic flame has dimmed. If it is again extinguished by larger vested interests or neglect we may find ourselves struggling against time to rekindle it once more.

Relighting the Flame

What must be done to rekindle the strategic flame? Reduced resources pose difficulties, but they are not the problem. The flame can be kept burning with even a fraction of today's defense budget. But it can't endure without devotion and spirit. It is easy to have both when institutional fortunes are soaring and assets abound. Keeping faith in ideas rather than things is difficult when institutions and resources are focused on things. As in the case of those strategic pioneers at mid-century, strategic thinkers within the military today may get greater support from the public, from outside the defense establishment. That is altogether fitting, for keepers of the strategic flame serve the Nation even more than they do the institutions to which they belong.

The strategic idea can't always be applied successfully, as history has shown. Sometimes the available technical means are not up to the demands. And sometimes the ends are not apparent. Unfortunately for those devoted to things rather than ideas, new strategic means cannot be defined apart from evolving strategic ends. That was part of the trap into which we fell some fifty years ago by dividing forces along strategic and tactical (nuclear and conventional) lines. It is not that we lack the ability to define strategic means once the strategic ends have been defined; we neglect to spend the effort up front to define and pursue the strategic ends. It is the keepers of the strategic flame who must find strategic ends for applications of military power, for no others will assume that responsibility. It took hard work and acrimonious debate to define the ends for the strategic applications of military forces twice before—and it will again.

How do we attend to strategic ends before the demand arises? In the same manner that we did in the past. No one directed the Air Corps Tactical School to think about economic targeting. No one told LeMay that the means for deterrence was to be found in a comprehensive nuclear war plan. Thinking about strategic ends—and means to achieve them before a threat presented itself—rekindled the strategic flame and set it to burning brightly, at least back in those days.

Thinking about these ends seems daunting. Determinants of the future are in flux on many levels—national interests, resources, threats, and technology. During the Cold War those issues at



U.S. Air Force (Mervin Lynchard)

F-117 precision bombing.

to the reduction of the strategic flame. Once again, as occurred earlier in this century, the military—including the aviators—has become mostly rooted in the idea that weapons should be conceived to defeat their opposite numbers in a major regional conflict—with armies confronting armies and air forces opposing air forces. The Navy, with no other significant maritime power to defeat, has oriented itself on projecting power over the land from the sea. But this concept remains mostly operational in nature—about the kinds of units needed to provide presence and project power.¹³

For the most part, however, the mid-20th century strategic idea that a military can be used for something more pertinent than defeating its counterpart has been pushed into the back-

least seemed relatively constant; and we became good at hedging against uncertainties with rapidly changing technology. But it is no longer possible to depend on abundant resources or precisely know who or where an enemy will be or what will be required of our military to directly serve the Nation. Contemplating strategic ends across this spectrum can boggle the mind; but it need not if we think strategically instead of tactically.

The strategic applications of military power are about choosing the ways, places, and times to

**the burden of strategic thinkers
is to explore beforehand what
may be worth doing and why**

get at the heart of the matter. The initiative lies with us when we think strategically. The burden of strategic thinkers is to explore beforehand what may be worth doing and why. Not only in

war, but when friends are isolated—Berlin in 1948 and Bosnia in the early 1990s. Not just for war, but when we need to punish—Libya in 1986 or Bosnia in 1995. Not just to destroy, but when help is needed—the aftermath of Hurricane Andrew and Provide Comfort. Not just to strike, but to know what is going on—over Cuba in 1962 and Rwanda in 1996.

Future strategic challenges may include asymmetrical conflicts (as the first world confronts threats in the second and third), terrorism with no definable state roots, and ethnic, religious, and separatist movements. They may involve a proliferation of weapons of mass destruction beyond state controls. The world may see uncontrollable migrations and contraband as borders between nation-states erode. And all this may have to be addressed as traditional nation-state sovereignties and resources decline. Preparing for war, though still necessary, will be insufficient.

The strategic idea is arguably the most important military concept of this century as well as the next. It is a much bigger idea than the one that dominates our military institutions today—warriors being able to defeat other warriors of like kind. It is serving the Nation—more directly, effectively, and efficiently—not just testing new arms one against the other. History tells us that strategic thinking requires courage and perseverance: courage because it demands departures from mainstream thinking and perseverance because it takes time for institutional mainstreams to move and join the “discovered” innovative courses of thought.

JFQ

NOTES

¹ In 1955, when the United States was urgently preparing for imminent thermonuclear war with the Soviet Union, the defense budget was \$242.8 billion in 1995 dollars. In 1995 the amount was \$271.6 billion. From *The Budget of the United States Government for Fiscal Year 1996*, historical tables, reported in *The National Review*, vol. 47, no. 24 (December 1995), p. 21.

² For a reprise of JV 2010, see *Joint Force Quarterly*, no. 12 (Summer 1996), pp. 34–50.

³ Even the missile defense debate seems to reflect this point. Only the political discussion addresses strategic concerns, whilst military concerns are mostly tactical.

⁴ Not only were bombers diverted to tactical military objectives, the invasion itself had the tactical objective of destroying the enemy. Eisenhower's invasion order (written by himself) was to enter Europe and do just that. At the same time, other leaders advanced strategic objectives such as seizing Berlin (Stalin and Patton) and blocking Soviet occupation of Eastern Europe (Churchill) by invading through the Balkans.

⁵ Submarines were aided in that strategic objective by aerial mining, including a number of sorties flown by B-29 bombers then massing in the western Pacific.

⁶ The Japanese used submarines mostly for the tactical objective of sinking American naval vessels in open ocean areas of the western Pacific.

⁷ See David MacIsaac, *Strategic Bombing in World War Two: The Story of the United States Strategic Bombing Survey* (New York: Garland Publishing, 1976).

⁸ In fact, the only confirmed effect so far has been the shooting down of two American Blackhawk helicopters.

⁹ Bernard Brodie, editor, *The Absolute Weapon* (New York: Harcourt Brace, 1946), p. 76, as repeated by its author in *War and Politics* (New York: Macmillan, 1973), fn. 2, p. 377.

¹⁰ George F. Kennan writing as “X” in “The Sources of Soviet Conduct,” *Foreign Affairs*, vol. 25, no. 4 (July 1947), pp. 575, 582.

¹¹ Martin van Creveld, “Air Power 2025,” in *New Era Security* (RAAF Air Power Studies Centre, June 1996).

¹² Indeed, the Navy sometimes argued that the fleet ballistic missile program served the Nation more than itself and thus should not come out of the Navy budget. See Carl H. Builder, *The Masks of War: American Military Styles in Strategy and Analysis* (Baltimore: The Johns Hopkins University Press, 1989), pp. 199–200.

¹³ Department of the Navy, *Forward . . . from the Sea* (Washington: Department of the Navy, 1994).

Find each back issue of *Joint Force Quarterly* in the Joint Electronic Library

<http://www.dtic.mil/doctrine>

http://www.dtic.mil/doctrine/jel/jfq_pubs/index.htm



Of the 300,000 page-hits on the Joint Electronic Library each week, some 20,000 are received by *Joint Force Quarterly*.





U.S. Air Force (Jeffrey Allen)

The Second REVOLUTION

By JAMES STAVRIDIS



A paradox is emerging as the revolution in military affairs (RMA) moves ahead: the larger the magnitude of the revolution, the greater the possible long-term advantage to a potential enemy. Why? The answer lies in the second revolution.

The system of systems—a complete architecture of detection, selection, display, targeting, and attack—will revolutionize war. Related advances in information warfare will complement and enhance the progress made in the first revolution. We will adjust and integrate these developments with new organizations, doctrine, and tactics, techniques, and procedures, many of which will be integrated into the Armed Forces by early in the next century, and other industrialized nations will gradually follow suit. Indeed, some components are already entering service, and others are being aggressively purchased, programmed, and

Captain James Stavridis, USN, is a member of the Strategy and Plans Directorate (J-5), Joint Staff, and previously commanded USS Barry.

researched. Both doctrine and operational concepts are undergoing study and change. *Joint Vision 2010* makes it clear that we are on the leading edge of this first revolution, evolving the military

throughout military history for every action there has been a reaction, often stronger

for a “challenging and uncertain future.” We are moving into the first revolution.

But throughout military history—in fact, all of human history—for every action there has been a reaction, often stronger and usually more important. In military science this is translated into *offensive* and *defensive* weapons, tactics, and systems of war. At other times it is manifested in a revolution brought about by a sudden technological advance. Stone was superseded by iron and bronze as the materials of offensive weaponry; and fortifications were improved in response. Then came the rise of organized armies and the warrior on horseback as a weapons system until the cannon and gunpowder changed everything. Firepower improved, with revolutionary jumps such as the rifle, machine gun, and tank. The great defensive barriers of the early 20th century were countered by *Blitzkrieg*, the massive armored battleship was overtaken by carrier airpower, and one day the lethal ballistic missile may be rendered ineffective by a new defensive system.

While this analogy is not precise, it is possible to think of the journey of RMA from now to the early part of the next century as consisting of two distinct revolutions. The tide of the first is rising today and will crest shortly after the turn of the century. It is characterized by the system of systems, information warfare, dominant knowledge, precision weapons, sophisticated processing, display capabilities, low observables, smaller dispersed forces, and massed weapons effects.

The second revolution will likely be different. By watching the first revolution, an enemy may be in a position to “skim the cream” of its advancements while simultaneously moving into the second revolution. It may thus obtain much of the technology at substantially lower cost after the expensive researching, prototyping, and fielding are complete. That is the essence of the paradox: if the current revolution really is a radical process requiring major investment and an expensive and extensive force restructuring, we may be left with fewer resources to pursue a second revolution. The result may be a very expensive, highly capable, but distinctly first revolution force structure.

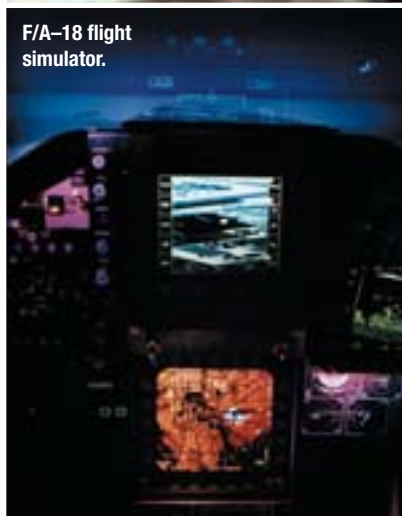
An enemy may have more efficiently moved on to a second revolution, taking advantage of our efforts to develop and field the first set of systems—because much of the technology involved in the first revolution is commercially applicable, dual use in character, and widely available—from the Internet to the classroom. We must never completely base our strategy on something that we cannot control; and the lesson to be drawn from interaction with technology is that the experience is far from controllable. We must recognize that actions today will drive participation in, and actually permit the execution of, the first revolution. But even as we pursue the first series of advances, we must consider and plan for the inevitable reaction—the second revolution.

The First Revolution

It is generally accepted that the first RMA proffers three key instruments of national power. The first is the *system of systems*, shorthand for the vast collective synergy achieved by melding formerly disparate means to establish battlespace awareness, command and control, and precision force.¹ Second and equally important is *extended information dominance*, the means to control bitstreams in the increasingly interdependent global information network. The third instrument—a corollary of the first—is known as *information warfare*, which can be defined as the capability to disrupt or override enemy information systems while defending one's own.²

The system of systems has received most of the attention in the RMA debate. It is marked by technologies, tactics, and organizations that allow for accurate wide-area scouting (unmanned aerial and undersea vehicles, overhead sensors, Aegis radars, JSTARS aircraft, acoustic sensors); essentially instantaneous data fusion (global command and control system, C⁴I for the warrior, linked combat centers); and precision massed fires (precision guided munitions, long-range strike, enhanced effect weapons). Combining these systems, the first revolution will provide dominant battlespace knowledge and the ability to take full advantage of it—dissipating if not eliminating the fog of war.³

Applying extended information dominance through “bitstreams” is a second characteristic that many associate with the first RMA. Providing information—instead of military capital stocks and troops—could enable us to better execute alliance obligations, undertake stand-off operations, and realize greater combat efficiencies. For instance, we could furnish both target information and surveillance through bitstreams to allies, who could then leverage their systems far more effectively in a region, such as by launching precision



U.S. Navy

Simulated aerial chemical attack, Roving Sands '97.

1st Combat Camera Squadron (James D. Mossman)

strikes or conducting peace operations based on distant surveillance systems.

Information warfare, also referred to as hacker warfare or cyber warfare (or commercially as information assurance), is the third emerging instrument. As national systems—from banking to electric power and communication—become increas-

ingly dependent on computer networks, a huge vulnerability arises. “Digi-criminals are already having a great time . . . the outlook for protection is bleak.”⁴ By using advanced software to attack enemy information systems, great advantages can accrue to the state or transnational actor best positioned for cyber warfare. Access may directly come from satellite broadcast via integrated computer networks, or the Internet itself. This could become the guerrilla warfare of the future.

Combined, these technologies comprise the first RMA: “a new paradigm of warfare, based not on attrition, but on the ability to paralyze

and shock.”⁵ These approaches and technologies will indeed revolutionize warfare by early in the next century.

Adversarial Reaction

While initially costly to research, develop, and field, many of the technologies of the first revolution will quickly become accessible. This is due to the extensive applicability of commercial technology inherent in the revolution. A potential enemy could recognize this fact and be able—with relative ease—to incorporate these rapidly disseminating elements of the first RMA into its force structure. “The low cost of many information age technologies will help potential adversaries improve their military capabilities as they learn to leverage these technologies effectively.”⁶

Both extended information dominance and information warfare will stem from computers. The knowledge that drives their implementation will be widely available on the Internet, through commercial publications, and by study at American and other Western institutions. Of particular significance will be access to display systems to fuse and organize information for easy access in smaller units—essentially the function of commercial information systems. Accelerating diffusion of

these technologies will be a prime element in the strategic construct early in the 21st century.

Likewise the system of systems, although large and complex, is intelligible and applicable to an enemy through its component parts: "The

**the system of systems is
intelligible and applicable to an
enemy through its component parts**

larger the system,
the smaller and
more powerful the
important individ-
ual parts."⁷ But an
enemy would be

left with the problem of countering these portions of the first RMA that are too expensive for them to acquire. This could lead to an endless cycle in warfare: an enemy discovers ways to fuse what it can afford from the *first* revolution with new ideas, technologies, and concepts—thus creating a *second* revolution in military affairs.

The Second Revolution

Although it is difficult to identify all the systems that will survive and become central to the first RMA, it is evident that precision weapons, advanced sensors, low observables, sophisticated networks, and information systems will predominate. The challenge is to determine what might be central to a second revolution. One approach to this problem is to examine the broad categories of technology and military-science application in the first revolution and then seek counters to them. It is also important to identify areas of study that may be under-represented in the first revolution. Looking at counters to the first RMA is particularly instructive and will probably provide the best point of departure (see the accompanying figure which lists points and counterpoints).

First, an enemy would seek to place many key command and control nodes underground. They would be joined through hardened or buried connectivity links. Other nodes would probably be located at sites that are politically difficult to attack such as hospitals, schools, and marketplaces. Their nodes would also be small and highly dispersed across large areas, perhaps in kiosks located in urban centers and towns around the country. Mobility and inexpensive forms of stealth would be incorporated in their design and placement.

Second, many enemies would explore biological advances that have warfare applicability. Chemical and biological weapons are the most obvious threats; but beyond such essentially simple weapons general advances in this field over the mid to long term may dwarf the importance of first revolution systems. Human performance enhancers—particularly those that provide the ability to process enormous levels of data and rapidly make coherent decisions—may be the most significant advances. Stimulants, narcotics,

anabolic agents, glycoprotein hormones, and beta blockers have battle potential. Moreover, the medical literature states that "three areas of genetics hold particular promise: gene identification, disease susceptibility, and gene therapy."⁸ The fusion of enhanced human abilities with new technologies may be a central element of a second revolution.

Third, a second revolution enemy could skim the cream from the advancements of the first. Then it would have highly precise self-navigation units, reasonable levels of computational power, and somewhat sophisticated capabilities to undertake regional information dominance. This enemy would likely have some ability to deliver precise weapons, although it would probably not have extensive military capital stocks of these assets. It would have developed operational concepts that optimize the use of a few expensive and highly precise systems by mixing them with area strikes by far less expensive weapons. In addition, this enemy might have antisatellite systems, dazzlers to use against our optics, and effective jamming and counterjamming devices.

A fourth category that must not be overlooked is the capability of an enemy to use simple, cheap intelligence systems—and lots of them—to counter first revolution systems. For example, hundreds of fishing boats with only a few carrying intelligence and navigation suites could operate in the littorals acting as markers. Civilian

The Second Revolution

COUNTERS	
First Revolution	Second Revolution
precision strike	hardening burying dispersing multiplying
information warfare	primitizing isolating counterattacking
dominant maneuver advanced sensors	responsive maneuver blinding dispersing multiplying
quality	quantity mass
centralized display	diffused display

NEW ELEMENTS OF THE SECOND REVOLUTION

biologics, advanced materials, and nonlinear
scientific advances



Predator UAV over
USS Carl Vinson.



M-2 Bradley digital
equipment.

13th Public Affairs Detachment (Richard Puckett)

U.S. Navy (Jeffrey S. Viano)

aircraft, both rotary and fixed wing, could operate in and among high-tech aircraft. In certain situations such primitive systems can be extremely effective, particularly in conflicts fought at a threshold below full regional war.

A fifth concern is the massive use of cheap, crude, but potentially effective cruise missiles and mines (at sea and on land). Even an Aegis system or Patriot battery can be quickly depleted of anti-cruise missiles. Mines are a challenge. Flooding landing zones or littoral seas with them can be an effective denial strategy. Bases for forward forces can be closed by placing large numbers of crude but relatively inexpensive explosives at key points. Destroying or denying something goes a long way toward controlling it.

Weapons of mass destruction, from low-yield tactical nuclear devices to the next generation of chemical and biological weapons, are a possible sixth area of concern. We must not assume that an enemy will be constrained from using such weapons because of our superior nuclear arsenal. It may think we would not respond with nuclear strategic strikes against limited first use of chemical, biological, or tactical nuclear warheads—and it would probably be right. For example, an enemy could indicate that it would employ tactical nuclear, biological, or chemical weapons only at sea, perhaps constraining our ability to respond with strikes on their population centers and effectively limiting our use of similar weapons to the same area.

Seventh, second RMA advancements in armor and materials may eventually counter first revolution systems and pose a significant challenge. Advances in ceramics, steel alloys, polymer

composites, and thermoplastic resins hold extraordinary promise. Such scientific innovations will be shared over the Internet and openly taught at American universities. Pre-lubricated surfaces, nylon composites superimposed on steel, diamond coated bearings, and other materials may play in the second wave of RMA technology. All the precision and display capability in the world will not be of use if targets are hardened beyond the ability of such systems to destroy them.

There will also be new operational concepts associated with the second RMA, constituting an eighth area of interest. Clearly, if the central organizing tenet of the first revolution is maneuver warfare, tactics will be developed to counter that approach. What could be called “responsive maneuver” may evolve, which could combine static defenses and rapid counterattacks that seek to

flank, isolate, encircle, and kill maneuvering units. Entrapment and wide-area ambush tactics may develop beyond current levels of expectation. Although today we are enamored with precision and maneuver, the endless competition in

the second revolution like the first will generate new doctrine, tactics, techniques, and procedures

warfare of precision versus mass—often manifested in new tactics—tells us that more change lies ahead. The second revolution like the first will generate new doctrine and new tactics, techniques, and procedures.

Finally, we must not overlook longer term research that goes beyond a second revolution for a truly nonlinear discovery that utterly and instantly changes the calculus of warfare. Given the acceleration of technological advance, it may be possible to leap ahead to ideas that are only dimly glimpsed today—concepts that bend the laws of physics beyond the horizon of common thought. Hyperpropulsion, optics, biologics, control of the electromagnetic spectrum—the possibilities are endless. This may be an area for hedging through research and highly limited prototyping.

In a general sense, the essence of a second RMA is the application of asymmetrical warfare against the United States, which is the leader in first revolution technologies and systems. This is a reverse of the competitive strategic approach that was pursued in the mid-1980s during the climax of the Cold War. While such actions are unlikely to endanger our existence, they can threaten our critical national interests in an increasingly interdependent world. The second revolution may thus provide an enemy with a great deal of asymmetric leverage—that is, influence out of proportion to political, economic, and military strength.

In sum, we must continue our progress through the first revolution. This course of action provides the best hedge against a range of challenges that may confront us in the next century. At the same time we must consider the courses enemies may pursue to achieve a second revolution as they search for asymmetric leverage. Accordingly, we should:

- Set up analysis cells to explore possible decisions by enemies with regard to first and second RMA systems. This should be done independently by the services, Joint Staff, Defense Intelligence Agency, Central Intelligence Agency, etc. The results then need to be compared, fused, and incorporated in upcoming strategic and procurement activities, including those stemming from the quadrennial defense review.

- Evaluate potential second revolution systems for research, development, and fielding. These technologies might include biologics and advanced materials. Nonlinear accelerations in technology and science should be considered.

- Develop operational concepts to overcome potential enemy responses, such as the cycle of maneuver countered by responsive maneuver, responding to primitive systems and tactics, and exploring anti-mass/quantity strikes against fewer though more precise and omniscient systems.

- Recognize that the first revolution will include some costly mistakes, miscues, and maldeployments. Patience will be required in fielding first wave systems, then adapting them to the second revolution.

- Develop a hedging strategy to react as the second revolution accelerates.

During the early debate over the revolution in military affairs, Admiral William A. Owens, the former Vice Chairman, indicated that “the problem with deep, fast, and rampant innovation is not getting people to accept the new but to surrender the old.”⁹ Ironically, that same sentiment can be applied to our preoccupation with the first revolution as a second looms on the horizon. **JFQ**

NOTES

¹ William A. Owens, “The Emerging System of Systems,” *Military Review*, vol. 75, no. 3 (May–June 1995), pp. 15–19.

² Institute for National Strategic Studies, *Strategic Assessment 1996* (Washington: National Defense University, 1996), pp. 185–90.

³ William A. Owens, “The American Revolution in Military Affairs,” *Joint Force Quarterly*, no. 10 (Winter 1995–96), p. 37.

⁴ Arjen Lenstra, “Communication,” *Spectrum* (January 1996), p. 32.

⁵ Thomas G. Mahnken, “War in the Information Age,” *Joint Force Quarterly*, no. 10 (Winter 1995–96), p. 40.

⁶ David S. Alberts, *The Unintended Consequences of Information Age Technologies* (Washington: National Defense University, 1996), p. 10.

⁷ John Naisbitt, *Global Paradox* (New York: Morrow and Company, 1994), p. 12.

⁸ Ed McCabe, “Medical Genetics,” *Journal of the American Medical Association*, vol. 274, no. 23 (June 19, 1996), p. 1819.

⁹ Owens, “Revolution in Military Affairs,” p. 37.

This article is an edited and abridged version of an entry that received first prize in the 1996 JFQ “Essay Contest on the Revolution in Military Affairs” sponsored by the National Defense University Foundation.

General John M. Shalikashvili, USA

Chairman of the Joint Chiefs of Staff

(October 1993–September 1997)

JFQ is intended to stay at the vanguard, to raise and air controversies, to tell us what we don't understand. Since World War II we have moved a long way toward jointness. It has been a prolonged march, punctuated by occasional disagreements, but ushered by a recognition that unity is dangerous as a battlefield advantage over disunited opponents. But jointness is not a science, it is surely not static, and the march is by no means over.

We need this journal, we need it to be open-minded, and above all it must be accessible. When you think back to General Billy Mitchell's frustrating crusade to educate the Armed Forces about the dawn of airpower, General George Marshall's tireless efforts to form a unified military establishment, or the more recent efforts by our own Congress—in the face of considerable military stubbornness—to formulate and pass the Goldwater-Nichols Act, it only emphasizes why we need JFQ. There is always room for improvement and there is a ceaseless challenge to adjust to new developments.

—JFQ, Issue 3 (Winter 1993–94)

Support Hope.



U.S. Air Force (Andy Dunaway)

Grenada, Panama, and Haiti



Moving inland, Grenada.

U.S. Army (Jon E. Long)

Joint Operational Reform

By RONALD H. COLE

Three joint operations in the Caribbean—Urgent Fury in Grenada (1983), Just Cause in Panama (1989–90), and Uphold Democracy in Haiti (1994–95)—reveal substantial limits as well as progress in joint planning and execution as a result of the Goldwater-Nichols Department of Defense Reorganization Act of 1986.

Questions on the effectiveness of joint operations began in Vietnam. After retiring General

David Jones, USAF, who was Chairman of the Joint Chiefs of Staff from 1978 to 1982, described that war as “our worst example of confused objectives and unclear responsibilities in Washington and in the field. Each service, instead of integrating efforts with the others, considered Vietnam its own war and sought to carve out a large mission for itself.”¹

Jones had experienced the fallout from a joint operation conducted in April 1980 that failed to rescue American hostages from the U.S. embassy in Tehran. Hampered by lack of joint training and inadequate command and control, the effort was aborted after the mechanical failure

Ronald H. Cole serves in the Joint History Office and has written studies on Urgent Fury and Just Cause and is co-author of *Roles of Federal Military Forces in Domestic Disorders, 1878–1945*.

of three helicopters. As a Navy helicopter prepared to return, its rotor struck the fuselage of an Air Force transport; eight men died and four were severely burned.

If the Vietnam War and the Iran rescue mission provoked thought on joint reform, events in Lebanon and Grenada in late 1983 sparked action.

lack of detailed intelligence on Grenadian defenses compelled planners to opt for a sudden attack with overwhelming force

In October of that year a terrorist truck bomb killed 241 marines in Beirut. The concentration of all marines in one building and restrictions on aggressive patrolling made them easy

targets. An investigation revealed that a cumbersome chain of command, unclear objectives, and inconsistent guidance placed them in unnecessary danger.

Grenada

It was, however, the operational mishaps in Grenada that established the clearest need for reform. On October 12, 1983 militant Marxists overthrew a moderate Marxist government on the island of Grenada and executed its leaders. The Department of State informed the Joint Staff of the danger to six hundred American medical students living in the country. Determined not to repeat the humiliation of Iran, on October 20 the National Security Council (NSC) ordered planning for a military operation to evacuate the students.²

Although the joint task force (JTF) accomplished its mission, things went wrong. Troops had to use tourist maps, Army and Marine operations were poorly coordinated, and lack of radio interoperability led to casualties among the civilian population and friendly forces. In the words of one member of Congress, "The mission was accomplished, but it was a good deal less than . . . totally successful. . . . It took some luck, an overwhelming force ratio, and we lost more equipment than we should have."³

At the NSC meeting the Chairman of the Joint Chiefs, General John Vessey, USA, warned that Grenadian soldiers and armed Cuban construction workers might resist. He persuaded NSC to expand the rescue mission to include disarming the Grenadian troops (1,200 regulars and 2,000–5,000 militia), deporting the 250 Cuban construction workers, stabilizing internal affairs, and maintaining the peace. He also

persuaded Secretary of Defense Caspar Weinberger to direct the commander in chief of U.S. Atlantic Command (CINCLANT), Admiral Wesley McDonald, to divert the *USS Independence* carrier battle group and Marine Amphibious Readiness Group 1–84 to the Caribbean for possible intervention.

On October 22 Weinberger inserted Vessey into the operational chain of command. Under the Chairman's direction the Joint Staff coordinated CINCLANT planning with the services. Lack of detailed tactical intelligence on Grenadian defenses compelled planners to opt for a sudden attack with overwhelming force. They hoped swift seizure of key enemy command and control facilities coupled with the quick removal of potential hostages would end the crisis with few casualties.

Grenada is twice as large as the District of Columbia with varied terrain and targets. The nearest available force, a battalion landing team of 1,800 marines, was too small to conduct a *coup de main*. The Joint Chiefs agreed to a joint operation whereby Army airborne troops would be flown from Fort Bragg and naval forces would deter Cuban interference and provide air and gunfire support.

