

# Annual Report 2009



RAND

NATIONAL SECURITY RESEARCH DIVISION

# Annual Report 2009



NATIONAL SECURITY RESEARCH DIVISION

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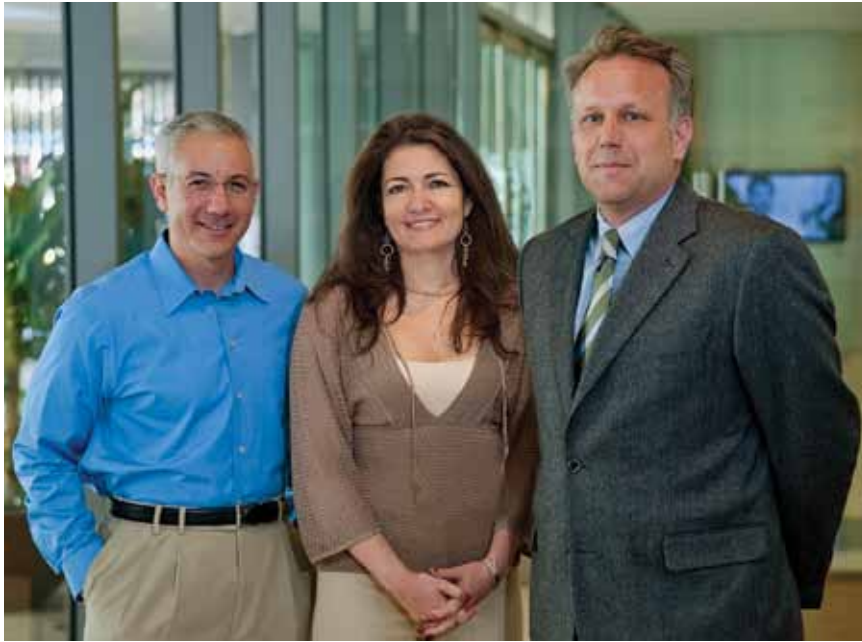
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## DIRECTOR'S MESSAGE



Eric Peltz, Associate Director;  
Nurith Berstein, Director,  
Operations and Planning; and  
Jack Riley, Director, NSRD.

**A**mong the chief challenges faced by U.S. defense planners in 2009, and one that will continue into 2010, is the drawdown of U.S. forces in Iraq, together with the simultaneous buildup in Afghanistan. The challenges are not only logistical but political and cultural: The drawdown in Iraq must be brought off without undermining the current accommodations and working arrangements among tribes and ethnic and sectarian factions. At the same time, the buildup in Afghanistan must not be read by the Afghan people as an Americanization of the war, or by the Afghan government as a free pass to continued corruption and dysfunction.

Meanwhile, the transition from one war to another promises continued burdens on U.S. servicemembers and their families. These burdens, in turn, raise the specter of drops in reenlistment and losses in the experience base so important in pursuing a counterinsurgency strategy that requires protection and cultivation of the populace at least as much as destruction of the enemy.

The mission of the RAND National Security Research Division (NSRD) and the National Defense Research Institute (NDRI), which it incorporates, is to help the Department of Defense (DoD) pick its way through what seems like a maze of policy challenges by framing options and analyzing their benefits and costs. These analyses are based on the most advanced tools available in disciplines such as economics, other social and behavioral sciences, management science, and engineering. But they are also informed by experience on the ground in Iraq and Afghanistan.

RAND researchers working on NSRD projects have reviewed strategy options for top U.S. military officers in the Middle East and have analyzed alternatives for the drawdown in Iraq. They have revealed the extent of mental health problems among returning veterans and have pointed the way for programs addressing adjustment issues for servicemembers and their families. They have sought ways to retain and build on skills developed in fighting substate adversaries and to avert losses in enlistment and retention of members by the military. Moreover, they have done all this while sustaining a broad research program that touches not just on today's challenges but on less salient threats and opportunities as well so that DoD will not be caught short when the source of the threat shifts.

This report provides an overview of NSRD and the research recently published and now ongoing. Here are some of the highlights:

### **Social Science Has Much to Say About Strategies for Counterterrorism and Counterinsurgency**

NDRI undertook a major effort to integrate the fragmented social science literature on issues such as when and why terrorism arises, why and how individuals become terrorists, how terrorists obtain and maintain support, how terrorist organizations make decisions, how terrorism ends, how individuals disengage or deradicalize, and how to design communications for reducing support of terrorism. The research team recommended a systems view to tie together disparate, discipline-bound lines of research (page 13).

### **America's Dependence on Foreign Oil, and Its Costs, Can Be Reduced**

The United States imports most of the oil it consumes. A RAND study identified the costs of doing so—most importantly, the negative economic effects of any disruption in the supply—and policies for reducing those costs. Such policies include cushioning disruptions in the supply of oil by supporting well-functioning oil markets; ensuring that licensing, permitting, and environmental requirements for oil production are clear and balanced in addressing both costs and benefits; and imposing an excise tax on oil to reduce demand for it (page 16).

### **The Coalition Provisional Authority in Iraq Performed Better Than Generally Recognized, Considering the Challenges It Faced**

In most of those sectors for which it had lead responsibility, the record of the U.S.-led Coalition Provisional Authority (CPA) in Iraq compares favorably to that of many other U.S.- and UN-led efforts at postconflict reconstruction. Thus concluded a RAND history of the CPA. The CPA did contribute to, but was not principally responsible for, the failure of U.S. civilian and military authorities to protect the Iraqi population from the criminals and extremists who pulled Iraq into civil war. The CPA's difficulties owe much to the disjunction between the scope of U.S. ambitions and the initial scale of the U.S. commitment (page 19).

### **Unmanned Undersea Vehicles Have Important Applications but Are Not Always a Good Choice**

A proliferation of missions advocated for unmanned undersea vehicles (UUVs) led the U.S. Navy to ask NDRI to sort them out. NDRI concluded that UUVs have advantages over alternative systems and can be developed with low to moderate technical risk and acquired affordably for various important missions—mine countermeasures, deploying leave-behind sensors, and near-land and harbor monitoring, among others. However, such vehicles are not a good choice for certain advocated intelligence, surveillance, and reconnaissance missions because of likely technical limitations (page 25).

### **As an Aid to Programming and Budgeting, the Navy Enterprise Management Construct Is Still a Work in Progress**

With respect to their participation in the Planning, Programming, Budgeting, and Execution (PPBE) framework, the role of U.S. Navy warfare enterprises has not yet changed much under the Navy Enterprise management construct, according to an NDRI study. Some initial PPBE-associated activities of the Navy Enterprise appear

Unmanned undersea vehicles have advantages over alternative systems and can be developed with low to moderate technical risk and acquired affordably for various important missions.

to have been beneficial, especially in communication, but more information is needed on workload and costs. Increasing the Navy Enterprise's involvement level in PPBE could bring gains in the alignment of programming and execution, among other benefits, but also increases in cost and complexity (page 28).

### **Reform of the Defense Acquisition System Requires Rethinking Some Conventions**

As the Obama administration took office, NDRI identified opportunities for reform of the defense acquisition system. Among the lessons: Savings from using a second competitive source are not inevitable. To meet demand for novel systems, DoD must accept more risk. Oversight should be based on risk level, not dollar value. The acquisition system needs better organizational integration (e.g., through giving the service commands more say in acquisition) and more flexible management processes. Prototyping can yield benefits under some circumstances (e.g., strict funding limits) but is not always beneficial (page 31).

### **Children of Servicemembers Face Emotional and Behavioral Challenges**

A RAND study has revealed that children from military families may be experiencing above-average levels of emotional and behavioral difficulties, relative to national norms. The difficulties that children experience during parental deployment and subsequent reintegration vary in predictable ways. They tend to be greater if parents have spent more time deployed over the previous few years. They also tend to be greater for older teens than for younger teens and preteens, and overall, girls struggle more when a deployed parent returns than boys do (page 37).

### **Recruiting Trends Vary by Race/Ethnicity, as Do the Factors Affecting Them**

Between 2000 and 2007, the representation of blacks among high-quality Army recruits declined, while in the Navy, black representation remained stable. The representation of Hispanics among high-quality recruits in both the Army and Navy grew during this period. NDRI found that these recruiting trends are partially explained by differential responsiveness on the part of potential black and Hispanic recruits to recruiting resources such as compensation, benefits, and the number of recruiters. Other influences include economic and demographic factors, factors related to eligibility, and the Iraq war (page 40).

### **New Data Have Changed the Prevailing Profile of the Defense Acquisition Workforce**

NDRI has been working to develop longitudinal data on the acquisition workforce (AW), which have permitted new forms of analysis. Some initial findings: There is significantly more turnover within the defense AW than is reflected by annual changes in workforce size. A growing percentage of new hires into the AW have military experience. Modest growth in the official AW count may mask divergent trends in key occupations (page 43).

### **The Fragile State of Yemen Is Diverted by What Should Be a Soluble Problem**

In a study motivated by increased concern over Yemen's potential as a haven for terrorists, NDRI describes the Yemeni government as absorbed by conflict with the

Huthi opposition movement. As a result, it has been unable to address the political, economic, and security challenges that threaten this increasingly fragile state. Ongoing conflict not only threatens Yemen's stability, it also aggravates regional tensions in the Middle East and creates a safe haven for al-Qa'ida. Nonetheless, the conflict is, with international support, one of Yemen's most soluble problems (page 48).

### Portfolio Analysis Helps Decisionmakers Think Through Resource Allocation Decisions

Portfolio analysis, and the RAND PortMan tool in particular, is a useful management aid for resource allocation across portfolios of projects. To achieve the highest expected value for a given portfolio, consideration is given to the value of the projects if successful, the probability of success, and project cost. Estimates of value and risk can be made through expert consensus, e.g., through the Delphi method, which also serves as a forum for senior management to address and discuss areas of disagreement (page 51).

### There Is Still Wide Disagreement Among Foreign Policy and National Security Analysts About What to Do in Afghanistan

At the time of the Obama administration's Afghanistan strategy review, RAND sponsored a symposium of experts for an exchange of views. Those who favored a continued large-scale U.S. military presence generally agreed on the need for an early shift of combat responsibilities to the Afghans and for more responsible, and responsive, governance in Kabul. But a rapid drawdown of U.S. forces was favored by some experts who believed that a large, continued presence would be very costly and would not benefit U.S. national security (page 59).

Most of NSRD's work is carried out through NDRI, a federally funded research and development center sponsored by the Office of the Secretary of Defense, the Joint Staff, the unified combatant commands, the Navy, the Marine Corps, the defense agencies, and the defense intelligence community. These formal sponsors of NDRI research are all within the federal executive branch. But in a sense, NDRI also works for Congress. A number of NDRI's projects over the years have been motivated by requests for information that Congress has made to DoD. Four are getting under way in the first half of 2010:

- One was motivated by a request from the Senate Armed Services Committee to the Secretary of Defense that RAND update its 1993 study on sexual orientation and military service. In February 2010, Secretary Gates announced his concurrence with, and intent to follow through on, that request.
- The second study responds to language in the National Defense Authorization Act for 2010 that the Secretary of Defense contract with an organization "to conduct an independent assessment of current, anticipated, and potential research, development, test, and evaluation activities for or applicable to the modernization of the combat vehicle fleet and armored tactical wheeled vehicle fleet of the Department of Defense."
- The third was occasioned by a new provision for review of sole-source Native American federal contracts. The Secretary is required to submit a report detailing the impact of the provision on the selection of Native American companies for large-dollar contracts, discussing how the provision is affecting the contracting process, and providing recommendations for amendment to mitigate any unintended negative consequences.

A number of NDRI's projects have been motivated by requests for information that Congress has made to DoD.

- Fourth, NDRI is responding to a congressional mandate for an independent analysis of Army modular force structures to determine their ability to contribute land power across the full spectrum of joint military operations, the flexibility and versatility of those contributions, the potential risks of moving to the planned structure, and how such a structure affects required and planned Army end strength.

NDRI has served its sponsors in DoD for 25 years, and the division housing it conducted its first research projects for the defense agencies more than 50 years ago. Obviously, RAND's sponsors have found reason to return, repeatedly. If there has been anything that has distinguished RAND's reputation over the years, it has been the cardinal qualities of independence and objectivity. These are timeless values, and we hope to be contributing to the development of policy in the defense and intelligence communities for the indefinite future.

A handwritten signature in blue ink, appearing to read 'Jack Riley', with a long horizontal flourish extending to the right.

**Jack Riley**  
Vice President, RAND Corporation  
Director, National Security Research Division  
Director, National Defense Research Institute

# OVERVIEW

The RAND National Security Research Division (NSRD) conducts research on complex national security problems with an emphasis on the most pressing and difficult strategy and policy concerns of high-level defense policymakers and their staffs. NSRD provides independent and objective analytical support to decision-makers in the Department of Defense (DoD) and elsewhere in the national security and intelligence communities by

- developing innovative solutions to complex problems using multidisciplinary teams of researchers
- providing practical guidance and clear policy choices while also addressing barriers to effective implementation
- meeting the highest research standards using advanced empirical methods and rigorous peer review
- maintaining independence and objectivity by scrupulously avoiding partisanship and vested interests
- serving the public interest by widely disseminating its research publications (subject to the constraints of national security) and encouraging staff to participate in public forums.

## The RAND National Defense Research Institute

NSRD includes the RAND National Defense Research Institute (NDRI), established in 1984 as a federally funded research and development center (FFRDC) sponsored by the Office of the Secretary of Defense (OSD), the Joint Staff, the unified combatant commands, and the defense agencies. Through OSD, NDRI also performs research for the U.S. Navy and the U.S. Marine Corps. The multiyear FFRDC contract, coupled with NDRI's broad sponsorship and its sponsors' appreciation of its objectivity and independence, allows the institute to

- conduct a continuous, integrated research and analytic program with particular emphasis on enduring issues that cut across organizational boundaries
- look to the future, maintaining a mid- to long-range focus together with a quick-response capability.

In support of these goals, and by virtue of its 24-year relationship with DoD, NDRI has

- accumulated an in-depth understanding of DoD and its needs
- developed a staff that balances the breadth and depth of technical expertise needed to address the complex issues faced by its sponsors
- supported the development and sustained the currency of an advanced suite of models and other tools that facilitate the analysis of issues across the defense policy spectrum.

It is noteworthy that, to perform research requiring access to proprietary and other sensitive information not generally accorded commercial contractors, NDRI stays strictly independent of proprietary interests.

## Research Centers and Agenda

Up through fiscal year 2009 (FY09), NSRD's research was largely conducted in four centers:

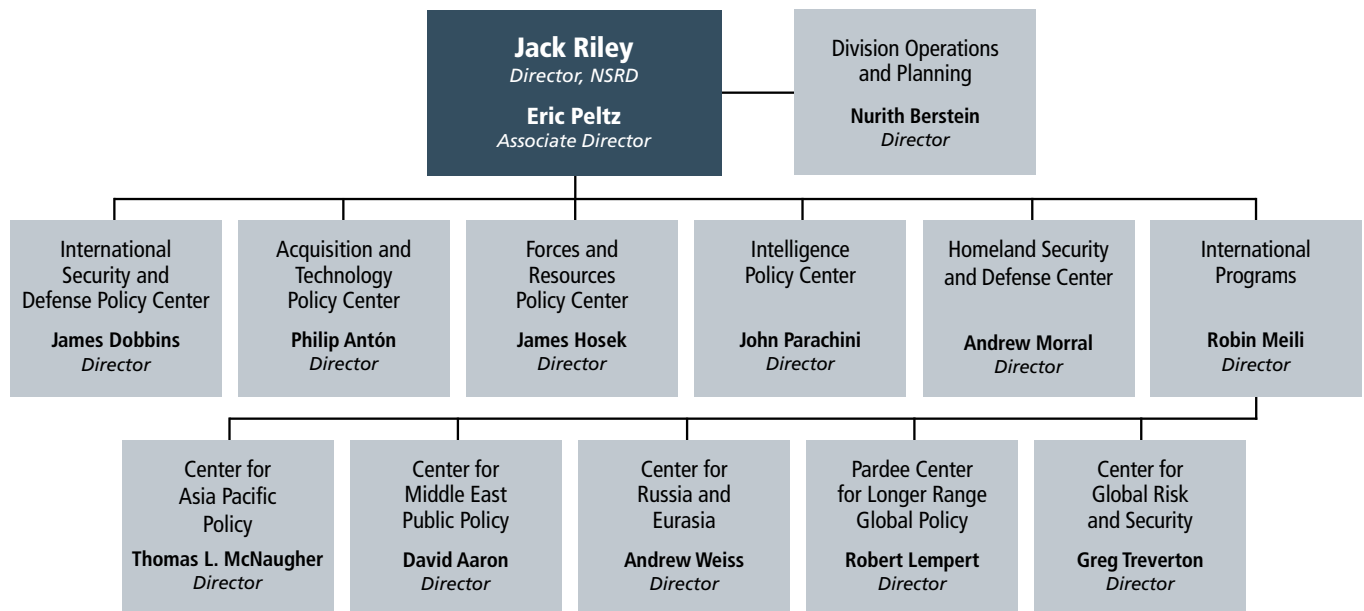
- International Security and Defense Policy Center (see page 10)
- Acquisition and Technology Policy Center (see page 22)
- Forces and Resources Policy Center (see page 34)
- Intelligence Policy Center (see page 46).

These centers correspond in scope to the purviews of the four under secretaries of defense whom NSRD supports most actively. Most of the work conducted by these centers, taken together, is carried out within NDRI. However, the centers also perform research for such non-DoD sponsors as the intelligence community, the Department of State, allied governments and their ministries of defense, and various foundations.

At the beginning of FY10, NSRD assumed oversight of the RAND Homeland Security and Defense Center (see page 54), in collaboration with RAND Infrastructure, Safety, and Environment. This new center carries out research under the sponsorship of the federal departments of Homeland Security, Defense, and Justice, among others.

NSRD also houses RAND's International Programs (see page 56), which supports the development of research conducted at the intersection of international policy and other issues, such as transnational trade and investment, education, health care, information technology, and energy and the environment. Research carried out within International Programs is funded principally by allied governments, foundations, and private contributors. RAND also supports some NSRD research through its own discretionary funds, which are derived from fees earned on client-funded research, independent research and development funds provided by DoD, and unrestricted private donations.

The research agenda of NSRD and NDRI emerges from relationships with clients that are long-standing, mutually reinforcing, and dynamic. NSRD and its FFRDC help their sponsors identify and evaluate new policies, frame alternative ways to implement current policies, and provide other analytic and technical assistance. That assistance includes helping decisionmakers develop political and technological responses to evolving terrorist threats, sustain a robust all-volunteer force, and reform intelligence collection and analysis. At the same time, NDRI acts to sustain and invigorate its core investigational, theoretical, and methodological capabilities—the institutional foundations that will enable it to address pressing national security concerns for years to come.



## The RAND Environment

The RAND Corporation is a nonprofit institution that helps improve policy and decisionmaking through research and analysis. For more than 60 years, RAND has worked side by side with government as a trusted adviser. Through rigorous and objective research and the development of sophisticated analytic tools, RAND researchers from diverse disciplines and perspectives collaborate to create strategies and solutions to keep our nation strong.

RAND focuses on the issues that matter most, such as health, education, national security, international affairs, law and business, the environment, and more. RAND also offers several advanced training programs: the Pardee RAND Graduate School's doctoral program in policy analysis and the military fellows programs, which sponsor one-year tours at RAND by mid-career officers in the military services and the Coast Guard.

