

William B. Ruger Chair
of National Security Economics Papers

Economics and Security: Resourcing National Priorities



Social Security Energy Debt Defense Strategy
Health Care Iraq Unemployment
Defense Budget Disaster Relief Military Forces Afghanistan



RUGER WORKSHOP

William B. Ruger Chair Workshop
U.S. Naval War College
Newport, Rhode Island
19–21 May 2010

Number 5

Report Documentation Page

Form Approved
OMB No. 0704-0188

Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

1. REPORT DATE MAY 2010		2. REPORT TYPE		3. DATES COVERED 00-00-2010 to 00-00-2010	
4. TITLE AND SUBTITLE Economics and Security: Resourcing National Priorities				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Naval War College, William B. Ruger Chair of National Security Economics, 686 Cushing Road, Newport, RI, 02841-1207				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

William B. Ruger Chair of National Security Economics Papers

Number 5

Economics and Security: Resourcing National Priorities

Proceedings

A Workshop Sponsored by the
William B. Ruger Chair of National Security Economics
Newport, Rhode Island
19–21 May 2010

Richmond M. Lloyd, editor
William B. Ruger Chair of National Security Economics



Naval War College
Newport, Rhode Island

The Naval War College expresses appreciation to the Naval War College Foundation, through the generosity of the William B. Ruger Chair of National Security Economics, in the preparation and presentation of this workshop.

The views expressed in the William B. Ruger Chair of National Security Economics Papers are those of the authors and do not necessarily reflect the opinions of the Naval War College or the Department of the Navy.

Correspondence concerning the Ruger Papers may be addressed to Richmond M. Lloyd, William B. Ruger Chair of National Security Economics, Naval War College, 686 Cushing Road, Newport, RI 02841-1207; by telephone at 401.841.3669; or by e-mail at richmond.lloyd@usnwc.edu. Our website is <http://www.usnwc.edu/Departments---Colleges/National-Security-Decision-Making/Ruger-Economic-Papers.aspx>.

ISBN 978-1-884733-83-3

Printed in the United States of America

Contents

Introduction	1
Workshop Agenda	3
Executive Summary	7
Opening Remarks	43
<i>Rear Admiral James P. Wisecup, U.S. Navy, President, Naval War College</i>	
Panel I: Economics and Security	45
Economics and Security: The Evolving Global Geopolitical Equilibrium 47	
<i>Dr. Ronald Findlay, Ragnar Nurkse Professor of Economics, Economics Department, Columbia University</i>	
U.S. Security in a Changing Global Economy: The Worst of Both Worlds? 57	
<i>Dr. Mathew J. Burrows, Counselor and Director, Analysis and Production Staff, National Intelligence Council</i>	
Panel I Summary of Discussion 67	
<i>Moderator: Dr. Colin F. Jackson, Professor of Strategy and Policy, Naval War College</i>	
Panel II: Federal Budget—Resourcing National Priorities	71
Addressing the Federal Deficit and Debt 73	
<i>Michael Ettliger, Vice President for Economic Policy, Center for American Progress</i>	
The Way Out of the Fiscal Hole: An Economist Mom’s Perspective 81	
<i>Dr. Diane Lim Rogers, Chief Economist, The Concord Coalition</i>	
Panel II Summary of Discussion 89	
<i>Moderator: Ambassador John A. Cloud, State Department Advisor to President, Naval War College</i>	

Panel III: Quadrennial Defense Review 95

 What the Quadrennial Defense Review Tells Us about Ends and Means. 97
 Dr. Patrick M. Cronin, Senior Advisor and Senior Director, Asia-Pacific Security Program, Center for a New American Security

 QDR 2010: What Exactly Was the Point? 105
 Dr. Kori Schake, Research Fellow, Hoover Institution

 Panel III Summary of Discussion 111
 Moderator: Dr. Thomas G. Mahnken, Jerome E. Levy Chair of Economic Geography and National Security, Naval War College

Panel IV: Defense Budget and Risks 115

 The Dynamics of Defense Budget Growth, 1998–2011 117
 Carl Conetta, Co-director, Project on Defense Alternatives

 The New Guns Versus Butter Debate. 133
 Todd Harrison, Senior Fellow, Defense Budget Studies, Center for Strategic and Budgetary Assessments

 Panel IV Summary of Discussion 145
 Moderator: Professor Sean C. Sullivan, Workshop Administrative Assistant and Associate Professor, National Security Decision Making Department, Naval War College