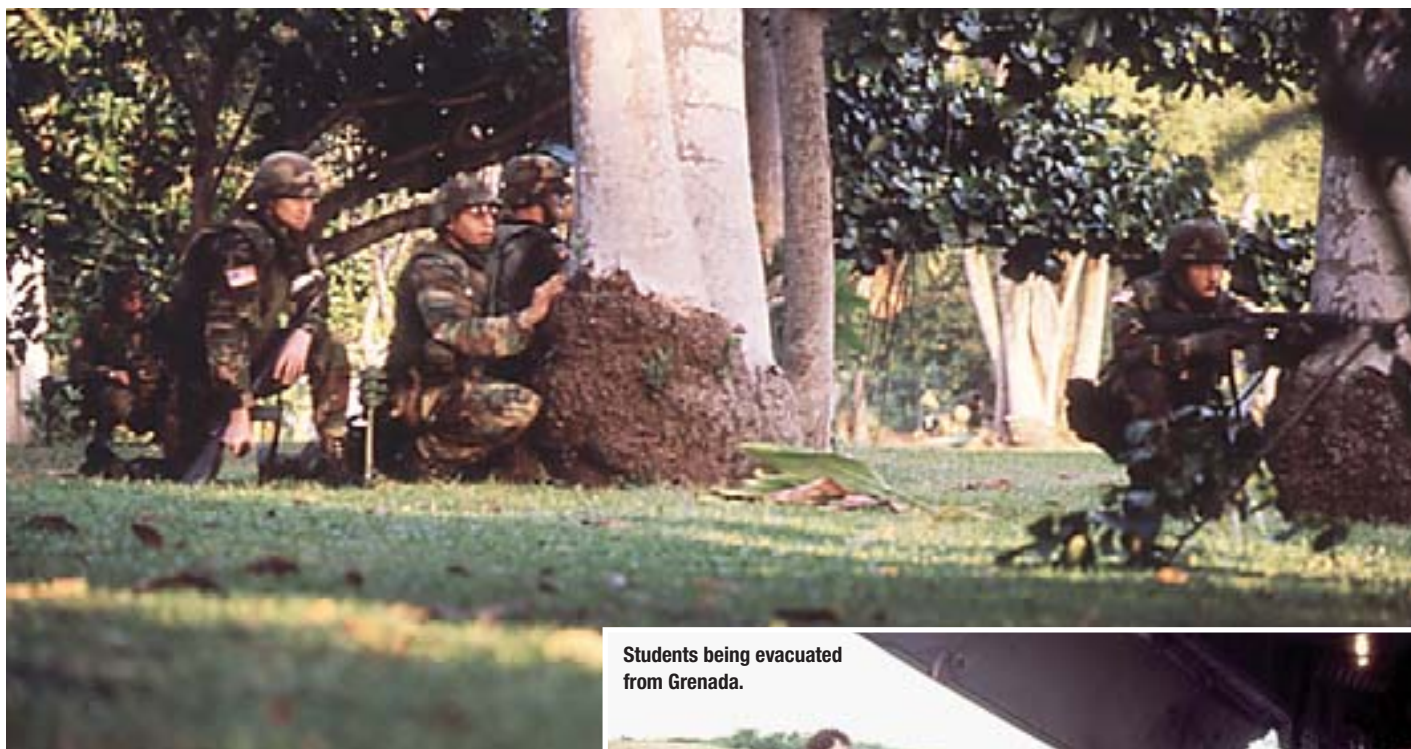
During a review by the Joint Chiefs of the CINCLANT plan on October 23, Vessey drew a tactical boundary dividing Grenada into northern (Marine) and southern (Army) sectors. He also selected two seasoned officers to help U.S. Atlantic Command conduct the joint ground operation. With its focus on maintaining the sea lines of communication with Europe in the event of war, the command lacked experience in directing ground combat involving Army troops with Air Force support. Major General Norman Schwarzkopf, USA, who then commanded the 24th Infantry Division (Mechanized), would serve as advisor (later deputy commander) to the JTF commander, Vice Admiral Joseph Metcalf. Vessey sent the vice director of the Joint Staff, Major General George Crist, USMC, to coordinate the ground operation with the efforts of the United Nations and the Organization of Eastern Caribbean States to reestablish democratic rule.

The operation began at 0500 on October 25. The Marines faced little resistance at Pearls and Grenville on the east side of Grenada. A malfunction in the lead C–130 delayed the drop of the Army Rangers at Point Salines Airport for over thirty minutes. After a fire fight the Rangers subdued the Cubans at Point Salines and rescued the students at the nearby True Blue campus.

Fully alerted, Grenadian troops in St. George's discovered and trapped a SEAL team attempting to evacuate the governor general. Schwarzkopf persuaded the JTF commander to send marines to rescue the SEALs and the governor general. He also



General Vessey.



Soldiers taking cover in Panama.

persuaded a Marine colonel to lend the support of his helicopter squadron to Army Rangers to rescue a second group of students at the Grand Anse campus outside St. George's.

In the end U.S. forces overwhelmed the opposition, rescued 720 U.S. and foreign citizens, restored popular government, and eliminated a strategic threat to U.S. lines of communication. Urgent Fury cost the United States 19 killed and 116 wounded; Cuban forces lost 25 killed, 59 wounded, and 638 captured. Grenadian forces suffered 45 killed and 358 wounded, and at least 24 Grenadian civilians were killed.

Tactical mistakes marred the operation. On October 25, lacking DOD maps and recent tactical intelligence, Navy A-7 Corsairs bombed a mental hospital near the Grenadian command post at Fort Frederick and killed 18 patients. Two days later, an air-naval gunfire liaison company team failed to coordinate with the 82^d Airborne Division, and Corsairs attacked a friendly brigade headquarters wounding 17 soldiers. Without adequate maps, intelligence, and organic helicopter gunships, the 82^d cautiously advanced across the southern half of the island while the Marines raced over the northern part in an uncoordinated action.

Students being evacuated from Grenada.



Panama

The intervention in Panama shared a Caribbean locale with Grenada, but its causes differed markedly. The deterioration of the Soviet Union heralded the rapid decline of Soviet and Cuban influence in the region. New problems threatened U.S. interests—drugs flowing from Colombia via Panama, danger to American citizens in Panama, and restricted access to the canal.

Panama was the base of U.S. Southern Command (SOUTHCOM), a predominantly Army organization led in 1988–89 by General Frederick Woerner, USA. Anticipating a hostage situation or interference with use of the canal, Woerner initiated a contingency plan for operations against the dictatorship of Manuel Noriega. Named Blue Spoon, the plan envisioned gradually doubling the 12,000–13,000 U.S. troops with reinforcements from the United States. The force would then mount operations to intimidate or overthrow Noriega and the Panama Defense Forces (PDF).⁴

Guarding prisoners,
Panama.



DOO

By summer 1989 relations between the countries had worsened. Dissatisfied with Woerner's incremental approach, President George Bush turned to the Chairman, Admiral William Crowe, who recommended Woerner be replaced by General Maxwell Thurman, USA. Thurman, with a reputation for toughness and efficiency, chose the commander of XVIII Airborne Corps, Lieutenant General Carl Stiner, USA, as primary joint warfighter with responsibility for planning and conducting the operation. Thurman instructed the SOUTHCOM operations director, Brigadier General William Hartzog, USA, to revise Blue Spoon to reflect a strategy of *coup de main* rather than escalation. By October Hartzog had expanded the overall force to 27,000 and compressed the time to move reinforcements to Panama from three weeks to five days.

Rather than asking Thurman to cobble together a force of equal parts from each service—a frequent practice in earlier operations—the new Chairman, General Colin Powell, USA, supported Thurman's decision to place an Army general in charge of a predominantly Army joint task force. The 22,000 soldiers would be augmented with 700 sailors, 900 marines, and 3,400 airmen.⁵ Hartzog gave 27 specific objectives to five special operations and four conventional operations task

forces (TFs). Although each TF was composed largely of troops from a single service, nearly all were supported by elements from others. For example, Rangers comprising TF Red included Air Force special tactics and Marine/Naval gunfire liaison teams, and all TFs depended on Air Force fixed-wing airlift and close air support.

In late September 1989 Powell met with Thurman and Stiner to discuss plans. He agreed to compress the flow of forces into Panama from three weeks to three days, seize Noriega, and dismantle the PDF. Stiner would report through Thurman and Powell to Secretary of Defense Dick Cheney and the President. In strictly tactical matters during the first few days, Powell, Cheney, and Bush would avoid the micromanagement that had characterized the Iranian hostage rescue attempt and Urgent Fury.

On December 20, four days after Panamanian soldiers killed a marine and molested a Navy officer and his wife, General Thurman executed the plan that SOUTHCOM and its subordinate commands had been revising and rehearsing for six weeks. The plan included rules of engagement that carefully restricted heavy firepower. Neither Powell, Thurman, nor Stiner wished to needlessly risk lives or property.

Shortly after midnight, Rangers of TF Red and troops of the 82^d jumped over targets from Rio Hato in the west to Fort Cimarron in the east. Their primary mission was to isolate Panama City

while TF Bayonet encircled and neutralized the PDF headquarters at the *Comandancia*. After a three-hour fight the headquarters was in U.S. hands. Meanwhile TF Atlantic secured the canal; and in the western suburbs of Panama City Marine TF Semper Fi blocked approaches to the Bridge of the Americas to prevent PDF forces fleeing Rio Hato from reinforcing the *Comandancia*. With

Powell became directly involved to ensure that actions in Panama meshed with political and diplomatic goals

key installations taken and Noriega in hiding, central control of PDF collapsed the first day. Fighting flared sporadically as U.S. forces overcame pockets of resistance.

As Stiner's force attained its objectives, General Powell became directly involved in military operations to ensure that actions in Panama meshed with the administration's political and diplomatic goals. Goldwater-Nichols permitted the Secretary to use the Chairman to transmit operational directions and the Chairman to act decisively without consulting the Joint Chiefs.

Powell told Thurman to accelerate the drive to liberate the Marriott Hotel, which held Americans who could become hostages. He also encouraged Thurman to quickly install the legally elected government to discredit claims that Noriega still held office or that U.S. military rule was imminent. After Noriega fled to the papal *Nunciatura*, U.S. troops played loud rock music outside the residence. When the Vatican and the diplomatic community complained to President Bush, the Chairman ordered Thurman to stop the noise. Powell then urged Thurman to have the new Panamanian government appeal to church officials in Panama and Rome for help in dislodging Noriega from the *Nunciatura*.

Noriega's surrender on January 3 ended resistance, but U.S. troops remained until the new government could take over police and security operations. Finished officially on January 31, 1990, Just Cause used 27,000 troops against an enemy force estimated at 12,000. U.S. casualties were 26 killed and 324 wounded. Some 65 PDF soldiers were killed.

If proportionally lower friendly casualties mark operational success, Just Cause was more successful than Urgent Fury. It showed substantial improvement in joint planning and execution. Part of that stemmed from the Goldwater-Nichols Act, part from the time available and forces already in place, and part from the close working relationship of top political and military leaders before and during the operation.



U.S. soldiers with Haitian policeman, Port-au-Prince.

Fleet Imaging Command Norfolk (Charles Wharton)

Haiti

Our third military intervention in the Caribbean since 1982, Operation Uphold Democracy featured flexible planning and execution of entry and operations ashore. A diplomatic breakthrough enabled peaceful entry to Haiti. However, once ashore U.S. forces had to cooperate with the military and police they were sent to replace. The JTF commander was able to perform these tasks with periodic refinement of the rules of engagement by the Chairman and CINC. Civilian agencies lacked sufficient planning time and resources and were inexperienced with military operations. Consequently their efforts to reconstruct the government and democratize the police and military were delayed. Waiting for greater civilian participation, U.S. forces assisted in civil affairs. They filled advisory roles in ministries, coordinated delivery of relief supplies, and assisted in civil administration in rural areas where local authority had collapsed.

Uphold Democracy took place principally in 1994–95. An island country, Haiti fell within the operational area of U.S. Atlantic Command. This was not the same command that had presided over Urgent Fury. General Powell had persuaded Secretary of Defense Les Aspin to transform the



Soldiers from 10th Mountain Division in Haiti.



2nd Marine Division (M.T. Huff)

General Shelton arriving in Haiti during Uphold Democracy.

“blue-water” Atlantic Command into one where service components would, in Powell’s words, “operate jointly as a way of life and not just for occasional exercises.”⁶

Aspin combined Army and combat air forces based in the continental United States with the Atlantic Fleet and its marines under Admiral Paul David Miller and directed him to focus on joint training and deployment. Enlarged and given a new mission, the Atlantic Command became ACOM, commanded by CINCLANT. Events in Haiti would quickly test its operational competence.

The overthrow of democratically-elected Jean-Bertrand Aristide on September 30, 1991 led to brutal repression, economic chaos, and a flow of Haitian refugees into the United States. During the next two years diplomats attempted to negotiate Aristide’s return. On October 11, 1993 Haitian

thugs blocked the docking of *USS Harlan County*, carrying a military assistance group to help democratize and professionalize the Haitian armed forces. Three days later, gunmen murdered the pro-Aristide minister of justice. Both acts signaled the junta’s determination to scuttle U.S. diplomatic efforts. Undeterred, President Bill Clinton charged his national security planners to develop new options, which would come to include military intervention and peacekeeping operations.

General John Shalikashvili, USA, replaced Powell as Chairman on October 25, 1993. Having observed *Urgent Fury* ten years earlier, the new Chairman knew its planners had only a few days to cobble together forces for a ground campaign that lacked tactical coordination, mutual fire support, and interoperable communications. He did not want those mistakes repeated. During the first half of 1994 he closely reviewed ACOM contingency planning for joint operations in Haiti.

In preparing operational plans, the ACOM deputy commander in chief, now Lieutenant General Hartzog, drew heavily on his background

Fleet Imaging Command Norfolk (James Lotz)

as a planner for Operation Just Cause. He also relied on the experience of the ACOM J-5, Major General Michael Byron, USMC, and Byron's predecessor, Lieutenant General John Sheehan, USMC, now serving as the Joint Staff director of operations (J-3) and the Chairman's resident expert on Haiti.

Hartzog saw parallels between Panama and Haiti. Both were dictatorships maintained by corrupt and brutal military forces. Both offered great

potential for civil unrest and violence. Both were close enough to the United States for rapid deployment of large joint task forces. He directed planners at ACOM and tactical planners at XVIII Airborne Corps and the 10th Mountain Division

to avoid surgical solutions and silver bullets. They were to rely on overwhelming force applied simultaneously against multiple objectives—the *coup de main* used in Panama.

Published May 20, 1994, ACOM operational plan 2370-95 called for forced entry by the 82^d Airborne Division, peaceful follow-on by the 10th Mountain Division, and eventual transition to a U.N. operation—all under JTF 180 led by Lieutenant General Hugh Shelton, USA, XVIII Airborne Corps. As in Just Cause the Army would be the lead force. However, 10th Mountain Division and the Joint Special Operations Task Force would deploy on the carriers *USS Eisenhower* and *USS America*.

During the next several weeks a plan was developed for peaceful entry, ACOM operation order 2380-95. After approving it in August, General Shalikashvili insisted that preparations be carried forward for both 2370 and 2380. While he anticipated a forced entry, he recognized the possibility of a diplomatic breakthrough or collapse of the junta. Events would vindicate his flexibility. Uneasy with two sharply different entry phases, Hartzog and Byron produced a hybrid "2380+" which planned for entry with a small vanguard force from the 82^d Airborne to secure key airfields and seaports for landings by JTF 190.

Satisfied with the operational planning, the Chairman turned to political aspects. He and his director for strategic plans and policy (J-5), Lieutenant General Wesley Clark, USA, worked with the U.S. interagency community, President Aristide, and the United Nations on measures to build the political and economic structures needed to ensure long-term progress and stability in Haiti. Economic and political headway would end the refugee crisis and encourage cooperation with U.S. forces.

On September 11, 1994 ACOM conducted an interagency dress rehearsal of the civil-military parts of Uphold Democracy. During the drill it became evident that some civilian agencies lacked the experience, manpower, and funding to participate vigorously during the first weeks. The Chairman directed Clark to work with the United Nations, Aristide, and U.S. civil agencies until they could assume full responsibility for rebuilding the government and economy. However, D-day would arrive before broad agreements reached on the national level could become specific steps in operational and tactical plans.⁷

Nearly a week later President Clinton sent former President Jimmy Carter, Senator Sam Nunn, and retired General Colin Powell to Port-au-Prince to negotiate for the peaceful arrival of the task force. At the last moment the leader of the junta, Lieutenant General Raoul Cedras, assured the U.S. delegation that the *Forces Armées d'Haiti* (FAd'H) would cooperate in a peaceful transition to Aristide's rule. Shalikashvili's insistence on continued planning for peaceful entry would now bear fruit.

With airborne troops flying toward Haiti, the Chairman directed CINCLANT to switch from an invasion to semi-peaceful entry, ACOM 2380+. Planners at ACOM and JTF 180 changed the force list and arrival sequence. On September 19 JTF 180—XVIII Corps headquarters, a 10th Mountain Division brigade, a special Marine air-ground task force, and the Joint Special Operations Task Force—landed without incident. Troops of the 10th Mountain Division and the Marines were stationed in urban centers with special operations forces in the countryside. The number of troops participating in Uphold Democracy would peak at over 20,000.

Working with FAd'H proved problematical. The Chairman instructed the joint task force to both help FAd'H prevent violence against the junta and stop it from attacking followers of Aristide. Shalikashvili also insisted that Shelton's troops not perform routine police work. With the aid of U.S. civil agencies, Shelton was to recruit a new police force from FAd'H after screening out criminals and human rights abusers. When finding members with clean records proved almost impossible, ACOM and JTF 180 developed a plan for using international police monitors to supervise existing police until a new national police force could be trained. As it became evident that not all FAd'H members would retain their jobs or freedom under the new administration, some attacked Aristide's followers and U.S. special operations troops. To send a clear message that neither violence nor a return to the status quo would be tolerated, Rangers suppressed all known loyalist strongholds.

with airborne troops flying toward Haiti, the Chairman directed CINCLANT to switch from an invasion to semi-peaceful entry



Marine road block,
Just Cause.

DOD

Despite attempts to replace U.S. security and stability operations with civil-military and economic measures, neither the interagency community, the U.N. Secretary General, nor President Aristide could be rushed. Civilian agencies and the United Nations continued to lag in providing humanitarian and nation building assistance. Aristide delayed signing a status of forces agreement pending resolution of differences with CINCLANT on three side letter issues: Aristide's refusal to accept U.S.-trained security guards for himself, his cabinet, and the parliament; his reluctance to develop separate military and police forces; and U.S. screening of FAd'H members for service with the interim public security force. The Chairman wanted Aristide to establish a small army under a separate ministry to check the power of the police. However, the Department of State and Aristide successfully opposed it, viewing the army as a seedbed for juntas.

Aristide returned to Haiti on October 15, 1994. Ten days later, General Shelton turned over the operation to JTF 190, the 10th Mountain Division commanded by Major General David Meade, USA. During the next three months JTF 190 extended its operations to assisting civilian organizations in building a new police force and improving the infrastructure. When the U.N. Security Council certified in late January 1995 that Haiti was safe for transition on March 31, JTF 190 progressively relinquished such civil-military activities to civilian agencies.

Operational successes in Panama and Haiti rewarded efforts by Congress and the Bush and Clinton administrations to avoid the mistakes in

Grenada. The determination of two Presidents and the enhanced authority of the Chairman and unified commanders under the Goldwater-Nichols Act combined to provide specific, attainable objectives and responsive, effective command and control. Commanders benefitted from maximum autonomy on the tactical and operational levels. However, when necessary, both Powell and Shalikashvili intervened to ensure the political success of these operations.

Defense reform and strong leadership have gone far in solving the strictly military problems that marred earlier joint operations. Yet neither a streamlined chain of command nor strong military leadership can compensate for the inadequacy of non-DOD agencies' resources for and inexperience with post-Cold War contingency operations. If that situation persists, the CINCs and their joint warfighters will repeatedly be asked to provide DOD resources to accomplish the political-military activities traditionally performed by domestic and international civilian organizations. **JFQ**

NOTES

¹ David C. Jones, "Past Organizational Problems," *Joint Force Quarterly*, no. 13 (Autumn 1996), p. 25.

² Parts of these accounts are based on interviews with DOD officials. The Grenada section draws heavily on Ronald H. Cole, *Operation Urgent Fury: The Planning and Execution of Joint Operations in Grenada* (Washington: Office of the Chairman of the Joint Chiefs of Staff, Joint History Office, 1997).

³ Cole, *Operation Urgent Fury*, p. 1.

⁴ Ronald H. Cole, *Operation Just Cause: The Planning and Execution of Joint Operations in Panama* (Washington: Office of the Chairman of the Joint Chiefs of Staff, Joint History Office, 1995), pp. 1-2, 7-10. Much of this section is taken from this book as well as testimonies provided by and interviews with DOD officials.

⁵ Cole, *Just Cause*, pp. 12-14, 17-23, 76 (footnote 19); Thomas Donnelly et al., *Operation Just Cause: The Storming of Panama* (New York: Lexington Books, 1991), pp. 44-51.

⁶ Ronald H. Cole et al., *The History of the Unified Command Plan, 1946-1993* (Washington: Office of the Chairman of the Joint Chiefs of Staff, Joint History Office, 1997), pp. 114-15.

⁷ Adam B. Siegel, *The Intervention of Haiti* (Alexandria, Va.: Center for Naval Analyses, August 1996), pp. 35-36.



U.S. Navy (David C. Mercil)



U.S. Air Force (Liam Robson)



1st Combat Camera Squadron (Jim Vanhegy)



U.S. Marine Corps (Penny Surdukan)

what they've said in JFQ

military power can sometimes be brought to bear when it is applied without first defeating defending enemy forces

—Carl H. Builder

the system of systems is intelligible and applicable to an enemy through its component parts

—James Stavridis

lack of detailed intelligence on Grenadian defenses compelled planners to opt for a sudden attack with overwhelming force

—Ronald H. Cole

the higher careerists rise, the more they see their role as protectors of service traditions, doctrine, and loyalties

—William A. Owens

to tackle the fog and friction of war is not akin to exploring unknown terrain

—Colin S. Gray

despite the recognition that graduated pressure was fatally flawed, the Joint Chiefs were unable to articulate their objections or alternatives

—H.R. McMaster

Making the Joint Journey

By WILLIAM A. OWENS

Thirteen years have gone by since passage of the Goldwater-Nichols Act made joint operations and joint force planning the law. Over that time the Department of Defense has established centers, management procedures, planning organizations, and command structures that bear the term *joint* prominently in their titles. Military professionals talk and write about jointness. We congratulate ourselves on how far we have come from the bad old days of unrestrained service parochialism and excessive redundancy among the Armed Forces.

Much of this self-congratulation is justified. There is greater planning coordination among the

Armed Forces and more cross-service operational integration today. The assignment to a joint command and staff is now a virtual necessity for career advancement, and the increasing number of joint entities—from task forces to the Joint Requirements Oversight Council—bear witness to the advance of a common perspective. The conglomeration of laws, organizations, and procedures that function under the rubric of jointness epitomizes how the military of today differs from that of yesterday. Some things really have changed.

Yet *jointness* is a term that has been invented. You will not find it in the dictionary; and it is difficult to institutionalize a universal

meaning for the concept. Moreover, objective evaluation reveals major caveats in the notion that the Defense Establishment has become more joint. Despite the period since the DOD Reorganization Act of 1986, operations remain more joint

in name than in conduct, and the process of determining requirements is more joint in rhetoric than in execution. Desert Storm, sometimes touted as the advent of joint operations in the American way of war, was more remarkable for its similarity to the command and operational patterns of the Vietnam era than as a reification of



U.S. Air Force Academy

joint warfare concepts. Look beneath the surface and you will uncover the same organizational pattern. Geography, not synergy, structured the responsibilities and missions of the service components in the Persian Gulf just as it did twenty-five years earlier in Southeast Asia. Difficulties rather than ease characterized cross-service communications and coordination. The fact that the Army, Navy, Marine Corps, and Air Force worked so well together is more a testament to the initiative and skill of those who did the actual fighting than to a real shift to joint command and control. And military operations since have provided scant evidence of rapid progress in this area.

Unfortunately the story is much the same with regard to joint force planning and identifying military requirements. While a joint perspective is not absent from considerations of requirements for future forces, it remains far subordinate to that of the individual services at a time when each recognizes increasing budget constraints and believes it is involved in a zero-sum funding contest. Service parochialism is still the most important factor in force planning.



U.S. Military Academy

Admiral William A. Owens, USN (Ret.), who served as the third Vice Chairman, is a senior executive with Teledesic Corporation. His new book, *Lifting the Fog of War*, will appear in the autumn.

Some Reasons

A joint perspective comes down to cross-service trust and the belief that another component can reliably provide a military function. Too often the functional redundancy of the Armed Forces stems from a basic desire to avoid reliance on another service or external source. Regardless of why duplication and redundancy exist, once in place they become vested. Internal organizations

are formed to conduct functions, maintain facilities, and ensure that these weapons or functions will be available. And the most potent rationale for duplication is soon proclaimed: it is *es-*

sential because the vagaries and fog of war demand redundancy to compensate for the unexpected. After all, aren't the stakes too high to depend on another service—specialized for another kind of warfare and focused on its own needs—to come through in a crisis? Isn't it better if functions and matériel that may be needed are all part of the same structure, tied together by a specialized doctrine, identifiable by a specialized insignia, and wedded to the same traditions, culture, and language? And isn't this the way that we've always done it and the way that has been proven by victory on the battlefield?

This is the substance of the rationale for the crystalline stovepipes that separate the services. I refer to them as crystalline because it is easy to miss them. Sometimes we see through them as if they were not there. Yet if you look closely you will discover them. And if you function inside one you are quick to learn how far you can go before hitting the side, for we shroud them in authority and tradition. We inculcate military careerists with these traditions and reinforce them throughout their lives, formally through service evaluation systems that determine how fast and how far people rise and informally in many subtle ways. The higher careerists rise, the more they see their role as protectors—stewards—of service traditions, doctrine, and loyalties that shape the crystal channels. These stovepipes, in turn, force thinking and action toward duplication and redundancy.

The Goldwater-Nichols Act promulgated a joint perspective in force planning by expanding the role of unified commanders in the planning, programming, and budgeting system. The unified commanders, most with regional responsibilities, are after all joint commanders and as such are positioned to best understand and advocate that perspective. But look closely at how these regional commands actually participate in planning and designing future forces. Unified commanders often command primarily by defining areas of responsibility and activity for separate service components assigned to them. And when asked for recommendations on the size, structure, and character of future forces, they usually compile the separate recommendations furnished by service components assigned to their command which are often drafted back in Washington by service staffs. They are dispatched in time for service components of a unified command to change the letterhead, correct the spelling, and more rarely adjust the substance to reflect the component commander's particular bias before submitting the require-

ments. The staff of the unified commander, in effect, will then staple together the input from each service component in time to dispatch recommendations back to Washington for the next cycle of planning, programming, and budgeting.

Then there are joint task forces. There are a lot of them now, organized for exercises and operations. Because of them, we are getting better at joint operations. But the operative word is still *task*. JTFs narrow jointness to particular events for particular durations. That means they are not regarded as the operational norm; we deal with them as temporary perturbations, exceptions to comfortable administrative and cultural channels that link Washington and components abroad. We are getting better at conducting joint operations. Synergy is enhanced among separate service components when they exercise and

operate together, and we are institutionalizing our knowledge on how to do it. But we should not yet claim victory or ignore how hard it is for components to interface.



U.S. Naval Academy

We created the joint doctrine formulation process in part to overcome this parochialism. Institutions like the Joint Doctrine Center in Norfolk, Virginia, and elements of the Joint Staff have produced literally tons of publications that sketch, and sometimes offer exquisite details for, what is termed joint doctrine. Yet this growing body of literature is not so much joint doctrine as simply an amalgam of service doctrines. Those charged with producing joint doctrine have no independent source of data, information, or concepts on how to generate new synergism from the interaction of the services other than what the individual services provide them. They rely on inputs from service staffs that are focused on their own doctrine. As a result, purple-wrapped joint doctrine pubs are usually either compilations of how each service goes about doing a particular thing or highly coordinated summaries of what the services do similarly. Service parochialism has dominated the defense planning and programming processes up through the last half of the 20th century.

Changing the Planning Process

The identification of military requirements should be consolidated in a Joint Requirements Committee, chaired by the Secretary or Deputy Secretary of Defense, with the Chairman (or his designated representative, perhaps the Vice Chairman) serving as the senior military member and deputy chairman. Membership should be restricted to the service chiefs or vice chiefs and four senior civilian members from the Office of the Secretary. The committee would be responsible for setting *all* military requirements.

A combined military-civilian staff would support the committee. It would be the only DOD staff dedicated to identifying requirements. We should strip out all other requirements bodies from the services and consolidate analytic resources in the new requirements committee staff. In effect this would remove the requirement function from the services and charge them with implementing decisions of the Joint Requirements Committee (on which they would be represented). The service chiefs would be specified as CEOs of the infrastructure, training personnel and managing facilities. This is no small task. It involves 65 percent of the defense budget.

The staff of the Secretary of Defense would also shift in function, losing all its independent requirement-setting taskings and dropping elements whose primary role has been to represent the budgetary interests of particular groups. This

in turn would justify reducing civilian and military staffs in the Pentagon by half. It would cut the civilian staff to about the level of the early 1960s when the Armed Forces were nearly twice as large as today.

Removing the requirements function from the services would be a major change. It would not mean that the services would be abolished or unified. They would remain the repository of the traditions that distinguish them individually. But a major prop that reinforces the stovepipes would be gone, and with it the entire tempestuous superstructure and mystique of budget shares and force structure maintenance. With an outside body (but one in which each service would be represented) setting the requirements, these obstacles would erode quickly.

Consolidating

Removing the services from the requirement-setting function would make it easier to merge key support functions. Nearly every analysis and assessment, from the Goldwater-Nichols Act to the Commission on Roles and Missions of the Armed Forces ten years later, indicated that there is real redundancy in the support structure but that it is too difficult to change. That has been true, not because the changes did not make sense but because the services opposed them. That opposition was rooted in parochialism and distrust. But redundancy was also justified annually because the services argued that maintaining separate support functions was a military requirement.

There have been efforts in the past to consolidate support functions. The most serious was the creation of defense agencies by Secretary Robert McNamara to provide integrated intelligence, communications, and logistics support for all military components. Over time it became obvious that his efforts were unsuccessful. Today we face the complexity and duplication generated not only by service redundancy, but by an increasing number of defense agencies which have become additional competitors for resources and the basis for duplication.

However, when the role of the services in requirement identification is removed, the game literally changes. It is time to consolidate the four great enablers of combat power—intelligence, communications, logistics, and medical services. Individual services should be made the executive agents for these support functions, assuming the management responsibility for the Armed Forces. Together with this consolidation, the separate logistics, communications, and intelligence agencies should be abolished.

we face duplication generated not only by service redundancy, but by increasing number of defense agencies

But we don't want to go too far. The benefits of service identity and traditions should be maintained. Only when traditions get in the way of the purpose of the military and become ends in themselves must we adjust what is, after all, an historical phenomenon. It is the abuses of service parochialism that must be curtailed.