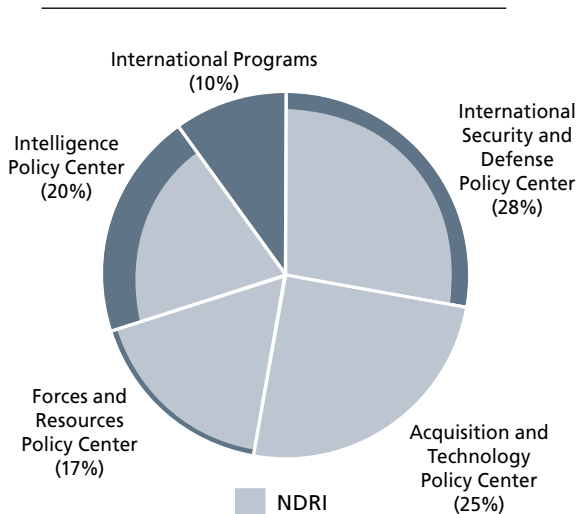
In addition to NDRI, RAND houses two other FFRDCs offering additional analytic resources to DoD:

- RAND Project AIR FORCE—RAND's oldest studies and analysis organization—focuses on issues of enduring concern to U.S. Air Force leaders, such as the role of air and space power in the future security environment, force modernization to meet changing operational demands, workforce characteristics and management, and acquisition and logistics cost control.<sup>1</sup>
- The RAND Arroyo Center, as the U.S. Army's only studies and analysis FFRDC, also emphasizes mid- and long-range policy questions while helping the Army improve efficiency and effectiveness, providing short-term assistance on urgent problems, and serving as a catalyst for needed change.<sup>2</sup>

RAND has a matrix-type organization. Research units such as NSRD administer the research programs; the corporation, through its Staff Development and Management Office, recruits, develops, and evaluates the staff, in consultation with

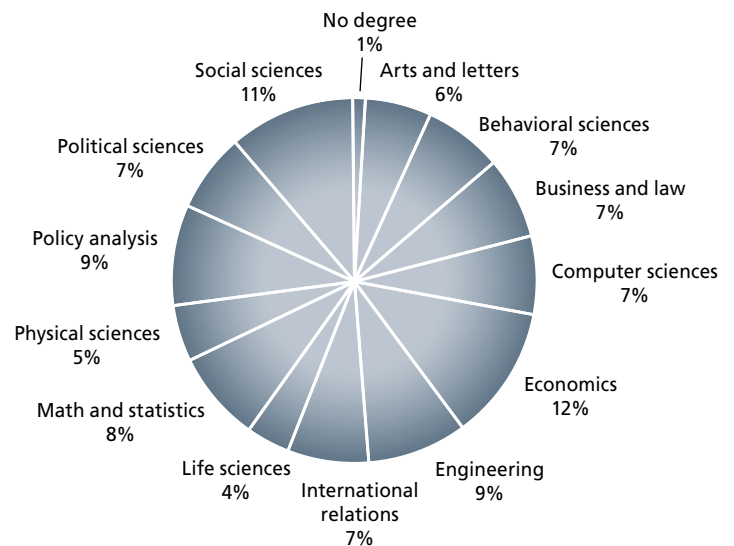
For more than 60 years, RAND has worked side by side with government as a trusted adviser.

**NSRD Revenues by Organizational Element, FY09**  
(Total \$53 million)



The NSRD research agenda is balanced across major issue areas.

**Percentage of staff with degree in**



RAND's multidisciplinary staff provide breadth and depth to research activities.



Offices in Europe and the Middle East provide international reach and perspective.

the units. Approximately 1,600 people from more than 50 countries work at RAND, representing diversity in work experience; academic training; political and ideological outlook; and race, gender, and ethnicity. Eighty-six percent of the research staff hold advanced degrees, with two-thirds of those being doctorates.

NSRD draws on analytical talent in six RAND offices in the United States and three abroad and in a wide array of disciplines. For instance, experts in the social sciences—economists, psychologists, sociologists, and demographers—contribute to studies of personnel and intelligence issues. Work on the effectiveness of evolving military technologies draws on staff skilled in engineering, information systems, computer modeling and simulations, and scenario design and testing. Political scientists and experts in military operations conduct research on the uses and limitations of the application of U.S. military power and alternative forms of leverage in addressing threats to peace and freedom.

NSRD works with other RAND units on topics of mutual interest. For instance, RAND Health brings crucial insight from its civilian health research into questions concerned with the provision and management of military medical services and with the effects of combat duty on mental health. Research on defense issues for U.S. allies is done in part through RAND's independently chartered European subsidiary, RAND Europe. This work also provides perspective for U.S. national security issues. The RAND-Qatar Policy Institute serves as a source of analysis of the most important and difficult issues facing public and private decision-makers in the Middle East, North Africa, and South Asia.

### Leading the Way in Defense Research and Analysis

RAND is an international leader in defense analysis. Government officials, academics, and business leaders in the United States, Europe, Asia, Australia, and the Middle East rely on RAND's advice. They turn to RAND for assistance with the complex problems they must confront. RAND has demonstrated the ability to analyze a problem, place it in the appropriate context, and identify options to help leaders make the best-informed decisions. NSRD's programs are a major component of RAND's overall success and reputation in national security research.

1 For more information, see *Annual Report 2009*, RAND Project AIR FORCE, AR-7145-AF. Online at [http://www.rand.org/pubs/annual\\_reports/AR7145/](http://www.rand.org/pubs/annual_reports/AR7145/)

2 For more information, see *Annual Report 2009*, RAND Arroyo Center, AR-7147-A. Online at [http://www.rand.org/pubs/annual\\_reports/AR7147/](http://www.rand.org/pubs/annual_reports/AR7147/)

**U.S.** national security decisionmakers must meet the challenge of supporting the governments of Iraq and Afghanistan even as they continue to address the broader threats of terrorism and the proliferation of weapons of mass destruction (WMDs). Other challenges must also be faced, such as the spread of terrorism to Europe and the changing security situation in Northeast Asia. Because the United States cannot handle these challenges alone, U.S. policymakers will need to continue efforts to maintain and enhance current coalitions and create new ones.

NDRI's International Security and Defense Policy Center explores the implications of political, strategic, economic, and technological challenges for U.S. and international security. It assists U.S. national security decisionmakers in developing strategies and policies to manage and adapt to such challenges and to protect U.S. and allied interests at home and abroad.

## SOME RECENT PROJECTS

### Terrorism and Counterterrorism in Southeast Asia

Since the 1990s, the challenge posed by substate militant extremism in Southeast Asia has risen in reaction to both the force of modernization pursued by many Southeast Asian governments and the political influence of radical Islam. Building on prior research on terrorism in the Asia-Pacific region, a team of researchers from RAND and the Centre for International Security Studies in Australia assessed the current terrorist environment in Southeast Asia, discussing the scope and nature of militant threats, counterterrorist achievements and shortfalls, and the main parameters of U.S. and Australian security assistance to partner nations in the region. The study also devoted considerable attention to the effectiveness of “nonkinetic” strategies aimed at winning the support of the local population and alienating extremist sentiments. The researchers judged the overall terrorist challenge in Southeast Asia to be serious but manageable. They found the threat in southern Thailand and the Philippines to be localized and that in Indonesia to be in decline. Counterterrorist responses were assessed as generally measured and professional, providing hope for favorable outcomes. The research team recommended several actions for the United States to take, including promoting further police reform, launching dialogue and communication initiatives, increasing support for regional institutions, and better integrating counterterrorism, law-and-order, and development policies to address the issue of corruption. Finally, the study broke new ground in assessing the likelihood of Cambodia's morphing into a future terrorist operational and logistical hub.<sup>3</sup>

**Sponsors:** *Australian Federal Police and U.S. Office of the Secretary of Defense*

**Project Leader:** *Peter Chalk*

### Building an Afghan National Army

The Afghan National Army (ANA) is critical to the success of the allied effort in Afghanistan and to the ultimate stability of the national government. A research team from RAND and the Royal Danish Defence College assessed the ANA's progress in manpower, training, operational proficiency, and public confidence. The team drew on in-country interviews with U.S., NATO, and Afghan officials; data provided by the U.S. Army; open-source literature; and data from a series of public opinion surveys conducted in Afghanistan between November 2005 and October 2008. The researchers judged that manpower goals appeared achievable, although there were still prob-



James Dobbins, *Director*  
*International Security and Defense*  
*Policy Center*

The challenge posed by militant extremism in Southeast Asia has risen in reaction to the force of modernization and the political influence of radical Islam.

Afghan National Army troops patrol with a British operational mentor and liaison team in Helmand province, Afghanistan, 2007.



lems with AWOL rates and ethnic balance. While schoolhouse training had progressed well, coalition teams to help with unit-level training in the field were not yet sufficiently available. Nonetheless, anecdotal and some quantitative indicators showed real gains in operational proficiency, although the Army faced a challenging adversary in the Taliban. Surveys indicated, however, that the Army was perceived by the Afghan public as playing a positive role in providing security. The researchers concluded that, although the ANA had come a long way in recent years, coalition forces—and especially U.S. forces—would play a crucial role in Afghanistan for the foreseeable future, particularly given the increased threat to the stability of the Afghan government from the Taliban and other criminal groups.<sup>4</sup>

**Sponsors:** *Royal Danish Defence College and U.S. Office of the Secretary of Defense*

**Project Leader:** *Obaid Younossi*

## Building Security in the Persian Gulf

Following the war in Iraq, the United States, along with its allies, faces the need to define a new, long-term strategy for the Persian Gulf region. The United States' continued engagement there has already been determined by its interests, but many elements must be considered and questions answered: What is the best strategy for promoting long-term security and stability in a manner consonant with the basic interests of the United States, its allies and partners, and participating regional countries? What means are there to reduce the long-term burdens—in terms of military engagement, risks and expenses, and opportunity costs—that are imposed on the United States by its involvement in the region? Can Iran be drawn productively into security arrangements for the Persian Gulf? What security structure can be developed with the potential to include all regional countries and provide lasting value? To answer these questions, a senior RAND political scientist analyzed the future of Iraq, the role of Iran, asymmetric threats (including terrorism), regional reassurance, the Arab-Israeli conflict, regional tensions, and the roles of other external actors. He recommended potential models and partners, arms-control and confidence-building measures, and steps in diplomacy and military commitments for a new Persian Gulf security structure that can meet U.S. interests at a reduced cost and gain the American people's support.

**Sponsor:** *Office of the Secretary of Defense*

**Project Leader:** *Robert Hunter*

## Barriers to Broad Dissemination of Creative Works in the Arab World

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Many analysts have examined the media that violent extremists use to communicate their core messages. Far less research, however, has been devoted to the growing body of creative works produced by Arab authors and artists that counter the intellectual and ideological underpinnings of violent extremism. Unfortunately, many of these works are not widely read or seen, marginalizing the influence of these alternative voices. A RAND research team has examined the barriers to the broad dissemination of such works, together with ways to counteract those barriers. The principal barriers are censorship, imposed by many Arab governments; the small size of the Arab market for literary material, consistent with the region's relatively low literacy rate; and poor internal distribution systems for books. Taking a page from the approach used to fight communist censorship in the Cold War, the researchers suggested that the United States form partnerships with trusted local critics of extremism, identify the pivotal target audiences and the media most likely to reach them, and recognize the value of nonpolitical material in combating extremism. A key recommendation was that the United States refrain from overt action of its own but work with nongovernmental institutions and international allies to engage in a variety of activities. These included promoting Arab literature prizes, supporting education reform, promoting literacy, assisting in the expansion of libraries and bookstores, and making censorship a consistent agenda item in bilateral discussions with regional Arab allied governments.<sup>5</sup>

**Sponsors:** *Office of the Under Secretary of Defense for Policy*

**Project Leaders:** *Nadia Oweidat and Dalia Dassa Kaye*

## China and Taiwan: Political Context and Military Balance

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The relationship between China and Taiwan is more stable than it has been in years, but China has nonetheless not renounced its "right" to use force to forestall Taiwan's "independence." At the same time, the cross-strait military balance is shifting in ways that are problematic for Taiwan's defense. Revising and expanding a study published nine years ago, a RAND research team employed theater-level combat modeling, simpler mathematical models, historical analysis, interviews with experts, and qualitative judgment to evaluate the China-Taiwan political dynamic and the cross-strait military balance. The researchers concluded that the situation has evolved in a manner unfavorable to Taiwan (and the United States). The new Taiwan administration has ushered in a period of much warmer relations with the mainland, but prospects for the long term are dimmer, given the growing tendency of the island population to identify as more Taiwanese than Chinese. Should the Chinese decide to force the issue, Taiwan's chances are mixed. China's missile arsenal has grown powerful enough to knock out Taiwan's air force before it can enter the fight. With air superiority established, China could attack other targets with virtual impunity. Sooner or later, however, China would likely have to invade and occupy the island to control it, and such an operation will remain difficult. The researchers recommended a strategy that could provide a robust defense against an invasion even if China controls the air. They concluded that, in the longer run, growing Chinese power will make it increasingly difficult for the United States to limit damage to or defend Taiwan.<sup>6</sup>

**Sponsors:** *Smith Richardson Foundation*

**Project Leader:** *David A. Shlapak*

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3 For more information, see *The Evolving Terrorist Threat to Southeast Asia: A Net Assessment*, Peter Chalk, Angel Rabasa, William Rosenau, and Leanne Piggott, MG-846-OSD, 2009. Online at <http://www.rand.org/pubs/monographs/MG846/>

4 For more information, see *The Long March: Building an Afghan Army*, Obaid Younossi, Peter Dahl Thruelsen, Jonathan Vaccaro, Jerry M. Sollinger, and Brian Grady, MG-845-RDCC/OSD, 2009. Online at <http://www.rand.org/pubs/monographs/MG845/>

5 For more information, see *Barriers to the Broad Dissemination of Creative Works in the Arab World*, Lowell H. Schwartz, Todd C. Helmus, Dalia Dassa Kaye, and Nadia Oweidat, MG-879-OSD, 2009. Online at <http://www.rand.org/pubs/monographs/MG879/>

6 For more information, see *A Question of Balance: Political Context and Military Aspects of the China-Taiwan Dispute*, David A. Shlapak, David T. Orletsky, Toy I. Reid, Murray Scot Tanner, and Barry Wilson, MG-888-SRF, 2009. Online at <http://www.rand.org/pubs/monographs/MG888/>

## *Social Science for Counterterrorism*

- Social science has much to say about counterterrorism and counterinsurgency despite fragmentation and contradictions in the literature.
- RAND's interdisciplinary review provided a structure identifying the range of causal factors for terrorism at different levels of detail, and also some approximate relations among the factors.
- Strategy developers for a particular operation can begin by discussing this structure of potential factors, and then winnowing them down based on context-specific considerations, which often vary with country and even by area within a country.

Social science has much to say about strategies for counterterrorism and counterinsurgency. Unfortunately, the relevant literature often appears fragmented and contradictory. DoD therefore asked NDRI to take the first steps toward integrating the social science literature to inform policy, analysis, and modeling. The subsequent research was organized around several topics transcending individual disciplines.

**When and why terrorism arises (“root causes”).** The likelihood of terrorism will increase if the social group in question has significant motivation to act, believes that violence is legitimate, and has mobilizing structures in place. Each of these factors has its own contributors. The acceptability or legitimacy of terrorism may be driven by a cultural propensity for violence, by ideology (including extremist religion), by political repression, or by foreign occupation. None of these secondary contributors is individually necessary; any one or a combination might suffice. Social instability also tends to increase with alienation, globalization, or growth in a youth population.

**Why and how individuals become terrorists.** Demographically, terrorists are “normal” for their environment. They are not particularly impoverished, uneducated, or afflicted by mental disease. Leaders tend to come from relatively privileged backgrounds. The people involved seldom think of themselves as terrorists; rather, they use terrorism but are motivated by multiple factors, including the radicalization that can occur in groups (whether with top-down recruiting or bottom-up activities), physical or psychological rewards (e.g., camaraderie, excitement, the religious promise of a “martyr’s afterlife”), and passions (whether to atone for grievances or to bring about political or religious changes).

**How terrorists obtain and maintain support.** Public support is important to terrorist organizations. It may be derived from a need people feel to assist resistance activities seen as being for the public good. It may reflect identification with the terrorists’ cause, ideology, or goals, or an appreciation of crucial services that the group provides. It may also reflect an idealization of a charismatic leader, or a more personal identification through kinship. Public support may reflect a sense of related obligation. However, some aspects of “public support” (e.g., sheltering) are also the result of ruthless intimidation.

The acceptability of terrorism may be driven by a cultural propensity for violence, by ideology (including extremist religion), by political repression, or by foreign occupation.

**How terrorist organizations make decisions.** Much of what terrorist organizations do can be understood in an extended version of a rational-choice framework, including perceived benefits, acceptability of risks, acceptability of expending resources required for success, and the sufficiency of information in making a judgment. But there are limits to the use of a rational-choice model by terrorist organizations. These include their inability to gather information needed for idealized rational-analytic calculations; the consequence of selecting data that reinforce preferences, emotions, and related zealotry; physiological circumstances (e.g., health, weariness); and leaders' idiosyncrasies. Most important, however, is understanding that the people in question see facts and issues through their own prisms; what may seem irrational to an outsider may be quite rational to them.

**How terrorism ends.** Terrorist movements often decline as a result of partial success or accommodation reflected in state policy. New alternatives may arise through political compromise, civil war, or economic prosperity. Terrorist movements may also be defeated by counterterrorism activities. Often, decline occurs because the organization weakens through loss of leadership, "burnout," or unsuccessful generational transition. Loss of popular support may also contribute to the decline of an organization; as support wanes, intelligence on terrorist activities tends to increase.

**Disengagement and deradicalization.** Individuals may disengage, but often without rejecting the cause. The path to deradicalization is not the mirror image of radicalization. For example, while aggregate-level research has not found economic predictors of radicalization, several countries provide economic support to individuals (and their families) in deradicalization programs. Further, while ideology and religion are only sometimes motivations for joining a terrorist cause, most deradicalization programs include ideological "re-education" efforts. "Pull factors" are more effective than "push factors." That is, people are more likely to disengage from terrorist activities because they are attracted to alternatives than because of the threat of punishment, counterviolence, or a negative reputation.

**Strategic communication.** Strategic communication is a primary mechanism in attempts to reduce public support of terrorism. It may not always be effective; in particular, a message suitable for one audience can be counterproductive for another. Messages should be targeted and built by those with an understanding of particular audiences rather than through centralized headquarters thinking. Actions will also speak louder than words. Some actions, such as tsunami relief, help U.S. strategic communication efforts. Others, such as support of authoritarian governments, occupation of Muslim countries, and excessive tilting toward Israel, do not. Fortunately, the actions of terrorist organizations also speak loudly: Their indiscriminate violence and more general extremism cause reduced public support and antipathy.

**Systems perspective.** RAND's review revealed a number of tensions in the research base. For example, debate exists on whether the supply of recruits far exceeds the demand from terrorist cells, organizations, or networks. One way to resolve this tension would be to think in terms of focusing resources on limiting the number and effectiveness of recruiters, rather than on diminishing individual motivations exclusively. Debates also exist on the significance of religion for influencing individual motivations or for contributing to permissive environments. A way to resolve this tension would be to distinguish between leaders, who may be more affected by religious extremism, and followers in studies of individual motivations.