Panel V: Land and Special Operations Forces 153

 The Future of U.S. Ground and Special Operations Forces: One Proposal. 155
 Dr. T. X. Hammes, Senior Research Fellow, Institute for National Security Studies, National Defense University

 Resourcing America’s Land Forces 167
 Dr. Fredrick W. Kagan, Resident Scholar, American Enterprise Institute

 Panel V Summary of Discussion 177
 Moderator: Dr. Mackubin Thomas Owens, Associate Dean of Academics for Electives and Directed Research,

	<i>and Professor of National Security Affairs, Naval War College</i>	
Panel VI: Air and Maritime Forces		181
American Airpower in the 21st Century: Reconciling Strategic Imperatives with Economic Realities		183
<i>Major General Charles J. Dunlap, Jr., U.S. Air Force</i>		
An Analysis of the Force Structure Implications and Costs of the Navy's Fiscal Year 2011 Shipbuilding Plan		199
<i>Dr. Eric J. Labs, Senior Analyst for Naval Forces and Weapons, Congressional Budget Office</i>		
Programs vs. Resources: Some Options for the Navy		215
<i>Ronald O'Rourke, Specialist in Naval Affairs, Congressional Research Service</i>		
Panel VI Summary of Discussion		227
<i>Moderator: Dr. Thomas R. Fedyszyn, Professor of National Security Affairs, Naval War College</i>		
Panel VII: Strategic Nuclear, Space, and Cyber Forces		233
Investing in Nuclear Weapons		235
<i>Amy F. Woolf, Specialist in Nuclear Weapons Policy, Congressional Research Service</i>		
Economics and Security: Resourcing National Priorities—The U.S. Space Program		245
<i>Ms. Marcia S. Smith, President, Space and Technology Policy Group</i>		
Wringing Deterrence from Cyberwar Capabilities		259
<i>Dr. Michael C. Libicki, Senior Management Scientist, RAND Corporation</i>		
Panel VII Summary of Discussion		273
<i>Moderator: Colonel Dana E. Struckman, U.S. Air Force, National Security Decision Making Department, Naval War College</i>		
Concluding Remarks		277
<i>Dr. Richmond M. Lloyd, William B. Ruger Chair of National Security Economics, Naval War College</i>		
Participant Biographies		279

Introduction

Workshop Focus

The purpose of this workshop is to provide a collegial forum for a small and select group of national security professionals to evaluate and recommend economic and security choices for the future.

Workshop Background

The nation is in the ninth year of war since 9/11. The nation is struggling to recover from the great recession with unemployment at over 10 percent. The proposed Fiscal Year (FY) 2011 federal budget is \$3.8 trillion with a deficit for this year of \$1.6 trillion, about 11 percent of gross domestic product (GDP). While the intent is to reduce deficits over time, on the current course deficits never fall below 3.6 percent and begin turning up again, reaching 4.2 percent by 2020. The national debt climbs from 63.6 percent of GDP in 2010 to 77.2 percent of GDP in 2020. The challenge is to set a path that furthers economic recovery in the short term and sets the stage for sustainable economic growth in the future. The 2010 Quadrennial Defense Review examines Department of Defense strategies and priorities and rebalances strategies, capabilities, and forces. The proposed FY 2011 defense budget is \$549 billion, with an additional \$159 billion for operations primarily in Afghanistan and Iraq. Even given these resource levels, the Department of Defense faces significant strategic and force choices as it attempts to deal with today's conflicts and tomorrow's threats.

This workshop addresses economics and security; the federal budget; resourcing national priorities; the Quadrennial Defense Review; the defense budget and risks; land and special operations forces; air and maritime forces; and strategic nuclear, space, and cyber forces. The primary focus is on economic and security choices for the future.

Workshop Venue

A total of thirty-five individuals participated in this by-invitation-only workshop held at the Naval War College in Newport, Rhode Island. The college and its staff provide a professional environment to facilitate small group workshops in exploring specific issues.

Sixteen panelists prepared and presented papers on topics of their choice within the subject areas of their respective panels. Following a presentation of the papers, all participants engaged in extensive discussion of the papers and of the focus of the panel. All discussions were conducted under a nonattribution policy.

All papers and summaries of working-group discussions (prepared by each panel moderator) are included in this monograph. The monograph is being

widely distributed within the policy and national security communities, and the general public. The monograph is also available electronically at <http://www.usnwc.edu/Departments---Colleges/National-Security-Decision-Making/Ruger-Economic-Papers.aspx>.

William B. Ruger Chair of National Security Economics

The Ruger Chair was established to support research and study in the interrelationships between economics and security. A fundamental premise is that without security it is difficult to have economic prosperity and without prosperity it is difficult to have security.