The age-old practice of denigrating other services stems from an ignorance of what actually occurs within them. It is sometimes rationalized by the argument that the complexity of what goes on within each service is so great and the skills demanded so high that one can't afford the luxury of learning about other services. Taking time away from the responsibility of mastering the mores, operational doctrine, and systems of one's own service is counterproductive. Personnel undergo extensive and intense training throughout their careers; but they are not taught about the advantages of truly joint operations.

Changing the Academies

The problem starts in the service academies and Reserve Officer Training Corps (ROTC) programs. The goal of the academies is to provide cadets and midshipmen with a solid education. Although some graduates are given a choice of service, the central goal of each academy has been not simply to produce good military officers, but good Army, Navy, Marine Corps, or Air Force officers. Interestingly, most sociological studies of what makes a good Navy officer as distinct from a good Army officer point to experience and training received after commissioning. Yet the distinctiveness among the services is accentuated the most at the academies.

That emphasis should be reversed. Service academies and ROTC programs ought to stress a joint perspective and, in particular, acquaint cadets and midshipmen with paradigms and systems found in the other services. The net result could be significant: each graduate might emerge proud not only of his or her service, but of what the Armed Forces provide jointly to national security. Specialization in the mores, systems, and operational doctrine of a particular service will come with experience and additional training. We must orient the academy experience toward producing good *military* officers.

Various study groups and commissions have proposed changes in officer education. They range from expanding the current exchange programs which allow some cadets and midshipmen to participate in other service academies to introducing more joint perspective classes at each academy to, more radically, consolidating the academies into a national military academy. I think the best approach would be to rotate the

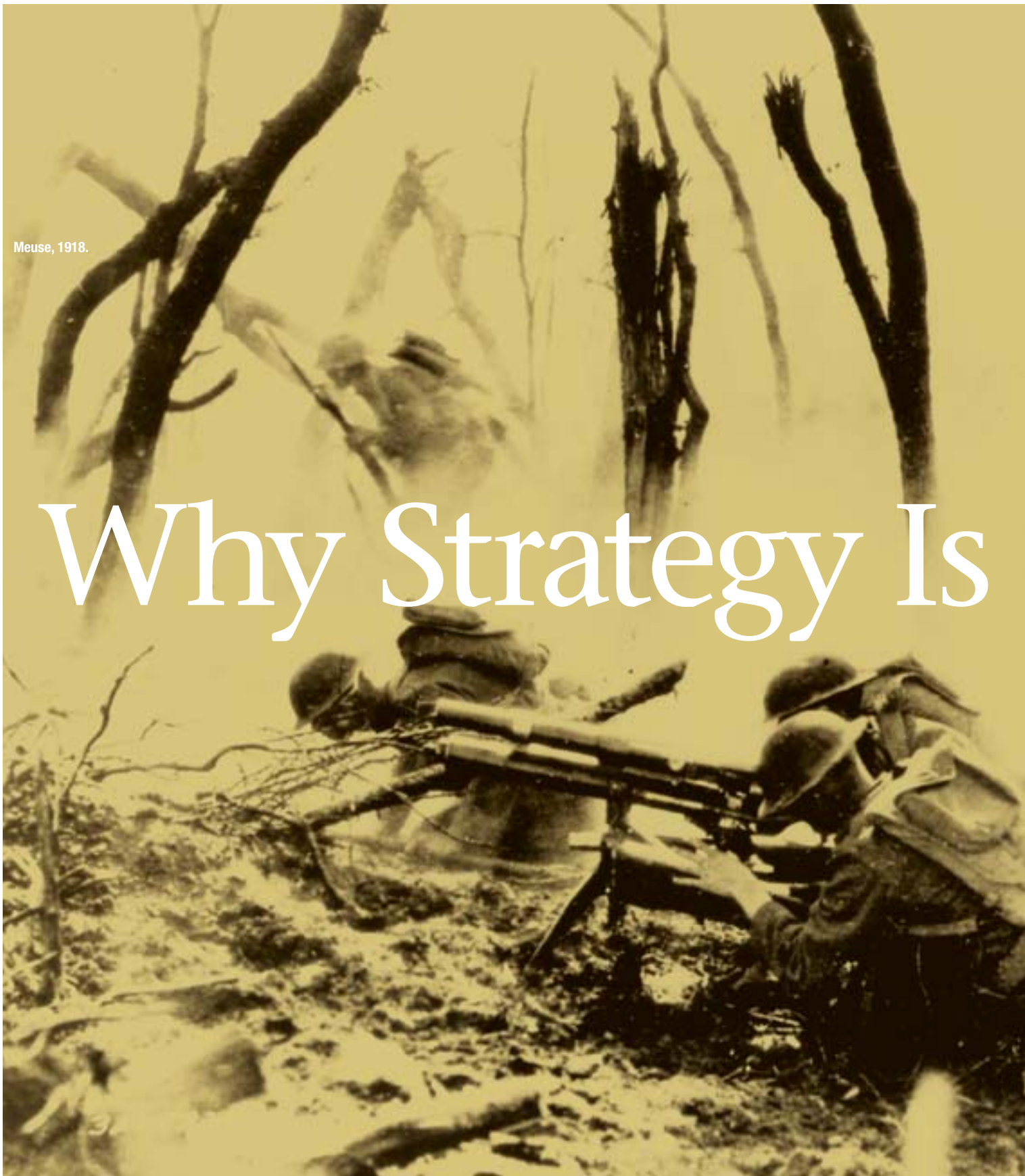
classes among academies. For example, a midshipman could spend the first year at the Naval Academy, the second at the Military Academy at West Point, the third at the Air Force Academy in Colorado Springs, and the fourth back at Annapolis. A similar rotation would apply to the Military Academy and the Air Force Academy. There would be little or no cost differential with the single-academy pattern that dominates the early socialization of officers today. Similar exchanges could be devised for ROTC programs, although their size would suggest consolidating them into a single program. In the final analysis, we want to make young officers of every service aware and proud of the Armed Forces, capable of operating together, and able to start their military careers thinking jointly.

Career Training

The professional military education and training system through which a better joint perspective can be built already exists. We do not have to make major changes in it or in the pattern by which individuals pass through it during their careers. We should, however, change some of what occurs inside it.

One key change would be to incorporate an improved understanding of the major military systems used by each service and of the new information systems that are binding platforms and systems into the emerging system of systems. Some may argue that the sophistication and complexity of the platforms and systems which make up the core of each service mean that learning about them would encroach on the time needed to grasp the essentials of one's own service. I disagree. There is no more important knowledge than that imparted by a joint perspective and increased awareness of the major systems of each service. This understanding ought to be a condition for promotion throughout the Armed Forces. If we are to accelerate the transformation of America's military—as I am convinced we should—we must draw on the insights, innovation, and intelligence of the entire officer corps.

JFQ



Meuse, 1918.

Why Strategy Is



Westmoreland
with Nixon, 1969.

DOD

Difficult

By COLIN S. GRAY

My aim is to relate the nature of strategy to the character of its artistic application and to the unknowable context of the 21st century. The immodesty, even arrogance, of this endeavor is best conveyed through an anecdote about a meeting between Hannibal Barca and an armchair strategist. Hannibal suffered from what in this last century has been the German failing—winning battles but losing wars. Hannibal won all of his battles in the Second Punic War except, sadly for a Carthage that did not deserve him, the last one, against Scipio Africanus at Zama in 202 BC. He is reported to have had little patience with amateur critics.

*According to Cicero (de Oratore), the great general when in exile in Ephesus was once invited to attend a lecture by one Phormio, and after being treated to a lengthy discourse on the commander's art, was asked by his friends what he thought of it. "I have seen many old drivellers," he replied, "on more than one occasion, but I have seen no one who drivelled more than Phormio."*¹

The theme of this article lurks in the ancient strategic aphorism that "nothing is impossible for the man who does not have to do it." When I was contributing to the *Defense Guidance* in the early 1980s its basic direction for the Armed Forces could be reduced to "be able to go anywhere, fight anyone, and win." To repeat my point, to those who do not have to *do* strategy at the sharp, tactical end of the stick, the bounds of feasibility appear endless.

True wisdom in strategy must be practical because strategy is a practical subject. Much of what appears to be wise and indeed is prudent as high theory is unhelpful to the poor warrior who actually has to do strategy, tactically and operationally. Two classic examples make the point.

Colin S. Gray is director of the Centre for Security Studies at the University of Hull; among his books is *The Leverage of Sea Power: The Strategic Advantage of Navies in War*.

U.S. Army

Carl von Clausewitz advised us that there is a “culminating point of victory,” beyond which lies a decline in relative strength.² Great advice—save, of course, that political and military maps, let alone physical terrain, do not come with Clausewitz’s “culminating point” marked. Imagine that you are a German and that it is anytime between late June 1941 and late August 1942. You have read Clausewitz. Where is the culminating point—at Minsk or Smolensk, on the Dnieper, Don, or Volga? How can you find a culminating point of victory until adverse consequences unmistakably tell you where it was?

The other example of great strategic wisdom that is difficult to translate into practical advice is the insistence of Clausewitz (and Jomini) that “the best strategy is always to be very strong; first in general, and then at the decisive point.”³ Naturally the challenge is not to comprehend the all but sophomoric point that one needs to be very strong at the decisive point. Rather it is to know the location of that point. What did Clausewitz’s advice mean for Germans in the late summer and fall of 1941? Did they need to concentrate their dissipating strength on the Red Army in the field, on the road to Moscow, or both?

For a tougher call, consider the American military problem in Southeast Asia in the second half of 1965. General William Westmoreland somehow had to identify military objectives to match and secure the somewhat opaque political objectives. Mastery of the arguments in the classics of strategic theory was unlikely to be of much practical help.

The Argument

Before expounding the central elements of my argument, which appear pessimistic, let me sound an optimistic note. Terrible though the 20th century has been, it could have been far worse. The bad news is that the century witnessed three world wars—two hot, one cold. The good news is that the right side won each of them. Moreover, threats to peace posed twice by Germany and then by the Soviet Union were each seen off at a cost that, though high, was not disproportionate to the stakes nor inconsistent with the values of our civilization. Western statecraft and strategy in two world wars was not without blemish. One needs to remember the wisdom of Lord Kitchener who said during World War I: “We wage war not as we would like but as we must.” Strategically, notwithstanding errors, the Western World did relatively well. Now for a darker view.

My key argument is organized around three reasons why it is difficult to do strategy well:

- its very nature, which endures through time and in all contexts⁴
- the multiplicity and sheer variety of sources of friction⁵
- it is planned for contexts that literally have not occurred and might not occur; the future has not happened.

This argument is essentially optimistic, even though that claim may appear unpersuasive given that the high-quality strategic performance is always challenged by the nature of strategy—not only by its complexity but by the apparent fact that whatever can go wrong frequently does. Also, strategy can fail because it may apply the wrong solutions to incorrectly framed questions because guesses about the future were not correct. If, despite this, the bad guys were beaten three times during the course of the 20th century, there are grounds for hope.

Before explaining the many sources of difficulty for strategy, it is necessary to highlight the recurrence of a serious fallacy. Lest this point appear unfairly focused on the United States, I will sugar coat the pill by citing an American who got it right, and two others—one American and one German—who got it wrong. Samuel Griffith, who got it right, was a scholar of Chinese military theory from Sun Tzu to Mao. He once observed that “there are no mechanical panaceas” when commenting on a *Newsweek* report in July 1961 about a fuel-air explosive to destroy bunkers.⁶ The American and German, who got it wrong, allowed themselves to be seduced by the promise of “mechanical panaceas.” One must hasten to add that these two warrior-theorists were exceptionally able men. The point is that, writing ninety years apart, they made almost the same mistake.

The issue underlying both views is whether much of the fog and thus friction that undoes applied strategy can be thwarted by modern technology. Writing in 1905, Lieutenant General Rudolf von Caemmerer, a member of the great general staff working under Field Marshal Alfred Graf von Schlieffen, offered this claim:

The former and actually existing dangers of failure in the preconcerted action of widely separated portions of the army is now almost completely removed by the electric telegraph. However much the enemy may have succeeded in placing himself between our armies, or portions of our armies, in such a manner that no trooper can get from one to the other, we can still amply communicate with each other over an arc of a hundred or two hundred or four hundred miles. The field telegraph can everywhere be laid as rapidly as the troops marching, and headquarters will know every evening how matters stand with the various armies, and issue its orders to them accordingly.⁷

Western statecraft and strategy in two world wars was not without blemish



U.S. Air Force

B-52 bombing north-west of Saigon, 1965.

to tackle the fog and friction of war is not akin to exploring unknown terrain

Caemmerer proceeded to admit that the telegraph might dangerously diminish the initiatives allowed to army commanders. The irony is that poor communications, lack of coordinated action, and a general loss of cohesion by the all important armies on the right wing of the German assault in early September 1914 allowed an Allied victory with the miracle on the Marne.⁸ The telegraph was a wonderful invention, but it could not reliably dissipate the fog of war.

An American example of a functionally identical error is drawn from the magical “system of systems” invoked by Admiral William Owens, former Vice Chairman of the Joint Chiefs of Staff. In 1995 he wrote, “The emerging system . . . promises the capacity to use military force without the same risks as before—it suggests we will dissipate the fog of war.”⁹

New technology, even when properly integrated into weapons and systems with well trained and highly motivated people, cannot erase the difficulties that impede strategic excellence. A new device, even innovative ways to conduct war, is always offered as a poisoned chalice. Moreover, scarcely less important, strategy cannot be reduced to fighting power alone.¹⁰ Progress in modern strategic performance has not been achieved exclusively through science and technology.

Consider this argument: strategists today have at their disposal technological means to help dissipate the fog of war and otherwise defeat friction that previous generations could only imagine. Modern strategists can see over the hill, communicate instantaneously with deployed forces around the world, and in principle rapidly destroy enemy assets wherever they are located—at least in fine weather and provided no innocent civilians are colocated with the targets. The problem is that war can’t be reduced simply to the bombardment of a passive enemy.

Despite electro-mechanical marvels it is no easier—in fact it is probably harder—to perform well as a strategist today than a century ago. Consider the utility of railroads, telegraph, radio, and aircraft to the strategist. The poison in the chalice of each is that other polities have acquired them; each has distinctive vulnerabilities and worse (recall the radio intercepts of World Wars I and II); and none of them can address the core of the strategist’s basket of difficulties.

Strategy is not really about fighting well, important though that is. To follow Clausewitz, it is about “the use of engagements for the object of the war.”¹¹ The fog of war and frictions that harass and damage strategic performance do not comprise a static set of finite challenges which can be attrited by study, let alone by machines. Every new device and mode of war carries the virus of its own technical, tactical, operational, strategic, or political negation.¹²

To tackle the fog and friction of strategy and war is not akin to exploring unknown terrain, with each expedition better equipped than the last to fill in blanks on the map. The map of fog and friction is a living, dynamic one that reorganizes itself to frustrate the intrepid explorer.

Why So Difficult?

Field Marshal Helmuth Graf von Moltke—victor in the wars of German unification—had it right when, in *Instructions for Superior Commanders*, he wrote that “strategy is the application of common sense to the conduct of war. The difficulty lies in its execution . . .”¹³ The elder Moltke was rephrasing the words of the master. Clausewitz advises that “everything in strategy is very simple, but that does not mean that everything is very easy.”¹⁴ Why should that be so? Five reasons can be suggested.

First, strategy is neither policy nor armed combat; rather it is the bridge between them. The strategist can be thwarted if the military wages the wrong war well or the right war badly. Neither experts in politics and policymaking nor experts in fighting need necessarily be experts in strategy. The strategist must relate military power (strategic effect) to the goals of policy. Absent a strategic

brain—as was the case of the United States and NATO vis-à-vis Bosnia and Kosovo—one is left with an awkward alliance of hot air (policy statements) and bombardment possibilities (the world is my dartboard view of aerial strategists).¹⁵ Strategy is difficult because, among other things, it is neither fish nor fowl. It is essentially different from military skill or political competence.

Second, strategy is perilously complex by its very nature. Every element or dimension can impact all others. The nature of strategy is constant throughout history but its character continually evolves with changes in technology, society, and political ideas. Success in strategy is not really about securing a privileged position in any one or more of its dimensions—such as technology, geography, or leadership—because it is always possible an enemy will find

ways to compensate for that strategic effect from its special strengths. This is a major reason why information dominance in a technical-tactical sense cannot reliably deliver victory. Triumph in war does not correlate with superior technology nor mastery in any allegedly dominant dimension of conflict.

Third, it is extraordinarily difficult, perhaps impossible, to train strategists. Consider these words of Napoleon Bonaparte:

*Tactics, evolutions, artillery, and engineer sciences can be learned from manuals like geometry; but the knowledge of the higher conduct of war can only be acquired by studying the history of wars and the battles of great generals and by one's own experience. There are no terse and precise rules at all; everything depends on the character with which nature has endowed the general, on his eminent qualities, on his deficiencies, on the nature of the troops, the technics or arms, the season, and a thousand other circumstances which make things never look alike.*¹⁶

Napoleon was in a position to know. Like Hannibal he was good at winning battles, but he failed catastrophically as a strategist. Like Imperial Germany, Nazi Germany, and the Soviet Union, Imperial France pursued political goals that were beyond its means. That is a failure in strategy.

Basic problems in training strategists can be reduced to the fact that no educational system puts in what nature leaves out, while the extraordinary competence shown by rising politicians or soldiers in their particular trades is not proof of an aptitude for strategy. The strategist has to be expert in using the threat or use of force for policy ends, not in thinking up desirable policy ends or in fighting skillfully.

Fourth, because strategy embraces all aspects of the military instrument (among others), as well as many elements of the polity and society it serves, the maximum possible number of things can go wrong. To illustrate, sources of friction that can impair strategic performance include those familiar to the military realm (incompatibilities among the levels of military activity and specialized functions such as operations, logistics, and weapons production) and, conceivably the most lethal of all, a mismatch between policy and military capabilities. In the world of strategists, as opposed to that of tacticians, there is simply much more scope for error.

Finally, it is critical to flag an underrecognized source of friction, the will, skill, and means of an intelligent and malevolent enemy. Andre Beaufre defines strategy as “the art of the dialectic of force or, more precisely, the art of the dialectic of two opposing wills using force to resolve their dispute.”¹⁷ Recall Clausewitz’s dictum: “War is thus an act of force to compel our enemy to do our will.”¹⁸ Yet it is easier to theorize about new ways of prevailing than to speculate honestly and imaginatively about possible enemy initiatives and responses.

Further Thoughts

There is a sense in which this article reinvents the wheel. It is no great achievement to appreciate that strategy is difficult to do well. Indeed, my point is not dissimilar from that made by Lawrence Freedman, who takes 433 pages in *The Evolution of Nuclear Strategy* to state that there is no truly strategic solution to the dilemmas of nuclear strategy.¹⁹ When armchair strategists tell military practitioners that their task is difficult on the level of strategy, they should not expect much praise. After all, strategy does have to be done. Academics can vote undecided and write another book. Practicing strategists must make decisions regardless of the uncertainty.

Next, one must stress the strategic ignorance of even practical people. Clausewitz wrote:

*It might be thought that policy could make demands on war which war could not fulfill; but that hypothesis would challenge the natural and unavoidable assumption that policy knows the instrument it means to use.*²⁰

The challenge is that before undergoing trial by battle, no one really knows how effective military power will be. Every passage of arms remains unique. A capability that appears lethally effective in peacetime exercises will not translate automatically into a violent elixir to solve political issues. That the Armed Forces appear lethally potent against a conventional enemy in open warfare could prove irrelevant or worse in urban

before undergoing trial by battle, no one really knows how effective military power will be

Inspecting beaches
at Normandy, 1944.



U.S. Navy



DOD (Bill Kimble)

Allied Force, 1999.

areas. In peacetime, militaries train against themselves, and that has to comprise a major source of uncertainty concerning future effectiveness.

It is vital to recognize potential tension in three sets of relationships: between politicians and commanders, between commanders and planners, and between commanders and theorists (recall Phormio's efforts to educate Hannibal).

Military professionals must simplify, focus, decide, and execute. Politicians, by virtue of their craft, perceive or fear wide ramifications of action, prefer to fudge rather than focus, and like to keep their options open as long as possible by making the least decision as late as feasible. Although commanders are gripped by operational requirements, planners—especially if unschooled by real operational experience—are apt to live in an orderly world where a model of efficiency and compromise is acceptable, indeed is a driver.

The tension becomes acute when a soldier who is only a planner finds himself in a position of high command. The classic example is Dwight Eisenhower, a superb staff officer and military politician who lacked the experience and the aptitude for command, let alone supreme command.²¹ As to the terrain between theorists and doers of strategy, the former are skilled in the production of complexity and are unlikely to enjoy the empathy for operational realities that makes

strategic ideas readily useful. For example, the nuclear strategist might conceive of dozens of targeting options yet be unaware that his theory passed its “culminating point of victory”—actually its “culminating point of feasibility”—at a distinctly early stage. A President thoroughly uninterested in matters of nuclear strategy until suddenly confronted at dawn some Christmas with the necessity for choice can’t likely cope intellectually, morally, politically, and strategically with many options. Probably he would find it useful to have alternatives: shall we go now, shall we go later, shall we go big, or shall we go small. But those broad binaries may be close to the limits of Presidential strategic thinking. Many strategists have presented seemingly clever briefings to policymakers and senior officers whose eyes crossed and brains locked at the sight of the third Power-point slide.

The many reasons why strategy is so difficult to do well can be subsumed with reference to three requirements. For strategic success:

- forces must be internally coherent, which is to say competently joint
- be of a quantity and provide a strategic effect scaled to the tasks set by high policy
- be employed coercively in pursuit of military objectives that fit political goals.

Competence cannot offset folly along the means-ends axis of strategy. Military history is littered with armies that won campaigns in the wrong wars.

Since the future is unforeseeable—do not put faith in the phrase “foreseeable future”—we must use only assets that can be trusted. Specifically, we plan to behave strategically in an uncertain future on the basis of three sources of practical advice: historical experience, the golden rule of prudence (we do not allow hopes to govern plans), and common sense. We can educate our common sense by reading history. But because the future has not happened, our expectations of it can only be guesswork. Historically guided guesswork should perform better than one that knows no yesterdays. Nonetheless, planning for the future, like deciding to fight, is always a gamble.

To conclude on a positive note, remember that to succeed in strategy you do not have to be distinguished or even particularly competent. All that is required is performing well enough to beat an enemy. You do not have to win elegantly; you just have to win.

JFQ

NOTES

¹ J.F. Lazenby, *Hannibal's War: A History of the Second Punic War* (Warminster, UK: Aris and Phillips, 1978), p. 275.

² Carl von Clausewitz, *On War*, edited and translated by Michael Howard and Peter Paret (Princeton: Princeton University Press, 1976), pp. 566–73. See also Antulio J. Echevarria II, “Clausewitz: Toward a Theory of Applied Strategy,” *Defense Analysis*, vol. 11, no. 3 (December 1995), pp. 229–40.

³ Clausewitz, *On War*, p. 204; Antoine Henri de Jomini, *The Art of War* (London: Greenhill Books, 1992), p. 70.

⁴ This argument is the central theme of Colin S. Gray in *Modern Strategy* (Oxford: Oxford University Press, 1999).

⁵ Clausewitz, *On War*, pp. 119–21.

⁶ Samuel B. Griffith, *On Guerrilla Warfare* (New York: Praeger, 1961), p. 31.

⁷ Rudolf von Caemmerer, *The Development of Strategic Science During the 19th Century*, translated by Karl von Donat (London: Hugh Rees, 1905), pp. 171–72.

⁸ Holger H. Herwig, *The First World War: Germany and Austria-Hungary, 1914–1918* (London: Arnold, 1997), pp. 96–106, is excellent.

⁹ Williamson Murray, “Does Military Culture Matter?” *Orbis*, vol. 43, no. 1 (Winter 1999), p. 37.

¹⁰ See Martin van Creveld, *Fighting Power: German and U.S. Army Performance, 1939–1945* (Westport, Conn.: Greenwood, 1982).

¹¹ Clausewitz, *On War*, p. 128.

¹² For lengthy musings, see Edward N. Luttwak, *Strategy: The Logic of War and Peace* (Cambridge: Harvard University Press, 1987). Luttwak argues that what works well today may not tomorrow exactly because it worked well today. Because Clausewitz insists war is essentially a duel, one may face an enemy capable of reacting creatively to one’s moves and perhaps even anticipate them.

¹³ Caemmerer, *Strategical Science*, p. 276.

¹⁴ Clausewitz, *On War*, p. 178.

¹⁵ This is a fair reading of the underlying premise of airpower theory. See Giulio Douhet, *The Command of the Air*, translated by Dino Ferrari (New York: Arno Press, 1972), p. 50; and John A. Warden III, “Success in Modern War: A Response to Robert Pape’s *Bombing to Win*,” *Security Studies*, vol. 7, no. 2 (Winter 1997/98), pp. 174–85. To the air strategist targeting is strategy.

¹⁶ Caemmerer, *Strategical Science*, p. 275.

¹⁷ André Beaufre, *An Introduction to Strategy* (London: Faber and Faber, 1965), p. 22.

¹⁸ Clausewitz, *On War*, p. 75.

¹⁹ Lawrence Freedman, *The Evolution of Nuclear Strategy* (New York: St. Martin’s Press, 1981), p. 433.

²⁰ Clausewitz, *On War*, p. 75.

²¹ Dominick Graham and Shelford Bidwell, *Coalitions, Politicians and Generals: Some Aspects of Command in Two World Wars* (London: Brassey’s, 1993), chapters 9–16, is pitilessly Anglo-Canadian in its critical view of Eisenhower as commander and serves as a partial corrective to the “patriotic” school of military history of the European campaign that finds undue favor among American writers such as Stephen E. Ambrose in *The Victors: Eisenhower and His Boys: The Men of World War II* (New York: Simon and Schuster, 1998).

GRADUATED PRESSURE



Honolulu conference,
1966

Naval Historical Center

President Johnson and the Joint Chiefs

By H.R. McMASTER

As early as May 1964 President Lyndon Johnson seemed to realize that the war in Vietnam would be a costly failure. In a taped phone conversation he confided to National Security Adviser McGeorge Bundy, “[It] looks like to me that we’re getting into another Korea. It just worries the hell out of me. I don’t see what we can ever hope to get out of this.” Vietnam was, Johnson said, “the biggest

damn mess that I ever saw. . . . It’s damn easy to get into a war, but . . . it’s going to be harder to ever extricate yourself if you get in.” Despite Johnson’s premonition, a web of events and decisions had slowly transformed the war into an American conflict. Although many forces such as the ideological imperative to contain communism, bureaucratic structure, and institutional priorities influenced Johnson’s decisions, those decisions depended primarily on the character of the President, his motivation, and his advisers. His fixation on domestic political goals, combined with a civil-military relationship based on

Lieutenant Colonel H.R. McMaster, USA, commands 1/4 Cavalry and is the author of *Dereliction of Duty: Lyndon Johnson, Robert McNamara, the Joint Chiefs of Staff, and the Lies That Led to Vietnam*.

Americans and Vietnamese during maneuvers, 1965.



Naval Historical Center

distrust, rendered the administration incapable of dealing with the tragic complexities of Vietnam.

Crossing the Threshold

No single decision led to direct intervention in Vietnam. Indeed, involvement began during World War II and grew during the 1950s as the United States first supported the French, then the fledgling nationalist government of South Vietnam against the communist North. The American military effort tripled between 1961 and 1963 as President John Kennedy tried to stabilize a rapidly deteriorating situation in the South. The assassinations of both Ngo Dinh Diem and John Kennedy in November 1963 marked a turning point. After that America would confront a new war.

Distressed over brutal repression of Buddhist unrest by the South Vietnamese government, the Kennedy administration fomented a coup against its ally that resulted in the murder of Diem and his brother, Ngo Dinh Nhu. With Diem gone, as Kennedy noted two weeks before his own death, the United States had “a responsibility to help this new government to be effective in every way we can.” As American responsibilities widened,

the Viet Cong sought to take advantage of the sudden change of government. The dynamic situation in the South after the coup against Diem added impetus to deliberations in Washington. The new President, Lyndon Johnson, and his advisers concluded that the situation demanded action beyond military advice and support. Between November 1963 and July 1965 critical decisions were made that took the United States into war against the communists.

The next turning point occurred in Spring 1964 when a strategy of graduated pressure was adopted. This strategic concept envisioned applying force at a low level and gradually increasing its scope and intensity and became the blueprint for deepening the American commitment to South Vietnam. It aimed to influence enemy calculations through carefully selected and controlled actions designed to send the right signal.

Initial elements of graduated pressure—covert action against the North—were underway as the United States crossed the threshold of direct involvement. After a North Vietnamese gunboat attacked U.S. destroyers in the Gulf of Tonkin on August 2, Johnson seized on the report of an ambiguous second attack on August 4 to mount a political coup against his Republican opponent in the November election, Barry Goldwater. The result was the Gulf of Tonkin resolution which gave the President carte blanche for escalation. From September 1964 to February 1965, he was able to advance domestic agenda items while assigning

initial elements of graduated pressure were underway as the United States crossed the threshold of direct involvement

Portable gas station
northeast of Saigon,
1966.



Naval Historical Center

Secretary of Defense Robert McNamara to build consensus behind the strategic concept of graduated pressure.

Having refused to respond to Viet Cong assaults on American facilities, the President again advanced the level of intervention in February and March 1965. Following an enemy attack on an air base at Pleiku, Johnson decided on February 9 to initiate systematic limited air strikes against targets in North Vietnam. On February 26 he committed ground forces to South Vietnam. Lastly, on March 15 he quietly approved engaging the Viet Cong by U.S. ground forces. Though none of those actions was tantamount to a clear decision for war, they collectively transformed the Nation's commitment to South Vietnam.