People are more likely to disengage from terrorist activities because they are attracted to alternatives than because of threats.

Despite these tensions, several key points of agreement are evident. First, “context matters,” and strategy should be correspondingly tailored to context. Second, factors that contribute to the emergence of terrorism do not always contribute to its decline. Third, popular support is very important to terrorist groups, but they also weigh other factors when making decisions.

In the end, the study concluded that the social science of terrorism offers many insights but is excessively discipline-bound rather than addressing the whole across levels of analysis and across forms of inquiry. Further, even where social science is strong, confident prediction is often inappropriate. A systems view, coupled with humility about predictions, can tie together the disparate parts and suggest inter-related sets of activities that have the potential for considerable counterterrorism leverage over time, especially if the terrorist organizations continue to act in ways that antagonize populations (e.g., through intimidation and indiscriminate violence).

**Paul K. Davis  
and Kim Cragin**  
*Project Leaders*

**For more information,  
see** *Social Science for  
Counterterrorism: Putting  
the Pieces Together*, Paul K.  
Davis and Kim Cragin,  
eds., MG-849-OSD, 2009.  
Online at <http://www.rand.org/pubs/monographs/MG849/>



## *Imported Oil and National Security*

- The most important cost of importing oil is the negative economic effects of a disruption in the supply.
- Policies to reduce the costs and risks of importing oil include
  - cushioning disruptions in the supply of oil by supporting well-functioning oil markets
  - ensuring that licensing and permitting procedures and environmental standards for developing and producing oil and oil substitutes are clear, efficient, balanced in addressing both costs and benefits, and transparent
  - imposing an excise tax on oil, imported and domestically produced, to reduce overall demand.

The United States imports about 60 percent of the oil that it consumes. Concerns about the economic, geopolitical, and national security consequences of U.S. imports of oil have triggered arguments for adopting policies to reduce oil imports. Many members of Congress have advocated “energy independence” for the United States.

A RAND study evaluated the risks to national security associated with U.S. imports of oil and assessed the costs and benefits of policies to address these risks. The study was sponsored by the Institute for 21st Century Energy, which is affiliated with the U.S. Chamber of Commerce.

### **How Oil Imports Are Linked to National Security**

RAND researchers evaluated several common concerns about U.S. dependence on imported oil, including the likely economic impact on the United States of a precipitous drop in the global supply of oil, attempts by oil exporters to manipulate exports to influence the United States or other countries in ways that are harmful to U.S. interests, and the role of oil-export earnings in financing terrorist groups. The researchers also estimated the costs of protecting the supply and transit of oil from the Persian Gulf. The study found the following:

- An abrupt and extended fall in the global oil supply and the resulting higher prices would seriously disrupt U.S. economic activity, no matter how much or how little oil the United States imports. Such a surge in prices would also hit U.S. oil consumers directly in the pocketbook.
- Politically motivated cutoffs of the supply of oil to the United States and other countries have been ineffective in advancing oil-exporting countries’ foreign policy goals. Targeted countries have been able to find alternative suppliers.
- Greater oil-export revenues from higher world market oil prices have enhanced the ability of rogue states, such as Iran and Venezuela, to pursue policies contrary to U.S. interests.
- Terrorist attacks cost so little to perpetrate that attempting to curtail terrorist financing through measures affecting the oil market will not be effective.

An abrupt and extended fall in the global oil supply and the resulting higher prices would seriously disrupt U.S. economic activity.

- The United States might be able to save an amount equal to between 12 and 15 percent of the FY08 U.S. defense budget in the highly unlikely event that all concerns for securing oil from the Persian Gulf were to disappear.

### What to Do About the Risks

The United States would benefit from policies that diminish the sensitivity of the U.S. economy to an abrupt decline in the supply of oil. The United States would also benefit from policies that would push down the world market price of oil by curbing demand or increasing competitive supplies and alternative fuels. U.S. terms of trade would improve, to the benefit of U.S. consumers; rogue oil exporters would have fewer funds at their disposal; and oil exporters that support Hamas and Hizballah would have less money to give to these organizations. The United States might also benefit from more cost-sharing with allies and other nations to protect Persian Gulf oil supplies and transport routes. For example, it could encourage allies to share the burden of patrolling sea-lanes and ensuring that oil-producing nations are secure.

The adoption of the following specific policies by the U.S. government would most effectively reduce the costs to national security of importing foreign oil.

### Cushion Disruptions in the Supply of Oil

**Support well-functioning oil markets and refrain from imposing price controls or rationing during times of severe disruption in supply.** Well-functioning domestic and international petroleum markets are a primary means by which the economic

U.S. reliance on oil imports has a range of national security implications, but the economic risks are most significant.

Summary of Potential Links Between Imported Oil and U.S. National Security	
Potential link	Risk or Cost
<b>Economic</b>	
Large disruption in global supplies of oil	Major
Increases in payments by U.S. consumers due to reductions in supply by oil exporters	Major
<b>Political</b>	
Use of energy exports to coerce or influence other countries in ways detrimental to U.S. interests	Minimal
Competition for oil supplies among consuming nations	Minimal
Increased incomes for rogue oil exporters	Moderate
Oil-export revenues that finance small terrorist groups	Minimal
Oil-export revenues that finance Hamas or Hizballah	Moderate
<b>Military</b>	
U.S. budgetary costs of protecting oil from the Persian Gulf	Moderate

costs of disruptions in the supply of oil can be minimized. Energy prices that are free to adjust to changes in supply and demand, undistorted by subsidies or price controls, offer the most effective mechanism for allocating petroleum in a time of increased scarcity.

**Draw on the Strategic Petroleum Reserve** when supplies are disrupted, and send clear signals to the market with an explicitly stated policy for doing so.

**Initiate a high-level review of prohibitions on exploring and developing new oil fields** in environmentally sensitive and other restricted areas, such as the Arctic National Wildlife Refuge. The purpose would be to provide policymakers and stakeholders with up-to-date, unbiased information on both economic benefits and environmental risks from relaxing those restrictions.

**Ensure that licensing and permitting procedures and environmental standards for developing and producing oil and oil substitutes, such as biofuels and coal to liquid, are clear, efficient, balanced in addressing both costs and benefits, and transparent.**

### Reduce Domestic Consumption

**Impose an excise tax on all oil—not just imported oil—to increase fuel economy and soften growth in demand for oil.** Raising fuel taxes is the most direct way to curb U.S. consumption of oil. Despite their merits, fuel taxes have been politically unpopular in the United States, even though it has the lowest fuel taxes of any industrial country. How tax revenues from increased fuel taxes are used will affect their overall economic impact and political opposition as well.

Because oil is traded through a global market, the U.S. economy will continue to be vulnerable to global shifts in the supply and demand for oil for the foreseeable future, regardless of how much oil or what percentage of its oil the United States imports. However, these policies, if adopted, should serve to reduce the national security risks that the United States faces from importing oil.



**Keith Crane**

*Project Leader*

**For more information, see** *Imported Oil and U.S. National Security*, Keith Crane, Andreas Goldthau, Michael Toman, Thomas Light, Stuart E. Johnson, Alireza Nader, Angel Rabasa, and Harun Dogo, MG-838-USCC, 2009. Online at <http://www.rand.org/pubs/monographs/MG838/>

## Occupying Iraq

- In most of those sectors for which it had lead responsibility, the record of the U.S.-led Coalition Provisional Authority (CPA) in Iraq compares favorably to that of many other U.S.- and UN-led efforts at postconflict reconstruction.
- The CPA contributed to, but was not principally responsible for, the failure of U.S. civilian and military authorities to protect the Iraqi population from the criminals and extremists who pulled Iraq into civil war.
- The CPA's difficulties owe much to the disjunction between the scope of U.S. ambitions and the initial scale of the country's commitment.

Arriving in Baghdad in May 2003, L. Paul Bremer had a broad mandate and plenary powers. As administrator of the Coalition Provisional Authority (CPA), he was charged with governing Iraq and promoting the development of a functioning democracy that, it was hoped, would serve as a model for the entire Middle East. The CPA existed for only 14 months; in June 2004, Bremer formally transferred sovereignty to the Iraqi people and their interim government. Yet, for many Americans and Iraqis, the CPA has become a convenient repository for blame about everything that went wrong during the occupation.

Using firsthand accounts and nearly 100,000 CPA documents never before available, RAND researchers working under the sponsorship of the Carnegie Corporation of New York have produced the most extensively sourced history of this pivotal period. They conclude that the CPA's achievements in areas in which it had lead responsibility are more significant than generally recognized, particularly considering the severe shortage of personnel and other resources under which it operated and the almost total absence of prior planning or preparation that preceded its creation.

What the CPA did not do is halt Iraq's descent into civil war. With the return of sovereignty, violent resistance to the occupation devolved into an even more violent conflict between Sunni and Shia extremist groups. With respect to security, arguably the most important aspect of any postconflict mission, Iraq comes near the bottom in any ranking of modern postwar reconstruction efforts.

### The CPA Had a Positive Record of Accomplishment in Important Areas of Iraqi Life

The CPA restored Iraq's essential public services to near or beyond their prewar level, instituted reforms in the Iraqi judiciary and penal systems, dramatically reduced inflation, promoted rapid economic growth, and reduced unemployment. It put in place barriers to corruption, began reform of the civil service and the educational system, vastly boosted spending on health care, promoted the development of the most liberal constitution in the Middle East, and set the stage for a series of free elections.

Using firsthand accounts and nearly 100,000 CPA documents, RAND researchers have produced the most extensively sourced history of this pivotal period.



Sovereignty is transferred back to Iraq in June 2004. From left: Iraqi Deputy Prime Minister Barham Salih, Chief Justice Midhat al-Mahmoudi, Prime Minister Ayad Allawi, U.S. Administrator L. Paul Bremer, his deputy David Richmond, and Iraqi President Ghazi al-Yawer.

Accomplishments in these and other fields compare favorably to performance in prior postconflict reconstruction efforts going back to the occupations of Germany and Japan after World War II. For instance, Iraq's economy grew 46.5 percent in 2004, a higher growth rate than that achieved over a comparable period in any of 22 earlier postconflict missions, with the single exception of Bosnia. Little U.S. or international assistance reached Iraq throughout the occupation, and these results were thus achieved largely with Iraqi funding.

### **Iraq's Descent into Civil War Slowed or Reversed the CPA's Progress**

Almost immediately on his arrival in Baghdad, Bremer announced two major steps that would prove to be the most controversial of his tenure. The first was to purge some 30,000 senior Ba'ath party members from public employment, and the second was to disband the Iraqi army. Both decisions had been briefed to the President and his principal cabinet advisers and approved by Secretary of Defense Donald Rumsfeld. Bremer made an early decision to retain the Iraqi police but to build an entirely new army from scratch. Neither approach produced positive results. The new Iraqi army eventually became a relatively competent and reliable force, but it took several years. The police force, which had not been disbanded, was even slower to develop; indeed, it became a serious source of insecurity for the next several years.

This experience indicates that the CPA's critical failure lay not so much in retaining police or in disbanding the army, as some have charged, but rather in failing to reform and rebuild either of these forces in a timely fashion. It is not clear, however, whether the capacity to raise, train, and equip foreign security forces on the required scale existed anywhere in the U.S. government at that time. In early 2004, the U.S. military assumed responsibility for rebuilding both the army and police but initially did only marginally better. Numbers increased but quality was much slower to follow.

Iraq provides an object lesson on the costs and consequences of unprepared nation-building. The result was a series of heroic, but in many cases unnecessary, improvisations.

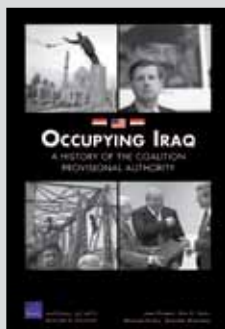
### **Mission Accomplished or Mission Impossible?**

Given what the CPA had to work with in the way of extant plans, human resources, and funding, it now seems apparent that its mission could never have been achieved with the manpower, money, and time available to it. For the first six months of the occupation of Iraq, Washington seemed to be barely paying attention to developments there. Bremer's reports were initially not being circulated beyond DoD; the White House was not pushing for an interagency process; and Bremer, while subjected to copious advice, was receiving little direction.

The decision to assign oversight of the CPA to DoD was an important contributing factor to this lack of support and supervision. DoD, despite its wealth of resources, had no modern experience with setting up, supporting, and running a branch office of the U.S. government half a world away. The result was a series of heroic, but in many cases unnecessary, improvisations, as new arrangements had to be established to handle tasks long familiar to the Department of State but new to DoD.

It was also a mistake for the United States to have premised so much of its appeal to the Iraqi people on an improvement in their economic circumstances. In Iraq, it would have been better to confine American promises to liberating the Iraqi people, protecting them, and allowing them to choose their own government. Fulfilling those promises would also have promoted more sustained economic growth than did pumping large amounts of aid into the midst of a civil war.

It is unlikely that U.S. officials will again face decisions exactly like those required of the CPA in the spring of 2003. But it is certain that the United States will again find itself assisting a society emerging from conflict to build an enduring peace and establish a representative government. Learning how best to prepare for such a challenge is the key to successful future operations. In this regard, Iraq provides an object lesson of the costs and consequences of unprepared nation-building.



**For more information, see** *Occupying Iraq: A History of the Coalition Provisional Authority*, James Dobbins, Seth G. Jones, Benjamin Runkle, and Siddharth Mohandas, MG-847-CC, 2009. Online at <http://www.rand.org/pubs/monographs/MG847/>

# ACQUISITION AND TECHNOLOGY POLICY CENTER

The United States has achieved undisputed superiority in traditional military force-on-force conflicts. It has demonstrated the ability to

- project power rapidly from the air, sea, ground, and space to remote areas of the world
- conduct operations from afar with fewer casualties than its adversaries suffer
- moderate collateral damage to reduce its effect on broader U.S. strategic goals.

This technological advantage, however, does not provide America and its allies with an unchallenged, unlimited, or risk-free environment, as Iraqi and Afghan insurgents wielding improvised explosive devices (IEDs) have shown. Indeed, technology that has made its way into the hands of adversaries exposes U.S. and coalition military and civilian interests to challenges, threats, and dangers. In response, U.S. defense policymakers have expanded their areas of concern beyond traditional, symmetric threats to include irregular, catastrophic, and destructive ones. As DoD fills increasingly diverse and nontraditional roles, U.S. forces are exposed to new vulnerabilities and face the challenges of acquiring and employing a wide range of capabilities in a flexible, adaptive, responsive, and creative manner. They will need to accomplish this against a backdrop of

- intense budgetary pressures
- the degradation of systems and equipment from Iraq and Afghanistan
- growing system costs and overruns on major new system acquisitions
- increasing requirements for the interoperability of U.S. and allied weapon systems and forces
- a defense-related technology and industrial base that is increasingly pressured by sporadic acquisitions and governed more by global commercial drivers than by military markets.

NSRD's Acquisition and Technology Policy Center helps U.S. and allied national security communities achieve and sustain an affordable technological advantage over the diverse array of current and future threats while examining trade-offs and coping with fiscal and management challenges.



Philip Antón, *Director  
Acquisition and Technology  
Policy Center*

## SOME RECENT AND ONGOING PROJECTS

### Facilitating Innovation in Electronic Warfare Against IEDs

The Navy has been given responsibility for managing JCREW—the joint electronic-warfare program targeting radio-controlled IEDs. For the latest version of the system, the Navy has chosen a modular open architecture that will enable a “plug-and-play” approach to allow rapid technology insertion and refresh. The intent is to help future development of the system keep up with the rapid rate of threat evolution as well as the opportunities available from technology advances. Current plans call for engineering and manufacturing development of the first technology insertion to begin in FY13—a very demanding schedule. NDRI has been helping the Navy develop an overall structure and plan for technology insertion and refresh, as well as with implementing incentives to bring innovative technology vendors into the procurement process. The research has indicated key activities to be accom-

plished and the timeline required. Ongoing work focuses on how to get those activities done on schedule (e.g., how to qualify vendors for the program by testing their prototypes under conditions specified by the Navy), how to specify the performance of the upcoming technology insertion, and how to refresh modules and select vendors for JCREW.

**Sponsor:** *U.S. Navy*

**Principal Investigators:** *Richard Silbergliitt and Brian Chow*

## Improving DoD and Navy Policy for C3, Intelligence, and Weapon System Programs

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In response to technology advances, changes in U.S. law, and the perceived weakness of DoD processes and policies, OSD and the Joint Staff continue to draft new policy governing DoD programs for command, control, and communication (C3); intelligence; and combat weapon systems (including ships, aircraft, and ground vehicles). New and revised policies are being developed in response to challenges encountered in developing and integrating complex systems of systems for joint warfighting missions and in networking systems produced by different programs into complex weapon systems and platforms. Another driver for policy change is the need to establish and implement improved systems engineering processes in DoD programs to prevent cost growth, reduce technical risk, and reduce system vulnerabilities to adversary cyberattacks. NDRI is helping OSD and the Department of the Navy improve and execute standards, policy, and guidance related to acquisition, information technology and assurance, interoperability, data strategy, enterprise services, and systems engineering for C3, intelligence, and weapon system programs. RAND researchers have also examined the roles and responsibilities of selected DoD offices and executives with oversight of information technology programs as specified in U.S. law and in DoD and Navy policy. The intent is to improve policymaking that will reduce the potential for policy conflicts and delays in acquisition programs.

**Sponsors:** *Office of the Secretary of Defense and U.S. Navy*

**Project Leaders:** *Daniel Gonzales and Eric Landree*

## Designing the Next Australian Submarine

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Australia's *Collins*-class submarines will begin to retire from service in the mid-2020s. The Australian government declared that the future force would include 12 conventionally powered submarines of a new class. The new class will have greater range than the *Collins* class, longer patrol endurance, and the ability to effectively support a wide range of missions. Development and acquisition of this new submarine class will be the largest and most complex defense procurement initiative in Australia's history, and the Australian government has decreed that the new vessels be built domestically. Australia, however, has never designed a submarine, so the Australian Department of Defence sought outside help to assess the country's current design resources and determine where additional resources will be required. RAND was chosen to conduct this assessment. In doing so, RAND has described the design process for a modern, conventionally powered submarine; identified current Australian engineering and design skills and resources that could support a submarine design program; analyzed gaps between those resources and what a new design program will require; and identified and evaluated options to allow Australian industry to achieve the desired design capability.

**Sponsor:** *Australian Department of Defence*

**Project Leaders:** *John Birkler and John F. Schank*

The Australian Department of Defence sought outside help to assess the country's submarine design resources

## Rail Guns for Naval Surface Fire Support

DoD has been exploring the potential of using electric projectile launchers, such as rail guns, for a number of years. These launchers are attractive because they have a potentially long range and because the projectiles are relatively small, so more projectiles can be stored in a given magazine space. The Navy asked NDRI to study the potential employment of rail guns aboard ships, focusing on operational issues: how a Navy ship armed with a rail gun might be used in a future conflict, what a rail gun's potential strengths and weaknesses would be, and how a rail gun compares with other sea-based fire support from aircraft, missiles, and other guns. Scenarios included noncombatant evacuation from an African country and subsequent counterinsurgency support, a Persian Gulf crisis, and war in Southeast Asia. Each was addressed by a different concept and operation group, which brought together subject-matter experts to discuss the pros and cons of the technologies, capabilities, and operational concepts involved. NDRI was also asked to review the technological challenges associated with the weapon and to explore platform options, such as whether rail guns should be mounted on multimission ships.