The intent of this Ruger Chair–sponsored workshop is to support individual research, publication, and a continuing dialogue on matters important to national security economics. It is hoped that research done for this workshop will provide participants with the building blocks for further research and publication.

Agenda

Economics and Security: Resourcing National Priorities

A Workshop Sponsored by the William B. Ruger Chair of National Security Economics Naval War College, Newport, Rhode Island 19–21 May 2010

Wednesday, 19 May 2010

1840 Depart Hotel

1900 Welcome Dinner, Officers' Club, Naval Station Newport

Thursday, 20 May 2010

0730 Depart Hotel

0745 Welcome Breakfast, Decision Support Center

0830 Opening Remarks

*Rear Admiral James P. Wisecup, U.S. Navy, President,
Naval War College*

0845 Panel I: Economics and Security

*Dr. Ronald Findlay, Ragnar Nurkse Professor of
Economics, Economics Department, Columbia University*

*Dr. Mathew J. Burrows, Counselor and Director, Analysis
and Production Staff, National Intelligence Council*

*Moderator: Dr. Colin F. Jackson, Professor of Strategy and
Policy, Naval War College*

1015 Break

1030 Panel II: Federal Budget: Resourcing National Priorities

*Mr. Michael Ettliger, Vice President for Economic Policy,
Center for American Progress*

*Dr. Diane Lim Rogers, Chief Economist, The Concord
Coalition*

*Moderator: Ambassador John A. Cloud, State Department
Advisor to President, Naval War College*

1200 Lunch, RADM Joseph Strasser Dining Room

1330 Panel III: Quadrennial Defense Review

Dr. Patrick M. Cronin, Senior Advisor and Senior Director of the Asia-Pacific Security Program, Center for a New American Security

Dr. Kori Schake, Research Fellow, Hoover Institution

Moderator: Dr. Thomas G. Mahnken, Jerome E. Levy Chair of Economic Geography and National Security, Naval War College

1500 Break

1515 Panel IV: Defense Budget and Risks

Mr. Carl Conetta, Co-director, Project on Defense Alternatives

Mr. Todd Harrison, Senior Fellow, Defense Budget Studies, Center for Strategic and Budgetary Assessments

Moderator: Professor Sean C. Sullivan, Workshop Administrative Assistant and Assistant Professor, National Security Decision Making Department, Naval War College

1645 Adjourn

1650 Return to Hotel

1845 Depart Hotel

1900 Dinner, La Forge Casino Restaurant

Friday, 21 May 2010

0730 Depart Hotel

0745 Breakfast, Decision Support Center

0830 Panel V: Land and Special Operations Forces

Dr. T. X. Hammes, Senior Research Fellow, Institute for National Security Studies, National Defense University

Dr. Frederick W. Kagan, Resident Scholar, American Enterprise Institute

Dr. Christopher J. Lamb, Interim Director and Distinguished Research Fellow, Institute for National Security Studies, National Defense University

Moderator: Dr. Mackubin Thomas Owens, Associate Dean of Academics for Electives and Directed Research, and Professor of National Security Affairs, Naval War College

1000 Break

1015 Panel VI: Air and Maritime Forces

Major General Charles J. Dunlap, Jr., U.S. Air Force

Dr. Eric J. Labs, Senior Analyst for Naval Forces and Weapons, Congressional Budget Office

Mr. Ronald O'Rourke, Specialist in Naval Affairs, Congressional Research Service

Moderator: Dr. Thomas R. Fedyszyn, Professor of National Security Affairs, Naval War College

1145 Lunch, RADM Joseph Strasser Dining Room

1300 Panel VII: Strategic Nuclear, Space, and Cyber Forces

Ms. Amy F. Woolf, Specialist in Nuclear Weapons Policy, Congressional Research Service

Ms. Marcia S. Smith, President, Space and Technology Policy Group

Dr. Michael C. Libicki, Senior Management Scientist, RAND Corporation

Moderator: Colonel Dana E. Struckman, U.S. Air Force, National Security Decision Making Department, Naval War College

1430 Concluding Remarks

Dr. Richmond M. Lloyd, William B. Ruger Chair of National Security Economics, Naval War College

1445 Adjourn

1500 Depart to Airport

Participants:

Mr. David T. Beatson, member, Naval War College Foundation, and Vice President and Chief Technology Officer, Acorn Energy, Inc.