Together the decisions might give the impression of a deliberate administration inclination. Yet Johnson in fact did not want to go to war and had no plans to cross that line. Rather he sought to postpone an explicit choice between war and disengagement indefinitely.

Contriving Consensus

Profoundly insecure, Johnson feared dissent and was obsessed with preventing damaging press leaks. In 1964 he was preoccupied with becoming President in his own right. Vietnam was principally seen as a danger to that end. After the election he feared congressional or public debate over

Vietnam would jeopardize efforts to create the Great Society, his domestic legislative program. He could not risk failure. McNamara would help the President protect his electoral chances and enact the Great Society by providing a Vietnam strategy that appeared cheap and could be pursued with minimal public and congressional scrutiny. The McNamara approach of graduated pressure would permit Johnson to pursue his objective of not losing the war while postponing the day of reckoning and preserving the illusion of continuity with the policies of previous administrations.

Johnson's desire for consensus rather than debate shaped his relations with the Joint Chiefs of Staff and his other advisers and determined who exerted influence over Vietnam policy. When circumstances seemed to demand military action, the President did not turn to the chiefs to explore the consequences of expansion. He went instead to his civilian advisers to find ways to postpone a decision. He used McNamara to shield him from calls for more resolute action and the Secretary's visits to Saigon gave the impression military recommendations were under serious consideration. Forming ad hoc interdepartmental study groups had a similar effect. Additionally, McNamara used the Chairman, General Maxwell Taylor, to check recommendations forwarded by the Joint Chiefs. Taylor, who thought his role was to be a "true believer in the foreign policy and military strategy of the administration which he serves," shielded Johnson from views advanced

by his less politically sensitive colleagues while telling the chiefs their recommendations had received full consideration. To prevent the Joint Chiefs from expressing dissenting views, Taylor helped craft a civil-military relationship in which the President obscured the finality of decisions and made false suggestions that the chief's conception of the war might one day be realized. Meanwhile, with the Joint Chiefs relegated to the margins, civilian planners developed a flawed strategy for fighting what seemed to them a war without precedent.

Graduated Pressure

McNamara was confident that he could help the President postpone a decision between war and disengagement. He believed nuclear weapons and the Cold War environment made traditional military thinking not only irrelevant but dangerous. Accordingly, with systems analysts and other civilians in the Pentagon and the Department of State, he developed plans independent of military advice and the historical record. Bolstered by what

that defies systems analysis quantification. Once America crossed the threshold with covert raids and Gulf of Tonkin reprisals, the course of events depended not only on decisions made in Washington, but also on unpredictable enemy responses. But McNamara viewed the war as another business management problem that would succumb to rational calculations. He and his whiz kids thought that they could predict with precision what amount of force would achieve the desired result and that they could control that force with precision from halfway around the world. However, there were compelling arguments that graduated pressure would not convince Hanoi to desist from fomenting insurgency but in fact could lead to escalation. General Harold Johnson, Chief of Staff of the U.S. Army, doubted that even the total destruction of North Vietnam would end the insurgency. Nevertheless, McNamara refused to consider the consequences of his strategy and forged ahead oblivious to the nature of the conflict and the human and psychological complexities of war.

Despite the recognition that graduated pressure was fatally flawed, the Joint Chiefs were unable to articulate their objections or alternatives. Interservice rivalry was an impediment. Although their differing service perspectives and interests were understandable, the chiefs were obligated by law to render their best advice. Both a failure to do so and a willingness to present single-service remedies prevented them from thinking effectively about strategy. They in large measure abdicated their statutory responsibility as principal military advisers.

When it became apparent that the Joint Chiefs were to have little influence on policy, they refused to confront the President with objections to McNamara's approach. Instead they attempted to work within that strategy to gradually remove limitations on further action. Unable to develop an alternative to graduated pressure, they became fixated on means and pressed for escalation by degrees. They hoped graduated pressure would evolve into an essentially different strategy more attuned with their belief in greater force and its more resolute application. In so doing, they gave tacit approval to graduated pressure as the President escalated the war. They failed to recommend the force levels that they believed would ultimately be required and accepted a large but inadequate number of troops for an extended period with little hope for success. Lacking a strategy, the Joint Chiefs and the senior American officer in Vietnam, General William Westmoreland, equated military activity with progress and focused on a tactical task, killing the enemy.

despite the recognition that graduated pressure was fatally flawed, the Joint Chiefs were unable to articulate their objections or alternatives

he regarded as a personal triumph during the Cuban missile crisis, he applied that experience to Vietnam. A principal assumption of graduated pressure, that carefully controlled and severely limited military action was reversible and thus could be carried out at minimal risk and cost, allowed McNamara and Johnson to avoid facing many of the consequences of their actions. Graduated pressure created the illusion that attacks on the North were means of communication and alternatives to—rather than acts of—war. Because the favored method of communication (bombing fixed installations and economic targets) was not appropriate against a guerrilla force, McNamara and his colleagues pointed to the infiltration of both men and supplies as proof that the source of enemy power lay north of the 16th parallel, specifically in Hanoi. They derived their definition of the source from the strategy of graduated pressure rather than a critical examination of the reality in South Vietnam.

Graduated pressure was fundamentally flawed in other ways. It ignored the uncertainty of war and the unpredictable psychology of an activity that involves killing and destroying. To the North Vietnamese, attacks on their forces and bombing of their territory were not simply means of communication. Human sacrifice evokes strong emotions that create a dynamic



F-8 attacking enemy stronghold, 1966

U.S. Navy



Naval Historical Center (J.F. Falty)

Marines boarding
USS Lenawee for
Vietnam, 1965.

The Whiz Kids

Johnson and McNamara were far from disappointed with the failings of the Joint Chiefs. The President, because of domestic priorities, had little use for advice that was inconsistent with his political objectives. Meanwhile, McNamara resolved to take advantage of their weaknesses. He reported to Johnson in March 1964 that a divide-and-conquer approach to the chiefs was going well. For military

advice, McNamara relied primarily on his whiz kids at the Pentagon, a group of young analysts who McNamara and Kennedy had drawn into government service. They considered military experience a liability because soldiers took a narrow view and based advice on antiquated notions of warfare. One top analyst likened leaving decision-making to the professional military to allowing welfare workers to develop national welfare programs. The whiz kids used statistics to analyze defense programs and issues and then provided the Secretary and the President with the information to make decisions. The whiz kids saw no limits to the applicability of their methods. They sought maximum political payoff in Vietnam at minimal military cost and assumed that Ho Chi Minh, when faced with a threat of military muscle, would behave reasonably and end support for the communist insurgency.

It should not be surprising that the way in which the United States went to war between November 1963 and July 1965 would profoundly



Naval Historical Center (Alan K. Holm)

Ambassador Taylor and
General Westmoreland,
1965.

influence the conduct of the conflict and its outcome. Policy decisions were based on domestic political expediency. The President was intent on forging a consensus behind what he believed was a middle ground policy that would not alienate key constituencies on which his domestic goals depended. The administration deliberately avoided clarifying objectives and postponed discussing the level of force it was willing to com-

mit. Indeed, because Johnson was seeking a political consensus built on lies and obfuscation, members of the administration believed that ambiguous objectives were a strength rather

than a weakness. Civilian planners in the Departments of Defense and State concluded they could preserve American credibility after a show of force against Hanoi in which Americans were bloodied. That approach, combined with the notion that force was merely a form of diplomatic communication, militated in favor of stalemate rather than victory. After the United States became committed to war, however, and more Americans died in combat, it would become impossible to simply disengage and declare national credibility intact. This should have been foreseen.

The Team

The Joint Chiefs sensed the ambiguity in Johnson's policy but did not directly challenge the views of civilian planners. Thus when the United

States went to war, the chiefs pursued different goals from the President and Secretary. When they sought permission to apply force consistent with their conception of U.S. objectives, Johnson and McNamara, based on their own goals and domestic political constraints, rejected their requests or granted them only in part. The Joint Chiefs and Secretary focused on means rather than ends, and on tactics rather than a strategy designed to connect military actions to achievable policy objectives.

Instead of advice, McNamara and Johnson extracted acquiescence and silent support from the Joint Chiefs for decisions that they had already made. Even as the chiefs were relegated to the margins, a facade of consultation was preserved to preclude them from opposing administration policies openly or from behind the scenes. As involvement escalated, the President's vulnerability to disaffected senior officers increased because he was deceiving Congress and the public about the nature of the military effort. To keep the chiefs on the team, the President and Secretary obscured their decisions and left their limits on the use of force undefined. In April 1965, Johnson promised the money, material, and effort needed to defeat the Viet Cong. He played to the sympathy of the Joint Chiefs, referring to himself as the coach and the chiefs as his team.

The ultimate test of loyalty came in July 1965. Administration falsehoods increased in magnitude as the conflict escalated. The President misrepresented the mission of ground forces, distorted the views of the military to lend credibility to his decision against mobilization, grossly understated the number of troops requested, and misled Congress about the cost of actions already taken and those awaiting decision. The President was lying and he expected the Joint Chiefs to do the same, or at least withhold the whole truth. They did not disappoint him. In the days before Johnson made his duplicitous statement of July 28, 1965 about Westmoreland's request for more ground units, they withheld from Congress their estimates of the forces needed and their belief that mobilization was necessary, thereby lending silent support to Johnson's deceptions.

Several factors kept the chiefs from challenging this subterfuge. They felt genuine loyalty to the President as Commander in Chief. Moreover, the Truman-MacArthur controversy during the Korean War reminded them of the danger of overstepping their bounds under civilian control of the military. Any action that could undermine administration credibility and derail Vietnam policy could not be undertaken lightly. For one, General Earle Wheeler, who became Chairman in July 1964, believed the war could "be lost in



Naval Historical Center (V.O. McColey)

Troops conducting search-and-destroy mission, 1966.

Washington if Congress loses faith." Parochialism also played its part. Chief of Naval Operations, Admiral David McDonald, and the Commandant of the Marine Corps, General Wallace Greene, both compromised themselves for concessions to their respective services. Moreover, the characters of the chiefs predisposed them to acquiescence rather than confrontation. The strength of the Chief of Staff of the U.S. Army, General Johnson, lay in perseverance under difficulty rather than challenging the administration, an act that he would regret for the rest of his life. General John McConnell, when interviewed for the position of Chief of Staff of the Air Force, promised his full support to the President even if he felt administration policies were flawed. He believed his role was to provide the National Command Authorities with "suitable alternatives for the application of military power" so the President and Secretary could "choose the one that best solved the problem as they saw it."

Although the chiefs must give Congress their best advice based on professional experience, they must not overstep the bounds of civil control of the military or undermine their credibility by crossing the line between advice and advocacy. Because the U.S. Constitution places that control in Congress as well as in the executive, they could not have been justified in misleading the people through their representatives about Vietnam. During the critical period in which Vietnam became an American war, a deceitful and manipulative civil-military relationship allowed the President to deny Congress and the public to openly voice their views in the most momentous issue a nation faces.

Because forthright communication between civilian officials and military officers was never established in the Johnson administration, there was no reconciliation of the intention on the part of McNamara to sharply limit the military effort and the assessment by the Joint Chiefs that the United States could not possibly win under such conditions. Had there been such an exchange, everyone would have recognized the futility. Instead, the chiefs lent credibility to the President's deceptions, aiding him in forestalling meaningful debate, and focused on a tactical task, killing the enemy.

The Westmoreland strategy of attrition was in essence the absence of a strategy. The result was military activity (bombing targets in the North and killing the enemy forces in the South) with no realistic objective. As casualties mounted, the public lost faith. The chiefs did not request the level of troops necessary to impose a military solution until after the Tet offensive in 1968. But by then the President was besieged by opponents to the war and unable to even consider the matter.

Lyndon Johnson thought he could control U.S. involvement in Vietnam. That conviction, based on a strategy of graduated pressure and assurances by Robert McNamara, proved false. The President should not have been surprised by the consequences of his decisions between November 1963 and July 1965. He had disregarded advice he did not want to hear in favor of a policy based on the pursuit of his own political fortunes and domestic programs. The disaster in Vietnam was not the result of impersonal forces but of a uniquely human failure, the responsibility for which was shared by Johnson and his key advisers. The failings were many and reinforcing: arrogance, weakness, lying in the pursuit of self-interest, and above all the abdication of responsibility to the American people.

JFQ

General Henry H. Shelton, USA

Chairman of the Joint Chiefs of Staff

(October 1997–September 2001)

I would like to share my thoughts with the readers of Joint Force Quarterly on the enduring priorities of the Armed Forces. After many years in uniform I have learned three basic lessons that focus my activities as Chairman. The first is that in our lethal profession there is no substitute for being ready when called. The next is that our people and their families are our most precious asset and that if we take care of them they will never let the Nation down. Finally, we must think about tomorrow even while fighting today. These are my priorities. Are we ready? Do we take proper care of our people? Are we preparing adequately for the future? Answers to these questions will define our success as a joint force well into the next century.

As the premier military power in the world we enjoy a unique opportunity to learn from the past and apply its lessons to ensure our continued freedom and prosperity. The 20th century has seen high achievement and stark tragedy, but America has emerged with the strength and vision to play a leading role in international peace and stability. We must move forward with determination to shape the future for our children and their children. With the continued support of Congress and the American people, I am confident that the Armed Forces will help build a new century, perhaps the best we have yet known.

—JFQ, Issue 18 (Spring 1998)



55th Signal Company (Angelica M. Harris)

Joint Guardian.

C-17 taking off during
Large Package.



Interdependent Maneuver

for the 21st Century

By ANTULIO J. ECHEVARRIA II

Virtually all intelligence and operational estimates suggest that war in the 21st century will require interdependence among land, sea, and aerospace systems. The services report that precision weapons will so expand the range and capabilities of systems that the tactical deadly zone, once a few hundred meters, could extend beyond 200 kilometers by 2020. Operational exclusion zones, designed to deny access to land, sea, and aerospace forces, might reach 2,000 kilometers. Each is

likely to be flooded with an admixture of technologically sophisticated and relatively crude precision and area-fire weapons (including weapons of mass destruction) linked by communication systems from state-of-the-art to the relatively primitive. At the same time, a dynamic strategic environment will add missions and responsibilities. Thus service interdependence will be necessary at the low and high ends of the conflict spectrum.

Although *Joint Vision 2020* calls for the Armed Forces to become fully joint, it provides no operational concept for moving in that direction. The desired endstate, full spectrum dominance, requires becoming better than everyone else at doing everything. A worthwhile aim, it does not offer the common ground for developing a shared

Lieutenant Colonel Antulio J. Echevarria II, USA, is director of national security affairs at the Strategic Studies Institute at the U.S. Army War College and is the author of *After Clausewitz: German Military Thinkers Before the Great War*.

conceptual model of future operations. Even more disconcerting, two concepts that allegedly support full spectrum dominance—dominant maneuver and precision engagement—stem from competitive rather than complimentary traditions. Unless reconciled, no move toward interdependence will occur. This article examines the definitional and historical tensions underlying dominant maneuver and precision engagement and suggests a way of harmonizing them under a new operational concept, interdependent maneuver.

Conflicting Definitions

Documentation such as *JV 2020* and Joint Pub 3.0, *Doctrine for Joint Operations*, does not provide a unifying concept. As presented in *JV 2020*, its four concepts—dominant maneuver, precision engagement, focused logistics, and full dimensional protection, and their endstate, full spectrum dominance—are little more than tautologies. Dominant maneuver amounts to the capacity to conduct maneuver that dominates, precision engagement equates to the ability to engage with precision, and so forth. Presumably these tautologies are marks on the wall toward which each service (as well as the many partners involved in defense research and development) should focus. However, since they are self-referential, tautologi-

cal concepts tend to become ends in themselves. In other words, efforts to improve precision engagement tend to take place in isolation from similar endeavors in developing

other concepts and could proceed beyond the point at which they contribute most meaningfully to full spectrum dominance. In a world of limited resources, efforts to perfect one capability could undermine the individual and collective effectiveness of others. Thus working toward ideal capabilities introduces pitfalls that might run counter to the development of a unifying operational concept. A vision document must at some point present desired capabilities that might come together to achieve battlefield success.

Moreover, the lack of a unifying operational concept is a result of the failure of *JV 2020* to reconcile tensions between dominant maneuver and precision engagement. For example, dominant maneuver means having positional advantage with decisive speed and overwhelming operational tempo. Widely dispersed joint land, sea, air, special operations, and space forces—capable of scaling and massing force or forces and the effects of fire—will secure advantage across the

range of military operations through the application of information, deception, engagement, mobility, and countermobility capabilities.

On the other hand, precision engagement is the ability to locate, surveil, discern, and track objectives or targets; select, organize, and use the correct systems; generate desired effects; assess results; and reengage with decisive speed and overwhelming operational tempo throughout the full range of military operations.

Each concept, according to *JV 2020*, uses “decisive speed and overwhelming operational tempo” and is to be applied across the “full range of military operations.” But to gain dominant maneuver one must also carry out all the activities—“scaling and massing force or forces and the effects of fires”—contained in the definition of precision engagement. In fact, on closer inspection, engagement seems to be integral to maneuver rather than a separate concept. Indeed, in most cases precision engagement will not occur without some movement of joint forces or assets, whether it be repositioning intelligence gathering satellites or launching F-16s. Similarly, dominant maneuver will likely require some form of engagement, whether surveillance and tracking hostile

the lack of a unifying concept is a result of the failure of *JV 2020* to reconcile dominant maneuver and precision engagement



Minuteman III,
Force Development
Evaluation Program.

U.S. Air Force (Amanda M. Edwards)

**USS Tarawa operating
off Aden.**



U.S. Navy (David Miller)

aircraft or neutralizing cruise missile sites, to permit enough movement for positional advantage. Differently put, it is as if *JV 2020* defined the terms separately to mollify service interests rather than to isolate their virtues as concepts. Dominant maneuver and precision engagement are interdependent—parts of the same activity.

Dominant maneuver and precision engagement are defined independently because they have evolved from two conflicting traditions. The origins of dominant maneuver are rooted in theories identified with the military canon of the 20th century, so-called *Blitzkrieg* doctrine. In contrast, concepts underpinning precision engagement emerged from ideas which influenced strategic bombing theory as developed following World War I.

Loosely associated with the work of Basil Liddell Hart, J.F.C. Fuller, and Heinz Guderian, *Blitzkrieg* (lightning-war) centered on using air bombardments, artillery fires, and armored attacks to penetrate defensive zones, disrupt command and control, and sever lines of communication and supply. At best the psychological shock would cause a defender's resistance to collapse suddenly. At worst it would force an enemy to fight in encircled pockets, against overwhelming odds, and with rapidly diminishing supplies.

With emphasis on both physical and psychological dislocation, *Blitzkrieg* represented the epitome of 20th century maneuver theory.

A significant contribution to that theory came in the 1980s and 1990s as American military writers engaged in a debate over the merits of firepower versus maneuver. This exchange resulted in a redefinition of the concept of maneuver as the "use of fire and movement to gain a positional advantage." Maneuver was thus divided into two mutually supporting elements—fire and movement, which could be employed sequentially or simultaneously. Fire is subsumed under maneuver. Yet for all its innovation, this new definition was applied better on the tactical than on the operational or strategic levels because coordinating fire and movement over great distances remained difficult, chiefly because of the limitations of communication technology.

The applicability of *Blitzkrieg* was not limited to land operations. Both land- and seapower evolved in similar ways and shared enduring principles. Alfred Thayer Mahan and Julian Corbett, prominent naval thinkers, relied upon landpower concepts such as central position, strategic lines of communications, and concentration of force to gain command of the sea. Early Japanese victories in the Pacific—the fall of Malaya and Singapore in two and a half months, Burma and the Philippines in three and a half

C-17 landing at North Field, South Carolina.



1st Combat Camera Squadron (Jeffrey Allen)

months, and the Dutch East Indies in two and a half months—validated the ideas espoused by Mahan and Corbett while confirming that *Blitzkrieg* would work in theaters in which naval (including amphibious) operations replaced armored pincer movements. The essential ingredient in rapid maneuver was not the armored vehicles but pinpoint application and timing of all-arms attack, followed by rapid exploitation before an enemy could recover. Accordingly, recent studies have concluded that the principles of maneuver warfare on land apply equally at sea.

Ideas associated with strategic bombing theory emerged concurrent with, but independent of, *Blitzkrieg* doctrine. They were inspired by events during World War I such as the bombing of London. Six months of air raids in 1915 caused 1,750 casualties and created a panic among the British population. Although the air arms of the day could not create or sustain the tempo to induce the enemy to surrender, Giulio Douhet in Italy, Hugh Trenchard in Britain, and Billy Mitchell in the United States believed that airpower, which was evolving rapidly, had revolutionized warfare. Accordingly, they argued that it was the best way to strike an enemy psychological center of gravity. By means of strategic bombing, air forces could circumvent the tactical and operational carnage of

surface attacks to strike directly and perhaps incessantly until an enemy capitulated or its capability to resist was destroyed.

With the appearance of larger aircraft and precision munitions at the end of the 20th century, a new generation of airpower theorists—notably John Warden—argued that the technology for achieving strategic collapse of an enemy was just over the horizon. Rather than using massively devastating bombardment, planners could employ long-range precision munitions for surgical strikes, greatly limiting collateral damage. As the range and variety of precision munitions grew, theorists began to embrace the possibility of executing parallel attacks—numerous simultaneous strikes against critical infrastructure nodes. These attacks would inflict damage on strategic assets that would render an enemy incapable of either reacting or recovering, thereby forcing strategic paralysis and psychological collapse.

The principles underlying dominant maneuver and precision engagement share a common theme—attacking an enemy psychological center of gravity. However, the fundamental difference is that the former finds movement as essential to effect an attack while the latter considers physical destruction as key. Both employ tempo, although for dominant maneuver tempo pertains to the pace of physical movement in relationship to that of an enemy. Precision engagement, on the other hand, uses tempo in terms of the rate at

M-1 on range in Korea,
Fool Eagle '00.



1st Combat Camera Squadron (Wayne Clark)

which destruction is inflicted on critical strategic assets. Both concepts also make use of lethality. But dominant maneuver uses lethality as a means to facilitate movement while precision engagement employs movement to inflict lethality.

Another difference is the level on which the concepts apply. Dominant maneuver is found to

practical applications of the conceptual forerunners of dominant maneuver and precision engagement have a mixed record

be the most applicable on the tactical and operational levels because of logistic and deployability limitations. Precision engagement is often considered in terms of strategic applicability because of the great distances that munitions and delivery systems can cover and because their expense makes them undesirable when used against tactical targets.

The intellectual tradition behind each concept has led to institutional conflict, not only with regard to budgets but to the roles of air assets in campaigns and whether they should be controlled by a single service. This conflict cannot be wholly solved with a unifying operational concept, but that is a place to start.

Blitzkrieg Revisited

Practical applications of the conceptual forerunners of dominant maneuver and precision engagement have a mixed record. *Blitzkrieg* doctrine was validated by German attacks on Poland, which fell in one month, Denmark and Norway, which succumbed in two months, and France and the Low Countries, which were overrun in one and a half months. But for various reasons, not the least of which was better training and equipment, Germany's enemies grew less susceptible to the psychological shock of *Blitzkrieg* as the war progressed. Campaigns between 1941–45, such as those conducted in Russia, North Africa, and Italy, became protracted as armies, navies, and air forces adjusted to a new style of war. Victory had to be won, more often than not, through costly and deliberate annihilation. On the Russo-German front, for example, where fighting was particularly bitter, encircled forces held out for extended periods, depriving *Blitzkrieg* of its chief advantage, lightning-like decisions. While the conflict remained one of movement on all fronts, logistical requirements and adaptive opponents limited the exploiting of tactical victories for operational effect.

From 1945 to 1995 the concept of *Blitzkrieg* changed more in form than substance. The object remained integrating ground, naval, and airpower into decisive strikes to break enemy will to fight



2nd Communications Squadron (Sarah E. Shaw)

B-52 being refueled,
Desert Fox.

or destroy its military. The Arab-Israeli, Falklands, Panama, and Persian Gulf conflicts proved that the *Blitzkrieg* concept was valid even if defensive technology was becoming deadlier and enemies did not always collapse instantly. Still the problem of moving beyond operational to strategic exploitation remained. Except in a few cases, maneuver forces could not maintain an operational tempo that was sufficient to turn tactical success into strategic victory.

Legacy of Strategic Bombing

Unlike *Blitzkrieg*, history shows that the concept of strategic bombing outpaced technology. Although most evidence before World War II suggested that new air arms had enormous potential,

results fell short of expectations. Strikes against cities and industrial sites did not ensure victory. Rather than surrendering en masse, civilians became inured to massive devastation. Their will to resist was arguably strengthened rather than diminished. The bombing of Hamburg in 1943, for example, caused 90,000 casualties in a four-month period, the bombing of Dresden in 1945 killed 80,000 in three months, and the most devastating of the Tokyo raids led to 125,000 victims during May 1945. Even with tremendous destruction, long-range bombing technologies did not generate sufficient tempo or lethality to compel surrender.

For a time it appeared that Douhet and his disciples had mistakenly convinced themselves that air arms alone could achieve decisive effects. Then the United States dropped atomic bombs on Hiroshima and Nagasaki, causing some 220,000 casualties in three days. Technology seemed to finally catch up with theory. From the standpoint of more conventional munitions, however, the events of World War II had neither proved nor disproved the case for strategic bombing.

From 1945 to 1980 intercontinental ballistic missiles not only expanded traditional strategic distances to global proportions but gave Douhet a renewed relevance. For a while, the capability to deliver long-range weapons of mass destruction against cities and industrial centers, whether dropped from B-52s or launched from submarines or missile silos, appeared to render conventional forces obsolete. Strategic attack became synonymous with nuclear attack, and strategic theory was focused on concepts such as nuclear deterrence, flexible response, and mutual assured destruction. Fortunately, the practical application of strategic nuclear attack is untested. Meanwhile, the advent of precision-guided munitions meant launching a strategic strike without mass casualties associated with weapons of mass destruction. Long-range precision strikes were viewed as the new warfare, and campaigns in the Persian Gulf, Bosnia, and Kosovo have been touted as airpower victories. Although under the right conditions such weapons can indeed modify enemy behavior, the extreme of strategic psychological collapse prophesied by Douhet and Warden has proven elusive.

The Human Factor—People's War

Conflicts in Vietnam, Cambodia, Afghanistan, and Somalia warned that insurgencies, civil wars, and terrorism remained the Achilles heel of dominant maneuver and precision engagement. Neither concept has been particularly successful in resolving protracted, internecine, or civil wars.

Marine vehicles in
UAE, Iron Magic.



13th Marine Expeditionary Unit, Combat Camera (Brandon P. O'Brien)

Such conflicts generally do not involve limited aims such as breaking the enemy will to resist, but nonnegotiable objectives such as political annihilation or genocide. The centers of conflict tend to remain dispersed. Time benefits the side that wages a protracted war by offering an opportunity to learn and adapt. The side that seeks a short, decisive war, on the other hand, suffers a decline in morale as its expectations are frustrated and its emotional endurance wanes.

The basic element in waging protracted war, as Mao Tse Tung noted, is not overwhelming force, but patience. Indeed, a decisive battle in the traditional sense was to be avoided. Instead of a classic confrontation of force on the battlefield, Mao called for first creating and consolidating a political base of support among the populace, then expanding that base by bold attacks that forced an enemy on the defensive and then a full-scale counteroffensive. This theory proved successful in China and was adopted in other agrarian societies, especially in Vietnam and Cuba. Because such conflicts are decentralized, with the front nowhere and everywhere, they pose unique challenges to doctrines that attack the enemy psychological center of gravity by more conventional means. While U.S. forces consistently achieved tactical victories in Vietnam, political constraints kept them from achieving operational and strategic success.

Reconciling New Ways of War

To merge the concepts found in *JV 2020*, a unifying operational concept is required to combine the advantages of rapid movement with the benefits of precision strike. It also must unite the tactical and operational applicability of dominant maneuver with the strategic reach of precision engagement. It must make movement and fire interdependent—hence *interdependent maneuver*.

This means applying principles of fire and movement on all levels of war simultaneously, elevating a tactical concept to an operational and strategic one. This leap in conceptual warfare is made possible by expected advances of information, maneuver, and firepower technologies over the next 20 years (the focus of *JV 2020*). Interdependent maneuver assumes that such advances will blend the tactical, operational, and strategic levels of war into a single continuum of military activity. In any case, these levels have historically been little more than arbitrary categories used to enable planners to assign objectives, resources, and responsibilities. Therefore, rather than accept such distinctions, one may find it more useful to see warfare as consisting merely of military actions—whether hand-to-hand combat or strategic bombing—linked in time and space by

USS Pennsylvania.



U.S. Navy (Larry Smith)

myriad information systems. It may also be helpful to divide such actions into *fire*—the ability to inflict lethality whether by the tip of a bayonet or the virulence of a biological agent—and *movement*—the physical relocation necessary to deliver lethality.

Interdependent maneuver thus is built upon the definition of tactical maneuver developed by military theorists in the 1980s and 1990s. In terms of application, however, it brings the synergy of fire and movement to the realms of operations and strategy, levels on which these components have never been applied in tandem. For example, once a decision is made to use force in a crisis, interdependent maneuver means that integrated ground, naval, and aerospace assets would begin to move into theater while at the same time laying down suppressive fires throughout. Such fires would engage what have traditionally been considered enemy tactical forces as well as operational and strategic reserves and other critical strategic assets. The fires would combine ground, naval, and aerospace systems employing lethal and nonlethal weapons to facilitate the insertion of ground elements. These units would initially consist primarily of special operations forces equipped with reach-back support and

non-line-of-sight weapons. They would be deployed in and around key terrain to provide human intelligence, report battle damage assessment, augment other special operations forces already in theater, and interdict enemy movements with reach-back fires.