**Sponsors:** *U.S. Navy (Office of Naval Research and Naval Sea Systems Command)*

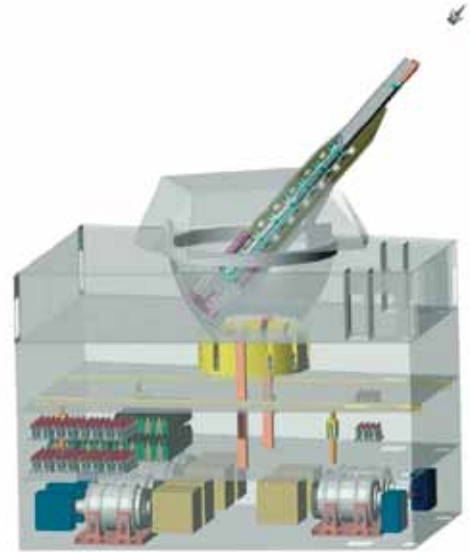
**Project Leader:** *John Gordon IV*

## Shipboard Network Consolidation

The computer networks, systems, and applications used on Navy ships are an amalgam of disparate hardware and software systems that were mostly developed and introduced onboard independently from one another. To reduce costs, increase interoperability, and improve configuration management, the U.S. Navy has undertaken the Consolidated Afloat Networks and Enterprise Services (CANES) initiative. In part, the idea is to inventory C4ISR<sup>7</sup> networks and capabilities afloat today and combine them (when possible) into a coordinated, integrated network architecture. In addition, the CANES concept seeks to provide the fleet with a secure, reliable common hosting environment for multiple C4I applications. NDRI has been asked by the Navy to characterize the various shipboard networks and assess their potential for consolidation under a concept such as CANES. The research team will review a comprehensive set of C4I-related capabilities and determine which make the most sense to combine into a single network infrastructure in the near term, which should be included in future increments, and which should remain as stand-alone capabilities. The set of capabilities for review will include common identity management, information assurance, desktop and network applications, enterprise service management, application hosting, service-oriented architecture and common computing environments, collaboration services, communications, portal services, and storage. NDRI will also identify and assess technological progress that could enable more expansive network consolidation. The research team will estimate the cost and performance impacts of consolidating network capabilities and will produce a tool for automating the estimation of total ownership cost subject to varying assumptions.<sup>8</sup>

**Sponsor:** *U.S. Navy*

**Project Leader:** *Isaac R. Porche III*



Rail guns could provide ships with a long-range strike alternative requiring limited additional magazine space.

<sup>7</sup> Command, control, communication, computing, intelligence, surveillance, and reconnaissance.

<sup>8</sup> See p. 35 for a project on the manpower and training implications of CANES.

## *A Survey of Missions for Unmanned Undersea Vehicles*

- For a number of important missions—mine countermeasures, deploying leave-behind sensors, near-land and harbor monitoring, and oceanography, among others—unmanned undersea vehicles have advantages over alternative systems and can be developed with low to moderate technical risk and acquired affordably.
- Such vehicles are not a good choice for certain suggested intelligence, surveillance, and reconnaissance missions because of likely technical limitations, such as limited computing power and field of regard.

The history of unmanned undersea vehicles (UUVs) for military use goes back to the 1950s and 1960s, when such vehicles were used in oceanography. By the early 1990s, a growing awareness of UUVs' military potential led the U.S. Navy to identify a wide-ranging mission set for these vehicles. At that time, however, Congress determined that the Navy's UUV program was in disarray and directed OSD and the Navy to establish priorities among various proposed UUV programs, focusing on near-term mine countermeasure (MCM) issues, and to develop affordable programs. The Navy's UUV plans were restructured accordingly, and today, most UUV programs are for MCM systems. However, the set of missions advocated for UUVs has expanded since 1994 by an order of magnitude, and issues of affordability have reemerged. The Navy thus asked NDRI to conduct a capability-based analysis to identify advocated missions for UUVs that are favorable in terms of military need, alternatives, risk, and cost. NDRI also highlighted technical issues concerning the use of UUVs for certain missions.

### **Recommended Missions**

The NDRI research team recommended seven mission categories for UUVs:

- **MCM operations.** Studies indicate that the Navy needs more MCM capability, especially in denied areas. In such areas, MCM operations could be carried out with UUVs launched by attack submarines, or, with improvements to UUV endurance, from surface ships outside the area. Both the U.S. and foreign navies have made significant progress in developing UUVs for this purpose.
- **Deploying leave-behind surveillance sensors or sensor arrays.** Payload capacities for these missions are consistent with those of UUVs under development. The feasibility of affordably deploying leave-behind sensor arrays with UUVs has been demonstrated. The alternative is to use Navy SEALs, who require submarine transport into theater and introduce the element of human risk.
- **Near-land and harbor monitoring.** Special operations forces involved in over-the-beach operations could benefit from systems that could identify safe areas, warn of detection potential, and watch over supplies. UUVs acquired for other purposes by the Navy have demonstrated an ability to conduct near-land and harbor monitoring.

In denied areas, mine countermeasure operations could be carried out with UUVs launched by attack submarines.



Double Eagle MK-III UUV, built by Saab for tethered or autonomous operation, is used by the Australian, Canadian, Swedish, and other navies. Its principal mission is MCM operations.

- **Oceanography.** Tactically useful oceanographic data can be gathered by gliders—UUVs equipped with wings that translate buoyancy into forward motion (i.e., they “fly” through the water). They can be deployed for months at a time and are cheap enough to be considered expendable. Similar UUVs with endurances measured in years are now being tested.
- **Monitoring undersea infrastructure.** The U.S. military depends on an extensive infrastructure of undersea communication cables, which are critical because satellites can convey only a fraction of the bandwidth required. These cables are vulnerable to aging, marine life, anchors, and other threats. The utility of UUVs for monitoring undersea cables has already been established by private-sector firms.
- **Tracking submarines of potential adversaries.** UUVs that could detect, classify, and track threat submarines are in development. Technical risk is mitigated by varied technological approaches used by developers. The alternative vehicle for this mission is the attack submarine, but the size of the U.S. attack submarine fleet is falling. The use of UUVs in this mission could free submarines for more-critical purposes.
- **Inspection/identification.** These missions support homeland defense and antiterrorism/force protection needs through the inspection of ship hulls and piers for foreign objects, such as mines. The need for this mission will be long-standing and is increasingly being performed by UUVs in preference to divers.

### Technical Challenges

The study resulted in the following technical findings, which, among other things, suggest impediments to the use of UUVs for intelligence, surveillance, and reconnaissance (ISR) missions, as has been advocated.

- For the foreseeable future, it will be highly technically challenging to develop UUVs with the autonomy needed for complex ISR missions, such as tactical signals intelligence. UUVs currently have only a limited ability to distinguish types of vessels, and onboard computing power is likely to remain relatively low (on the order of that in a personal computer). The need to cope with unforeseen conditions over the course of a mission presents a further serious developmental challenge.
- Autonomy and communication bandwidth can be traded off against each other. However, bandwidth is limited, and the communication options open to UUVs tend to be slow. Moreover, stealth can be compromised by operating UUVs with

For the foreseeable future, it will be highly technically challenging to develop UUVs with the autonomy needed for complex ISR missions, such as signals intelligence.

masts exposed and broadcasting for long periods. These stealth issues can spill over to host vessels, such as submarines.

- An important long-term technical challenge to UUV development is in the area of propulsion energy. Propulsion objectives stated in the Navy's 2004 *UUV Master Plan* would require order-of-magnitude improvements in propulsion technology. And such performance improvements may not come from spiral development of existing propulsion technologies.
- There are more capable and less technologically risky alternatives to UUVs where ISR missions are concerned. They include unmanned aerial vehicles, unmanned surface vehicles, and semisubmersible vehicles.
- Developing UUVs for launch from attack submarine torpedo tubes would be difficult and would require design compromises along numerous dimensions. Moreover, the torpedo rooms of attack submarines lack the electrical-power distribution systems needed to recharge large, battery-powered UUVs. Launch from surface ships is the less technically risky alternative.

### Other Issues

Two recommendations emerging from the study address Navy plans for developing and acquiring UUVs.

- The Navy's Mission-Reconfigurable UUV System program is multiply problematic: It intends to launch UUVs from torpedo tubes, fails to address some lingering submarine safety issues, and will not field a usable system within the next few years. NDRI recommended that the program be canceled or restructured with achievable milestones. (It has since been canceled.)
- NDRI recommended that the Navy consolidate its master plans for UUVs and unmanned surface vehicles, which overlap. Also, after concluding that the current *UUV Master Plan* advocates too many missions, NDRI recommended that priorities be established.

### Robert W. Button

*Project Leader*

**For more information, see** *A Survey of Missions for Unmanned Undersea Vehicles*, Robert W. Button, John Kamp, Thomas B. Curtin, and James Dryden, MG-808-NAVY, 2009. Online at <http://www.rand.org/pubs/monographs/MG808/>



## *Navy Enterprises in the Programming and Budgeting Framework*

- Under the U.S. Navy Enterprise management construct, there has been little change in the extent to which Navy warfare enterprises and service and equipment providers participate in the Planning, Programming, Budgeting, and Execution (PPBE) framework.
- Some initial PPBE-associated activities of the Navy Enterprise appear to have been beneficial, especially in communication, but more information is needed on workload and costs.
- Increasing the Navy Enterprise's involvement level in PPBE could bring gains in the alignment of programming and execution, among other benefits, but also increases in cost and complexity.

To recapitalize the force structure while maintaining or improving fleet readiness, the U.S. Navy has adopted the Navy Enterprise management construct. The purpose of the Navy Enterprise is to incorporate efficiencies so that current and future readiness can be achieved with limited budgets. More specifically, the Navy Enterprise seeks to gain an improved return on investments through better resource allocation and increases in output over cost. The exact implementation of the Navy Enterprise is still being developed, and many questions remain unanswered.

The Navy asked NDRI to assess this concept within the PPBE framework. Specifically, the researchers identified and described the current participation of organizations in PPBE and identified and evaluated potential alternatives for participation. They accomplished this through evaluations of available documentation and interviews with senior leaders throughout the Navy.

The Navy Enterprise consists of three main entities: the Executive Committee, the Fleet Readiness Enterprise, and a group of providers of resources and services. The Executive Committee comprises senior Navy leadership and evaluates Navy Enterprise output and progress, makes budgeting and resource allocation decisions, and develops strategic communications. The Fleet Readiness Enterprise, led by the Commander, U.S. Fleet Forces Command, consists of five warfare enterprises, each responsible for identifying ways to improve output over cost. The providers in the Navy Enterprise construct are those responsible for providing services, equipment, and other resources and otherwise ensuring future readiness at a minimal cost.

### **Interview Findings**

Interviews with senior officials indicated that the warfare enterprises and providers participate in the PPBE process mostly in a supporting role, as warfighters have in the past. Decisionmaking authority remains in the hands of organizations that have programming and budgeting responsibilities.

The Navy Enterprise seeks to gain an improved return on investments through better resource allocation and increases in output over cost.

Interviewees cited increased communication as the greatest benefit of the Navy Enterprise construct, including regular meetings of resource sponsors, warfighters, and providers to discuss money, requirements, resources, and other matters. As a result of increased communication, resource allocation decisions and risk evaluation improved as more and better data and information flowed to decisionmakers.

Interviewees reported some adverse effects. Some believed that the enterprises did not have sufficient staff, programming, or budgeting expertise to participate in the PPBE process and were therefore overextending themselves. Some interviewees also reported that participating in the Navy Enterprise adds more complexity to a process that is already extremely so because of the number of organizations involved.

### Alternative Structures

Through the interviews, assessments of individual activities in the PPBE process, and consultations with experts, the researchers identified and evaluated three alternative constructs for Navy Enterprise participation in PPBE:

- **no involvement**, which would eliminate Navy Enterprise participation from newly assigned PPBE activities
- **select participation**, in which some selected activities, such as planning, readiness assessments, and sponsor program proposals, would become part of Navy Enterprise work
- **process ownership**, which would entail the highest level of potential participation of the enterprises and providers in the PPBE process, including transfer of all PPBE management responsibilities to the warfare enterprises.

The researchers evaluated each alternative using criteria such as workload, PPBE benefits, complexity, and other costs (see table).

Under the *no involvement* option, warfare enterprises and providers would continue their historical budgeting and execution responsibilities. Limiting the warfare enterprises and providers to participating in the PPBE process through associated resource sponsors and budget-submitting offices would reduce workload but would also reduce the current benefits of participation. It would reduce complexity and costs for any personnel currently required to support PPBE tasks. It would also allow warfare enterprises and providers to focus on execution and identifying efficiencies in their

An assessment of three levels of potential Navy Enterprise involvement in the PPBE process compared the impact on PPBE outcomes.

Evaluation of Alternatives Relative to Current Involvement			
	No Involvement	Select Involvement	Ownership
Workload	Better	Slightly Worse	Worse
Other cost	Better	Slightly Worse	Worse
PPBE benefit	Worse	Slightly Better	Slightly Worse
Alignment	Worse	Slightly Better	Better
Complexity	Better	Slightly Worse	Worse
Buy-in	Worse	Slightly Worse	Better
POM ability*	Better	Better	Worse

\*Navy's ability to develop a Program Objective Memorandum (5-year outlook on budget requirements)

daily tasks, which may yield more cost savings. At the same time, if the warfare enterprises are separated from the planning process, the resulting plans could be impossible to execute. They also may feel little responsibility for PPBE outcomes.

*Select participation* could help maximize the benefits of participation in PPBE activities while minimizing costs. By participating in the selected activities, enterprises and providers can comment on how resource decisions may affect their organizations. They would also have a formal opportunity to help improve the allocation of resources by identifying requirements and can assist with risk mitigation and cost trade-offs. At the same time, taking advantage of these opportunities could increase workload and other costs. The enterprises and providers may lack the skills needed for such participation, and increased responsibilities could offset cost savings generated through the enterprises' traditional focus on efficiencies and effectiveness in execution.

Under *process ownership*, trade-offs among manpower, modernization, and readiness could also be made by the organizations most affected by these decisions. This approach would also improve the alignment of planning and programming objectives with execution. Nevertheless, costs, workload, and complexity would substantially increase. Other consequences, such as personnel churn, would be unavoidable and have an associated cost. Enterprises and providers would also have to develop additional skills and competencies that they do not currently have. Delegating all PPBE functions to the enterprises may be similar to a return to the former so-called "Baron Structure," in which three-star admirals led the Undersea Navy, the Surface Navy, and the Air Navy, essentially owning the research and development, the procurement, the manpower, and the operating and support dollars of their sponsorship.

### Evaluation Needs

The researchers found that the formal role of the warfare enterprises and providers in PPBE has not yet changed much under the Navy Enterprise construct. Participants have perceived the initial activities to be beneficial, with the biggest benefit being increased communication helping the Navy to better assess resource allocation decisions. Nevertheless, metrics on required workload and costs are necessary to determine whether the new process has had a positive effect overall. All alternatives will have a trade-off between more or less work for more or less benefit.



### Irv Blickstein and Jessie Riposo

*Project Leaders*

**For more information, see** *Navy Enterprises: Evaluating Their Role in Planning, Programming, Budgeting and Execution (PPBE)*, Jessie Riposo, Irv Blickstein, John A. Friel, and Kindle Fell, MG-794-NAVY, 2009. Online at <http://www.rand.org/pubs/monographs/MG794/>

## *Opportunities for a More Agile Acquisition System*

- Savings from using a second competitive source are not inevitable.
- To meet demand for novel systems, DoD must accept more risk.
- Oversight should be based on risk level, not dollar value.
- Better organizational integration and more flexible management processes are needed.
- Evidence on the benefits of prototyping is mixed.

In today's defense environment, there is increasing pressure on policymakers to make the defense acquisition system more nimble and effective. To help, NDRI researchers came together in the early weeks of the incoming Obama administration to identify opportunities for change in areas likely to be of critical importance to the new defense acquisition leadership: competition, risk management, novel systems, prototyping, organizational and management issues, and the acquisition workforce. Their efforts led to six papers that offer suggestions based on decades of research by RAND and others, new quantitative assessments, an NDRI-developed cost-analysis methodology, and the expertise of the authors and core NDRI research staff.<sup>9</sup> The key points are as follows.

### **Determining When Competition Is a Reasonable Strategy for the Production Phase of Defense Acquisition**

The value of competition is so taken for granted that defense officials are often criticized for not relying more frequently on competition in awarding contracts for major defense systems. However, the research indicates that it is not guaranteed that a second production source will lead to savings in every procurement. Defense acquisitions differ from the typical business market in terms of priorities, the number of buyers and producers, and the level of market uncertainty. Moreover, competition requires additional time, money, and management effort.

The researchers used historical data and an NDRI-developed methodology to determine whether and when competition is a reasonable acquisition strategy during the *production* phase. The analysis indicates that competition is more reasonable in situations in which nonrecurring costs are low, cost improvement is minimal, and a greater number of units will be produced.<sup>10</sup> In some cases—especially in the procurement of major systems, in which the nonrecurring costs are large—it may actually be *less* costly for the government to forgo competition.

### **Untying Gulliver: Taking Risks to Acquire Novel Weapon Systems**

Today, there is a growing need to respond to asymmetrical threats using novel weapon systems that can be quickly developed and fielded. Novel systems—such as the F-117 Stealth Fighter (at the time it was developed) and robotic ground vehicles—involve more uncertainty than conventional systems, not only with regard to design and technology but also in terms of how they will be used, how many units will be needed, and how much they will cost.

It is not guaranteed that a second production source will lead to savings in every procurement.

Comparison of Conventional and Novel Systems		
Dimensions		
Conventional Systems	Novel Systems	
Follow-on	Design	New
Evolutionary	Technology	Disruptive
Established	Operational employment	Information
Predictability	Outcomes	Uncertain
Large	Production run	Uncertain
Long	Operational life	Uncertain

Novel systems differ from conventional systems in ways that are important for acquisition decisions.

The findings indicate that current acquisition policies and processes are too risk-averse to enable the effective development and timely employment of novel systems. The researchers recommend a separate acquisition strategy that is less tied to achieving precise cost, schedule, and performance outcomes. The new strategy should include a focus on unique integrations of existing and emerging technologies, a willingness to accept risks, easy and quick termination of programs that do not yield expected benefits, and early test and demonstration of military utility.

### Dollar Value and Risk Levels: Changing How Weapon System Programs Are Managed

DoD requires a review of major defense programs and decisions by senior officials on the basis of a program’s dollar value. This approach has been constantly refined over the years without noticeably improving acquisition outcomes. NDRI researchers propose a new paradigm in which the level of oversight and management would be based instead on the level of risk a program represents. Some very costly projects might have significantly less risk than projects of similar cost and thus should require less oversight. Conversely, projects may cost little but have a lot of risk because they push the state of the art in technology; as a result, they require more comprehensive oversight than dollar value alone would indicate. The examination also considered the extent to which DoD is prepared to assess technical, system, design, production, and business innovation risk, and it makes recommendations to improve DoD’s ability to assess these risks.

An NDRI paper proposes a new paradigm in which the level of oversight and management would be based on risk.