Dr. David T. Burbach, Associate Professor of National Security Affairs, Naval War College

Vice Admiral William R. Burke, U.S. Navy, Deputy Chief of Naval Operations for Fleet Readiness and Logistics, N4, OPNAV

Mr. Seth Cropsey, Senior Fellow, Hudson Institute

Dr. Peter Dombrowski, Chairman, Strategic Research Department, Naval War College

Captain Leo G. Goff, U.S. Navy, Director CNO's Executive Panel, N00K, OPNAV

Rear Admiral Michael A. McDevitt, U.S. Navy (Ret.), Vice President/Director, CNA Strategic Studies, Center for Naval Analyses

Rear Admiral Frank C. Pandolfe, U.S. Navy, Director, Surface Warfare Division, N86, OPNAV

Mr. Andrew Shearer, Director of Studies, Senior Research Fellow, Lowy Institute for International Policy, Australia

Executive Summary

Workshop Purpose and Organization

The purpose of this workshop is to provide a collegial forum for a small and select group of national security professionals to evaluate and recommend economic and security choices for the future.

The nation is in the ninth year of war since 9/11. The nation is struggling to recover from the great recession with unemployment at over 10 percent. The proposed fiscal year (FY) 2011 federal budget is \$3.8 trillion with a deficit for this year of \$1.6 trillion, about 11 percent of gross domestic product (GDP). While the intent is to reduce deficits over time, on the current course deficits never fall below 3.6 percent and begin turning up again, reaching 4.2 percent by 2020. The national debt climbs from 63.6 percent of GDP in 2010 to 77.2 percent of GDP in 2020. The challenge is to set a path that furthers economic recovery in the short term and sets the stage for sustainable economic growth in the future. The 2010 Quadrennial Defense Review examines Department of Defense strategies and priorities and rebalances strategies, capabilities, and forces. The proposed FY 2011 defense budget is \$549 billion, with an additional \$159 billion for operations primarily in Afghanistan and Iraq. Even given these resource levels, the Department of Defense faces significant strategic and force choices as it attempts to deal with today's conflicts and tomorrow's threats. The primary focus of the workshop is on economic and security choices for the future.

A total of thirty-five individuals participated in the workshop. Panelists presented sixteen papers on seven panels: Economics and Security; Federal Budget: Resourcing National Priorities; Quadrennial Defense Review; Defense Budget and Risks; Land and Special Operations Forces; Air and Maritime Forces; and Strategic Nuclear, Space, and Cyber Forces.

This Executive Summary highlights the major ideas presented in each paper and the topics discussed in the follow-on panel discussions. The summary of each paper draws upon extensive verbatim extracts from each author's work with minor paraphrasing and editing.

Panel I: Economics and Security

Economics and Security: The Evolving Global Geopolitical Equilibrium

Dr. Ronald Findlay, Ragnar Nurkse Professor of Economics, Economics Department, Columbia University

U.S. Security in a Changing Global Economy: The Worst of Both Worlds?

Dr. Mathew J. Burrows, Counselor and Director, Analysis and Production Staff, National Intelligence Council

Moderator: Dr. Colin F. Jackson, Professor of Strategy and Policy, Naval War College

Ronald Findlay argues that the present international situation in which the United States is the sole superpower is not a stable one but a stage in the transition to a new bipolar world order with the United States and China as the opposite poles.

His general approach to these geopolitical issues is to relate them to the continuation, and perhaps culmination, of three fundamental long-term trends in world history over the last few hundred years. First is the Industrial Revolution, which originated in Britain around 1800 and has been gradually extending itself subsequently all over the globe, beginning in Western Europe before spreading to North America and other “offshoots,” and which has now reached the two Asian giants of China and India with already notable consequences. Second is the associated switch from what Anthony Wrigley has called the “advanced organic economy” to the “mineral-based energy economy,” or from wind, water, and wood as sources of energy from the surface of the earth to fossil fuels extracted from its interior. Third is the apparent shift in the balance of geopolitical power back to what Halford Mackinder called the “Heartland” of Eurasia, away from the “Rimland” of the maritime powers—first Spain and Portugal, then Great Britain, and lastly the United States. These three trends do not simply run parallel to each other but interact incessantly in myriad ways, without any one of them being solely determinative of the others.