The suppressive effects of fires executed throughout theater would in turn enable additional aerospace, naval, and perhaps heavier ground forces to be deployed into combat. Such forces would exploit strategic vulnerabilities—extant or created by interdiction fires—in enemy defensive zones and maneuver to obtain a position of advantage. In the meantime suppressive attacks would continue throughout, developing synergy that comes from fire and movement. An enemy is thus presented with a constant rain of destruction across its entire defensive zone as well as the threat of inevitable capture or destruction by ground maneuver forces via the close fight.

One further benefit is that interdependent maneuver applies more to situations that resemble people's wars than to traditional maneuver conflicts. If such a war is in the first phase—building a political base—operations would likely entail less suppressive fires and a greater number of ground elements to isolate an enemy from indigenous peoples, destroy supply caches, and interdict efforts to reestablish a logistic flow. If people's war is in the second phase—expansion—interdependent

maneuver would be used to preempt its expansion. Suppressive fires and ground elements would operate in tandem to reduce known enemy concentrations, effect isolation, and erode indigenous support. The third phase—full scale counteroffensive—resembles a conventional conflict.

Interdependent maneuver is more than linking ground maneuver with the halt-phase concept, which claims that airpower alone can decisively defeat a large-scale armored attack. First, it

**interdependent maneuver
calls for a fully joint approach,
generating synergy between
fire and movement**

calls for a fully joint approach from the outset, generating synergy with the interaction between fire and movement rather than placing the burden of success on one dimension, with others absent or

only in support. Second, halt phase applies to a limited segment of the threat spectrum; it can't effectively address people's war, for example. The type of conflict to which the halt-phase concept applies, armored engagements in relatively open terrain like the Middle East or Korean peninsula, is becoming rarer. By contrast, interdependent maneuver is based on the principle of presenting an enemy with a dual threat—destruction by fire or the close fight. Aerospace power alone is too easy to counter. The Armed Forces need a truly integrative operational concept to give them every possible advantage.

Technological Prerequisites

Ground forces will surely need to enhance strategic deployability to execute interdependent maneuver. The Army and Marine Corps have recognized this fact and established vehicle/system requirements to accommodate easier air and sealift with regard to military and commercial transport capabilities. Vehicles/systems projected for the 2020 timeframe will likely feature modular designs to permit mixing and matching components to a single chassis. One example of such a maneuver technology, a hybrid, air-cushioned vehicle, is currently under investigation and could hover over level terrain or water, enabling it to reach speeds well beyond conventional track or wheeled systems. At the same time, advances in active protection systems, lightweight ceramics, titanium, and other metals might afford ground vehicles nearly as much protection as heavy armor. Ground forces are also exploring vertical-take-off-and-landing and short-take-off-and-landing technologies to develop viable self-deployment options. Other initiatives include developing fuel-efficient and hybrid-power technologies to reduce logistic requirements,

making ground units more strategically agile. Most of these technologies are already under development in DOD or industrial laboratories. *JV 2020* should promote such technologies through a coherent, unifying operational concept that illustrates how such capabilities will contribute to military success.

The technological revolution of the 21st century which is currently underway might finally combine fire and movement in a genuinely effective manner. If so, well-timed, precisely-directed surface, subsurface, and supersurface attacks over extended areas will provide a better means for achieving political and military objectives even in situations like Vietnam, Bosnia, and Kosovo, where force requirements may be subtle and dispersed. To realize this potential, we must complete this revolution with comparable conceptual and doctrinal transformation. At a minimum, a means must be found to move the Armed Forces from a joint to interdependent approach. As *JV 2020* asserts, "Without intellectual change, there is no real change in doctrine, organizations, or leaders." Indeed, recent debates over which service is the arm of decision prove that there is still some way to go. Thus we must reconcile tensions between dominant maneuver and precision engagement. Merging these competing traditions into a single unifying operational imperative will not only reconcile them but permit a coherent articulation of how a particular list of desired capabilities would contribute to the execution of military actions and provide a blueprint to focus the efforts of the research and development community.

Adopting independent maneuver is not equivalent to emulating the technological optimism that captured airpower theorists before World War II. The evolution of technology will bring both opportunities and challenges to future ways of war. Indeed, whatever new technologies may bring, the key to applying military force will remain the ability to discriminate between the will of an enemy to fight and its means to do so.

JFQ

Nanotechnology in a New Era of Strategic Competition

By SHANNON L. CALLAHAN



Preparing GBU-16
aboard *USS Enterprise*.

U.S. Navy (Jacob L. Hollingsworth)

New technologies on the battlefield can alter the course of history and precipitate the rise or fall of nations. The advent of microelectromechanical systems (MEMS) coincides with what some regard as a revolution in military affairs (RMA), an onset of technological innovation that changes the nature of warfare. These tiny devices could be the revolution's enabling technology.

Lieutenant (Junior Grade) Shannon L. Callahan, USN, is undergoing training as an electronics countermeasures officer with EA-6B Fleet Replacement Squadron.

In the mid-1990s, Admiral William Owens articulated the initial RMA concept as a *system of systems* that yields total *situational awareness*. An overarching systems architecture integrates an array of capabilities such as command and control, surveillance, reconnaissance, intelligence, and targeting. Under this integrated system, advantages of individual platforms and capabilities are fused into a powerful joint warfighting entity. As Andrew Marshall has predicted "The change will be profound . . . the new methods of warfare will be far more powerful than the old."¹

MEMS is a far-reaching technology with possible application to two broad military arenas: precision guided munitions (PGMs) and individual soldiers. The former represents the stand-off warfare likely to characterize future major regional conflicts while the latter represent a countertrend to manpower-intensive, close-in fighting likely to characterize military operations other than war. MEMS answer some criticisms of the revolution in military affairs—such as prohibitive cost—and expand the impact of the revolution by bringing its fruits to the level of the warfighter.

The developments examined below represent areas of great potential. They are in various stages of development, but their eventual realization is probable and cannot be ignored. Without serious consideration of MEMS, the Nation could lose its unchallenged military prominence like other states on the brink of RMAs who rested on past accomplishments or early leads.

Vision of New Technology

Richard Feynman delivered a speech in 1960, “There’s Plenty of Room at the Bottom,” which envisioned a technological world of the very small, where the units of construction were not blocks or circuits but atoms.² Nanotechnology, a term coined by Nobuhiko Taniguchi in 1974, is the technology of the ultrasmall: roughly the 1–100 nanometer or billionth of a meter (10^{-9} meters) range. Minia-

turization will extend to mechanics and electronics. The field that combines the two

microelectromechanical systems is known as MEMS in the United States. The vision statement of the Defense Advanced Research Projects Agency, which is spearheading research and development on MEMS, reads:

The field of microelectromechanical systems is a revolutionary, enabling technology. It will merge the functions of compute, communicate, and power together with sense, actuate, and control to change completely the way people and machines interact with the physical world. Using an ever-expanding set of fabrications processes and materials, MEMS will provide the advantages of low power, low mass, low cost, and high functionality to integrated electromechanical systems both on the micro as well as the macroscale.

It must be stressed that MEMS are a multidisciplinary *approach* to design and fabrication, not simply a class of products. Its devices fall into three general categories: sensors, actuators, and mechanical components such as gears, cogs, and switches. These three categories demonstrate the ubiquity of this emerging potential. Virtually any

mechanical or electronic device can be shrunk by replacing macroscale parts with MEMS.

But this technology is more than just miniaturization of existing systems. It allows for new functionality since the decrease in size facilitates the creation of new architectures. Through them an entire subsystem could be integrated on one chip. For example, one firm replaced an avionics component of 1,044 parts for F-22s with an equivalent MEMS component that had only 36 parts. This characteristic of multiple and mixed technology integration in MEMS devices and fabrication technologies may be especially relevant

Getting situation report, Culminating Phase Experiment.



2nd Marine Division (D.R. Storms)

to the Armed Forces, which relies on a core competency of integrated global and local surveillance, communications, and data fusion.

New High Ground

MEMS offer several dramatic advantages. The first is what makes the technology possible to begin with: universally accessible fabrication. These tiny parts are manufactured using the same processes as the integrated circuits of microchips

the field that combines the two microelectromechanical systems is known as MEMS in the United States

and can be made of silicon wafers. Because of the manufacturing technology, 10,000 MEMS can be built as easily as one. Correspondingly, ease of fabrication allows engineers to change the way they design systems. Economies of scale make production inexpensive. In fact, this massive reduction in cost is the main driver for research. For example, Raytheon Corporation wants to build a system of circuits for radios at 3 percent of the cost of macroscale systems. This product will shrink a bulky \$200,000 system into a radio the size of a credit card for only \$2,500. Multiplicity permits augmenting low-end systems with high-end technologies for greater performance and extended life. Many products can be upgraded, or many redundant systems can be included in the larger architecture for improved reliability and lowered maintenance demands. MEMS make advanced technology affordable in quantity.

Secondary effects will also reduce cost. Microscale systems require less energy to operate moving parts. Systems that run on lower power produce less heat, leading to fewer maintenance problems and a longer service life. Moreover, smaller systems that weigh less require less energy to propel. Other advantages

with micronavigation components, many dumb munitions could be transformed into PGM-like weapons

stem from the physical properties of very small devices. Many use electrostatic energy for power, drastically reducing energy requirements.

In some cases extreme sensitivity to the environment acts as a disadvantage, particularly in high temperatures. This special packaging challenge can account for more than 80 percent of the costs. Despite this problem, the demand for and development of this technology is continuing at an amazing pace. The Committee on Advanced Materials and Fabrication Methods for MEMS of the National Research Council contends that the technology makes possible the "implementation of fault-tolerant architectures that are modular, rugged, programmable, conventionally interfaced, and relatively insensitive to shock, vibration, and temperature variations."³ Even though more research is needed in the field of MEMS packaging, solutions will be discovered.

MEMS is achieving a technological critical mass as more and more possible applications emerge, including:

- inertial measurement units
- signal processing
- distributed control of aerodynamic and hydrodynamic systems
- distributed sensors for condition-based maintenance and structural monitoring

- unattended sensors for tracking and surveillance
- mass data storage
- analytical instruments
- biomedical sensors
- optical fiber components and networks
- wireless communications
- active conformable surfaces for aircraft.

The range of uses suggests that MEMS is applicable to every aspect of military technology.

MEMS and PGMs

Among the many applications of this new technology is PGM enhancement. In the Persian Gulf War these munitions made such an impact that they became almost synonymous with the revolution in military affairs. Used against what war planners considered *strategic core* targets (C³ assets, leadership facilities, and military support facilities), they were the weapons of choice.

Since then reliance on PGMs has only increased. Their accuracy makes them especially attractive. Collateral damage can be avoided. They permit selection of specific aimpoints for a given target to achieve desired objectives, perhaps merely disabling enemy assets rather than razing an entire site. Accuracy also increases the probability of a kill, meaning fewer munitions. Stand-off capability, which keeps friendly forces away from well-defended targets, is another advantage.

Unfortunately the advantages of PGMs have not been fully realized in combat. The Persian Gulf War illustrated their limitations as well as their capabilities. They were not always as accurate as desired, and their sheer expense restricted their numbers. The conflict also revealed that simple countermeasures decrease effectiveness. The evidence suggests that Iraq housed some of its most valuable nuclear assets deep underground. It also frustrated the allies by placing military assets near populous areas or sites of religious or cultural significance or dispersing them in the desert every few days. Nevertheless, the low cost, small size, and light weight characteristics of microtechnology make it the ideal enabler for PGM systems, and integrating sensors, computers, accelerators, and actuators allows the systems to be custom designed for specific munitions. MEMS can make the components both smaller and cheaper. A typical missile accelerometer and gyroscope cost \$1,000, but an equivalent microdevice costs \$20.

With micronavigation components, many dumb munitions—howitzer, mortar, and rocket-fired—could be retrofitted and transformed into PGM-like weapons. Unguided rounds with a circular error probable of 250 meters could instantly improve to 64 meters. Smart rounds reduce the number required to destroy a target by a factor of ten.

Launching Tomahawk during Desert Fox.



U.S. Navy (Todd Cichonowicz)

Conducting surveillance operations with hunter sensor suite.



U.S. Army (Marshall Woods)

In addition to minimizing cost MEMS present several cost-imposing strategies to an enemy. High volumes of PGMs incentivize costly countermeasures. An enemy may invest heavily in anti-air warfare batteries, jamming capabilities, or underground facilities—essentially trading offensive for defensive investments. Moreover, dispersing and hiding targets requires sizable manpower, reduces efficiency in operations, and lowers

morale. Cost-imposing strategies fostered by MEMS force an enemy to expend time, effort, and resources on defensive measures instead of offensive advancements that would in turn force the United States to develop countermeasures.

Sensor and fusing devices are an area in which MEMS could improve PGMs, for instance by eliminating unexploded ordnance that often causes friendly casualties and wastes resources. When a munition fails to detonate, a microaccelerometer could sense its impact with the earth and trigger a self-destruct mechanism. MEMS fusing/detonation devices offer greater reliability, which results in fewer duds.

Taking the Revolution to the Trenches

Planners emphasize PGMs, stealth aircraft, and other highly touted RMA platforms for use in

Marines during
Urban Warrior '99.



Fleet Image Command, Pacific (Eric Logsdon)

conventional war. But many RMA supporters neglect individual soldiers as beneficiaries of the revolution through information, communication, situational awareness, survivability, and lethality.

New technologies are especially critical to lesser contingencies which are more manpower-intensive and where the value of firepower is diminished. Soldiers in this environment need better communications and intelligence—or situational awareness. Effective command and control is also vital, especially because complex operations typically involve small detached units. Overwhelming force, which can compensate for command and control weakness, will be unavailable. Moreover, such operations are increasingly joint and multilateral, placing greater strains and greater import on command and control.

But these technical needs clash with competing requirements for speed, agility, stealth, and mobility. Individual soldiers carry everything themselves, constraining weight and size. Taking technology to the individual level also demands more devices, limiting spending per unit. In light of such requirements, MEMS are the natural enabling technology for equipping soldiers.

Outfitting soldiers in mechanized suits was once the stuff of science fiction; but in the early 1990s the Army embarked on the Land Warrior project, with a vision of transforming each soldier into a Terminator III. The product director for the modular weapons system (MWS) in the Office of the U.S. Army Product Manager for Small Arms depicted the link between project and lethality:

With the advent of Land Warrior, you are integrating the infantryman's capabilities into the digitized battlefield without adversely affecting his performance,

thereby multiplying his lethality through an ability to communicate what he sees and knows up to higher headquarters.⁴

The Land Warrior program realizes the idea of systems architecture, a system of systems. For instance the MWS component alone comprises subsystems such as close-combat optics, night-fighting sights, thermal weapon sights, laser rangefinder/compass/clinometer, camera modules, and combat identification equipment. The overall picture is an armored suit, special rifle, computerized helmet with a monacle display, and computers and electronic components wired throughout every part of the suit, with the ability to communicate remotely with other soldiers and headquarters.

But the program hit a snag. The suit weighs 80 pounds and proved too heavy for soldiers to maintain speed and agility in field tests. There were also problems with bulkiness and balance. Congress lost faith in the program and canceled funding.

The Land Warrior concept remains valid, but technical problems thwart its realization. In several areas MEMS research and development has already yielded results that could be speedily integrated into the Land Warrior or similar battle suit.

Communications. Using MEMS over the next few years, Raytheon is expected to produce a military radio receiver that weighs four ounces. It will work ten times longer than current models and require less maintenance. The receiver is part of a larger effort to shrink a four-channel radio, now weighing 10 pounds, to the size of a credit card.

Navigation. The MEMS inertial navigation system/global positioning system (INS/GPS) device that guides PGMs could also guide warriors. It could run on microwatts at a cost of \$50 per unit. It could aid in locating friendly assets, interrogate from afar, and transmit its coordinates in response, greatly enhancing command and control.

Information display. The monacle visual display in the Land Warrior helmet shows maps, data, position, manuals, and orders from headquarters. Microtechnology makes possible a high-resolution, low-power display screen (0.5 to 5 inches), meeting mobility requirements and fitting into the larger computer network.

Chemical/biological warfare defense. The miniaturization of analytical instruments is a core MEMS technology. Although the United States has some chemical agent alarms, they are too bulky for individual use in the field. Microanalytical instruments could be made small enough for each soldier to carry several or integrated in a protective mask or mounted on equipment. Such a sensor might cost \$25 and allow a five order of magnitude reduction in operating power.

Unmanned Aerial Vehicle (UAV). Lockheed Martin recently used MEMS to create a UAV that is only 6 inches long and weighs 3 ounces. Because of its light weight, soldiers could carry several disposable UAVs. One version of the MEMS model could provide reconnaissance, using radio signals to transmit real-time information from its camera to a display. Another version might couple CBW sensors to provide a stand-off chemical/biological warning system. Other versions of UAVs could jam enemy communications or designate targets for PGMs.

Identification Friend or Foe (IFF). Military aircraft are equipped with a transmitter that when interrogated emits an identifying code to differentiate between threats and friendly forces. In the

Persian Gulf no aircraft were downed by friendly fire. On the ground, however, 35 Americans died mainly because vehicles lacked IFF technology. Fortunately, small, low-power, lightweight IFFs are possible using MEMS technology. A passive, secure microdevice could be integrated into the uniform of each soldier and/or his equipment.

Implications for Competitive Strategy

The U.S. military can be uniquely enhanced by MEMS because of its lead in the revolution in military affairs. Over the next decade or so, only America will be able to realize the revolution in its entirety. Successful innovation, combining new technology with operational advances, is key to retaining this lead and resulting political influence.

Other nations may acquire pieces of the revolution. Australia, Austria, Belgium, Britain, People's Republic of China, Denmark, Finland, France, Germany, Italy, Japan, The Netherlands, Poland, Russia, Sweden, and Switzerland are also researching nanotechnology. There is reason to believe that other countries may harness technological advantages to close the military gap between themselves and the United States. Because nanotechnology is dual use, regulating its export may be impossible. The same advantages that attract America and its allies to MEMS attract potential enemies. Though this pattern has been true for any nation experiencing revolutionary or even evolutionary advances in technology, MEMS is unique. The combination of low costs with high numbers of advanced weapons lures potential enemies perhaps more than the Pentagon. Rogue states, insurgents, and terrorists face greater resource constraints. These state and/or nonstate actors may perceive microtechnologies as their only way to compete with wealthier actors.

MEMS transcend traditional limits to technological proliferation. The cost of sophisticated weapons has traditionally been a great deterrent to their procurement. But microdevices cost less to acquire and operate through secondary effects such as reduced energy consumption and greater survivability. Their small size also makes them easier to smuggle or buy under the table. They are almost impossible to track, especially because they are dual use by nature and rudimentary to many systems. Both characteristics make global nonproliferation measures unlikely. How can a regime regulate simple valves or cogs—or commercial systems such as miniature cell phones or INS/GPS devices? Moreover, verification would be unworkable.

Even if a supply-side regime were attempted, the range of suppliers minimizes chances for success. Anyone who can manufacture a microchip

small, low-power, lightweight IFFs are possible using MEMS technology



Analyzing readings from chemical/biological aerosol warning system.

U.S. Air Force (Wayne Clark)



55th Signal Company (Russell J. Good)

Entering coordinates,
Rapid Force Projection
Initiative.

can create MEMS. The knowledge required is in the public domain. Thus MEMS obviate the traditional barrier of locating cooperative suppliers.

Since nuclear warheads, ballistic missiles, and chemical weapons are relatively unattainable MEMS will become more desirable. They can enhance existing unsophisticated weapons and also make sophisticated weapons easier to acquire. They can be perceived as a great equalizer.

The security ramifications of this new wave of technology are seldom addressed. Although some prophets warn of the apocalyptic dangers of self-replicating tiny machines, no one comments on the more immediate and pressing threats of proliferation or how enemies may take advantage of microtechnologies to use the revolution in military affairs against us.

MEMS offer opportunities to capitalize on new technology. PGMs exemplify the benefit of

applying MEMS to existing RMA developments and how that application could lead to the full realization of their potential. The case of soldier-level warfare indicates how MEMS can extend advantages to areas of warfighting heretofore largely excepted from the revolution in military affairs.

It is unlikely that proliferation will completely disturb the balance in global military power. However, potential enemies could bypass our strengths and exploit weaknesses as well as raise the cost of intervention in regional conflicts. Technological advances, survivability, and redundancy by an enemy could deny a quick and painless victory, possibly deterring intervention in regional crises and thus eroding national leverage. The Nation would see its options limited as both human and economic costs of intervention increased.

The push for commercial applications as a way to reduce the research burden for military applications overlooks larger security ramifications and favors would-be enemies. Officials should review counterproliferation methods to reduce threats. Perhaps denying some key subtechnology could create a hurdle for MEMS proliferators. Packaging techniques, though not widely publicized yet and still in development, might offer such a solution.

The Armed Forces are poised to take advantage of the revolution in military affairs through microtechnology. Leaders must facilitate this process. The result will be broader capabilities that translate into greater political leverage and national security. But a plan to capitalize on a MEMS revolution must be two-pronged: the United States must utilize the technology and deny its use to any potential enemies.

JFQ

NOTES

¹ Barbara Starr, "Plotting Revolution at the Pentagon," *Jane's Defence Weekly*, vol. 23, no. 23 (June 10, 1995), p. 38.

² Max Nelson and Calvin Shipbaugh, *The Potential of Nanotechnology for Molecular Manufacturing* (Santa Monica: The RAND Corporation, 1995), p. 3.

³ National Research Council, *Microelectromechanical System: Advanced Materials and Fabrication Methods* (Washington: National Academy Press, 1997), p. 13.

⁴ Scott Gourley, "Lethal Combination," *Jane's Defence Weekly*, vol. 30, no. 14 (October 7, 1998), pp. 39–42.

U.S. Air Force (Efrain Gonzalez)



U.S. Navy (Jason A. Pylarinos)



786th Communications Squadron (Edward D Holzapfel)



USS John F. Kennedy (Christian Eskelund)

what they've said in JFQ

***interdependent maneuver calls for a fully joint approach,
generating synergy between fire and movement***
—Antulio J. Echevarria II

***with micronavigation components, many dumb munitions
could be transformed into PGM-like weapons***
—Shannon L. Callahan

***history suggests that the denial of military experience
increases the long-term suffering inherent in combat***
—Barry R. McCaffrey

***if there ever was a function worthy of civilianization and
privatization, civil affairs is it***
—Charles J. Dunlap, Jr.

***gradualism may be here to stay if U.S. leaders opt to fight more
wars for amorphous interests with a disparate set of allies***
—Benjamin S. Lambeth

***an active, sustained partnership between the public
and private sectors will be essential in the case
of bio-defense***
—Michèle A. Flournoy

Lessons of Desert Storm

By BARRY R. McCaffrey



M1-A1 tank rolling off Saudi transport, Desert Shield.

DOD (Brian Cumper)

Our memories of the Persian Gulf War include CNN images of anti-aircraft tracers lighting the sky over Baghdad and smart bombs striking bridges and buildings. Americans recall the event as a stunning victory over a well-armed, brutal, but ultimately inept enemy achieved in a thousand hours. They believe that the war was just—

wrapped in the legitimacy of the United Nations—and checked a ruthless dictator and restored independence to Kuwait. The ambiguities of the Vietnam War were largely absent during Desert Storm. The conflict in the Persian Gulf was decisive and supported by the international community. Yet for the Army and Marine Corps it also distorted expectations on the cost of ground combat as well as the nature of modern warfare.

Victory was not secured after only a few days of fighting on land; it was

General Barry R. McCaffrey, USA (Ret.), commanded 24th Infantry Division in the Persian Gulf War and served as Commander in Chief, Southern Command; from 1996 to 2000 he was director of the Office of National Drug Control Policy.

fifteen years in the making. It was rooted in the lessons of Vietnam:

- war should not be entered into without full public support
- to gain that support, troops should be put into combat only when national interests are clear and can be convincingly explained
- once committed, both the Nation and the Armed Forces must be implacable.

Leaders took advantage of the decade and a half between Vietnam and Desert Shield to shape the U.S. military into the most lethal and disciplined fighting machine in the world. The commitment of resources to create this force paid enormous dividends. Undeniably, the reinvention of land-sea-air forces was largely driven by the need to deter or fight huge Soviet ground formations menacing Western Europe. But this sophisticated team was also extraordinarily effective in the desert.

During one hundred hours of ground combat, preceded by the most stunning air campaign in history, seven Army and two Marine combat divisions in concert with coalition ground forces

it took more than a decade to build the military that America watched with pride during the Gulf War

turned the fourth-largest army in the world into the second-largest army inside Iraq. This allied force used maneuver, deception, speed, and carefully targeted violence, which not only achieved its military objectives but saved lives and cut short what could have become a protracted struggle. The ground elements fought effectively and acted with compassion. This victory was possible because of a revolution in military affairs that was largely unseen by the American people until the lopsided victory in the Persian Gulf revealed its dimensions and power.

People's War

Compared to any other force deployed by the Nation over its history, the soldiers, sailors, marines, and airmen who fought in Desert Storm were better educated (over 90 percent were high school graduates), more capable physically, better trained (through



General Schwarzkopf and staff during victory parade.

DOD (Rob Jenson)

high-tech force-on-force, live-fire exercises as well as battlefield simulations), and more prepared for the operational environment faced in battle. Compared to the force of the late 1970s the contrast is stark. From 1976 to 1981 the Army routinely missed recruiting goals. Morale, readiness, and training were marginal and drug abuse, crime, and maintenance problems were high.

Every service struggled with grave declines in readiness.

It took more than a decade to build the military that America eventually watched with pride during the Gulf War. Improved pay, benefits, and facilities contributed to the sense that serving in the Armed Forces was worthy of the best and brightest. Cutting-edge technology was crucial. But rebuilding the noncommissioned officer corps, forming a physically fit force, creating a disciplined military culture, and rejecting drug and alcohol abuse that sapped professional strength throughout the ranks after Vietnam was even more important.

Research and development in the 1980s enabled the defense industrial base to develop and field revolutionary systems designed to overwhelm Soviet weapons and tactics. Critics derided

many of these systems in the years before the Gulf War. Some defense skeptics, for example, doubted the survivability and utility of the Bradley fighting vehicle. The Abrams tank was regarded as unreliable and unsupportable because of its fuel consumption. Several advanced weapons and other systems—including the sea-launched cruise missile, F-117 stealth fighter, and many night vision devices and electronic warfare capabilities—had never been used in combat and had undergone limited operational testing. Some criticized this hardware as too complex and prone to failure under harsh conditions. The Soviets were routinely cited as the model of a more rational military-industrial process. Such cynicism proved unfounded as coalition hardware proved equal to the task.

However, U.S. forces in Desert Storm could have won the conflict decisively even if they had swapped their equipment with the Iraqi military. This view reflects a deeply ingrained, experience-based belief. Effectively employing sophisticated matériel requires demanding, results-oriented training. In contrast to the American approach, Iraqi training during the Desert Shield buildup was almost as pathetic as its strategic leadership.

Thoughts of Battle

Doctrine plays a unifying role in the employment of people, resources, and time. History demonstrates that brave soldiers with excellent equipment can be paralyzed and defeated if lacking in doctrine to integrate and leverage their advantages. The humiliation of France by the *Wehrmacht* and *Luftwaffe* during the opening moves of *Blitzkrieg* in World War II makes that point. Prior to Desert Storm, the services invested years integrating their warfighting doctrine. That collaboration produced forward-looking, offense-based strategies that exploited American strengths and enemy weaknesses. In the early 1980s, for example, the Army moved from a reactive and static combat doctrine known as active defense to AirLand Battle, which focused on maneuver flexibility, synergy, and violence. The change in doctrine paralleled improved leadership training throughout the Army. AirLand Battle stressed bold, coordinated ground and air offense and exploiting battlefield initiative, which provided a decisive advantage during the hundred-hour maneuver that characterized the attack of Desert Storm.

A crucial factor in improving doctrinal initiatives was that commanders and units practiced and honed concepts under realistic conditions. Beginning with top gun air combat school by the Navy, the services developed state-of-the-art, force-on-force training and exercises linking doctrine and new systems under realistic conditions. Such training produced leaders whose individual and collective success (and promotions) were based on demanding and fully transparent exercises. The Army National Training Center at Fort Irwin, Air Force Red Flag at Nellis Air Force Base, Marine Air Ground Combat Center at Twentynine Palms, and Navy instrumented sea warfare training in the Caribbean allowed warfighters to make fatal mistakes in a realistic battle lab instead of combat. At joint training centers, combat leaders underwent a painful learning process that often damaged their egos but saved lives in war. A training atmosphere of candor, rapid feedback, and defined outcome standards was critical.



F-117As in hangar,
Desert Shield.

DOD (Hans H. Delfner)

An Unsettled Legacy

Are the battlefield lessons that contributed to the success of Desert Storm relevant ten years later? Military leaders have frequently been accused of preparing to fight the last war. If this were the case at the moment, the Gulf War template would offer a wasted intellectual exercise at best and a prescription for defeat on some future battlefield at worst. Focusing doctrine on

past successes can blind commanders to rapidly evolving asymmetrical threats which may target predictable U.S. military doctrine, leadership, and equipment in the future.

Some argue that the focus of doctrine on European armored combat left the United States with a force that had little application to post-modern war.



13th Public Affairs Detachment (Richard Puckett)

Advanced warfighting experiment, National Training Center.

The military today is being tasked with broader security missions. It is expected to tackle challenges ranging from peacekeeping to the proliferation of weapons of mass destruction. Providing humanitarian aid, combating terrorism, and confronting international drug cartels and organized crime are among the support duties. So what does the future hold?