### Improving Acquisition Outcomes: Organizational and Management Issues

Many of the problems that contribute to poor cost and schedule outcomes are systemic to the way that the acquisition process is organized and managed in DoD. NDRI researchers traced organizational divides and overly prescribed management processes to inefficiencies in the acquisition system and unrealistic expectations. Service chiefs,<sup>11</sup> who validate warfighting requirements, have become increasingly disconnected from the acquisition process. To better ensure that defense programs meet warfighting needs affordably, the researchers recommend appointing the service chief as co-chair of the relevant military department’s acqui-

sition board. In contrast, they argue that increasing the role of the combatant commanders (a current push in recent reforms) would take too much time away from the commanders' warfighting responsibilities.<sup>12</sup>

The researchers also conclude that recent acquisition reforms have led to an overly complex and rigid process in which success has been reduced to following rules in a rote manner to move a program through an increasing number of wickets. Recommendations include streamlining the acquisition process.

### On Prototyping: Lessons from RAND Research

Acquisition policy and practice reflect the recurring theme that prototyping as part of weapon system development can reduce costs and time; allow demonstration of novel system concepts; provide a basis for competition; validate cost estimates, design, and manufacturing processes; and reduce or mitigate technical risks. NDRI researchers reviewed four decades of RAND research on the uses of prototyping and identified the conditions under which prototyping activities are most likely to provide benefits. They conclude that, although the available evidence is somewhat mixed overall, the historical record does reveal some of the conditions under which prototyping strategies are most likely to yield benefits in a development program. These conditions include ensuring that prototyping strategies and documentation are austere, not committing to production during the prototyping phase, making few significant design changes when moving to the final configuration, and maintaining strict funding limits.

9 One of the papers addressed the acquisition workforce, a topic covered in detail on page 43 and thus omitted here.

10 Labor and materiel are recurring costs; nonrecurring costs include such one-time costs as those for special test facilities.

11 That is, the Chief of Staff of the U.S. Air Force, the Chief of Staff of the U.S. Army, the Chief of Naval Operations, and the Commandant of the Marine Corps.

12 The military departments supply forces to the combatant commands, which conduct joint military operations.

## John Birkler

Project Leader

**For more information, see** *Determining When Competition Is a Reasonable Strategy for the Production Phase of Defense Acquisition*, Mark V. Arena and John Birkler, OP-263-OSD, 2009. Online at [http://www.rand.org/pubs/occasional\\_papers/OP263/](http://www.rand.org/pubs/occasional_papers/OP263/)

*Untying Gulliver: Taking Risks to Acquire Novel Weapon Systems*, John Birkler, OP-268-OSD, 2009. Online at [http://www.rand.org/pubs/occasional\\_papers/OP268/](http://www.rand.org/pubs/occasional_papers/OP268/)

*Dollar Value and Risk Levels: Changing How Weapon System Programs Are Managed*, Robert Murphy and John Birkler, OP-264-OSD, 2009. Online at [http://www.rand.org/pubs/occasional\\_papers/OP264/](http://www.rand.org/pubs/occasional_papers/OP264/)

*Improving Acquisition Outcomes: Organizational and Management Issues*, Irv Blickstein and Charles Nemfakos, OP-262-OSD, 2009. Online at [http://www.rand.org/pubs/occasional\\_papers/OP262/](http://www.rand.org/pubs/occasional_papers/OP262/)

*On Prototyping: Lessons from RAND Research*, Jeffrey A. Drezner and Meilinda Huang, OP-267-OSD, 2009. Online at [http://www.rand.org/pubs/occasional\\_papers/OP267/](http://www.rand.org/pubs/occasional_papers/OP267/)



# FORCES AND RESOURCES POLICY CENTER

The military operations in Iraq and Afghanistan have been the longest and most demanding test of the all-volunteer force since its inception in 1973. More than 2 million servicemembers have been deployed in these operations. Traditional defense manpower policy issues, such as recruiting, retention, and compensation, have remained as salient as ever. In some respects, they have become even more important: Consider the much-increased use of bonuses to help achieve enlistment and reenlistment goals.

Having enough people is just the first step. DoD must recruit or develop people within its total workforce who have the skills necessary for a myriad of occupational specialties, whether they may be enlisted sailors serving as information technicians aboard ship or civilians staffing the defense acquisition workforce.

At the same time, DoD faces structural challenges. For example, the reserves have been transformed from solely a strategic reserve to both a strategic and an operational reserve, while the finer points of achieving jointness are a continuing challenge.

The armed forces continue their push for diversity. With respect to racial and ethnic diversity, the focus has turned to the leadership, while recent remarks from the Secretary of Defense and the Chairman of the Joint Chiefs of Staff suggest that DoD is ready to take another look at sexual orientation.

Concerns have also been raised regarding jobs and health care for returning veterans and, more generally, the reintegration of deployed servicemembers back into their communities. There, the issues range from disturbingly high rates of automobile and motorcycle deaths among recently returned servicemembers to the difficulties children face when a parent returns home.

NSRD's Forces and Resources Policy Center has been actively involved for over three decades in helping the United States create and sustain the all-volunteer force. The center continues a varied program of research intended to help DoD adapt its organizations, policies, and processes to current and evolving manpower and other resource challenges.



James Hosek, *Director*  
*Forces and Resources Policy Center*

## SOME RECENT AND ONGOING PROJECTS

### Research Support for the Military Leadership Diversity Commission

The Defense Authorization Act for FY09 established the Military Leadership Diversity Commission and charged it with comprehensively evaluating policies that provide opportunities for the advancement of minority members of the armed forces, including those who are senior officers. The commission aims to examine factors influencing accession, retention, career development, and promotion of military members and to find ways to eliminate any barrier for advancement of minority servicemembers. The commission's review will also include current DoD diversity initiatives and management, as well as diversity best practices from the private sector that are suitable for the U.S. military. NDRI has been asked to support the commission's efforts in several ways: by developing a research plan to fulfill the commission's objectives; helping to assemble a research team, from both inside and outside RAND, to carry out the plan; coordinating the research effort; providing materials based on the team's analyses to the commission for its deliberations; and assisting the commission with its final report. To these ends, a senior RAND social/behavioral scientist is based at the commission's headquarters and fully integrated into that organization.

**Sponsor:** *Office of the Under Secretary of Defense for Personnel and Readiness*

**Project Leader:** *Nelson Lim*

## Revising the “Don’t Ask, Don’t Tell” Policy

In February 2010, Secretary of Defense Robert Gates, in testimony before the Senate Armed Services Committee, announced that he and Admiral Michael Mullen, Chairman of the Joint Chiefs of Staff, had appointed a high-level working group within DoD that would immediately begin a review of the issues associated with properly implementing a repeal of the “Don’t Ask, Don’t Tell” policy on military service by homosexuals. He also announced that DoD would, as requested by the committee, ask RAND to update its 1993 study on the impacts of allowing homosexuals to serve openly in the military. That study drew from a wide array of investigations by social and behavioral scientists, and this approach will be repeated. Topics to be considered will include the prevalence of homosexuality in the general population and the military, as well as analogous experiences of foreign military services, domestic police and fire departments, and similar government agencies. The research team will also revisit relevant public and military opinion, epidemiology and/or military policy regarding sexual behavior and health issues, anti-homosexual violence, unit cohesion and military performance, the implementation of policy change in large organizations, and the potential effects on military recruitment and retention. RAND will provide its findings to DoD in support of the DoD decisionmaking process.

**Sponsor:** *Office of the Secretary of Defense*

**Project Leader:** *Bernard D. Rostker*

## Manpower Implications of Consolidating Shipboard Computer Networks

The computer networks, systems, and applications used on Navy ships are an amalgam of disparate hardware and software independently developed and introduced onboard. The Navy’s Consolidated Afloat Networks and Enterprise Services (CANES) initiative is designed to consolidate and improve the networks on tactical platforms, largely through a common computing environment. Recognizing that this initiative could reduce the requirement for shipboard manpower and alter the demand for training, the Navy asked NDRI to assess any such effects. The NDRI effort focused on information technology (IT) personnel aboard carriers and destroyers. The manpower requirements for IT personnel are determined by watch station and depend only slightly on maintenance needs. Thus, the CANES conversion to

an environment with improved reliability will result in only modest manpower reductions of around 12 to 18 percent. Planned changes to IT training have positive implications for CANES. Lengthening initial skill training (A School) and providing immediate advanced skill training (C school) for some IT personnel can increase capability. RAND simulated these training changes and additional options for increasing the numbers of entrants with six-year contracts and the percentage attending immediate C school. Best effectiveness gains were made when all IT personnel entered with six-year contracts and were fully trained before assignment to their first unit. Investment costs could be used to fund greater effectiveness

Information Systems Technician 2nd Class Frederick Marshall, assigned to guided missile destroyer USS *Hopper* (DDG 70), gets hands-on IT training.



on the part of the IT complement or could be recouped through reductions in manpower, holding overall effectiveness constant. Different Navy stakeholders held different perspectives on the ideal outcome and whether it is more important to minimize cost or to maximize performance.<sup>13</sup>

**Sponsor:** *U.S. Navy*

**Project Leaders:** *Harry J. Thie and Margaret C. Harrell*

## Factors Influencing Automobile and Motorcycle Crashes

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Private motor vehicles are the leading noncombat killer of America's servicemembers. As such, they are a principal focus of the Defense Safety Oversight Council, which, through its task forces, identifies and recommends mishap-prevention initiatives for demonstration and implementation in DoD. RAND has been providing technical support to the council and its Private Motor Vehicle Task Force in reducing preventable mishaps with such vehicles, a goal clearly articulated by the Secretary of Defense. Specifically, RAND has reviewed evidence-based studies conducted in the United States and abroad that help in identifying human demographic and behavioral factors and other influences that precipitate motor vehicle crashes affecting servicemembers and the U.S. civilian young-adult population. RAND researchers also reviewed evidence on personality factors, such as sensation-seeking and impulsivity. The research team paid special attention to motorcycle crashes, in part because motorcycle riding is more risky and in part because risk factors differ from those for automobile collisions, to some extent. Finally, the team reviewed a number of policy interventions intended to reduce crashes.

**Sponsor:** *Office of the Under Secretary of Defense for Personnel and Readiness*

**Project Leader:** *Martin Wachs*

## A Strategic Approach to Joint Officer Management

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Acting on studies indicating the need for updated joint officer management and education to more effectively meet the demands of a new era, DoD in 2003 asked NDRI for an analysis providing overarching guidance on such matters. Once finished, that analysis framed a strategic approach that was operationalized through further extensive data analysis and complex modeling in a follow-on study published in 2009. To further examine the demand for and supply of "jointness," the new research drew on a survey of officers in billets (positions) requiring or providing joint experience. NDRI analyzed the characteristics that measure the jointness of a billet and used that analysis to identify billets that could be recommended for inclusion in the official Joint Duty Assignment List, which confers joint duty credit. The research team also determined whether sufficient numbers of officers with joint education, training, and experience would likely be available to satisfy DoD's need for them. Finally, NDRI explored whether and how the experiences of selected communities of officers—for example, those dealing with acquisition matters—differed from those of their peers. Findings from this work were used in developing DoD plans for joint officer management and education and for the joint officer qualification system.<sup>14</sup>

**Sponsor:** *Office of the Under Secretary of Defense for Personnel and Readiness*

**Project Leaders:** *Margaret C. Harrell and Harry J. Thie*

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<sup>13</sup> For more information, see *Consolidated Afloat Networks and Enterprise Services (CANES): Manpower, Personnel, and Training Implications*, Harry J. Thie, Margaret C. Harrell, Aine Seitz McCarthy, and Joseph Jenkins, MG-896-NAVY. Online at <http://www.rand.org/pubs/monographs/MG896/>

<sup>14</sup> For more information, see *A Strategic Approach to Joint Officer Management: Analysis and Modeling Results*, Margaret C. Harrell, Harry J. Thie, Sheila Nataraj Kirby, Al Crego, Danielle M. Varda, and Thomas Sullivan, MG-886-OSD, 2009. Online at <http://www.rand.org/pubs/monographs/MG886/>

## *How Deployment Affects the Children of Military Families*

- Children from military families may be experiencing above-average levels of emotional and behavioral difficulties, relative to national norms.
- The difficulties that children experience during parental deployment and subsequent reintegration are greater if their parents have accumulated more months of deployment over the previous three years.
- Deployment-specific challenges are greater for older teens than for younger teens and preteens, and overall, girls struggle more with deployed parent return (reintegration) than boys.
- Poor mental health reported by nondeployed parents or caregivers is associated with worse child well-being and greater difficulties during and after deployment.

Multiple and extended deployments and the high operational pace of the current conflicts in Iraq and Afghanistan are unparalleled for the U.S. military's all-volunteer force. As a result, many youth from military families have been experiencing significant parental absence. Research has begun to document the challenges faced by members of the U.S. military in deploying for war and reintegrating into life at home. But little is known about how wartime experience and parental deployments are affecting children from military families.

A RAND study commissioned by the National Military Family Association addressed this issue. The research is among the first to explore how children from military families are faring academically, socially, and emotionally during an extended period of wartime, and how that depends on the length of time the deployed parent is away.

RAND researchers surveyed 1,500 military children (applicants to Operation Purple® summer camps, a program of the National Military Family Association for children of military servicemembers), as well as each child's nondeployed parent (or other primary caregiver), by phone. The sample was randomly selected from this applicant pool and purposefully drawn to represent the deploying personnel at the time by service and component. The children's average age was 13 (range 11–17 years); 47 percent were girls. Approximately 57 percent of children had a parent in the Army, 20 percent in the Air Force, approximately 17 percent in the Navy, and the remainder in the Marine Corps or Coast Guard. The majority of the military parents were in the active component, with approximately 37 percent in the National Guard or Reserve. Data from the surveys were subjected to statistical regression analyses that allowed the isolation of influences with all other things equal.

### **Child Well-Being in an Era of Extensive Deployments**

The research team first analyzed the answers to questions pertaining to child well-being at the time of the interview. Key results were as follows:

The study is among the first to explore how children from military families are faring during an extended period of wartime.

- Children in military families experienced emotional and behavioral difficulties at rates above national averages.
- About one-third of the children reported symptoms of anxiety, which is approximately twice the percentage reported in other studies of children.
- Self-reported problems varied by age and gender: Older youths and boys reported more difficulties with school and more problem behaviors, such as fighting; greater numbers of younger children (compared with older children) and girls reported anxiety symptoms.
- Where caregivers reported their own mental health as poor, both children and caregivers reported lower child well-being by almost any measure.
- Child well-being in general was not related to whether the deployed parent was in the active or one of the reserve components, what service he or she was in, or how often or how long he or she had been deployed.

Older youths and boys reported more difficulties with school and more problem behaviors. Younger children and girls reported anxiety symptoms.

### Children’s Difficulties During Deployment and Reintegration

The results also revealed difficulties that were specific to the deployment period itself (e.g., dealing with life without the deployed parent) or to the subsequent reintegration period (e.g., getting to know the just-returned parent again). (For most children and caregivers, these questions were retrospective. For example, while 95 percent of children had experienced a parental deployment in the previous three years, only 39 percent were experiencing one at the time of the interview.)

- Longer periods of parental deployment (within the past three years) or more months of total deployment in the past three years were linked to greater difficulties in children’s social and emotional functioning during and after deployment, based on reports from the caregivers. (Children’s reports did not show this relationship.)

Some child and caregiver characteristics, along with deployment length, are associated with greater difficulties experienced by children during or after deployment.

Possible Explanatory Factors	Difficulties During Deployment		Difficulties During Reintegration	
	Caregiver Report	Child Report	Caregiver Report	Child Report
<b>Child and caregiver characteristics</b>				
Female gender (child)				
Child age				
Caregiver employed				
Renting (vs. living in military housing)				
Renting (vs. owning home)				
Caregiver mental health				
Child emotional difficulties (per caregiver)				
<b>Deployment experiences</b>				
Current deployment (vs. not)				
Deployed twice (vs. once)				
Deployed three or more times (vs. once)				
Number of months deployed in past 3 years				

A shaded cell indicates that the characteristic in that row is associated with greater difficulties according to the source in that column, where the probability is more than 99 percent that the relationship is not due to chance. A blank cell indicates that any relationship between the characteristic and difficulties experienced by the child is not statistically significant, i.e., the probability is less than 95 percent that the relationship is not due to chance.

- Deployment-related challenges varied by age and gender: Older youths and girls experienced greater difficulties during deployment and reintegration than did young children and boys.
- Children who had more emotional difficulties in general, as reported by caregivers, were reported by both caregivers and the children themselves to experience more difficulties during deployment and reintegration.
- Children whose caregivers had better self-reported mental health were also better able to cope with the deployment experience, both during and after.
- Living on base was linked with reduced difficulties both during and after deployment, and employment of the caregiver was linked with increased difficulties during reintegration.

### Next Steps

The results represent an important first step in understanding the link between parental deployment and military child and family well-being. The findings suggest the need for more research to improve understanding in several areas. These include the emotional health of nondeployed caregivers and the stressors they experience, possible effects of the military parent's mental health, and the reasons that girls and older youths may be reporting more challenges from deployment. The study included two more survey time points over one year; preliminary analyses of those data are under way.

The results also highlight several avenues for possible intervention. Considering the emotional or behavioral difficulties experienced by military children (relative to their civilian counterparts), at least some military families may require assistance in addressing their children's needs, via school programming, mental health services, or resources usable at home. Given that children with parents who were deployed longer experienced greater difficulties, families may benefit from support to deal with stressors at later points in deployment, rather than only during the initial stages. Further, families in which caregivers face mental health issues may need targeted support for both caregiver and child. Although such interventions are being developed and implemented, there are not yet sufficient data to judge program effectiveness.

### Anita Chandra

*Project Leader*

**For more information, see** "Children on the Homefront: The Experience of Children from Military Families," Anita Chandra, Sandraluz Lara-Cinisomo, Lisa H. Jaycox, Terri Tanielian, Rachel M. Burns, Teague Ruder, and Bing Han, *Pediatrics*, Vol. 125, No. 1, January 2010, pp. 16–21. Online at <http://pediatrics.aappublications.org/>



## *Explaining Recent Minority Recruiting Trends in the Army and Navy*

- Between 2000 and 2007, the representation of blacks among high-quality Army recruits declined, while in the Navy, black representation remained stable.
- The representation of Hispanics among high-quality recruits in both the Army and Navy grew during this period.
- These recruiting trends are partially explained by differential responsiveness on the part of potential black and Hispanic recruits to recruiting resources.
- Other influences include economic and demographic factors, factors related to eligibility, and the Iraq war.

Black representation among high-quality Army recruits has changed over time, with the black share of gross contracts falling between FYs 2000 and 2004, then gaining back only a part of that drop between 2004 and 2007. (A recruit is deemed *high-quality* if he or she has a high school diploma and scores above the 50th percentile on the Armed Forces Qualification Test.) Black representation among Navy recruits has been generally stable. In contrast, Hispanic representation among high-quality recruits increased in both the Army, between FYs 2000 and 2003, and the Navy, between FYs 2002 and 2005. These disparate trends suggest that black and Hispanic youths respond differently to resources, external opportunities, and other factors when making enlistment decisions.

An NDRI project team identified factors correlated with trends in black and Hispanic representation among high-quality recruits in the Army and Navy. The researchers also suggested policies likely to be most effective in increasing high-quality enlistments among black, Hispanic, and white youth.

### **In What Ways Do Groups Respond Differently to Recruiting Resources?**

The military relies on many resources to recruit youths, including enlistment bonuses, educational benefits (such as the Montgomery GI Bill), military pay, and recruiters. The researchers estimated enlistment models by race and ethnicity and identified several patterns:

- In the Army, black high-quality enlistments are more responsive to enlistment bonuses and less responsive to military pay, compared with high-quality enlistments of other groups.
- In the Army, Hispanic high-quality enlistments are highly responsive to military pay, Army educational benefits, and recruiters.

There have been patterns and variation in the response to recruiting resources by race and ethnicity, service, and resource type.

In the Army, different factors contributed to an 8.3 percentage point decrease in black representation and a 3.3 percentage point increase in Hispanic representation over the study period.

Factors Accounting for FY 2000–2004 Decrease in Black Representation (percentage points)		Factors Accounting for the FY 2000–2003 Increase in Hispanic Representation (percentage points)	
Iraq War	-5.2	Montgomery GI Bill	+1.4
Military/civilian pay differential	-2.0	Military/civilian pay differential	+0.6
Production recruiters	-0.3	Production recruiters	+0.2
Unemployment rate	-0.1	Enlistment bonuses	+0.1
Montgomery GI Bill	0.0	Army College Fund	0.0
Army College Fund	+0.2	Iraq war	0.0
Enlistment bonuses	+0.3		
Other factors	-1.0	Other factors	+0.3
Amount explained	-8.0	Amount explained	+2.6
<b>Total decrease</b>	<b>-8.3</b>	<b>Total increase</b>	<b>+3.3</b>
Amount unexplained	-0.3	Amount unexplained	+0.7

NOTE: Values may not sum because of rounding.

- In the Navy, both black and Hispanic high-quality enlistments are responsive to recruiters, while the estimated effects of bonuses, military pay, and educational benefits are not statistically different from zero.
- Enlistments respond differently to these resources in the Army versus in the Navy. In general, for a given percentage increase in a resource, Navy enlistments show a lower percentage increase than Army enlistments.

### What Else Accounts for the Recruiting Trends by Group?

In addition to these recruiting factors, the researchers identified economic and demographic factors (e.g., the unemployment rate and noncitizen population), eligibility factors (e.g., obesity rate and crime rate), and political factors (e.g., the war in Iraq and the presidential approval rate) that help explain high-quality minority enlistment trends.

Almost two-thirds of the 8.3 percentage point decrease in black representation reflects two factors. First, the Iraq war was associated with a negative effect for all groups, but the effect was largest for blacks—a 45-percent drop in high-quality contracts versus 21 percent for whites and Hispanics—over the data period. Second, blacks were less sensitive than other groups to the large increases in regular military compensation relative to civilian pay that occurred over this period. Thus, part of the decline in black representation arose from the success of the Army in increasing Hispanic and white enlistments through increases in military pay, which increased the market share of these latter groups relative to that of blacks.

Resource changes have been important in explaining improvements in Hispanic representation in the Army in recent years. The estimated models are able to

explain much of the recent change in Army representation. Increases in Montgomery GI Bill benefit levels explain more than one-third of the 3.3 percentage point increase in Hispanic high-quality enlistments. Increases in relative military pay, as well as the stronger responsiveness of Hispanic versus black youth to pay increases, explain almost one-quarter of the increase in Hispanic representation over this period.

For the Navy, Hispanic representation among high-quality recruits has also increased, rising by 5.3 percentage points between 2002 and 2005. Almost all this increase—5 percentage points—is attributable to a positive estimated association between the Iraq war and Hispanic enlistments. For the Navy, the Iraq war is associated with a larger increase in Hispanic than black enlistments and a decrease in white enlistments. The percentage of recruits who were Hispanic rose dramatically in the Navy as the war progressed. The precise explanation for this finding remains unclear, but one possibility is that minority youth who wanted to serve in the military and who might have chosen the Army prior to the Iraq war chose the Navy instead.

### Policy Implications

Because potential black and Hispanic recruits respond differently to recruiting resources, the military might effectively target resources to specific groups in each service, and even across services. However, such an approach may run counter to notions of equity and fairness—that is, the services might be reluctant to target resources based on race and ethnicity. Still, as policy allocation decisions are made, the services should recognize that these decisions will affect not only the quantity of high-quality enlistments but also their distribution across groups, and that some policies could alter minority representation.

The analysis also suggests the possibility of targeting resources across services by group, given the differential responses of different groups across services. Because the NDRI team did not estimate joint models of Army and Navy enlistments, the findings do not address the question of resource allocation across services; however, such an analysis should be explored in future research.



**Beth J. Asch**

*Project Leader*

**For more information, see** *Recruiting Minorities: What Explains Recent Trends in the Army and Navy?* Beth J. Asch, Paul Heaton, and Bogdan Savych, MG-861-OSD, 2009. Online at <http://www.rand.org/pubs/monographs/MG861/>

## *A New Approach for Acquisition Workforce Analysis*

RAND has been working to develop comprehensive, longitudinal data on the defense acquisition workforce (AW). This effort has made possible new forms of workforce analysis. Some initial findings:

- There is significantly more turnover in the defense AW than is reflected by annual changes in workforce size.
- A growing share of new external hires to the AW have prior military experience.
- A sizable number of DoD civilians are recategorized into or out of the AW in any given year, though they remain in DoD.
- Modest growth in the official AW count may mask divergent trends in key occupations.

The DoD acquisition workforce (AW), which comprises more than 126,000 military and civilian personnel, provides a wide range of acquisition, technology, and logistics support to the nation's warfighters. Concerns about defense acquisition outcomes—cost escalation, reports of improper payments to contractors, and schedule delays—have been raised both in the popular media and in DoD audits and internal reports. Critics have pointed to the size, quality, and effectiveness of the acquisition workforce as key factors contributing to the observed problems. DoD has also focused recent attention on other workforce concerns, including impending retirements, recruitment of new civilian employees, and increasing demand for workers educated in science and engineering.

DoD recently announced plans to increase the defense AW by 20,000 (or 16 percent) over the next five years. However, it is unclear whether this step will adequately address the challenges faced by the defense AW.

NDRI has been working to develop comprehensive, longitudinal data on the defense AW. This effort has allowed NDRI to conduct workforce analyses that were not possible before and focuses attention on issues that deserve further analysis and policymaker attention.

### **A Comprehensive Approach for Analyzing the Defense Acquisition Workforce**

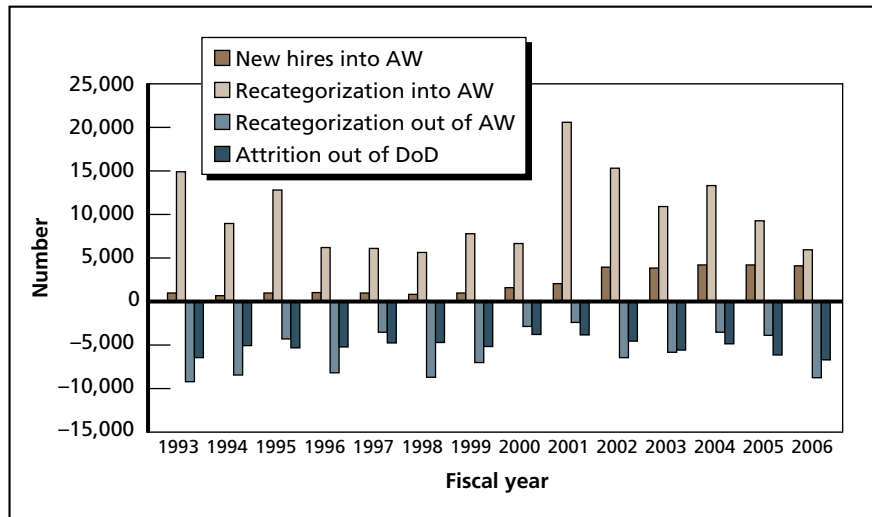
Since 1992, DoD has been required to report annually on the number of workers in the official AW. To support such reporting, DoD has identified and recorded information about individuals who are part of this workforce. These data have historically been used to provide annual, cross-sectional descriptions of the defense AW and to describe overall workforce trends. However, the definition used to identify these individuals has changed substantially over time, making it difficult to interpret personnel trends generated by the cross-sectional data.

Critics have pointed to the size, quality, and effectiveness of the acquisition workforce as key factors contributing to cost and schedule problems.

To address this limitation and enable more comprehensive analyses, RAND has assembled a comprehensive data file that can support longitudinal, DoD-wide analysis of the DoD AW. The data file is drawn from several files that are maintained by the Defense Manpower Data Center (DMDC) (dating back to 1980): the DoD civilian personnel inventory file, the DoD civilian personnel transaction file, the military work experience file, and the acquisition workforce person and position files.

Using the comprehensive data file, the researchers have been able to conduct several types of workforce analyses that were not possible before:

- Records can be linked across files (for example, between the military and civilian files) and over time. This allows an examination of movement into and out of the AW and between the military and civilian workforces, as well as promotion and experience trajectories.
- In examining gains and losses in the AW, the researchers have been able to distinguish employees who switch into or out of the AW while remaining in DoD from those who come from outside DoD (or who leave DoD altogether). It has also been possible to explore the characteristics of gains and losses in greater detail.
- The researchers have also conducted analyses of all DoD civilians in acquisition-related occupational series irrespective of their official characterization as part of the defense AW to better understand the implications of the changing defense AW definition.



There have been more recategorizations of DoD personnel into and out of the AW than hires into it from outside DoD or losses from it to the outside.

### New Kinds of Workforce Analyses Are Now Possible

To date, NDRI has used these new tools to examine several key issues concerning the defense AW. A few initial findings are highlighted here.

**Workforce recategorizations dwarf overall changes in the size of the defense AW.** There is significantly more turnover in the defense AW than is reflected by annual changes in workforce size. As shown in the figure, each year since 1993, more existing DoD employees were recategorized into the AW than there were new DoD employees hired into the AW. In many years, the number of these “internal” hires has *substantially* exceeded external new hires. Recategorizations are also a factor in losses (i.e., defense AW employees who leave the AW but remain in DoD), but at a level that is generally comparable to losses due to separation from DoD.

**A significant and growing share of new external hires to the AW have prior military experience.** In FY06, more than one-third of the new hires into the civilian AW had prior military experience, up significantly from 1992. This trend is particularly interesting in view of the fact that the military AW represents a small share of the overall defense AW. In fact, many of these former military new hires were not part of the AW during their military careers.

**A large percentage of AW recategorizations are administrative.** The researchers distinguished between workforce recategorizations that were substantive and those

RAND's data file can support analysis informing decisions on acquisition workforce retention, professional development, and leadership.

that appeared administrative in nature. A recategorization was judged to be substantive if there was a meaningful change in the individual's personnel record (i.e., a change to the employee's agency, bureau, functional occupational group, occupation series, or pay plan). The analyses revealed that, from 1992 to 2006, a large proportion of all recategorizations (up to nearly 80 percent in some years) were administrative. This suggests that there has been more turnover in the AW's composition than actual changes in what DoD civilian workers have been doing.

**Modest growth in the official AW count may mask divergent trends in key occupations.** Whereas trends based on the official AW count reflect modest workforce growth since 1992, an analysis of the number of all DoD civilians employed in a set of acquisition-related occupational series suggests a slight decline in that workforce over the same period. The NDRI analyses revealed, further, that some occupations experienced very different trends relative to others. For example, the number of DoD civilians in the program management and logistics occupation series has increased substantially and consistently since 1980, while the total number of DoD civilians in the contracting, quality assurance, and auditing areas has declined steadily since the late 1980s.<sup>15</sup>

**RAND's data capability can be used for specific analyses on topics of interest.** RAND's data file has also been used to analyze career trends for specific subsets of employees, including AW leadership and Department of the Navy intern programs. Focused or service-specific analyses can be used to inform policy decisions related to key issues of concern, including AW retention, professional development, and leadership.

<sup>15</sup> It should be noted that RAND's analyses cover only the organic DoD civilian workforce; the researchers did not have data on the role contractors are playing in these areas and could not conclude anything about the growth or declines in total workforce size in these areas.

### Conclusion

Findings such as those highlighted here have been used to assist DoD in identifying and better understanding analytical challenges to AW management and developing strategies for improving workforce planning. A better definition of the acquisition workforce and more-detailed analysis of the current workforce and historical trends could yield new insights.

**Susan M. Gates**  
Project Leader



**For more information, see** *The Defense Acquisition Workforce: An Analysis of Personnel Trends Relevant to Policy, 1993–2006*, Susan M. Gates, Edward G. Keating, Adria D. Jewell, Lindsay Daugherty, Bryan Tysinger, Albert A. Robbert, and Ralph Masi, TR-572-OSD, 2008. Online at [http://www.rand.org/pubs/technical\\_reports/TR572/](http://www.rand.org/pubs/technical_reports/TR572/)

*The Department of the Navy's Civilian Acquisition Workforce: An Analysis of Recent Trends*, Susan M. Gates, Edward G. Keating, Bryan Tysinger, Adria D. Jewell, Lindsay Dougherty, and Ralph Masi, TR-555-NAVY, 2009. Online at [http://www.rand.org/pubs/technical\\_reports/TR555/](http://www.rand.org/pubs/technical_reports/TR555/)

*Shining a Spotlight on the Defense Acquisition Workforce—Again*, Susan M. Gates, OP-266-OSD, 2009. Online at [http://www.rand.org/pubs/occasional\\_papers/OP266/](http://www.rand.org/pubs/occasional_papers/OP266/)

# INTELLIGENCE POLICY CENTER

The mission of the 16 organizations constituting the intelligence community (IC) is to warn policymakers of threats and alert them to opportunities. Since 9/11, the IC has undergone tremendous changes in its personnel and areas of focus. Some missions, such as tracking down terrorists and supporting U.S. warfighters in theater, have endured over that period. But the IC also has newer assignments, e.g., assessing the implications of global climate change and providing warning on global financial changes. Moreover, the information revolution has both greatly complicated and enhanced the IC's mission of collecting information and extracting insight from it. Surely, at no time since World War II has the challenge to intelligence professionals been so varied and complex.

That challenge, together with the calls of high-level commissions and congressional oversight committees for improved U.S. intelligence capabilities, has etched a compelling consensus for change in IC structure and practices. Effecting and managing change amid military operations around the globe poses formidable challenges to the leadership of the IC and the thousands of professionals serving in it. IC leaders must strike a balance between meeting current demands and developing the assets needed to serve policymakers of the next era when the threats and opportunities facing the country will, in all likelihood, be quite different.

NSRD's Intelligence Policy Center (IPC) is helping the community with analyses supporting these changes. The center helps senior IC leaders assess the impact of future global developments on intelligence collection and analysis requirements, human capital needs, and resource allocation. It helps decisionmakers understand the shifting operational environments in Iraq and Afghanistan as well as other emerging threats around the globe. To that end, it not only conducts research in the various RAND offices but also has people in theater. In all, the IPC has become one of a number of centers of strategic analysis for the IC, a place to turn for rigorous methodological approaches to vexing problems and innovative options to address them.



John Parachini, *Director  
Intelligence Policy Center*

## SOME RECENT PROJECTS

### Iranian Leadership Dynamics

The 2009 Iranian presidential election was a watershed event in the Islamic Republic's history that has altered elite relationships and solidified the position of the Islamist right and the Revolutionary Guards in Iranian politics. But U.S. policymakers are hampered in their ability to "read" the regime by the lack of access to Iran by U.S. diplomats and other citizens, a result of there having been no official diplomatic relations between the two nations since 1980. To help analysts better understand Iranian decisionmaking, NDRI undertook a study of Iranian leadership dynamics. The researchers concluded that it is the combination of key personalities, networks based on a number of commonalities, and institutions—not any one of these elements alone—that defines Iran's complex political system. Factional competition and informal, back-channel maneuvering trump the formal processes of policymaking. The Supreme Leader retains the most power, but he is not omnipotent in the highly dynamic landscape of Iranian power politics. The evolving role of the Islamic Revolutionary Guard Corps, the vulnerability of the elite "old guard" to challenge, and the succession of the next Supreme Leader are key determinants of Iran's future direction.<sup>16</sup>

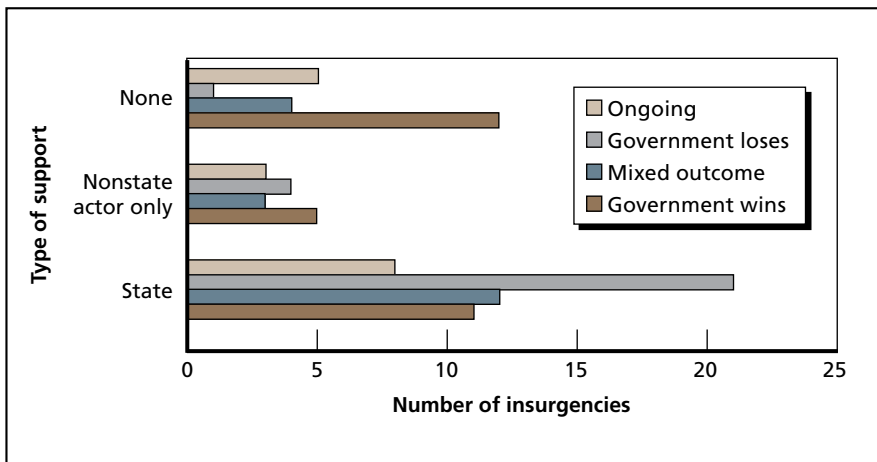
**Sponsor:** *Intelligence Community*

**Project Leaders:** *David E. Thaler and Alireza Nader*

## How Insurgencies End

Insurgencies have dominated the focus of the U.S. military for the past decade and are likely to figure prominently in future operations. Typically, the United States is in the position of wanting an insurgency to come quickly to an end and has an interest in which side wins. Thus, the characteristics of insurgencies that bear on how they end are of significant interest to policymakers and to strategic and operational planners. NDRI reviewed the literature on insurgency and counterinsurgency and performed a quantitative and qualitative analysis of 89 insurgency case studies. The key findings were as follows: Modern insurgencies last approximately 10 years, and the government's chances of winning may increase slightly over time. Withdrawal of (external) state sponsorship cripples an insurgency and typically leads to its defeat. Governments that are democracies in name only do not often succeed against insurgencies and are rarely successful at fully democratizing. The study also found that insurgencies involving more than two clear parties have longer, more complex endings; governments tend to outlast insurgents, not vice versa; governments are better off without any external support; and insurgencies do better if their organizations are hierarchical, not loosely networked, and if their environments are rural, not urban. The researchers found no "alternative cures" to hurry the process along to a desired conclusion. In nearly all cases examined, only the direct and consistent application of basic counterinsurgency methodology led to favorable endings.<sup>17</sup>

External state sponsorship is correlated with insurgent victory.