First, people requirements have not changed significantly. The Armed Forces will continue to need a substantial number of personnel (1.5 million)—and tactical leaders with the motivation, skills, and mental agility to

the ability to assimilate real-time combat data and sort out vital information will be critical to success

operate decisively in a complex, confusing, and dangerous international arena. As combat equipment becomes more sophisticated, broadly educated, literate, and highly trained people will be needed to operate and maintain it. Violent conflict will require global reach, rapid decisionmaking, and expanded notions of battlespace with digital, space-based information systems. At the same time, overwhelming levels of raw intelligence from a range of sensors could lead to paralysis rather than decisive action. The ability of leaders to assimilate real-time combat data and sort out vital information will be critical to success.

The political sensitivity of future battlefields will be driven by their increasing transparency to high-tech media oversight, requiring leaders to function under challenging conditions despite intense scrutiny from international news sources and hostile political actors. Near instantaneous global communication creates a political-military environment in which tactical decisions by even junior noncommissioned officers can shape national strategy. Furthermore, advanced combat systems will put increasingly lethal, simplified weapons and targeting capabilities into the hands of enemy and friendly small-unit leaders.

These operations will not be run successfully from either Washington or a unified commander's war room. The Armed Forces must continue to recruit and train capable people and imbue them with a level of judgment previously expected only of mature servicemembers.

America produces vast numbers of young men and women with great physical courage and leadership ability. Professionals of this caliber will not remain in the military simply for high pay, dual-income opportunities, large quarters, or predictable home-station time. Neither will they leave the service of their country because they fear death or injury in combat. However, they will be unforgiving if denied the combat edge and confidence generated by demanding and realistic training, first-class

technology, and a culture based on trust, respect, and personal growth.

Developing, acquiring, and fielding combat systems requires making assumptions on next generation threats that will shape resource commitments and future doctrine. Today military research and development is conceptually adrift. The mayhem and brutality of modern violence are functions of nonstate militias, truck bombs, chemical weapons, cruise missiles, diesel submarines, high-speed missile boats, mines, and large amounts of Cold War hardware flooding arms bazaars. Billions of dollars in drug money and international criminal activity contribute to this lethal mix.

The equipment-technology doctrine cycle must be driven by requirements for transportation and logistics to deploy from the continental United States. Joint forces must be ready to fight on arrival. New threats to international security can't be resolved by sea-launched precision weapons and airpower based at home. Today the Nation has essentially the wrong force structure for the missions at hand. It requires new concepts, additional resources, and a revitalized strategic political consensus to build capabilities geared for both warfighting and peace operations.

Here the lesson of the Gulf War is that substantial funding, research and development, and procurement are crucial for the national defense posture. The challenge is preserving the existing infrastructure while developing the next generation of doctrine, training, and weapons. The procurement cycle for some major systems is 15 years. There will be serious overlap with older combat systems that must be maintained even though more recent versions have been developed and gradually integrated. Nevertheless, these systems are aging. The M-1 tank entered the inventory in the early 1980s and the F-15 fighter went into service in 1975. Incremental improvements in many battlefield systems have given the United States preeminent capabilities. But the Pentagon must look beyond contemporary technology and force structures and identify what is needed to dominate the battlefield of tomorrow.

Launching
Tomahawk missile
from *USS Mississippi*.



Joint strike fighter
approaching
Patuxent River.



Naval Air Station Patuxent River (Vernon Pugh)

DOD (Hedderley)

Two principles of national security will be critical in maintaining military dominance while anticipating requirements. First, the Armed Forces must be prepared for the worst-case scenario: high intensity conflict against well equipped and determined enemies. Substantial forces fielded by modern nation-states still pose the most significant, though least likely, threat to national interests. Prior to the Gulf War most militaries were organized around this core commitment. This strategy worked. The United States prevailed in Desert Storm and during the Cold War. The price of failure in a possible high-intensity conflict means we must not allow our focus to drift from such large-scale threats.

Second, systems must be developed that are relevant to realistic scenarios for deployments from the United States to distant battlefields. The Armed Forces can't count on enemies to allow a six-month buildup like Desert Shield. A greater investment is needed in capabilities to deliver decisive force anywhere in the world on short notice. Major sea-based, pre-positioned equipment is vital. However, the deployability of ground and air systems is also crucial. Capability must be transformed from a forward-deployed ground force—backed by

CONUS-based assets—to a CONUS-centered air-ground force with global air and sea-delivery reach.

Washington also must rethink what seems to be a self-defeating requirement that each force deployment be articulated to the American people through an exit strategy. This concept has been an unmitigated disaster. Events in the Persian Gulf reaffirmed the wisdom of committing troops to warfighting or peace missions only when the Nation is determined to achieve its purpose—whether that entails bloodshed or a fifty-year presence as in the case of NATO. The elevation of the notion of exit strategy to the

status of a strategic principle signals weak commitment. It may also ensure that time and initiative are ceded to a potential enemy.

Overmatching Force

The doctrine produced to defeat the Warsaw Pact proved itself in Desert Storm. It stressed offensive initiative and coordinated day-night employment of advanced combat systems. The battle doctrine was well suited to high intensity operations conducted against the brutal, rigid, and poorly led Iraqi forces. In preparing for high-intensity conflicts of the future, the principles of AirLand Battle doctrine remain valid. Though refinements in existing doctrine are needed because of technological advances, the fundamentals of joint, synchronized offensive are unlikely to change.

Over the last decade the Armed Forces have conducted various operations around the world as part of humanitarian, counterterrorist, counterdrug, and peacekeeping missions.

These security responsibilities challenged the military to develop new doctrine for contingencies at the lower end of the operational continuum. Involvement in multinational peace-keeping and peace-enforcement is likely to remain a requirement.

Postulating the employment of remote lethal targeting technology to wage war—followed by the unopposed deployment of peacekeepers—has given rise to the hopeful but misplaced belief that future wars can be fought

history suggests that the denial of military experience increases the long-term suffering inherent in combat

with little or no loss of American lives. But absolute dependence on high tech in pursuit of a bloodless war may introduce at least two flaws into warfighting doctrine. First, it will limit the ability to respond to the full range of possible conflicts. There is also danger in communicating to potential enemies that the direct employment of ground combat troops in favor of other options is foreclosed. The military can't protect both Americans and innocent populations abroad by adopting zero-casualty force protection as an operational priority. There are causes for which our soldiers should be willing to fight and die.

A second danger resulting from a misguided belief in bloodless conflict comes from turning abstract notions of battlefield fairness or proportionality into an operational imperative. America has a strong sense of fair play and justice for all. It abhors human suffering, a virtue which is among its greatest strengths. However, blindly applying fairness and balance on the battlefield is inimical to national security. History suggests that the denial of military experience increases the long-term suffering inherent in combat.

Any military that limits itself to narrowly calibrated proportional force is an organization in search of defeat. The Armed Forces do not go off to war to put up a good fight; they go to win.

They do not attack in kind; they attack with every type of force to break enemy will and defeat it. By prosecuting warfare aggressively, one not only limits losses but shortens the conflict and thus lessens the suffering of noncombatants and often enemy forces themselves.

The Armed Forces must act in accord with international law. They must respect the rights of prisoners and noncombatants. They are accountable to the American people and scrutinized by the media. Like political leaders who must explain the justness of a cause, military leaders should inform the public on strategies used to protect national interests. But when the Nation goes to war, commanders are entrusted with the lives of American men and women. Leaders from the President down to a fire team leader bear responsibility for achieving objectives while safeguarding lives.

The military must strive to employ its forces to maximal advantage in prosecuting complex missions. However, critics argue that the services remain parallel and noncomplementary and that they are characterized by

parochial doctrines, which generate turf battles over resources.

The dominance of expensive, high-tech equipment will require a higher quality of training for joint forces. To obtain the maximum benefit from advanced technology, an equivalent long-term resource commitment to troop and leader training, education, and career development is needed.

To accomplish the range of missions the Armed Forces are likely to face, training must be both tailored and flexible. It will require assets commensurate with the complexities of warfare. Simulations and virtual battlefields will become preferred methods of joint training. The existing force structure often will not allow matching forces to contingencies. Joint commanders must deal with the operational expectation that units may be sent anywhere any time for various missions. Realistic, rigorous joint and combined arms training will have to produce cohesive teams that can adapt to rapidly changing operational environments.

Though strategy, force structure, and technology may differ in the future, the principles on which the Desert Storm force was built should continue to serve us well. The lessons of the Gulf War related to personnel, equipment, doctrine, and training must be applied to the challenges the Nation will face by virtue of having the world's greatest military. Leaders will need the agility to respond to threats faster and more competently. America must continue to bear the burdens of peace operations, humanitarian aid, economic containment, counterterrorism, illegal drugs, et al. Its military must prepare for violent engagement against major organized forces that might threaten Southwest Asia, Japan, Korea, Thailand, or Israel. The United States must also provide support for multinational military engagement designed to keep sea and air routes open for the global free-trade community, maintain access to energy supplies, and defend vital global interests. **JFQ**



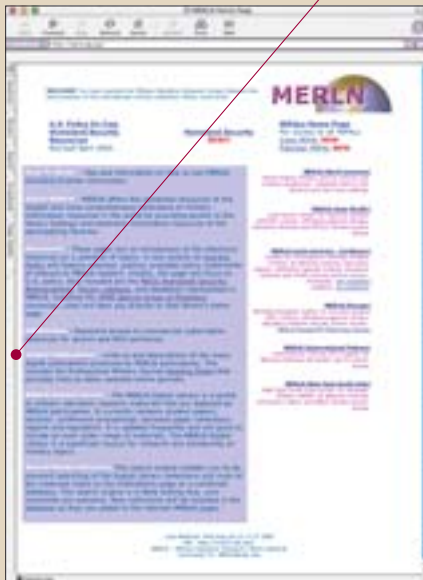
Unloading M-2A2s
from Maersk
Constellation.

DOD (Brian Cumper)

<http://merln.ndu.edu>

MERLN

The Military Education Research Library Network (MERLN) provides access to professional literature in the United States and abroad.



MERLN offers the combined resources of the largest and most comprehensive collections of military information in the world by providing access to library holdings and electronic resources of participating institutions.

Look for *Joint Force Quarterly* and other publications of the Institute for National Strategic Studies at <http://merln.ndu.edu>

MC-130P and MH-53J
refueling over RAF
Mildenhall.

Special Operations Forces after Kosovo

By CHARLES J. DUNLAP, JR.

To many observers the NATO air campaign against Serbia in the spring of 1999 represents the future face of war. The long-distance, high-tech application of force is an attractive template as the United States and other nations become ever more casualty-averse. Indeed, Allied Force was the first major operation in which aircraft achieved victory without the need for a land campaign. What really encouraged airpower enthusiasts was the apparent vindication of decades-old theories that air attacks could

achieve a psychological effect on an enemy that would force it to yield even when its military remained in the field able to resist.

Allied Force was a manifestation of the revolution in military affairs (RMA). Several types of aircraft dropped precision-guided munitions (PGMs) on urban areas with astonishing accuracy, save for a few well-publicized miscues. In fact, PGMs constituted the bulk of the weapons used, continuing an RMA-derived trend begun in the Persian Gulf War. Advanced command and control platforms such as the airborne warning and control system (AWACS) and joint surveillance target attack radar system (JSTARS)—pre-viewed during Operation Desert Storm—allowed perceptions of the battlespace to reach new levels, especially when combined with information

Colonel Charles J. Dunlap, Jr., USAF, is staff judge advocate at Air Education and Training Command and served with U.S. Central Command in both Somalia and the Middle East.

100th Communications Squadron (Rashawn A. Douglas)

SEAL team members,
Northern Edge '01.



U.S. Air Force (Brian Snyder)

from surveillance satellites and augmented by unmanned aeronautical reconnaissance vehicles such as Predator.

At first blush the achievements of high-tech warfare demonstrated during Allied Force may be troubling for Special Operations Forces (SOF). Of the principal SOF missions, three of the most im-

portant and most legendary could face technological shrinkage if not obsolescence: direct action, special reconnaissance, and unconventional warfare. What is

the role of the special operator when PGMs can strike high-value targets with relative impunity and effective and pervasive surveillance systems can produce battlefield intelligence without risking lives? Likewise, technology may have a serious impact on traditional SOF peacetime missions. Although other nations once viewed SOF trainers as essential in improving their armed

forces, technology may render that need superfluous. This is particularly true as inexpensive, user-friendly software makes operating complex weapons systems relatively simple, thereby obviating the need for training. Software innovations bring self-paced computer-assisted instruction within reach of poor countries. Basic infantry skills can be learned from a computer program which costs less than \$50.

Although Special Operations Forces will not disappear any time soon, one cannot assume that they will be unaffected by new technology or the post-Cold War landscape. They will change or atrophy. It is not enough to inculcate new devices piecemeal into existing mission concepts to meet such challenges; instead, the SOF community needs to fundamentally reconsider how it will fit into the 21st century security architecture.

In Search of the Warrior Ethos

Since the Persian Gulf War, much SOF dynamism has gone to what may not be considered classic warfighting. Nonwarfighting missions have grown in scope and importance. While these missions are critical, they cannot maintain Special Operations Forces as organized today. Despite interservice squabbling, the Armed Forces are bonded in the end by the mutual respect of comrades who go into harm's way together. Special Operations Forces lose relevance when alienated from the defense community. Absent a realistic warfighting role, they could become marginalized.

At the same time, the American way of war today suggests that SOF combat missions may be a thing of the past. Few commanders will seriously contemplate ordering a direct action mission against a high-value target if it can be destroyed with standoff systems. As Allied Force illustrates, commanders will readily look to other options in the future, including robotic platforms.

While strikes by Special Operations Forces against command and control nodes and similar targets will become increasingly rare, it does not necessarily follow that the end of the fabled direct action missions is at hand. No matter how casualty-averse decisionmakers have become, there are times in any conflict when American lives are in jeopardy. Allied Force highlighted such an occasion—a prisoner of war rescue. Three soldiers captured early in the conflict became pawns in a diplomatic game. Although they were eventually released, intense media exposure demonstrated a tool which an enemy can use to mold public opinion. Given the manipulation of American prisoners by North Vietnam, clumsy efforts by Saddam Hussein to leverage captives in

Special Operations Forces lose relevance when alienated from the defense community

1st Combat Camera Squadron (Efrain Gonzalez)

Special Forces and Thai airborne troops, Cobra Gold '01.

the Gulf War, and the recent detention by China of EP-3 crew members, the United States should anticipate similar episodes.

Decisionmakers must prevent an enemy from gaining advantage with captives. An obvious solution would be a robust rescue capability. Theoretically, Special Operations Forces can perform such missions through combat search and rescue (CSAR). But what is required is not necessarily an operation with the immediacy of CSAR, but rather one of greater dimensions aimed at rescuing incarcerated personnel. But when such operations have been mounted, organization and planning were done on an ad hoc basis and the results were usually disastrous. Large-scale operations have not been the centerpiece of focused, dedicated SOF assets, but forces should be organized, trained, and equipped for that

mission now. Such raids may require new capabilities such as non-lethal weapons to minimize friendly casualties and encourage inventive ingress and egress methods.

A parallel benefit to a stronger snatch capability would be a potential to hold enemy leaders at risk, not necessarily through physical destruction but rather by enforcing the rule of law. Many observers agree that one reason no pro-Nazi resistance movement emerged in Germany after World War II was the Nuremberg trials. Trying Nazi leaders and exposing their evil deeds to the German public in detail aborted any nascent defiance of the Allied occupation. The same effect can be noted in Panama with the capture and trial of Manuel Noriega on drug charges.

Conversely, putting enemy leaders to death can create martyrs and further resistance. The death of Che Guevara at the hands of Bolivian troops in 1967 turned him into a cult hero who is still revered by leftists. Obviously, the capture of well-guarded enemy leaders deep in their territory is a challenging task demanding an extraordinarily disciplined and skilled force. This capability is especially valued when Western interests are served by bringing villains to trial. Moreover, it plays to the existing strengths of Special Operations Forces.

Shadow War

Facilitating unconventional warfare is another SOF core competency that some might think has been superseded by Allied Force. Political imperatives curtailed the role Special Operations Forces might otherwise have played. The decision was made to minimize contacts with the Kosovo Liberation Army. Similar constraints may be anticipated in the future. The Nation will be reluctant to align itself with groups that pursue controversial agendas, especially when fueled by ethnic or religious hatred. This factor, along with a growing desire to not risk SOF losses unless absolutely necessary, means there will be relatively few opportunities to organize indigenous forces behind enemy lines.

Nevertheless, unconventional warfare is pertinent to commanders of conventional forces. The Air Force, for example, expended considerable resources in developing small footprint forward air operations centers (AOCs). Replacing people with such technology means deploying much faster and beginning air operations sooner. But flexibility comes at a price. The smaller numbers make AOCs—the critical linchpins of air campaigns—less durable and thus extremely vulnerable as high-value targets. As attacks on the

1st Combat Camera Squadron (David D. Underwood)

SOF working with Senegalese soldiers.

Marine barracks in Beirut, Khobar Towers, and *USS Cole* demonstrated, even weak enemies can strike defended targets. Surprisingly, few AOCs are hardened or have plans to be.

Role playing also can help identify limitations and vulnerabilities. Red teaming by Special Operations Forces could draw not only on its generic unconventional warfare proficiency but also on its expertise in the culture and mindset of specific threats, providing a realistic assessment of a too-often overlooked aspect of modern air operations.

Such factors suggest an enhanced SOF role in intelligence analysis and strategic planning. For example,

getting the right kind of insight into enemy thinking has bedeviled airpower planners for years. Consider the following remark by Lieutenant General Charles Horner, who commanded U.S. air forces during the Gulf War:

Our peacetime-trained intelligence organizations are taught never to be wrong. They like numbers and don't like to talk about what the other guy is thinking. They don't predict, they just give you the rundown, like TV news anchors. Yet as a commander I had to think about what the other guy was thinking. I needed to get inside the other guy in order to find ways to spoil his plans and make his worst fears come true.¹

Failures in this regard result in the misapplication of airpower.

There is no indication that traditional intelligence organizations can meet analytical needs of decisionmakers. Special Operations Forces, however, are peculiarly well situated to fill the void. They are trained to think like an adversary and are adept at infusing their analysis with the historical and cultural context of a particular enemy worldview. This point of view would be invaluable to conventional warfighters, especially when facing unconventional threats.

As a case in point, one purpose of deploying Apache helicopters during Allied Force was to create fear of a ground assault in the minds of the enemy, driving it to coalesce its forces into lucrative targets for air attacks and other standoff fires. Regrettably, there is little evidence that it had that effect. Imbued with an understanding of the Serb mind, Special Operations Forces might have suggested that NATO organize the deployment or exercise of Turkish troops. That might have genuinely alarmed Belgrade, for whom defeat at the hands of the Turks in 1389 is not just an historical footnote but part of the Serb psyche. Most conventional commanders think in terms of what makes sense in modern, parochial contexts; the unconventional warrior readily draws upon historical and cultural analogies that are all but invisible to others.

A Different Path

To make unique contributions in the future, Special Operations Forces must participate in the planning process. Beyond CSAR, they are largely limited to responding to the targeting plans produced by others rather than actively deciding what should be targeted. Yet they have the clearest understanding in the military of warfare as essentially imposing one's will on an enemy. Much conventional strategic thinking by airpower advocates overemphasizes coercion through denial, which in essence requires reducing capabilities to the point where an enemy can no longer use force. The viability of such strategy in 21st century warfare is plainly suspect.

The oft-understated lesson of Allied Force is that the quantum of combat power that must be brought to bear on the adversary to render his military capability physically ineffective simply may not be politically possible. Walter Boyne predicted as much, stating that the American public demands that "we must win our wars with a minimum of casualties inflicted upon the enemy."² Thus the SOF expertise in identifying psychological vulnerabilities that may not require the same level of destruction as coercion through denial is exactly the kind of talent conventional commanders will need in politically sensitive conflicts.

Similarly, psychological operations (PSYOP) must be reexamined in light of Allied Force.

there is no indication that traditional intelligence organizations can meet analytical needs of decisionmakers



Airman Magazine (Dave Nolan)

MH-53M on training mission over Florida.

Many experts believe the Serbs won the information war.³ The reasons for this conclusion include the fact that SOF resources were relatively limited. The inventory of Commando Solo aircraft, the platform that broadcasts radio and television programming into enemy or denied areas, is only four planes. But more critical is finding the creative personnel with expertise for the PSYOP mission. It is not clear that it is feasible for Special Operations Forces to recruit and retain the talent needed to produce effective 21st century PSYOP products even within the Reserve components.

PSYOP is clearly a function in which America should dominate. The United States created Madison Avenue and the advertising techniques that have proven effective worldwide. Special Operations Forces must develop better ways to tap into what should be an obvious asymmetrical advantage for this country. That may require greater reliance on contractors and other commercial sources to produce media that work against modern and modernizing societies. Even if much of

the development of material is contracted out to private vendors, the process must remain under the aegis of Special Operations Forces.

Thus to the extent SOF units engage in information operations in the psychological warfare context, continued emphasis on this area makes sense. However, it would be improper for Special Operations Forces to create a capability to conduct computer network attack operations, a mission recently and appropriately given to U.S. Space Command.

Engagement Blues

As Special Operations Forces seek to enhance their warfighting utility, the pull of military operations other than war remains powerful. The question becomes one of prioritization. Although it is difficult to anticipate the next hot spot, there is no value in expending resources on a training mission simply because it offers an opportunity for military-to-military engagement. Nevertheless, Special Operations Forces may come under pressure from the Department of State to continue or even increase their presence in certain

nations. Ambassadors and country teams working on the margins of national interests have little chance of competing for foreign aid. Thus SOF assets may represent the best, perhaps only, opportunity for U.S. representatives to provide host nations with American largess. If those resources were unconstrained, there could be merit in honoring such requests under some kind of expanded global scout concept, but not in an era of fiscal austerity. Pressures to do more with less and place a premium on engagement must be resisted.

Beyond resources, there is the issue of focus. Diffusion of energy is a continuing threat to the small SOF community. Accordingly, its leaders may want to exercise considerable discipline regarding the scope and intensity of peacetime operations. For example, Special Operations Forces

should be relieved of counterdrug missions when possible. The reasons include the fact that U.S. policy may be headed toward a less aggressive interdiction mode.

More importantly, it is the risk of military participation in what is essentially a law enforcement effort. There are relatively few historical cases of military organizations that have successfully performed law enforcement missions without compromising either warfighting ability or democratic liberties. Counterdrug missions, which are inherently tied to a rights-oriented criminal justice system, leave SOF assets vulnerable to losing the public support they need.

Likewise, the civil affairs mission deserves to be reconsidered. Conceptually, the capability exists to administer occupied enemy territories as required by international law. In practical terms, it has become the preferred diplomatic fix for a range of failed and failing states. The problems of such states are deeper and longer-term than civil affairs can be expected to solve. If ever there was a function worthy of civilianization and privatization, civil affairs—beyond those needed for bona fide military purposes—is it. Besides practical issues, remarkably little consideration is given to the concept of civil affairs at present. The message America sends to fledgling democracies should not be to put the military in charge. But this seems to be the case when civil affairs units are tasked to rebuild broken countries.

Notwithstanding the changes that Allied Force portends, Special Operations Forces do have a bright future so long as they show the flexibility to accept change. That future may be tied more to direct action and other warfighting competencies than a cursory analysis of the operation might imply. Like any enterprise, the SOF community has its own constituencies, clans, and rice bowls.

Furthermore, having evolved in a larger, often unfriendly military environment, SOF capabilities, including those earmarked here for either deemphasis or elimination, are adept at self-preservation. Consequently, change may not come easily, and fierce bureaucratic struggles loom.

Nevertheless, change must come. Even staunch advocates realize that technology is creating new challenges and opportunities for every component of the military. Those that refuse to change may find themselves caught in a tailspin of decline. Special Operations Forces were established as an innovative solution to global military and political conditions. In important respects, therefore, their very roots are founded in adaptability.

The revolution in military affairs has stimulated change and Special Operations Forces must evolve once again. The stakes are high; only by leveraging these special capabilities can the Nation fully meet the security demands of the new millennium. **JFQ**

NOTES

¹ Tom Clancy with Chuck Horner, *Every Man a Tiger: The Gulf War Air Campaign* (New York: G.P. Putnam's Sons, 1999), p. 560.

² Walter J. Boyne, *Beyond the Wild Blue: A History of the U.S. Air Force 1947–1997* (New York: St. Martin's Press, 1997), p. 7.

³ Timothy L. Thomas, "Kosovo and the Current Myth of Information Superiority," *Parameters*, vol. 30, no. 1 (Spring 2000), pp. 13–29.

This article is adapted from the prize-winning entry in the first annual Special Operations Forces Essay Contest sponsored by U.S. Special Operations Command. See page 111 for details on this year's contest.

if there ever was a function worthy of civilianization and privatization, civil affairs is it

The Tenth Anniversary Collection

Joint Force Quarterly on CD-ROM

... *available*
in late 2003



This compact disc will be searchable and cross-indexed by author, title, and subject area. To obtain a copy, send an e-mail request to JFQ1@ndu.edu or write: Editor, *Joint Force Quarterly*, ATTN: NDU-NSS-JFQ, 300 Fifth Avenue (Bldg. 62), Fort Lesley J. McNair, Washington, D.C. 20319-5066

A PROFESSIONAL MILITARY JOURNAL



Escorting Serb detainees to Kosovo-Serbian border.

2nd Marine Division (Craig J. Shell)

Lessons from the War in Kosovo

By BENJAMIN S. LAMBETH

Allied Force, the most intense and sustained military operation in Europe since World War II, represented the first extended use of force by NATO as well as the first major combat operation conducted for humanitarian objectives against a state committing atrocities within its own borders. At a cost of more than \$3 billion, it was also expensive. Yet in part because of that investment, it was

an unprecedented exercise in the discriminate use of force, essentially airpower, on a large scale. There were highly publicized civilian fatalities; yet despite 28,000 high-explosive munitions expended over 78 days, no more than 500 noncombatants died as a direct result, a far better performance in terms of civilian casualty avoidance than either Vietnam or Desert Storm.

But Allied Force was a less than exemplary exercise in U.S. and NATO strategy and an object lesson in the limitations of Alliance warfare. A balanced appraisal must accordingly account not only for its signal accomplishments, but its shortcomings in planning and execution, which nearly made it a disaster.

Benjamin S. Lambeth is a senior staff member at RAND and the author of *NATO's Air War for Kosovo: A Strategic and Operational Assessment*.



55th Signal Company (Lorenzo A. Sam)

Administering first aid
to Serbs in Kosovo.

Allied strikes against dispersed and hidden forces were largely ineffective, in part because of the NATO decision at the outset to forgo even the threat of a ground invasion. Hence Serb atrocities against the Kosovar Albanians increased even as air operations intensified. Some observers claimed that the bombing actually caused what it sought to prevent. Yet it seems equally likely that Milosevic would have unleashed some form of Operation Horseshoe, the ethnic cleansing campaign, during the spring or summer of 1999 in any event. Had NATO not finally acted, upward of a million Kosovar refugees may have been stranded in Albania, Macedonia, and Montenegro with no hope of return.

Although Allied air strikes were unable to halt Milosevic's campaign before it was essentially accomplished, they completely reversed its effects in the aftermath of the cease-fire. More than

600,000 of the nearly 800,000 ethnic Albanian refugees from Kosovo returned home within two weeks of the air war's conclusion. By the end of July, barely a month later, only

50,000 displaced Kosovar Albanians still awaited repatriation. By any reasonable measure, Milosevic's bowing to NATO amounted to his defeat, and his accession to the cease-fire left him worse off than had he accepted the Rambouillet conditions, under which Serbia was to keep 5,000 security forces in Kosovo. Thanks to the settlement reached before the cease-fire, however, there are now none. Moreover, on the eve of Allied Force,

Milosevic insisted as a point of principle that no foreign troops would be allowed on Kosovar soil. Today, with some 42,000 soldiers from 39 countries performing daily peacekeeping functions, Kosovo is an international protectorate safeguarded by both the United Nations and NATO, rendering any Serb claim to sovereignty over the province a polite fiction.

Second, the Alliance showed that it could function under pressure even in the face of hesitancy by political leaders of member states. In seeing the operation to a successful conclusion, it did something it was neither created nor configured for. The proof of success was that cohesion held despite the combined pressures of fighting a war and actually going into Kosovo with no fixed exit date even while bringing in new members.

Finally, for all the criticism directed at less steadfast Allies for their rear-guard resistance and questionable loyalty during the air war, even the Greek government held firm to the end, despite 90 percent of its population supporting the Serbs through large-scale street demonstrations. True enough, there remain unknowns about Allied steadfastness in future confrontations along Europe's eastern periphery. Yet NATO maintained the one quality essential to Allied Force—integrity as a fighting cooperative.

Grinding Away

Despite its accomplishments, enough discomfiting surprises emanated from Allied Force to suggest that air warfare professionals should give careful thought to what still needs to be done to realize its joint warfare potential instead of basking in airpower's largely singlehanded success. Many of the surprises entailed tactical shortfalls. Examples abound: the targeting process was inefficient, command and control arrangements were complicated, and enemy integrated air defense system challenges indicated much unfinished work in planning suppression of air defense. In addition, elusive enemy ground forces belied the oft-cited claim that airpower has arrived at the threshold of being able to find, fix, track, target, and engage any object on the surface of the earth.

There were likewise failings in strategy and operations. First, despite its successful outcome, the bombing effort was a suboptimal application of airpower. The incremental plan NATO leaders chose risked squandering much of the capital that had built up in airpower's account following its ringing success in Desert Storm. The comment made by General Wesley Clark, Supreme Allied Commander Europe (SACEUR), that coalition forces would "grind away" at Milosevic rather than hammer him hard, attested to the watered-down nature of the strikes. By meting out the raids with such hesitancy, leaders remained blind

**by any reasonable measure,
Milosevic's bowing to NATO
amounted to his defeat**

to the fact that airpower's very strengths can become weaknesses if used in ways that undermine its credibility. The first month of underachievement likely convinced Milosevic that he could ride out the assault.

Indeed, the way the operation commenced violated two of the most enduring axioms of military practice: surprise and keeping the enemy unclear of one's intentions. A strategy that preemptively ruled out a ground threat and envisaged only gradually escalating air strikes was a guarantee for trouble downstream, even though it was the only strategy that seemed politically workable.

In fairness to the U.S. and NATO officials most responsible for air operations planning, many of the differences between Allied Force and the more satisfying Desert Storm were beyond Allied control. Bad weather was the rule. Variegated and forested terrain hampered sensors. Serb surface to air missile operators were more proficient and tactically astute than the Iraqis. Alliance complications were far greater than the largely inconsequential intracoalition differences during the Persian Gulf War. Finally, because the goal

and staying power. By opting instead to accelerate ethnic cleansing, he not only united the West but also left NATO with no alternative but to dig in for the long haul, both to secure an outcome that would enable the repatriation of displaced Kosovars and to ensure its continued credibility as a military alliance.

Efforts during the first month were badly underresourced because of the prevailing assumption among NATO leaders that the operation would last just two to four days. The consequences included erratic target nomination and review, too few combat aircraft for both night and day operations, pressure for simultaneous attacks not only on fixed infrastructure targets but on fielded Yugoslav armed forces, an inadequate airspace management plan, and no flexible targeting cell in the combined air operations center (CAOC) for meeting General Clark's sudden demands for attacking fielded forces in the engagement zone. All these problems were a reflection not on NATO mechanisms for using airpower *per se*, but on strategy choices either made or forgone by political leaders.

Capabilities for detecting and engaging fleeting ground targets improved as the Kosovo Liberation Army (KLA) became more active. Nevertheless, persistent problems with the flexible targeting effort spotlighted deficiencies. The CAOC went into the operation without an on-hand cadre of experienced target planners accustomed to working together. Accordingly, leaders were forced to resort to a pick-up team during the first month of operations against Yugoslav forces. The fusion cell also frequently lacked ready access to all-source reconnaissance information.

The nature of the operation and the way it was conducted from the highest levels in Washington and Brussels placed unique stresses on the ability of Lieutenant General Michael Short, USAF, the combined forces air component commander (CFACC) to command and control air operations. For example, leaders had to contend with continuous shifts in political priorities and SACEUR guidance as well as myriad pressures occasioned by a random flow of assets to the theater, ranging from combat aircraft to staff augmentees in the CAOC. These problems emanated from a lack of consensus on both sides of the Atlantic as to the military goals at any given moment and what it would take to prevail. The *de facto* no friendly loss rule, stringent collateral damage constraints, and the absence of a ground threat to concentrate enemy troops into easier targets further limited the rational employment



55th Signal Company (Judy Ryan)

Kosovo Protection Corps during mass funeral.

was to compel rather than destroy, it was difficult to measure daily progress without a feedback mechanism to indicate the effect of the bombing on coercing Milosevic.

That said, the central question has less to do with platform or systems performance than with basic strategy choices NATO leaders made and what they suggest about lessons forgotten from previous conflicts. Had Milosevic been content to hunker down and wait out the bombing, he could have challenged long-term Allied cohesion

F-14 aboard *USS Theodore Roosevelt*.



U.S. Navy (Dorrell McKissick)

of in-theater assets and placed a premium on accurate information and measures that took a long time to plan and carry out. One realization driven home was the need for targeting cell planners to train together routinely before a contingency.

The greatest frustration of Allied Force was its slow start and creeping escalation. A close second entailed uniquely stringent rules of engagement that constrained combat sorties. Indeed,

gradualism may be here to stay if U.S. leaders opt to fight more wars for amorphous interests with a disparate set of allies

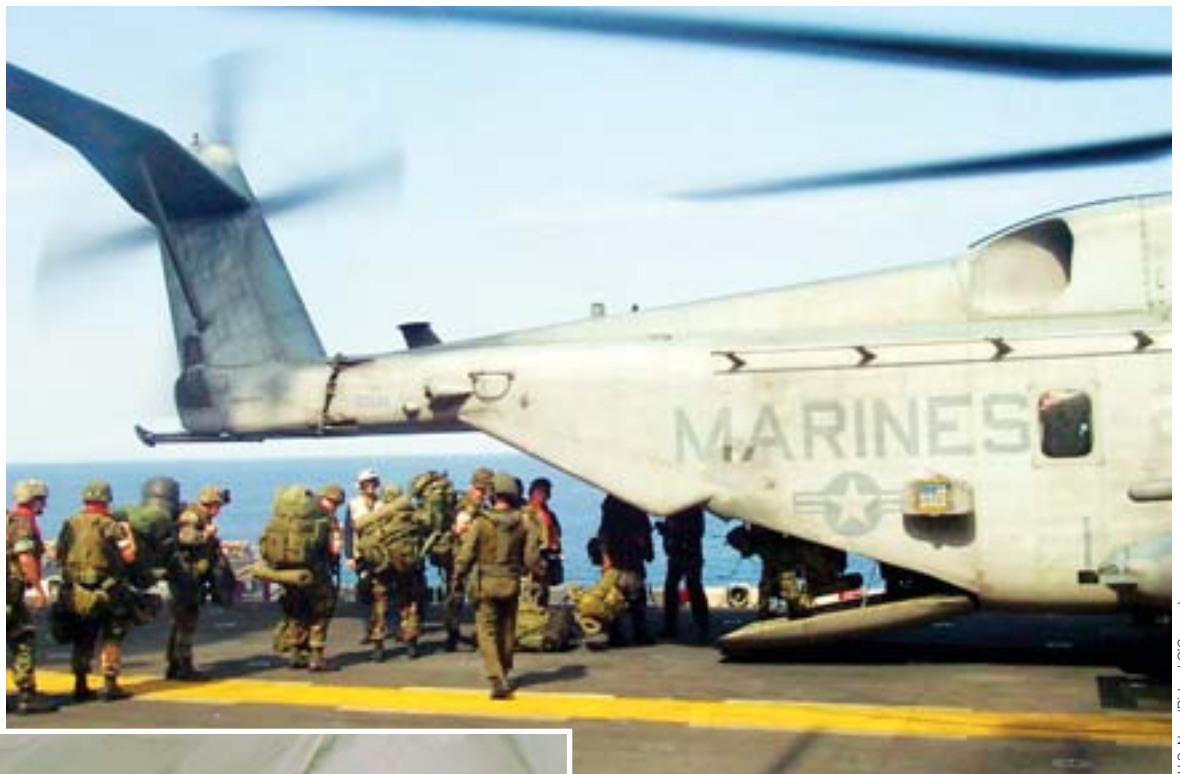
the dominance of political inhibitions was a unique feature. Because the air war was an essentially humanitarian operation, neither the United States nor the European Allies saw their security interests threatened by ongoing events in Yugoslavia. The perceived stakes were not high at the outset, so committing early to a ground offensive was out of the question. Moreover, both the anticipated length of the bombing and the menu of targets were bound to be matters of heated contention.

Dark Future

Although Allied Force did not exhibit the ideal use of airpower, it suggested that gradualism may be here to stay if U.S. leaders opt to fight more wars for amorphous interests with a disparate set of allies. Gradualism suggests that airmen will need discipline whenever politicians hamper the application of a doctrinally pure campaign strategy. War is ultimately about politics, and civilian control of the military is in the democratic tradition. While warfighters are duty-bound to argue the merits of their recommendations to civilian superiors, they also have a duty to make the most of the hands they are dealt in an imperfect world. Senior civilian leaders have an equal obligation to stack the deck so the military has the optimal hand to play and the fullest freedom to do its best. That means expending the energy and political capital needed to develop and enforce a strategy that maximizes the probability of military success. Most top civilian leaders on both sides of the Atlantic failed to do that in Allied Force.

On the plus side, the success of the war suggested that U.S. airpower may have become capable enough to underwrite a strategy of incremental escalation despite inherent inefficiencies.

Boarding CH-53D,
USS *Keasarge*.



U.S. Navy (Richard O'Connor)



Fleet Combat Camera, Atlantic (Brian McFadden)

Kosovar refugees at
Camp Hope, Pier,
Albania.

What made the gradualism of Allied Force more bearable was that the NATO advantages in stealth, precision standoff attack, and electronic warfare allowed the Alliance to fight a one-sided war with near impunity and achieve the desired result even if not in the ideal way.

With the air weapon now largely perfected for such established situations as halting massed armored assaults, it needs to be further refined for handling messier, less predictable, and more challenging combat situations—elusive or hidden enemy ground forces, restrictive rules of engagement, disagreeable weather, enemy use of human shields, lawyers in the targeting loop as a matter

of practice, and diverse allies who have their own political agendas—all of which were features of the Kosovo crisis. Moreover, although NATO political leaders arguably set the bar too high with respect to collateral damage avoidance, it seems the Western democracies have passed the point where they can contemplate using airpower, or any force, in ways as unrestrained as World War II bombing. That implies that along with new precision-attack capability goes new responsibility, and air warfare professionals must now understand that they will be held accountable.

One can fairly suggest that both SACEUR and CFACC were equally prone throughout Allied Force to remain wedded to excessively parochial views of their preferred target priorities, based on implicit faith in the inherent correctness of service doctrine. Instead, they might more effectively have approached Milosevic as a unique rather than generic opponent, conducted a serious analysis of his particular vulnerabilities, and then tailored a campaign plan aimed at attacking those vulnerabilities directly, irrespective of canonical land or air warfare solutions for all seasons.

Finally, the probability that future coalition operations will be the rule rather than the exception suggests a need to work out ground rules before a campaign, so operators, once empowered,

can implement the agreed plan with minimal political friction. As it was, Allied Force attested not only to the strategy legitimation that comes from the force of numbers a coalition provides, but also to the limitations of committee planning and least-common-denominator targeting.

The Ground Option

One of the most important operational and strategic realizations was that a ground component to joint campaign strategies may sometimes be essential to enable airpower to deliver to its fullest potential. General Richard Hawley, USAF, the former commander of Air Combat Command, was one of many senior airmen who admitted that the *a priori* decision by the Clinton administration and NATO political leaders not to employ ground forces undercut air operations: "When you don't have that synergy, things take longer and they're harder, and that's what you're seeing in this conflict."¹

Had Yugoslav forces faced an imminent ground invasion, or even a credible threat of one later, they would have been obliged to move troops and supplies over bridges that NATO aircraft could have dropped. They also would have been compelled to concentrate and maneuver in ways that made it easier to find and attack them.

Earlier, Samuel Berger, the National Security Adviser to the President, maintained that taking ground forces off the table had been right because anything else would have prompted an immediate public debate both in the United States and abroad which could have split the Alliance. Yet there was a huge difference between acknowledging that a land offensive could be perilous and categorically ruling one out before the fact. Considering a land offensive would have been demanding enough under the best of circumstances because of basing, airlift, and logistic problems; but denying the possibility of one was a colossal strategic mistake in that it gave Milosevic the freedom to act against the Kosovar Albanians and determine when the war would end. The anemic start of Allied Force because of the lack of an accompanying ground threat created opportunity costs that included failure to exploit the shock potential of airpower and to instill in Milosevic an early fear of more dire consequences to come. It encouraged enemy troops to disperse and hide while they had time, extended *carte blanche* to accelerate atrocities, and relinquished the initiative.

As for the oft-noted concern over an unbearable level of friendly casualties from ground action, there likely would have been no need to actually commit NATO troops to battle. The



B-52H taking off from RAF Fairford.

100th Communications Squadron (Randy Mallard)

mere fact of a serious Desert Shield-like deployment of ground troops along the Albanian and Macedonian borders would have made the enemy more easily targetable by airpower. It might also have lessened or deterred ethnic cleansing. In both cases, moreover, it could have enabled a quicker end to the war.

Even had Milosevic remained unyielding to the point where an opposed ground-force entry became unavoidable, continued air preparation of the battlefield might have prevented the residual enemy strength from significantly challenging land forces. Impending weather improvements and further air dominance would have enabled more effective air performance against targets, especially had KLA forces maintained enough pressure on the Serbs to bunch up and move.

The problems created by ruling out a ground option suggest an important corrective to the argument over airpower versus boots on the ground. Although Allied Force reconfirmed that friendly ground forces need no longer be inexorably committed to combat early, it also reconfirmed that airpower often cannot perform to its potential without a credible ground component in the campaign strategy. Airpower alone was not well suited to defeating Yugoslav forces in the field. Once the returns were in, it was clear that few kills were accomplished against dispersed and hidden units. Moreover, airpower was unable to protect the Kosovar Albanians from Serb terror tactics, a problem exacerbated by the stringent rules of engagement aimed at minimizing collateral damage and avoiding any NATO loss of life. As General Merrill McPeak, the former Chief of Staff of the Air Force elaborated, "In a major blunder, the use of ground troops was ruled out from the beginning. I know of no airman—not a single one—who welcomed this development. Nobody said, 'Hey, finally, our own private war. Just what we've always wanted!'" It certainly



Royal Canadian Mounted Police investigating mass grave site.

2: Marine Division (Craig J. Shell)

would have been smarter to retain all the options. . . . Signaling to Belgrade our extreme reluctance to fight on the ground made it much less likely that the bombing would succeed, exploring the limits of airpower as a military and diplomatic instrument.”²

Good Luck and Bad Weather

As for what should be learned from Allied Force, the head of the U.S. military contribution, Admiral James Ellis, made a good start in his after-action briefing to Pentagon and Allied officials, declaring that luck played the chief role. The commander of JTF

the commander of JTF Noble Anvil charged that NATO leaders “called this one absolutely wrong”

Noble Anvil charged that NATO leaders “called this one absolutely wrong.” Their failure to anticipate what might occur once their initial strategy of hope did not succeed caused most of the untoward consequences, including the hasty activation of a joint

task force, a race to find suitable targets, an absence of coherent campaign planning, and lost opportunities resulting from not adequately considering the unexpected. Ellis concluded that the imperatives of consensus politics made for an “incremental war” rather than “decisive operations,” that excessive concern over collateral damage created “sanctuaries and opportunities for the adversary—which were successfully exploited,” and that the lack of a credible ground threat “probably prolonged the air campaign.”³ It was only because Milosevic made a blunder no less towering than ruling out a ground option that the war had a largely positive outcome.

The Kosovo experience further suggested needed changes in both investment strategy and campaign planning. The combination of marginal weather and the unprecedented stress placed on avoiding collateral damage made for numerous delays between March 24 and mid-May, when entire air tasking orders had to be canceled and only cruise missiles and B-2s, with their through-the-weather capability, could be used. That spoke powerfully for broadening the



U.S. Air Force (Joe Cupido)

KC-135E refueling
Norwegian F-16A.

ability of other aircraft to deliver accurate munitions irrespective of the weather, as well as for ensuring adequate stocks. The extended bad weather underscored the limitations of laser-guided bombs and confirmed the value of global positioning system-guided weapons.

The munitions generally performed as advertised. Results, however, confirmed the need for a larger inventory of precision-guided munitions (especially those capable of all-weather target attack), as well as greater accuracy and more stand-off attack capability. At the same time, they indicated a continued operational utility for both unguided general-purpose bombs and cluster munitions for engaging soft military area targets deployed in the open. Other areas for improvement included interoperability across platforms, more multispectral sensors, higher-gain optical sensors for unmanned aerial vehicles, more data link interoperability, a wider range of bomb sizes, and weapons capable of conducting auto-bomb damage assessment. Still other force capability needs included better means for locating moving targets, better discrimination of real targets from decoys, and a way of engaging those targets with smart submunitions rather than costly precision-guided munitions and cruise missiles.

Viewed in hindsight, the most remarkable thing about Allied Force was not that it defeated Milosevic, but that airpower prevailed despite a risk-averse U.S. leadership and an Alliance often

held together only with paralyzing drag. Although airpower can be surgically precise, it is in the final analysis a blunt instrument designed to break things and kill people in pursuit of clear and militarily achievable objectives. Indeed, air war professionals have insisted since the Vietnam War that if all one wishes to do is send a message, use Western Union.

To admit that gradualism of the Allied Force sort may be the wave of the future for U.S. involvement in coalition warfare is hardly to accept that it is thus justifiable from a military standpoint. Quite the contrary, the incrementalism of the air war for Kosovo involved a potential price beyond the loss of valuable aircraft, munitions, and other expendables for questionable gain right up to the end. It risked frittering away the hard-earned reputation for effectiveness that U.S. airpower had finally earned in Desert Storm after more than three years of unqualified misuse over North Vietnam a generation earlier.

U.S. airpower as it has evolved since the mid-1980s can do remarkable things when employed with determination in support of a campaign whose intent is not in doubt. Yet to conjure up the specter of air strikes, conducted by NATO or otherwise, for the appearance of doing something without initially weighing intended targets or consequences, risks getting bogged down in an operation with no plausible theory of success. After years of false promises by its most outspoken prophets, airpower has become a vital instrument of force employment in joint warfare. Even in the best of circumstances, however, airpower can never be more effective than the strategy it supports.

JFQ

NOTES

¹ Bradley Graham, "General Says U.S. Readiness Is Ailing," *The Washington Post*, April 30, 1999.

² Merrill A. McPeak, "The Kosovo Result: The Facts Speak for Themselves," *Armed Forces Journal International* (September 1999), p. 64.

³ Elaine M. Grossman, "For U.S. Commander in Kosovo, Luck Played Role in Wartime Success," *Inside the Pentagon*, vol. 15, no. 36 (September 9, 1999), p. 1.

General Richard B. Myers, USAF

Chairman of the Joint Chiefs of Staff

(October 2001–present)

During my tenure as Chairman, I intend to use these pages in each issue of JFQ to explain my vision, the actions we need to take to improve jointness, and our progress in preparing the force to meet the challenges of the future. With that in mind, I want to begin by addressing my priorities: winning the global war on terrorism, enhancing joint warfighting capabilities, and transforming the Armed Forces. Achieving these goals demands that we challenge and redefine the intellectual foundations of existing operational concepts. . . .

Transformation is often seen in terms of technological change. Intellectual change is necessary as well. Without intellectual adaptation, we simply apply new technologies to old ideas. Transformation must therefore extend beyond new weapon systems and matériel to doctrine, organization, training, education, leadership, personnel, and facilities. This is no simple task in an organization as large as the Armed Forces but such cultural change will enable us to take best advantage of new ideas and technologies.

—JFQ, Issue 29 (Autumn/Winter 2001–02)



Enduring Freedom.

509th Communications Squadron (Michael R. Nixon)



F-16s patrolling skies over Washington.

148th Fighter Wing (Dean Kuhlman)

Strengthening Security at Home

By MICHÈLE A. FLOURNOY

The events of September 11, 2001, pierced the sense of invulnerability that most Americans had come to expect. Although the feeling of security at home waxed and waned with the perils of the Cold War—from duck-and-cover drills in the 1950s to détente in the 1970s—an expectation of being removed from any direct threat of war

became common after the fall of the Soviet Union. As the sole superpower, the United States pursued its interests as a nation at peace. If the Persian Gulf War warned that there were still threats around the world, it also reinforced the idea that America would fight its wars far from home. As one Pentagon wag quipped in the 1990s, the Armed Forces only played away games.

In the decade following Desert Storm, some defense analysts began to focus on asymmetric threats that could be directed at the homeland. At the

Michèle A. Flournoy is currently a senior advisor at the Center for Strategic and International Studies and has served as Principal Deputy Assistant Secretary of Defense for Strategy and Threat Reduction.

same time the Clinton administration initiated various actions to help Federal, state, and local governments enhance their ability to defend against and coordinate responses to attacks on the United States. But Americans remained either unaware or unconvinced of any threat even after the attack on the World Trade Center in 1993.

In the wake of the worst terrorist attack in the history of the Nation, homeland security has become the top priority. Before September 2001 there was a growing commitment among many government officials to guard against such threats to the United States. Since then there has been an urgent public demand and an unprecedented political will to do whatever is necessary to enhance homeland security as quickly as possible. Congressional approval to give the President \$40 billion in an emergency supplement—twice the sum requested—was indicative of the new mood.

But a year after this wake up call, the United States still lacks a homeland security strategy to manage risk and guide resource allocation. Although Congress is debating how to organize for homeland security, no decisions have been made on which threats require attention, what programs should receive a priority, and how resources must be allocated. Given this policy vacuum, there is an urgent need for an integrated, strategy-driven homeland security program.

Prevention, Protection, Response

Homeland security means preventing, deterring, preempting, and defending against attacks against the United States, and managing the consequences of any attack. Inherent in this definition are three broad-based and enduring objectives that must underpin a new national strategy. The first is preventing attacks. This is central to the open, democratic, market-based American way of life. Prevention involves countering threats before they become manifest as far from the Nation's borders as possible. This can range from efforts mounted with allies to roll up terrorist networks or denying access to weapons of mass

destruction to immediate actions inside the United States to prevent terrorists from renting crop-dusters. Prevention is proactive, requiring offensive action to destroy or neutralize threats before an attack occurs. It involves "shaping the security environment to avoid or retard the emergence of threats to the United States," which can only be achieved by action abroad.¹ In this regard, the Departments of State and Defense, allies, and law enforcement agencies overseas play a significant role. In the final

decisionmakers must anticipate the kinds of attacks that might occur and details on their nature, location, and timing

analysis, the major element of prevention is detecting threats in advance, with enough specificity and warning to take preventive action.

To deflect attacks, decisionmakers must anticipate the kinds of attacks that might occur and details on their nature, location, and timing. This requires good intelligence collection and analysis and, in most cases, substantial sharing of information across national and agency lines.

Because not every threat can be prevented, the goal must be to minimize the likelihood that the most serious types of attack could be mounted successfully. As the Secretary of Defense said, "Our victory will come with Americans living their lives day by day, going to work, raising their children, and building their dreams as they always have—a free and great people."² The fact that Federal law enforcement and intelligence agencies have averted such attacks in the past by acting rapidly on specific indications is proof that a degree of prevention is possible.

The second objective of homeland security is enhancing the capability of the United States to protect itself against attack. This includes strengthening defenses against a range of threats that might come from a variety of directions against any number of targets.

Essential to the protection of American citizens is a capability to defeat or neutralize enemy action once an attack is launched. A range of capabilities that includes domestic law enforcement, intelligence, military, and public health organizations will be needed to mount effective barriers to such attacks whether they involve immediate responsive defense against either aircraft or missiles, a rapidly instigated search to find and foil a terrorist cell, or day-to-day security measures to patrol borders and protect critical in-

frastructure. This aspect of homeland security is particularly complex because of the variety of acknowledged threats, the increasing sophis-

tication of known terrorists, and the ability of subversive elements to adapt their mode of operations to new countermeasures and exploit weaknesses in existing protective systems.

Efforts must focus not only on ensuring that terrorists can never again hijack airliners and fly them into skyscrapers. The United States must guard against planes, missiles, vehicles, ships, chemical or biological agents, nuclear materials in urban areas, and cyber and physical attacks on critical infrastructure. Both lethal and non-lethal disruptive threats demonstrate the complexity of the problem and range of participants in the public and private sectors who should be involved in protecting the homeland. This diversity highlights the need to prioritize. The United States cannot afford to give equal weight to defending against every conceivable threat scenario.

The third objective is improving the ability to manage the consequences of an attack. First, there must be a forceful capability to guarantee public safety; continuity of government; command, control, and communications; and essential services. Effective consequence management is central to maintaining public confidence and reducing the impacts of terrorism. As seen on September 11, first responders such as firefighters, police, and emergency rescue teams are often the most critical elements of consequence management. They should



Ground zero.

Fleet Combat Camera, Atlantic (Aaron Peterson)

The Pentagon,
September 11.



U.S. Marine Corps Photolab (Jason Ingersoll)

have the assets and training to coordinate their activities under extraordinary conditions, such as the use of weapons of mass destruction.

Second, the United States must be able to minimize disruption and restore the infrastructure rapidly in the immediate aftermath of any attack. This might involve restoring telecommunications service, repairing energy production and distribution systems, or providing alternative means and routes of communication and transportation. Hardening potential targets, developing contingency plans, and building a degree of redundancy into key systems will be critical to rapid restoration.

Third, the Federal Government must be prepared to quickly stabilize financial markets and manage economic consequences of an attack. This should involve agencies such as the Treasury Department and Federal Reserve System working in partnership with the private sector.

Fourth, Federal, state, and local agencies as well as nongovernmental organizations must provide immediate assistance to attack victims and affected communities. Central to protection and response are advanced planning, exercises, and simulations that

identify problems and coordinate efforts among government and private sector representatives.

The Long Pole in the Tent

Intelligence is indispensable in the global war on terrorism. However, given the nature of the enemy, there is no assurance that the quality of intelligence on organizations like al Qaeda will notably improve without institutional changes and a sustained effort by the intelligence community. As a flat organization composed of small cells of individuals in more than sixty countries, al Qaeda has demonstrated its ability to employ a range of communications, from low-tech means such as face-to-face meetings to high-tech devices such as encryption. When communications have been intercepted, it has been agile in changing its modus operandi.

Terrorist organizations do not rely on the kind of assets that make other intelligence targets such as governments easier to penetrate. Thus national technical means of collection—satellites, electronic eavesdropping,

and surveillance aircraft—are less effective. Moreover, extremism not only motivates recruits and cements otherwise loose networks, but makes them almost impossible for Western agents to infiltrate. Because of their strong ideological convictions, members of these groups are unlikely to defect even if offered incentives. Given these factors, the campaign against terrorism may pose the biggest intelligence challenge since the Cold War.

Homeland security presents a set of requirements that call for an understanding of the types of attack that various terrorist organizations are able to launch. If indicators suggest that an attack is imminent, authorities need specific warning on its location and type to enhance law enforcement, security, and consequence management. Such insight is unlikely to emerge without a synthesis of relevant information across bureaucratic lines into a coherent, timely picture.

One of the greatest challenges to homeland security is enhancing situational awareness—the ability to know what terrorists are doing inside national borders—without becoming a police state. Consider the fact that perpetrators of the September 11 attacks

lived, prepared, and hid in America for several years but went undetected. This lapse occurred because the intelligence community did not collect and evaluate the right information. There is a need to redesign collection and analysis strategies within the intelligence and law enforcement communities.

In addition, relevant bits of information were available in various agency files but remained needles in a proverbial haystack of intelligence data. This points to the need for new technologies to organize, store, and retrieve data already collected. Another

intelligence sharing must be overhauled to enable rapid, effective fusion and ensure situational awareness

concern is that agencies may have identified key elements of information yet failed to correlate them to present the larger picture. This argues for better data sharing across agency lines. But such efforts raise the specter of intelligence activities within U.S. borders, which has long been seen as a threat to civil liberties.

The campaign against terrorists requires coming to terms with the question of basic rights. Creating situational awareness will call for new methods of lawful surveillance of both citizens and foreigners living in America, while establishing adequate oversight mechanisms to ensure that they are not misused. In short, a better job should be done to track and find terrorists on American soil while protecting our fundamental liberties.

Since better intelligence is indispensable, it is imperative that the United States act quickly and prudently to address the most serious problems in the counterterrorism campaign. For a start, the President should require an interagency assessment to identify shortfalls in intelligence policy, capabilities, practices, and resources that could hamper effectiveness. Based on a comprehensive assessment, the administration must develop a multi-year action plan.

Second, the President should assign a high priority to strengthening bilateral intelligence-sharing and cooperation with countries that have the

most to offer on the terrorist organizations of greatest concern. After September 11, such arrangements are defining political issues in relations with many nations. A central diplomatic goal must be to broaden and deepen these arrangements as a cornerstone of bilateral relations with key countries. This should include continuing to seek greater cooperation in surveillance of the financial transactions of terrorist organizations.

Third, Congress should increase resources devoted to the intelligence community in general and the global war on terrorism in particular. This will be essential in addressing critical shortfalls in areas such as human intelligence, covert operations, analysts, linguists, area specialization, and the integration of new technologies, especially with regard to information management.

Fourth, the guidelines and processes for intelligence sharing must be overhauled to enable rapid, effective fusion and ensure situational awareness. This must occur not only on the national level but also among Federal, state, and local agencies. American lives are on the line, and there is no excuse for bureaucratic infighting that compromises the ability to exploit available intelligence.

Such initiatives will require a shift from a case file approach of domestic law enforcement to more fundamental and proactive data analysis. It will also demand substantial investment in data correlation and analysis capabilities, as well as sharing data across bureaucratic lines. Improving the ability to correlate data will mean reevaluating rules that govern collecting intelligence on private citizens and others living in this country. Specifically, the United States must organize combined-agency investigation centers supervised by officials who are named by the court authorized under the Federal Intelligence Surveillance Act. These officials would be real-time privacy ombudsmen to guard against the inappropriate use of new investigative techniques.

Fifth, intelligence and law enforcement agencies must conduct more red team assessments to better anticipate what types of attack terrorists might contemplate and how to respond. Though imperfect, such efforts can expose gaps in thinking and shortcomings in preparation.

Finally, the intelligence community cannot be expected to solve every problem on its own. It must pursue public-private partnerships to engage the best expertise to surmount technological hurdles. Particular investment must be made in new technologies to store and retrieve information. In the wake of September 11, it should not be hard to find private sector partners. More broadly stated, the intelligence community should seek to leverage the diversity and openness of America, engaging experts and linguists outside the Government through outreach and outsourcing.

The intelligence and law enforcement communities are recognized as crucial and in need of resources and reform. Nothing will be more important to fighting terrorism and homeland security than meaningfully improving the capabilities and performance of these two communities.