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**Sponsor:** *Marine Corps Intelligence Activity*

**Project Leader:** *Ben Connable*

## Whither Al Anbar Province?

Over the past two to three years, Al Anbar transformed from one of the most violent of Iraq's provinces to one of the most hopeful. But can stability be sustained as the U.S. Marine Corps, which played such a role in establishing it, withdraws? What might we expect for the future of Anbar through 2011? During a series of three full-day workshops early in FY09, RAND posed this question to 30 civilian and military analysts and practitioners, nearly all of whom brought considerable experience on Anbar or comparable expertise on Iraq. These structured discussions made use of various analytic tools to develop a set of projections. Notably, it was a set rather than one projection, highlighting the fluidity of the situation there. Five possible scenarios were constructed, falling along a scale from most negative to most positive. In the worst-case scenario, a renewed insurgency pits united Sunnis against the Shia-dominated government in Baghdad. In the best, the Anbari provincial government and the central government work out effective power-sharing, reconciliation, and reconstruction arrangements. Which of the five scenarios (or which combination) comes to pass will depend on the relative strengths of some key drivers, including governmental effectiveness in both Baghdad and Anbar, adequacy of financial flows into the province, and how Anbaris self-identify (as Iraqis first, or along ethnic-sectarian or tribal lines).<sup>18</sup>

**Sponsor:** *Marine Corps Intelligence Activity*

**Project Leader:** *James B. Bruce*

<sup>16</sup> For more information, see *Mullabs, Guards, and Bonyads: An Exploration of Iranian Leadership Dynamics*, David E. Thaler, Alireza Nader, Shahram Chubin, Jerrold D. Green, Charlotte Lynch, and Frederic Wehrey, MG-878-OSD, 2010. Online at <http://www.rand.org/pubs/monographs/MG878/>

<sup>17</sup> For more information, see *How Insurgencies End*, Ben Connable and Martin C. Libicki, MG-965-MCIA, 2010. Online at <http://www.rand.org/pubs/monographs/MG965/>

<sup>18</sup> For more information, see *Whither Al Anbar Province? Five Scenarios Through 2011*, James B. Bruce and Jeffrey Martini, OP-278-MCIA, 2010. Online at [http://www.rand.org/pubs/occasional\\_papers/OP278/](http://www.rand.org/pubs/occasional_papers/OP278/) (As of June 2010)

## *Yemen's Huthi Conflict and Global Terrorism*

- Absorbed by conflict with the Huthi opposition movement, the Yemeni government has been unable to address the political, economic, and security challenges that threaten this increasingly fragile state.
- Ongoing conflict not only threaten's Yemen's stability, it also aggravates regional tensions in the Middle East and creates a safe haven for al-Qa'ida.
- The conflict is, with international support, one of Yemen's most soluble problems.

Yemen suffers from weak security institutions, a failing economy, and political corruption—ailments that facilitate terrorist recruitment and training. Yet the Yemeni government has focused its attention on a war of choice against loosely networked groups of its citizens known as “Huthis” rather than on the most serious threats to Yemen's stability. The United States is increasing aid to Yemen to build up its security and military capabilities, but an NDRI study of the sociocultural, political, and military aspects of the Huthi conflict indicates that additional aid will help only if the Yemeni government changes its priorities.

### **From Tension to Confrontation**

The study traced the conflict to a richly textured combination of physical conditions, sociocultural factors, and government policies. Resources in the north are scarce, the geographic environment harsh, and the population relatively small and scattered across deserts, mountains, and other obstacles to movement. Material survival requires self-sufficiency and fosters identities based on place and kin networks. Consequently, individual autonomy and collective honor (derived from tribalism) have taken precedence over other ideas of law and legitimacy.

To a great extent, the government of Yemen possesses little control over its northern peripheries due to these factors. Its economic, political, and religious policies have, moreover, sown discord among northern Yemenis. Like other Arab states, Yemen has concentrated economic development and social welfare programs in the capital region (see city of Sanaa on the map). Discontent with material conditions grew among northern Yemenis with increased exposure to the wider world in the 1980s. These tensions were aggravated by government measures on the political and religious plane, which galvanized a religious revival in northern Yemen, the historical heartland of the Zaydi branch of Islam.

The Huthis take their name from a northern Yemeni family based in the province of Sa'da whose patriarch is a respected Zaydi religious scholar. In 2001, his son Husayn al-Huthi spearheaded local opposition to President Saleh's support of the United States in the war on terrorism. Husayn incited Zaydis to protest Saleh's actions as un-Islamic, also accusing the regime of targeting Zaydi identity and violating the constitution's guarantees of equality. Saleh sent military forces into tribal lands in 2004 to arrest Husayn al-Huthi, precipitating armed resistance.

The Yemeni government has focused its attention on a war of choice rather than on the most serious threats to Yemen's stability.

Yemeni's Huthi insurgency is based in Sa'da Province.



Subsequent government measures widened the scope of destruction. Since 2004, the regime has launched six large-scale offensives against the Huthis, employing infantry, armor, and aircraft. Casualty estimates exceed 20,000, with as many as 150,000 internally displaced persons spread throughout the country. Many in the north now resent the regime and condone, if not support, Huthi actions.

### Provoking an Organized Insurgency

In February 2010, the Yemeni government and Huthi rebels agreed to a cease-fire. However, the NDRI analysis suggests that, in the absence of a fundamental restructuring of relations between the government and the Huthis, the conflict could persist into the next decade, in one of two forms. In the first scenario, the government confronts a smoldering level of violence in the north, absorbing significant military effort, causing progressive destruction of the local environment, and preventing unfettered access to the region.

In the second, more likely scenario, the Huthis evolve into a more formal organization with more-sophisticated weapons, improved command and control capabilities, and expanded political ambitions. At present, the Huthis' public statements, actions, and capabilities do not suggest a desire or ability to overthrow the Yemeni state. The movement is clearly more primitive than organized insurgencies, such as Hizballah or Hamas. However, the Huthis are able to mobilize support beyond their geographical center and could acquire external support. With additional resources, they could evolve into an organized insurgency. Preoccupied with a progressively contracting economy, lingering southern political dissent, and a resurgent al-Qa'ida threat, the Yemeni government might be unable to stop a more sophisticated Huthi movement from overthrowing the current regime.

### Enmeshing U.S. Allies and Rivals

As long as Yemen is engaged in conflict with the Huthis, it cannot defend its frontiers, increasing the likelihood of terrorism, illicit trade, and weapon smuggling throughout the region. For example, an insecure Yemeni-Saudi border could permit

the reinfiltration of al-Qa'ida in the Arabian Peninsula (AQAP) into Saudi territory, from which it had mostly been eradicated by 2006. Along with alleged movement of Huthi fighters northward, these concerns drew Saudi forces into the conflict in October 2009. Persistent Saudi involvement could tempt regional countries—such as Iran—to meddle in Yemen. Then, the Huthi issue would truly be of primary concern to the United States, enmeshing major U.S. allies and rivals and frustrating efforts to counter terrorism and contain Iran.

### Conflict Abatement: More Carrots Than Sticks

Although the Huthi rebellion is the greatest drain on Yemen's resources, the NDRI study concludes that it is Yemen's most soluble challenge. While Zaydi identity, tribal autonomy, or distaste with government practices have driven some northerners to armed resistance under the "Huthi" banner, they do not have a uniting ideology. The appropriate combination of political engagement, economic inducements, and ceased military actions may thus wean Huthi groups away from opposition to the regime—if the latter were to embrace a genuine political process legitimizing the discontent that evoked Huthi opposition in the first place.

The study's authors emphasize that this problem requires international involvement. They contend that prior efforts at conflict mediation—such as those by Qatar in 2007–2008—failed due to mutual suspicion between protagonists and other regional powers. Since then, Saudi Arabia's involvement in the fighting, as well as the Arab League and Gulf Cooperation Council's support of Saudi and Yemeni operations, render these entities questionable as impartial mediators. They, however, along with the West, will need to locate a credible international partner to mediate dialogue, monitor compliance with any agreements, and catalyze international aid for local reconstruction.



**Barak A. Salmoni**

*Project Leader*

**For more information, see** *Regime and Periphery in Northern Yemen: The Huthi Phenomenon*, Barak A. Salmoni, Bryce Loidolt, and Madeleine Wells, MG-962-DIA, 2010. Online at <http://www.rand.org/pubs/monographs/MG962/>

## *Portfolio Management for Disseminating Intelligence Information*

- Portfolio analysis, and the RAND PortMan tool in particular, is a useful management aid for resource allocation across both research and development (R&D) and operations and maintenance (O&M) portfolios.
- To achieve the highest expected value for a given portfolio, it is important to consider project value (assuming successful implementation), the probability of success, and project cost.
- The Delphi method, as part of the portfolio management process, provides not only a mechanism for generating consensus, but also a forum for senior management to address and discuss areas of disagreement.

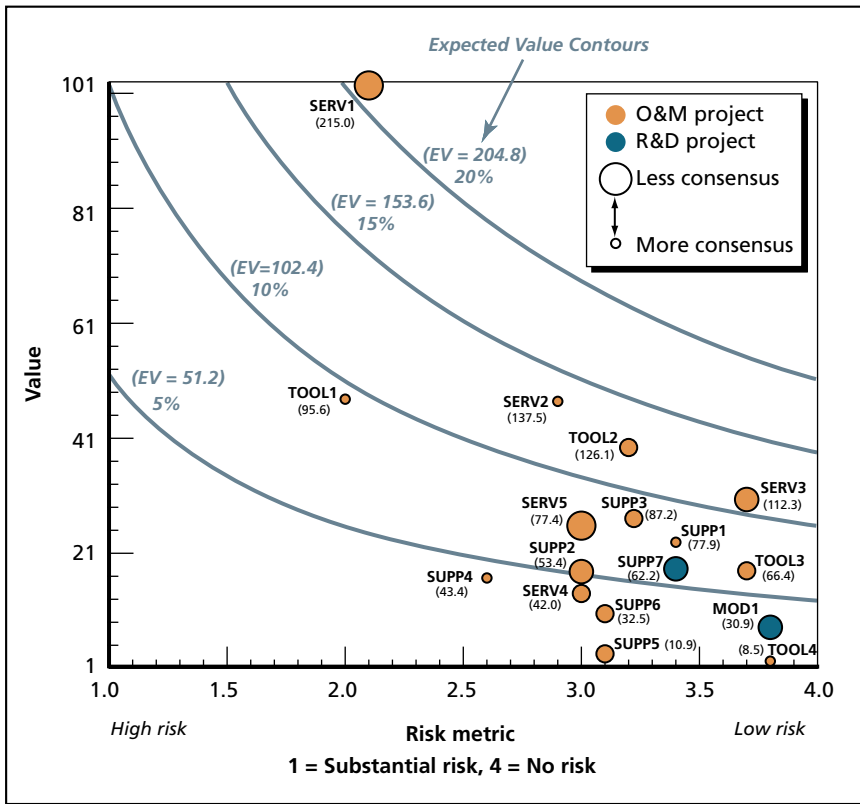
A number of U.S. intelligence agencies have both operational and acquisition responsibilities and thus place a premium on strategic management and decision processes. The RAND Intelligence Policy Center helps those agencies' decisionmakers think through a range of planning and resource trade-off decisions. One tool for doing that is portfolio analysis and management. Portfolio management is a means for assessing the contributions and balance of a collection of projects aimed at achieving a common goal. This is in contrast to assessing individual projects independently and against their own unique set of goals. While specific metrics for assessing contributions and balance vary, they typically fall into one of three general categories: value, risk, or cost.

One of the organizations that RAND has assisted with strategic planning is the National Security Agency (NSA), which, among other things, collects and analyzes signals intelligence. The NSA's Information Sharing Services (ISS) division disseminates information based on that intelligence to NSA stakeholders and customers in the national security community. ISS supports its functions through a portfolio of O&M and R&D projects. When RAND was asked to help ISS with strategic planning, portfolio analysis was judged to be a useful tool for allocating resources across projects so as to provide the best value in enabling signals intelligence products to reach those who need them.

In 2006, RAND performed a pilot study of the applicability of its PortMan analysis tool to ISS's R&D project portfolio. The tool generated project rankings based on explicit value and risk metrics elicited from ISS management. These rankings were significantly different from those obtained using ISS's then-current method, which was based on undocumented, implicit metrics. PortMan produced open, auditable, transparent data that could then be used by program managers and senior decisionmakers to support program-related decisions. As a result of these outcomes, ISS sponsored a broader analysis.

PortMan evaluations are based on estimates of the expected value (EV) of each project, defined as the value realized in the event of successful implementation,

Portfolio management is a means for assessing the contributions and balance of a collection of projects aimed at achieving a common goal.



In a plot of value versus risk, curves of equal expected value can aid risk allocation decisions.

multiplied by the probability of successful implementation. The latter probability is greater if the difficulty or risk associated with implementing an R&D project or sustaining an O&M project is lower.

RAND developed metrics for estimating EV, based on judgments of the important components of value (if successfully implemented or sustained) and risk, elicited from ISS staff and analysis of documents provided by ISS management. To estimate the value and the risk for each project, RAND conducted a Delphi exercise—that is, a systematic consensus-building exercise using subject-matter experts, in this case from ISS’s Senior Leadership Group.

The graph shown here is a plot of value versus risk for all 17 ISS projects ranked as part of the RAND project. O&M projects are shown as orange-filled circles and R&D projects as blue. Value, plotted along the y-axis, is measured as the product of the answers to four value-metric questions derived from the Delphi exercise, each using a 1–4 scale. (The highest value score obtainable is thus  $4 \times 4 \times 4 \times 4 = 256$ , and the lowest is 1.) The risk metric is defined as the answer to the Delphi’s sole risk metric question, where 1 corresponds to the answer *substantial* and 4 to the answer *none*. In the figure, risk decreases (and the probability of successful implementation increases) as one moves from left to right along the x-axis. The size of the circle represents the level of consensus for each project: The smaller the circle, the better the consensus. The EV of each project—that is, the product of value and probability of success—is shown in parentheses next to each dot. The four colored lines are constant EV contours at 5, 10, 15, and 20 percent of the maximum possible EV of 1,024 ( $256 \times 4$ ).

Note that the projects with the highest (SERV1 at 215.0) and fifth-highest (TOOL1 at 95.6) EVs have the highest risk compared with the rest of the portfolio.

The PortMan analysis generated reproducible and auditable data to support programmatic decisionmaking.

Thus, one clear recommendation that can be drawn from the PortMan analysis is to focus resources on risk-mitigation strategies or new R&D programs to support or replace these two projects. The contour lines on the graph also allow ranking of the projects according to EV: The six projects falling below the 5-percent line are candidates for reduction or elimination.

PortMan also allows inclusion of project cost. With ISS-provided FY08 project costs as an input, a linear programming model was used to select a portfolio of projects that would deliver the maximum portfolio EV (defined as the sum of the EVs for all projects selected) for the available budget. Because projects have varying EV-to-cost ratios, this maximum-EV portfolio includes three projects with less than 5 percent of the maximum EV (SUPP6, SERV4, and SUPP4) and excludes a project with greater than 10 percent of the maximum EV (SERV3).

The PortMan analysis proved useful to ISS management in several ways:

- It generated reproducible and auditable data to support programmatic decision-making.
- The Delphi exercise provided the Senior Leadership Group with a venue in which to identify areas of consensus and nonconsensus and to debate the latter.
- It provided data and analysis of EV versus program budget and EV-to-cost ratios for individual projects that can be used by program managers and directors in discussions with supervisors and senior management.

## Eric Landree and Richard Silbergitt

*Project Leaders*

**For more information, see** *A Delicate Balance: Portfolio Analysis and Management for Intelligence Information Dissemination Programs*, Eric Landree, Richard Silbergitt, Brian G. Chow, Lance Sherry, and Michael S. Tseng, MG-939-NSA, 2009. Online at <http://www.rand.org/pubs/monographs/MG939/>



With the formation of the Department of Homeland Security in 2002, the United States began a complex effort to reform the strategy, tactics, and management of securing the nation's borders, its critical infrastructure, and its people. The threats are foreign and domestic, as well as from natural hazards. The department's multiple missions are complex and fraught with uncertainty about the nature of the many possible threats, the benefits to be expected from alternative security strategies, and the management processes that will ensure that security is effective and efficient. Strategic planning for homeland security requires balancing cherished principles of freedom, privacy, and due process with responsible federal, state, and local preventive and protective measures. These are complex, often novel, planning problems requiring integrative and cross-cutting analysis. They raise controversial questions about judgments and priorities, meaning that analyses supporting decisionmaking must be transparent, objective, and grounded in a deep understanding of the technical, operational, policy, and historical context. RAND is uniquely capable and experienced in providing the kind of high-level systematic and independent planning and analysis that the nation requires to ensure that decisions are supported by the best available information.

The Homeland Security and Defense Center conducts analysis to prepare and protect communities and critical infrastructure from natural disasters and terrorism. Its projects examine a wide range of risk management problems, including coastal and border security, emergency preparedness and response, defense support to civil authorities, transportation security, domestic intelligence programs, and technology acquisition.

The center's clients include the Department of Homeland Security (DHS), the Department of Defense, the Department of Justice, and other organizations charged with security and disaster preparedness, response, and recovery. The Homeland Security and Defense Center is a joint center of the RAND National Security Research Division and RAND Infrastructure, Safety, and Environment.



Andrew Morral, *Director  
Homeland Security and Defense  
Center*

## SOME RECENT AND ONGOING PROJECTS

### Alternatives Analysis for the U.S. Coast Guard's Offshore Patrol Cutter

The U.S. Coast Guard is planning to replace its medium-endurance cutters with a new platform termed the Offshore Patrol Cutter (OPC). A major acquisition of the size anticipated for the OPC requires an analysis to identify alternatives that can provide the required capabilities and to measure the cost-effectiveness of those alternatives. This alternatives analysis has been carried out by NDRI. In the first phase, validation, the researchers developed a preliminary definition of the mission scenarios that were most appropriate for evaluating the effectiveness of the alternatives. They also tentatively defined measures of effectiveness and performance. They identified ground rules and assumptions (e.g., operating areas and environments, crewing, patrol duration, aviation support) and reviewed the market analyses completed to date. Finally, they developed a study plan, which was executed in the second, analytic, phase of the project. That began with the selection of 12 alternative OPC designs, including the National Security Cutter, the Littoral Combat Ship, and a notional Offshore Patrol Vessel. The researchers then evaluated the operational effectiveness of the alternatives, developed life-cycle cost estimates for each (from development through operation and support), and evaluated cost-effectiveness. They also conducted a sensitivity analysis of critical input factors (e.g., ship characteristics,

Strategic planning for homeland security requires balancing cherished principles of freedom and privacy with responsible preventive and protective measures.

mission parameters) to show what impact any changes in those factors might have on operational effectiveness. Key features of the ships found to be important for effectiveness were the ability to operate in high sea states, the number of racks for the crew, and capabilities to deploy a manned helicopter.

**Sponsor:** *U.S. Coast Guard*

**Project Leaders:** *Mark V. Arena and Paul DeLuca*

## Measuring the Effectiveness of Border Security

DHS is responsible for securing the land, air, and maritime borders of the United States. Strategic planning is necessary if it is to do so effectively and efficiently. As part of that planning, DHS leadership must define concrete and sensible objectives and measures of success that can be used to assess results along the way, to guide allocation of resources, and to inform programming and budgeting for future capabilities and functions. To support these efforts, the DHS Office of Program Analysis and Evaluation asked RAND for recommendations on strategic-level measures for assessing the effectiveness of border-security efforts and informing program decisions, which inevitably involve trade-offs within and across DHS missions. DHS border-security missions are diverse, but three of them appear to be of special interest to DHS leadership because they are especially problematic: illegal drug control, counterterrorism, and illegal migration. To assess DHS contributions to solving these problems, RAND researchers recommended measuring the performance of three fundamental functions of border-security efforts: interdiction of illegal flows across borders; deterrence of would-be smugglers, criminals, or terrorists from attempting to illegally cross borders; and exploiting networked intelligence. For each of these functions, the researchers described measurement approaches for DHS to consider and early steps that DHS could implement to adopt them. By following these recommendations, DHS and its components will be in a better position to discuss past performance and to provide reasoned justifications for future allocation of resources.

**Sponsor:** *Department of Homeland Security*

**Project Leaders:** *Henry H. Willis and Paul K. Davis*

## Determining the Optimum Mix of Air Assets for the Forest Service

The U.S. Forest Service operates a fleet of firefighting aircraft—rotary- and fixed-wing air tankers—that is aging and in need of replacement. However, the Forest Service has not had a way of quantifying the net benefit of new aircraft. RAND has

undertaken an effort to answer several questions on behalf of the Forest Service: How should the performance of large tankers be evaluated? What is the net present value (NPV) of various air tanker options, and what is the optimal mix of helicopters and fixed-wing air tankers in terms of NPV? How many of each type of aircraft will the Forest Service need over the next decade? The benefit side of the study will employ an innovative break-even analysis based on a linked set of existing models that will furnish information on the frequency, extent, and location of fires. The break-even approach is used to compensate for a lack of research on air tanker effectiveness against large fires. The approach answers a critical question: How much must ground crew productivity be increased—that is, how much suppression and damage costs must be averted—to justify the expense of air tankers?

**Sponsor:** *U.S. Forest Service*

**Project Leader:** *Edward G. Keating*

A U.S. Forest Service air tanker drops fire retardant, Oak Park, California, 2005.



# INTERNATIONAL PROGRAMS

In addition to the five policy research centers described earlier, NSRD houses RAND's International Programs, which facilitates the growth and understanding of RAND's internationally focused research, particularly that funded by sponsors outside DoD and the intelligence community (and often outside the U.S. government). Because this research lies at the intersection of international policy with issues such as transnational trade and investment, education, health care, information technology, and energy and environment, it often involves multiple research units, and International Programs plays a coordinating role. International Programs includes five centers that promote understanding of RAND's work in their areas of concern:

- The RAND Center for Middle East Public Policy, which supports RAND's research efforts on political, social, economic, and technological developments in and around the Middle East with an eye to helping advance the domestic research agenda in those countries. Projects have included a plan for building moderate Muslim networks and, in collaboration with RAND Health, a landmark study on building a successful Palestinian state.
- The RAND Center for Asia Pacific Policy, which has helped researchers address issues such as China's economic transformation, modernizing the North Korean system, science and technology planning in South Korea, and terrorist networks in Southeast Asia.
- The RAND Center for Russia and Eurasia, which facilitates dialogue on political and economic change in that region, particularly through the RAND Business Leaders Forum, an organization of top corporate executives from Russia, the United States, and Western Europe.
- The RAND Frederick S. Pardee Center for Longer Range Global Policy and the Future Human Condition, whose goals are to improve our ability to think about the future from 35 to 200 years out and to develop new methods for analyzing potential long-range, global effects of today's policy options.
- The RAND Center for Global Risk and Security, whose goal is to assist researchers in working toward a better understanding of issues such as the security risks of climate change, the challenges of fragile states, and the security implications of the global economic crisis.



Robin Meili, *Director  
International Programs*

## SOME RECENT AND ONGOING PROJECTS

### Patterns of Influence in World Financial Markets

Traditionally, U.S. financial markets have “led” influences in financial markets elsewhere. Day-to-day movements in world markets have generally originated in U.S. markets. In a project sponsored by RAND trustee emeritus and former Secretary of Defense Harold Brown, RAND researchers sought to answer this question: Have the upheavals of the recent financial crisis changed patterns of influence? This matters because a better understanding of the origins of market fluctuations and disturbances may help in shaping policies to promote stability. While acknowledging that the full consequences of the financial crisis would take years to emerge, RAND researchers reasoned that if they looked closely, they might see changing patterns in the short-term movements of financial indicators. Specifically, they have been seeking to determine whether, since the onset of the crisis, daily movements in world equity prices are more or less likely to originate in the United States. Instead of attempting to determine what caused a market to move, which is difficult, they have been trying to determine when

The Arab-Israeli conflict should be a top national security priority, and significant progress remains possible.

market moves begin and how one market affects others. To do this, they have been tracking equity price movements around the globe, as markets open and close in New York, Tokyo, and London, and statistically testing whether each market's prices are associated with prices in the market opening before it. They are looking not only at the consistency of the relationships, but also at their strengths.

**Sponsor:** *Harold Brown*

**Project Leader:** *C. Richard Neu*

## Strategic Planning in Support of Peace in the Middle East

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In September and October 2008, the RAND Center for Middle East Public Policy conducted a series of exercises. The purpose was to help the new U.S. administration more effectively address the challenges of the Arab-Israeli conflict (and of the Israeli-Palestinian conflict in particular) as a key component of the broader effort to secure stability in the Middle East. The center sought to achieve this objective by drawing on the insights of leading experts and former government officials through a strategic planning exercise that illuminated the following: (1) key security and other challenges in Arab-Israeli (and related Middle East) relationships, (2) derivative linkages and threats to U.S. regional and international security interests, and (3) alternative strategies that the new administration could pursue in addressing the Israeli-Palestinian problem and other regional issues. In May 2009, a subset of participants in the initial exercise reconvened to reassess the results from the 2008 exercises in light of current circumstances in the region. Two dominant sentiments emerged from the deliberations of the highly diverse group of exercise participants based on the hypothetical challenges presented and on the alternative strategies for the region: the extraordinary importance of the Arab-Israeli conflict to achieving long-term stability in the Middle East and the conclusion that the new administration could not put Arab-Israeli peacemaking on the back burner. The May 2009 roundtable discussion unequivocally reaffirmed the broad consensus from the fall 2008 exercises: The Arab-Israeli conflict should be a top national security priority, and significant progress remains possible.<sup>19</sup>

**Sponsor:** *RAND Center for Middle East Public Policy*<sup>20</sup>

**Project Leader:** *Roger C. Molander*

## The Lessons of Mumbai

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To prepare for or counter future terrorist attacks on urban centers, RAND sponsored a study of the assault on Mumbai, India, in November 2008. The study assessed the strategic, operational, and tactical aspects of the assault, as well as the Indian response, and arrived at some key judgments. First, India will continue to face a serious jihadist terrorist threat from Pakistan-based terrorist groups for the foreseeable future. However, this should not obscure the likelihood that the attackers had local assistance. The Mumbai attackers evinced a level of strategic thought—a strategic culture—that makes this foe particularly dangerous. Such terrorists will also continue to demonstrate tactical adaptability, which will challenge the soundness of security measures based on a few familiar threat scenarios. The Indian response to the attack was less than optimal. It suffered from intelligence failure, inadequate counterterrorism training and equipment among the local police, response timing delays, flawed hostage-rescue plans, and poor strategic communication and information management. Given that terrorists seek to maximize the psychological impact of their actions, it can be expected that future attacks will also aim for large-scale casualties at symbolic targets. Iconic institutions that are potential targets must work with local police



The Taj Mahal Hotel burns as Indian soldiers take cover along a sea wall during gun battles between Indian troops and militants in Mumbai, India, November 2008.

and intelligence agencies to receive timely alerts about possible threats. The research team's report received a great deal of attention in the Indian and international media and was highlighted at two international conferences in 2009.<sup>21</sup>

**Sponsor:** *RAND-initiated research*

**Project Leader:** *Angel Rabasa*

## Development of the Kurdistan Region

RAND is helping the Kurdistan Regional Government with four one-year projects with the following purposes:

- Increase the availability and quality of primary health care in the region by designing an innovative, comprehensive approach specifying facilities, staffing and equipment needs, and services to be offered, among other things.
- Improve and expand the education system, particularly in grades 7 through 9, by developing a strategic, practical plan to increase access and quality and by assessing how the region's newly established national examination compares with international standards.
- Increase private-sector employment by assessing the climate for business formation, evaluating opportunities for privatizing government functions, and examining issues related to the transfer of civil-sector employees to the private sector.
- Increase the availability of policy-relevant data by identifying which domains of data are most in need of collection and designing a system for collecting them. The availability of such statistics will help attract foreign investment and improve infrastructure.

**Sponsor:** *Kurdistan Regional Government*

**Project Leaders:** *C. Ross Anthony, Michael Hansen, Krishna B. Kumar, Robin C. Meili, Howard J. Shatz and Georges Vernez*

<sup>19</sup> For more information, see *The Day After . . . in Jerusalem: A Strategic Planning Exercise on the Path to Achieving Peace in the Middle East*, Roger C. Molander, David Aaron, Robert E. Hunter, Martin C. Libicki, Douglas Shontz, and Peter A. Wilson, CF-271-CMEPP, 2009. Online at [http://www.rand.org/pubs/conf\\_proceedings/CF271/](http://www.rand.org/pubs/conf_proceedings/CF271/)

<sup>20</sup> This project was part of RAND's program of self-initiated research, the funding for which is provided by donors and through the independent research and development provisions of RAND's DoD-funded FFRDC contracts.

<sup>21</sup> For more information, see *The Lessons of Mumbai*, Angel Rabasa, Robert D. Blackwill, Peter Chalk, Kim Cragin, C. Christine Fair, Brian A. Jackson, Brian Michael Jenkins, Seth G. Jones, Nathaniel Shestak, and Ashley J. Tellis, OP-249-RC, 2009. Online at [http://www.rand.org/pubs/occasional\\_papers/OP249/](http://www.rand.org/pubs/occasional_papers/OP249/)

## *U.S. Policy in Afghanistan: Basic Questions, Strategic Choices*

- Among experts concerned principally with promoting U.S. national security, there has been and continues to be wide disagreement over what course the United States should follow in Afghanistan.
- Those who have favored a continued large-scale U.S. military presence fear that rapid disengagement of that force would embolden extremists throughout the Middle East.
- Nonetheless, these observers agree on the need for a timely shift in responsibility for the war to the Afghan armed forces.
- A rapid U.S. military drawdown is favored by some experts who continue to believe that a large, sustained presence will be very costly and will achieve little, if anything.

In the period leading up to the President's decision to increase U.S. forces in Afghanistan, there was an intense national debate on the best course to pursue. To contribute to that debate, on October 29, 2009, the RAND Center for Middle East Public Policy (CMEPP) convened a half-day symposium of experts to address assumptions and alternatives for U.S. policy in Afghanistan. Moderated by CMEPP director David Aaron, the symposium began with a keynote address by Zbigniew Brzezinski, chairman of the CMEPP Advisory Board and national security advisor in the Carter administration. Brzezinski laid out some basic strategic guidelines for decisionmaking by the current administration. He began with some *don'ts*, for example, don't withdraw from Afghanistan in the near term, and don't Americanize the war. He followed that with a list of *dos*, e.g., focus on the central objective of denying safe haven to al-Qa'ida, be very sensitive to ethnic diversity when strengthening the central government, rely more on indigenous militias than on a centralized Afghan army, direct troops toward control of cities and roads as the first priority over counterinsurgency operations.

The first of three panels was chaired by Peter David, Washington bureau chief of *The Economist*. The first speaker, Fred Kagan of the American Enterprise Institute, deplored what he saw as a disconnect between the debate over how many more U.S. troops to send and military-technical assessments of how many are needed for the mission. He called attention to the lack of analytic support for alternatives to the options presented by General Stanley McChrystal, commander of coalition forces. Paul Pillar of Georgetown University declared that, while the military is properly focused on stabilizing Afghanistan, the broader goal of the U.S. presence there is to enhance the security of the American people. The question before the President is therefore whether any reduction in the terrorist threat that is likely to be realized by an expanded U.S. presence is worth the costs. Arturo Muñoz of RAND stressed the value of getting civil defense forces, essentially tribal militias, into the fight against the Taliban. Only recently have U.S. political and military leaders been willing even

The RAND Center for Middle East Public Policy convened a symposium of high-level experts to address assumptions and alternatives for U.S. policy in Afghanistan.



Participants in the conference on Afghanistan included Zbigniew Brzezinski, Arturo Muñoz, Brian Jenkins, Steve Coll, Stephen Walt, and Carl Levin

to consider such a notion. Where the local councils are strong, arming the ad hoc, unpaid community police willing to fight the Taliban would not risk “warlordism.”

Chaired by Yochi Dreazen, military correspondent for the *Wall Street Journal*, the four-member second panel began with remarks by Terrence Kelly of RAND. Kelly asserted that success against the Taliban would require three elements: the emergence of an Afghan leader trusted by the populace, enough Afghan soldiers to take the lead in battle, and the end of support for the Taliban by Pakistan and Arab nations. Brian Jenkins, also of RAND, asserted that the administration has to choose between conserving strength for the long run and going for the short-term knockout with a troop surge. The latter increases the pressure for speedy progress and early departure, which helps the Taliban. Steve Coll from the New America Foundation identified the policy goal as defending the constitutional Afghan state, for which he suggested an “ink-spots-plus” approach. The “plus” part—in the countryside—cannot be limited to countering terrorists, or the entire project will collapse; the effort must include political and diplomatic elements. Michael O’Hanlon of the Brookings Institution listed reasons not to support a narrow counterterrorism approach, e.g., it has already been tried and failed, it does not sufficiently protect the intelligence sources on which it relies, it cannot guarantee continued access to drone bases.

The third panel was chaired by Kevin Sullivan, deputy foreign editor at the *Washington Post*. Stephen Walt of Harvard University stressed the need for a cost-benefit analysis of expanding or even continuing a large-scale U.S. military presence. The costs are large in money and lives. The chief benefit or objective, to keep al-Qa’ida from becoming more dangerous, will not be much affected by the outcome of the U.S. effort. Moreover, benefits cannot be achieved without success, and the prerequisites for success are not there. Christopher Preble of the Cato Institute also argued against a military counterinsurgency campaign on a cost-benefit basis. A large-scale open-ended troop presence is counterproductive to counterterrorism objectives and to stabilization of the government. Moreover, the United States cannot convert a tribal society into a modern democracy. James Dobbins of RAND began with three lessons learned in the Clinton administration: Go in massively, provide for public safety, and engage neighboring states. The current administration breaks precedence by retaining experience from the previous one—a point in its favor—but unfortunately is attempting to match a narrow counterterrorism goal with a broad counterinsurgency strategy. Disengagement will probably lead to greater civil war, with attendant suffering by the population.

The conference ended with a pair of talks by Zalmay Khalilzad, former U.S. ambassador to the United Nations, and U.S. Senator Carl Levin. While acknowledging the disappointing results of, and declining public support for, U.S. Afghan

## INTERNATIONAL PROGRAMS

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policy, Ambassador Khalilzad declared that abandoning Afghanistan would encourage extremism throughout the Middle East. An effective strategy would comprise a counterinsurgency approach relying mainly on the Afghan army, which must be strengthened, and that will take time; enhancing the U.S. presence in the interim; bringing pressure to bear on the Pakistanis to stop them from offering sanctuary to violent elements; and benchmarking U.S. assistance to Afghanistan against the Afghan government's performance. Senator Levin worried that if the Taliban controlled large areas, they would afford sanctuary to forces interested in destabilizing Pakistan, a nuclear power. Averting this eventuality calls for a counterinsurgency strategy, but the debate has been overly focused on troop levels. Those are less important than changing the strategy to place greater emphasis on protecting the Afghan population. Despite the U.S. security interest, this is an Afghan war, and the Afghan army must be doubled in size before any substantial U.S. troop increase occurs.

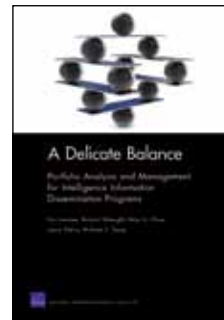
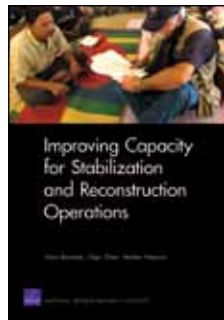
### David Aaron

*Project Leader*

**For more information, see** *U.S. Policy in Iraq: Basic Questions—Strategic Choices*, David Aaron, ed., CF-274-CMEPP, 2009 (videos). Online at [http://www.rand.org/pubs/conf\\_proceedings/CF274/](http://www.rand.org/pubs/conf_proceedings/CF274/)



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Robert A. Levine. OP-243-RPC. Online at [http://www.rand.org/pubs/occasional\\_papers/OP243/](http://www.rand.org/pubs/occasional_papers/OP243/)

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*The Challenge of Domestic Intelligence in a Free Society: A Multidisciplinary Look at the Creation of a U.S. Domestic Counterterrorism Intelligence Agency.* Brian A. Jackson, Agnes Gereben Schaefer, Darcy Noricks, Benjamin W. Goldsmith, Genevieve Lester, Jeremiah Goulka, Michael A. Wermuth, Martin C. Libicki, David R. Howell. MG-804-DHS. Online at <http://www.rand.org/pubs/monographs/MG804/>

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*Data for DoD Manpower Policy Analysis.* Jacob Alex Klerman. TR-486-OSD. Online at [http://www.rand.org/pubs/technical\\_reports/TR486/](http://www.rand.org/pubs/technical_reports/TR486/)

*The Day After . . . in Jerusalem: A Strategic Planning Exercise on the Path to Achieving Peace in the Middle East.* Roger C. Molander, David Aaron, Robert E. Hunter, Martin C. Libicki, Douglas Shontz, Peter A. Wilson. CF-271-CMEPP. Online at [http://www.rand.org/pubs/conf\\_proceedings/CF271/](http://www.rand.org/pubs/conf_proceedings/CF271/)

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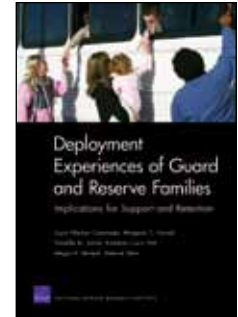
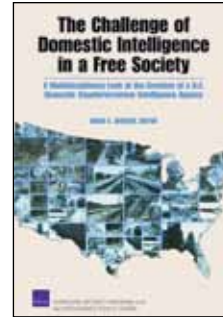
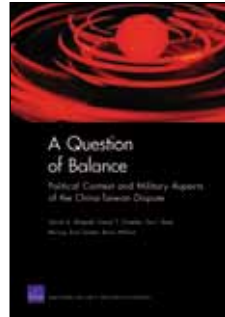
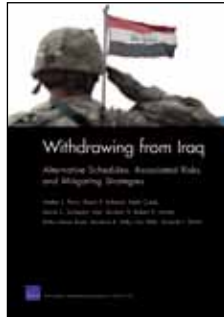
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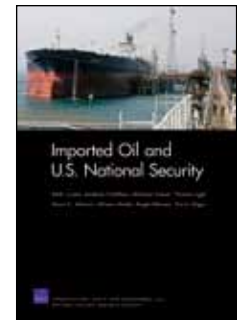
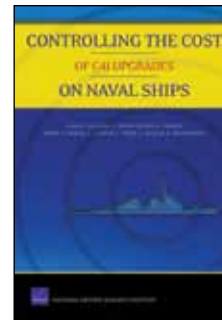
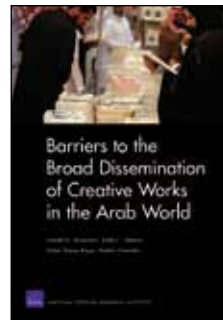
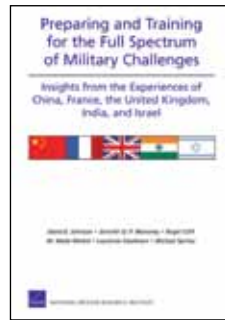
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