Preparing for the Worst

As the United States develops a strategy for homeland security, it should pay attention to the greatest threats to its way of life: bioterrorism and attacks on critical infrastructure.

While chemical agents could produce hundreds of thousands of casualties, an attack using biological pathogens could cause millions. It is well established that al Qaeda has sought biological means of attack and has contacts with states that have biological weapons programs. The anthrax attacks after September 11 ended the debate about whether or not an individual or small group can obtain and use biological agents.

The good news is that biological pathogens are generally difficult to weaponize; it is hard to produce them in large quantities and format their dispersal to cause mass casualties. The bad news is that dedicated terrorists would need only a small quantity of a highly contagious pathogen such as

smallpox to create a mass-casualty event. Every infected person would be a walking biological weapon. This danger is magnified in a mobile society. Local bio-attacks could turn into a national crisis that could be crippling. The Nation must therefore give highest priority to keeping pathogens out of the hands of terrorists and enhancing its ability to deal with such attacks.

Security measures at U.S. and foreign facilities have not been adequate to prohibit theft of dangerous pathogens. Samples of some pathogens such as smallpox are kept under tight control in America, whereas others like anthrax are stored in labs under minimal security. Across the former Soviet

an active, sustained partnership between the public and private sectors will be essential in the case of bio-defense

Union, literally tons of biological weapons agents are housed in nonsecure facilities.

In addition, we are ill-prepared to manage the aftermath of a large-scale bioterrorism attack. The United States has neither sufficient stockpiles of vaccines and antibiotics nor means to rapidly distribute them. It also lacks adequate cadres of first responders trained and equipped to deal with such a crisis. The Government also needs management strategies, plans, and information systems. Senior leaders simply would not get the intelligence and expert advice required to make informed decisions. Federal and state officials could find themselves in the untenable position of using force to constrain the movement of citizens absent a viable means to contain a crisis. This may endanger civil liberties and also test decisionmakers. Indeed, the less adequate the response to bioterrorism, the greater both the likely panic and the threat to basic freedom.

Working with members of Congress and state and local government officials, the President should undertake a public-private initiative to enhance national capabilities. This effort must focus on the public health system to limit the catastrophic potential of bioterrorism.

Substantial investments are needed to strengthen public health expertise, infrastructure, and early warning systems. New approaches must be developed to deal with the diseases that might be used as weapons of terror, especially stockpiling vaccines and antibiotics, strengthening national and regional distribution, and researching and developing other means of facilitating rapid disease control such as easily deployable diagnostic tools using new biotechnologies. Administration and congressional action to create a stockpile of hundreds of millions of doses of smallpox vaccines is a step in the right direction, but much more needs to be done to safeguard against other pathogens. Particularly important will be developing an appropriate regulatory process to ensure the safety of vaccines and antibiotics as well as providing medical and pharmaceutical industries with incentives such as liability protection to rise to this national challenge.

This initiative must also include the development and implementation of a robust security protocol to protect laboratories that store pathogens which could be used in terrorist attacks; an extensive program of analysis, simulations, and exercises to improve knowledge of such threats and identify and prioritize shortfalls; development of detailed plans and decision-making protocols, including clarification of jurisdictional issues between Federal and state entities; and development of information systems on all levels to better manage such events.

In addition, the United States must deal with the legacy of biological weapons in the former Soviet Union through cooperative threat reduction programs. This effort should reinvigorate and reorient the Biological Weapons Convention to take into account new bioterrorism threats. Only in preparing for the worst case can the potential consequences be limited.

The security of critical infrastructure—physical assets and cyber-based systems essential to the minimal operations of the economy and bureaucracy—is another urgent challenge in addressing the risks and consequences

of terrorism. Widespread disruption and panic would quickly ensue if an aircraft breached the containment structure of a nuclear power plant, a major urban power plant was shut down, or the computer system of the New York Stock Exchange was sabotaged.

Between 80 and 90 percent of critical infrastructure is either owned or operated by private firms. It includes telecommunications, electrical power systems, gas and oil distribution, banking and financial institutions, transportation, water resources, and emergency services. In the new age of information technology much critical infrastructure has become automated, bringing efficiencies but also vulnerabilities, including susceptibility to cyber attack. An active, sustained partnership between the public and private sectors will be essential in the case of bio-defense.

Significant progress has been made, including the organization of Information Sharing and Analysis Centers by the Government in partnership with the private sector for addressing electronic threats, vulnerabilities, incidents, and solutions. But to date such efforts have largely focused on cyber-based rather than physical threats. Given that terrorist groups like al Qaeda have displayed interest in inflicting highly visible mass-casualty events, cyber strikes may not be a preferred mode of attack. The Bush administration should focus on physical vulnerabilities and threats in various sectors in its efforts to improve critical infrastructure protection.

The United States needs not only new threat and vulnerability assessments, but also a clear delineation of various responsibilities and authorities for the security of critical infrastructure. For example, who is responsible for security at over 100 nuclear power plants? The utility companies who operate the plants, local law enforcement agencies, or the National Guard under state control? These issues must be clarified through consultations between Federal, state, and local governments and industry. Private firms will have a particularly important role,



151st Air Reserve Wing (Mark Savage)

Providing security in Salt Lake City.

ranging from designing new facilities to better withstand attack, to enhancing physical security systems at existing facilities, to bringing relevant technologies and products to market.

Towards Homeland Security

Congress is scrutinizing the proposal for a department of homeland security, but regardless of the organizational structure that emerges, the challenges outlined above require that the Nation take five interrelated steps. First, it must conduct a thorough interagency assessment of possible dangers to the homeland, considering different kinds of threats and their consequences. Second, based on that assessment, it must develop a national strategy that articulates priorities for resource allocation—essentially where to place the emphasis and how to accept or manage a degree of risk. Third, it must create an interagency program review and budget process to integrate and prioritize homeland security efforts on the national level. Fourth, it must establish a program to simulate and train decisionmakers. Finally, it must develop operational concepts to

enhance homeland security. Only these steps can enhance national security at an acceptable cost.

Interagency threat assessment. The first step is tasking the Homeland Security Advisor to lead a comprehensive interagency assessment of current and future threats. The objective would be to develop a framework for understanding potential threats and establishing short-, mid-, and longer-term goals. Participants should include the intelligence agencies; Federal Bureau of Investigation; Departments of Defense, Treasury, Transportation, Commerce, and Health and Human Services; and Centers for Disease Control and draw on open as well as internal information sources.

To make the appraisal a living process rather than a one-time exercise, the President should establish a new terrorism assessment unit in the Office of Homeland Security designed to think like terrorists and study ways security could be breached. This must not be an unbounded exercise of human imagination, but rather a disci-

plined review of terrorist doctrine and techniques, intelligence assessments, and goals and effects sought by terrorist groups. The unit should draw on research as well as unconventional sources. Its aim must be to shape the strategy and programs of departments and agencies that share the homeland security mission.

National risk management strategy. Next, the President should task the Homeland Security Advisor to conduct an interagency review to define and prioritize objectives, articulate a strategy to meet those objectives, and develop a concept of operations that assigns responsibilities to specific agencies and actors for executing the strategy. While this is the charter of the Homeland Security Advisor, and there has been much talk of developing a national strategy, no rigorous interagency process appears to be underway. This planning process must build on the threat assessment described above and include an assessment of capabilities to deal with priority threats. The objective should be to provide policy guidance and prioritize shortfalls in national capabilities.

Informed by a strategy review, the Homeland Security Advisor should develop a multi-year interagency action plan. The plan must specify short-term actions to be taken on a priority basis, long-term investments to enhance critical capabilities, and a clear division of labor, including lead agency responsibility for specific areas and actions. This plan should be issued by the President to guide resource allocation. It must be a living document that is annually revised. The development process must include input from all Federal agencies responsible for homeland security, as well as consultation with state and local agencies and actors. Such an integrated action plan will be critical to getting the highest returns on an investment totalling billions of dollars.

Strategy-driven program and budget review process. Once the plan is in place, the advisor should establish a rigorous program and budget review process which annually reviews activities and



Marines on Capitol Hill.

U.S. Marine Corps (Bryant V. Cox)

expenditures of relevant agencies in light of multi-year requirements. The review must provide a mechanism for enforcing Presidential priorities. White House backing will be essential.

The Homeland Security Advisor must also fully integrate Federal programs and plans with state and local governments and aid those authorities in enhancing homeland security capabilities. Because state and local governments are likely to be the first to respond, they will bear the lion's share of responsibility in implementing decisions made in Washington. They will feel the impact of any attack most acutely. These constituencies will have to be included in decisions to strengthen security at home. The same situation is true within the private sector, particularly firms involved in operating or securing critical infrastructure.

Rigorous simulation and training.

The Office of Homeland Security must institute gaming or simulation of homeland security scenarios. Such simulations can reveal discontinuities in plans for future events, offer insights into complex problems that can't be learned from reports, establish operational working relationships among players in peacetime that are crucial for

communication in crises, help organizations to surmount turf battles by recognizing what can be done as well as what various organizations bring to the table, and detect shortfalls in processes and capabilities that should be addressed. Comprehensive simulation and training must include periodic sessions for the President and cabinet as well as subcabinet and working-level officials in key positions.

Develop new operational concepts. Finally, the Office of Homeland Security should form an advanced concepts office that can develop approaches which bridge discontinuities and address shortfalls identified in simulations and training. It could use current research techniques to identify alternative operational concepts and provide guidance on capabilities to meet priority requirements.

Homeland security is front and center in America's consciousness, and it is likely to remain so, especially if further attacks occur. Unlike the Gulf War or even the decades of the Cold War, fighting terrorism will not have a clear endpoint. Rather, it will be similar to the wars on crime and drugs. Since intractable problems can't be eliminated, victory becomes a matter of reducing risks to an acceptable level. In sum, the realities of homeland secu-

rity require the Nation to think about conflict in different ways and overcome its varied challenges.

The Federal Government in partnership with state and local agencies and the private sector must enhance homeland security to win the global war on terrorism. This effort must be started by conducting a comprehensive threat assessment and developing a national strategy and program that outlines clear priorities for investment. It must adopt ways of doing business to integrate policies, programs, and budgets across bureaucratic lines on the national, state, and local levels as well as the private sector. This will require both political will and leadership on the part of elected officials and historic levels of public support. But meeting this challenge is not an option; it is imperative for the Nation to prevail in this fight against terrorism. **JFQ**

NOTES

¹ Michael Dobbs, "Homeland Security: New Challenges for an Old Responsibility," *Journal for Homeland Security* (March 2001), <http://www.homelandsecurity.org/journal/Articles/Dobbs.htm>.

² Donald Rumsfeld, "A New Kind of War," *The New York Times*, September 27, 2001, p. A21.



1st Combat Camera Squadron (Jim Varhegyi)

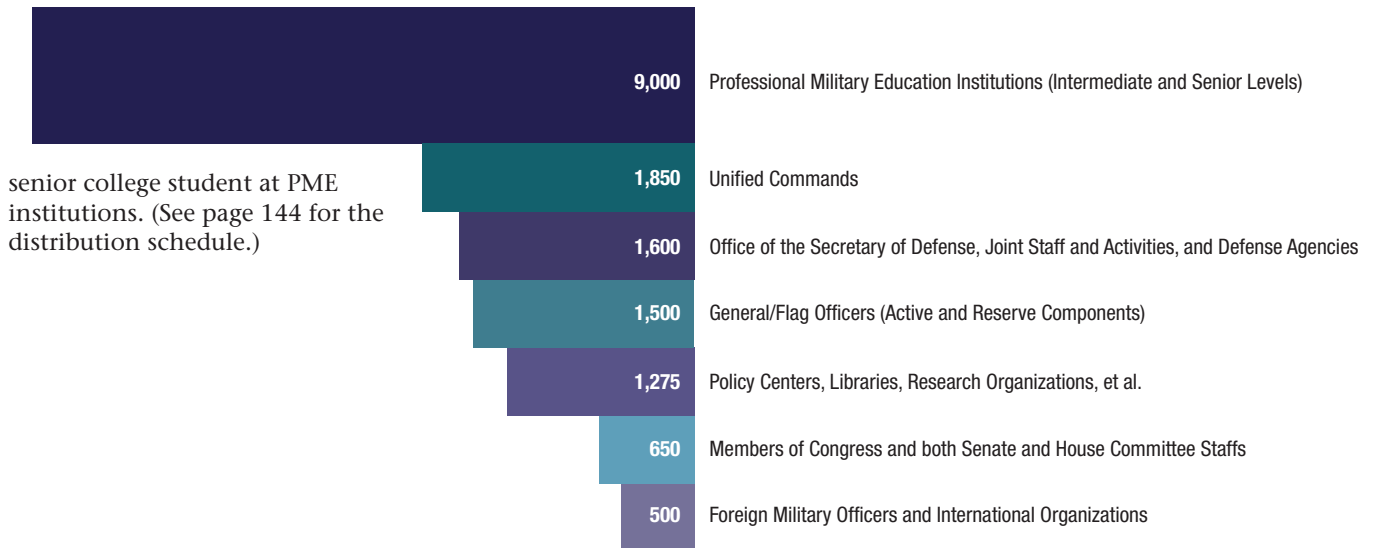
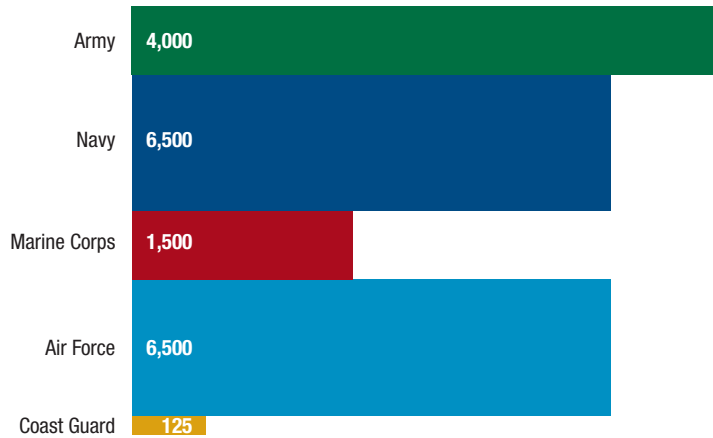
982nd Signal Company (Jonnie L. Wright)

1st Marine Air Wing (Robert A. Kunda)

U.S. Navy (Marlow P. Dix)

who gets JFQ?

Of the 35,000 copies of *Joint Force Quarterly* published by the National Defense University, more than half are furnished to the services and unified commands for distribution to the field and fleet. One copy is provided for every two majors/lieutenant commanders and lieutenant colonels/commanders serving in joint billets. (Across the services one copy is provided for every four officers in this target audience.) In addition, one copy is furnished to every general/flag officer and every intermediate and



senior college student at PME institutions. (See page 144 for the distribution schedule.)

DISTRIBUTION: *JFQ* is distributed to the field and fleet through service channels. Individuals and organizations interested in receiving the journal on a regular basis should make their requirements known through command channels. Any corrections in shipping instructions for service distribution should be directed to the appropriate activity listed below.

■ **ARMY**—To order, write U.S. Army Publications Distribution Center, ATTN: Customer Service, 1655 Woodson Street, St. Louis, Missouri 63114-6181 (citing Misc. Publication 71-1); call (314) 263-7305 [extension 4]/DSN 693-7305 [extension 4]; or contact U.S. Army Publishing Agency Home Page on the Internet at www.usapa.army.mil and select: (1) *Publications Ordering and Subscription System*, (2) *Publications Ordering System* > (Modify 12-Series Subscriptions), (3) *Subscription Add/Change/Delete* > *Submit a Subscription (DA Form 12-9-R)*, and complete the order under (4) *Subscription Changes* by entering > *Account Number* and > *ZIP Code* followed by both *First 2 Digits* and *Last 4 Digits* of the Initial Distribution Number (IDN) > 05 0042 and then indicate desired number of copies > *Quantity*.

■ **NAVY**—Contact the Navy Inventory Control Point, Customer Service List Maintenance (Code 3343.09), 700 Robbins Avenue, Philadelphia, Pennsylvania 19111-5098; requests may be sent by Fax at (215) 697-5914 (include SNDL, UIC, and full address).

■ **MARINE CORPS**—For one-time distribution of an individual issue write to Marine Corps Logistics Base (Code 876), 814 Radford Boulevard, Albany, Georgia 31704-1128; request by Fax at (912) 439-5839/DSN 567-5839. To be placed on standard distribution contact Headquarters, U.S. Marine Corps (Code ARDE), Federal Building No. 2 (Room 1302), Navy Annex, Washington, D.C. 20380; request by Fax at (703) 614-2951/DSN 224-2951.

■ **AIR FORCE**—To order on a one-time basis, contact Air Force Publishing online at <http://www.e-Publishing.af.mil> and enter *JFQ* in > *Short Title Search* (at the top of the page) and then click > *GO!* for a list of current and back issues on hand, or follow instructions for submitting an order on the online ordering page. To have your unit added to the distribution list for *JFQ*, send a request, which includes your full mailing address and number of copies you desire, to rss-AFDPOAccessandDissemination@pentagon.af.mil. Customer service is available from the Air Force Distribution Center at (410) 687-3330/DSN 584-4529/4729/4829; by Fax at DSN 584-4629; or via e-mail at afpdc-service@pentagon.af.mil. PACAF Order Desk (Hickam Air Force Base): call (808) 449-5509/DSN 449-5509; USAF Order Desk (Ramstein Air Base): call (011-49) 6371-47-2184/DSN 480-2184, Fax at (011-49) 6371-47-7481/DSN or via e-mail at afpdc-e@ramstein.af.mil.

■ **COAST GUARD**—Contact Headquarters, U.S. Coast Guard, ATTN: Defense Operations Division, 2100 2nd Street, S.W., Washington, D.C. 20593-0001.

In addition to service channels, bulk distribution is made directly to defense agencies, the Joint Staff, unified commands, service colleges, and other activities. Changes in shipping instructions should be communicated to the Editor (see schedule below).

SUBSCRIPTIONS: *JFQ* is available by subscription from the Government Printing Office. To order for one year, cite: *Joint Force Quarterly (JFQ)* on the order and mail with a check for \$20.00 (\$28.00 foreign) or provide a VISA or MasterCard account number with expiration date to the Superintendent of Documents, P.O. Box 371954, Pittsburgh, Pennsylvania 15250-7954, or Fax the order to: (202) 512-2233.

Individual copies may be purchased through GPO bookstores nationwide for \$21.00 each.

CONTRIBUTIONS: *JFQ* welcomes submissions from members of the Armed Forces as well as defense analysts and academic specialists from this country and abroad, including both foreign military officers and civilians. Articles submitted for consideration should be 3,500 to 5,000 words long. Any standard manual of style may be followed in preparing the manuscript. Unsolicited book reviews are generally not accepted for publication.

Submissions should be mailed under a covering letter stating that the manuscript has not been previously published and is not under consideration by any other publication. In addition, include the author's full name (including rank, service/component, and assignment), a complete postal address (with Zip code), and work phone number. A biographical sketch or curriculum vitae should also be included. Submissions that do not satisfy these requirements will be rejected.

Manuscripts may be formatted using any standard word processing software (WordPerfect is preferred) and must be accompanied by the personal information indicated above. Send submissions to JFQ1@ndu.edu. It is recommended that a hard copy of the manuscript also be mailed with a diskette or compact disc.

All unsolicited manuscripts are reviewed, a process which can take two to three months. Do not identify the author in the body of the work. Manuscripts should be double-spaced with one-inch margins. Endnotes should include all relevant publication data (including page numbers) and cite printed sources rather than references to Web sites. Do not embed graphics (such as PowerPoint slides) in the text; place illustrations in separate data files. Original supporting material (maps, photos, et al.) should not be submitted with the manuscript.

JFQ reserves the right to edit contributions for length and conformity with the established style of the publication. Extensive use of acronyms and abbreviations is discouraged; technical jargon should be explained in the text. Page proofs of articles are not normally provided to authors for review.

Contributions selected for publication by servicemembers and employees of the Department of Defense are submitted to the Office of the Secretary of Defense for security review. No payment or honorarium is authorized for publication of articles submitted by servicemembers or Government employees. Material that appears in the journal is considered in the public domain and is consequently not protected by copyright.

Additional information is available by calling (202) 685-4220/DSN 325-4220, Fax at (202) 685-4219/DSN 325-4219, via e-mail at JFQ1@ndu.edu, or from the Editor, *Joint Force Quarterly*, ATTN: NDU-NSS-JFQ, 300 Fifth Avenue (Bldg. 62), Fort Lesley J. McNair, Washington, D.C. 20319-5066.

JFQ

DISTRIBUTION SCHEDULE

A total of 35,000 copies of *Joint Force Quarterly* is distributed worldwide. Of this number, more than 18,500 copies are sent directly to the five services for break down and delivery to subordinate commands, units, bases, etc. Bulk shipments are made as follows:

	<i>copies</i>		<i>copies</i>		<i>copies</i>
Office of the Secretary of Defense	400	U.S. Joint Forces Command	150	PME Institutions	
Joint Staff and Joint Activities	700	U.S. Southern Command	150	U.S. Army War College	600
Services		U.S. Central Command	275	U.S. Army Command and General	
Army	4,000	U.S. Northern Command	50	Staff College (including the School	
Navy	6,500	U.S. Strategic Command	275	of Advanced Military Studies)	1,525
Marine Corps	1,500	U.S. Special Operations Command	150	Naval War College (both resident and	
Air Force	6,500	U.S. Transportation Command	100	nonresident programs)	1,750
Coast Guard	125	Defense Agencies		Naval Postgraduate School	300
Unified Commands		Defense Information Systems Agency	125	Marine Corps War College and Marine	
U.S. European Command	275	Defense Intelligence Agency	150	Corps Command and Staff College	400
U.S. Pacific Command	275	Defense Logistics Agency	150	Air War College	450
U.S. Forces Korea	75	Defense Threat Reduction Agency	25	Air Command and Staff College	
U.S. Forces Japan	50	National Imagery and Mapping Agency	25	(including the School of Advanced	
Alaskan Command	25	National Security Agency	25	Air and Space Studies)	1,200

In addition to the above, approximately 3,500 copies of *JFQ* are distributed to general/flag rank officers and members of Congress; service doctrine centers; U.S. and foreign military attachés; and selected educational institutions, journals, and libraries in this country and abroad.

—continued from front inside cover

Peter R. Lavoy • K. Scott Lawrence • Peter Leahy • David G. Leatherwood • Richard A. Lechowich • Gary C. Lehmann
Michael Leurs • Brian M. Lewis • William H. Lewis • Martin C. Libicki • Joseph I. Lieberman • Charles D. Link
Brian M. Linn • Thomas C. Linn • James R. Locher III • John M. Logsdon • Carnes Lord • Lance W. Lord • F.M. Lorenz
Douglas C. Lovelace, Jr. • Richard B. Lovelock • James M. Loy • Angela Maria Lungu • Michael R. Lwin • Barry R. McCaffrey
Kevin F. McCarroll • Damian J. McCarthy • Bruce H. McClintock • Michael L. McDaniel • Anne F. Macdonald
Dennis McDowell • John G. McGinn • Douglas A. Macgregor • Kenneth McGruther • Mark A. McGuire • Richard C. Macke
Kenneth F. McKenzie, Jr. • H.R. McMaster • Merrill A. McPeak • Roderick R. Magee II • Thomas G. Mahnken
Alan G. Maiorano • Philippe H. Mallard • James D. Marchio • Stephen J. Mariano • Rosemary Bryant Mariner
Edward Marks • Paul Marks • Phebe Marr • Andrew W. Marshall • Pablo Carlos Martinez • Jose F. Mata
Michael P. Mathews • Gary H. Mears • Susan A. Medlin • William W. Mendel • Susan E. Merdinger
Graham Messervy-Whiting • Marvin G. Metcalf • David R. Mets • Steven Metz • Stanlis D. Milkowski • Charles E. Miller
Paul David Miller • Allan R. Millett • Anthony E. Mitchell • James E. Moentmann • Ronald N. Montaperto
George M. Moore • Ronald W. Moore • Scott W. Moore • Clarence Todd Morgan • James K. Morningstar • Edward H. Moseley
Joseph E. Muckerman II • Carl E. Mundy, Jr. • Clark A. Murdock • Williamson Murray • Thomas W. Murrey, Jr.
Grover E. Myers • Richard B. Myers • Naef bin Ahmed Al-Saud • John A. Nagl • Bruce Nardulli • C.P. Neimeyer
Michael A. Nelson • Mark C. Nesselrode • Samuel J. Newland • Gail Nicula • Suzanne Nielsen • David L. Norquist
Frederick M. Nunn • Sam Nunn • Robert B. Oakley • Don Oberdorfer • Michael E. O'Hanlon • Masao Okonogi
Thomas O'Leary • Stephen D. Olynyk • William G. O'Neill • Kevin P. O'Prey • Fumio Ota • Mackubin Thomas Owens
William A. Owens • Timber P. Pangonas • Jay M. Parker • Rod Paschall • Ralph W. Passarelli • Sue C. Payton
J.H. Binford Peay III • William T. Pendley • Peter P. Perla • Charles M. Perry • James D. Perry • Walter L. Perry
William J. Perry • John N. Petrie • Lillian A. Pfluke • Curtis Phillips • Terry Pierce • Donald C. Pipp • W. Darren Pitts
Walter S. Poole • B. Poulin • Colin L. Powell • Earl W. Powers • David E. Price • George W. Price • Joseph W. Prueher
Terry J. Pudas • George T. Raach • Leonard M. Randolph, Jr. • Joseph J. Redden • John F. Reichart • Dennis J. Reimer
James R. Reinhardt • Robert Riche • Shawn P. Rife • Richard J. Rinaldo • Robert W. RisCassi • James A. Robards
Charles S. Robb • Mark J. Roberts • George Islay MacNeill Robertson • James G. Roche • Ervin J. Rokke • Ronald F. Rokosz
George A. Rollins • Stephen Peter Rosen • Eugene V. Rostow • William V. Roth, Jr. • Amy M. Rowe • Ian Roxborough
Robert C. Rubel • Tomislav Z. Ruby • James A. Russell • Donald E. Ryan, Jr. • Ralph Sanders • James T. Sanny, Sr.
Eugene D. Santarelli • Harvey M. Sapolsky • David A. Sawyer • Robert H. Scales, Jr. • John M. Schafer • Kori N. Schake
Robert L. Scheina • Gary J. Schmitt • James J. Schneider • Gregory L. Schulte • Frank E. Schwamb • Paul J. Selva
Robert W. Sennewald • Kalev Sepp • Simon Serfaty • John O.B. Sewall • John M. Shalikashvili • Timothy C. Shea
John J. Sheehan • Michael A. Sheehan • Henry H. Shelton • John D. Sherwood • Richard H. Shultz, Jr. • Kevin A. Shwedo
Adam B. Siegel • Steve C. Sifers • Jeffrey Simon • Jay Gordon Simpson • Ajay Singh • Ike Skelton • Stanley R. Sloan
Arthur M. Smith • Edwin P. Smith • Michael M. Smith • Michael V. Smith • Don M. Snider • Jed C. Snyder • Henry Sokolski
Richard D. Sokolsky • Javier Solana • Robert M. Soofer • Lewis Sorley • Robert R. Soucy II • Ronald H. Spector
Roy W. Stafford, Jr. • James P. Stanton • John F. Starns • James Stavridis • Robert David Steele • William M. Steele
Thomas W. Steffens • Jonathan Stevenson • Richard W. Stewart • Charles W. Stiles • Jeremy R. Stocker • Ann E. Story
Frederick R. Strain • John Strebeck • Frank B. Strickland, Jr. • Bruce B. Stubbs
Scott W. Stucky • Brian R. Sullivan • Gordon R. Sullivan
Harry G. Summers, Jr. • Richard Szafranski • Anthony J. Tata
Scott R. Taylor • Peter B. Teets • Bruno Tertrais • William C. Thomas
James S. Thomason • Ronald Tiersky • John H. Tilelli, Jr. • John C.F. Tillson
David F. Todd • James H. Toner • Kenneth R. Totty • Bernard E. Trainor
James J. Tritten • John J. Tuozzolo • Douglas E. Utley • Jan M. van Tol • Milan N. Vego • Rudy Veit • Alexander R. Vershbow
Henry Viccellio, Jr. • George R. Vickers • Michael C. Vitale • Jay M. Vittori • Michael Vlahos • Arthur Waldron • Jack Walker
Nancy J. Walker • Lewis Ware • Huba Wass de Czege • Nathan K. Watanabe • Geoffrey D.W. Wawro • Gary C. Webb
Willard J. Webb • Glenn R. Weidner • Russell F. Weigley • William G. Welch • Gordon M. Wells • Charles M. Westenhoff
Frederick L. Wattering • Kevin R. Wheelock • Shawn C. Whetstone • John P. White • Paul K. White • J.L. Whitlow
John A. Wickham, Jr. • Sheila E. Widnall • Lawrence B. Wilkerson • T. LaMar Willis • H.P. Willmott • Gregory C. Wilmoth
Thomas R. Wilson • James A. Winnefeld • Andrew C. Winner • Harold R. Winton • James J. Wirtz • Paul D. Wolfowitz
Gary A. Wolver • William Woodruff • Simon P. Worden • Jay B. Yakeley III • Casimir A. Yost • David S. Yost • Mark Yost
Thomas-Durell Young • James L. Zackrison • James M. Zepka • Anthony C. Zinni • Donald R. Zoufal

JFQ Contributors— 1993–2003



coming next . . .

the center of gravity

plus

**transforming joint warfighting,
consequence management,
homeland security,**

and more in the Summer 2003 issue of JFQ



JFQ

J O I N T F O R C E Q U A R T E R L Y

Published for the
Chairman of the Joint Chiefs of Staff
by the Institute for National Strategic Studies
National Defense University
Washington, D.C.