Since the European Union is so closely allied with the United States it is apparent that the two main protagonists of the global competition for power and influence in the coming decades will be the United States and China. Clearly the balance of economic power, as measured by relative total GDP, is going to be moving steadily in China’s favor for a long time to come. Given a rising China, what should be the response of the United States? Findlay argues against the extreme options of passive acquiescence and “preemptive” action to prevent China from rising. He thinks the most appropriate option is to accept the fact that China’s economic rise is inevitable but to actively maintain a system of close economic and looser military alliances with some other Asian and Pacific states that will collectively maintain the balance of power sufficiently in our favor to ensure, rather than merely wish for, continued compliance by China with mutually acceptable rules of the game in international relations. China will of course itself engage with these same states to promote its own interests but the United States should not be deterred on that account. What he envisages is an active promotion of commercial, diplomatic, and military ties particularly with the key nations of Japan, Korea, the Philippines, Indonesia, Malaysia, Singapore, and Vietnam in East and Southeast Asia as well as Australia and New Zealand in the Pacific. He thinks that Burma, Thailand, and Cambodia will be brought closer within the Chinese orbit, while India will undoubtedly follow its own independent course as a regional superpower, but nevertheless having more interests in common with the United States than with China. Russia will of course act independently, but would also wish to contain Chinese expansion and influence in Central Asia, which will work to our advantage.

A key geopolitical question of the present era as he sees it is whether, and if so to what extent, China can turn the geographic advantage of its “oceanic frontage” into genuine “blue water” naval power in the Pacific and Indian Oceans. As a global trading power China now obviously needs a navy to protect its commercial activities and particularly its imports of oil from the Middle East. The Strait of Malacca therefore once again becomes a key global geopolitical “choke point.” The *de facto* “Lord of Melaka” today is of course the U.S. Navy, a fact that the Chinese are obviously well aware of.

The global geopolitical equilibrium that Findlay sees the world evolving toward is a return to bipolarity, but now with the United States and China as the opposite poles. But unlike the era of the “global Cold War” we do not now have a conflict between rival economic systems or models, each one out to destroy or supplant the other. The Chinese wish to preserve their centralized one-party political system but have embraced, and benefited enormously from, the global market economy. They therefore have a joint interest with the United States in seeing that this open trading and financial system continues to flourish without disruptions. Looking ahead to, say, 2030 Findlay thinks the United States will probably still have the largest GDP and defense establishment but China will be close behind in both dimensions, while also having closed the present gaps in scientific and technological capabilities. The world will not have solved the “Hobbesian Problem” by having a single global sovereign but rather by evolving into an untidy but workable sort of *Pax Sino-Americana*, a global geopolitical duopoly in which the two superpowers trade and invest actively with each other as well as with all the other countries of the world to everyone’s advantage, while at the same time keeping a wary eye on each other on land and at sea and in space as well, jointly providing global public goods along with expanded and reformed versions of the World Trade Organization, International Monetary Fund, and a corresponding environmental agency. Each will maintain armed forces proportionate to the increases in GDP that they attain. Both will compete for influence and advantage in Africa and Latin America. Russia, India, and perhaps Brazil also will each vigorously pursue their own interests, navigating between the two leviathans as they best see fit, while the Europeans continue to enjoy the benefits of the welfare state freed from the shackles of a single currency and the Middle East still smolders. Things could, and perhaps even might, be much worse.

Mathew J. Burrows explains why we are headed into an extended period of a decade or more in which the rapidly changing geoeconomic landscape is likely to put an increased security burden on the United States. There is little doubt the United States will remain the preeminent world power for the foreseeable future, but values such as liberal markets, democracy, and free trade—on which U.S. power was established in the post–World War II era—are likely to be under siege. Moreover, potential peer competitors—particularly China—will continue to chip away at the United States’ historic economic and technological edge. The battle for future dominance is likely to be fought over ideas

and innovation—areas of historic U.S. strength—but ones over which we can no longer be as confident of success. Even if there were no state rivals on the horizon, hostile nonstate actors—such as terrorist groups and cyber criminals—would threaten U.S. resources and power. The number and extent of conflicts may increase in the coming years, in part because of contention over growing resource constraints. All of these factors point to a growing burden for the United States as we and the rest of the world transition from a unipolar “moment” to a multipolar world. Over the longer term, however, some of the threats are likely to moderate, and other countries will be better positioned to shoulder more global responsibilities.

Most commentators cite the recent financial crisis as a turning point for U.S. fortunes, with increasing talk about decline or relative decline of the United States’ economic clout. In truth, many of these trends were evident before 2008 and are a function of the globalization that began to pick up steam in the 1990s. In the National Intelligence Council’s *Global Trends* publication in 2004, we talked about a world that would no longer be dominated by the United States and West and in which other norms—brought to bear by the emerging powers—would come to the fore. Democratic governance, for example, has been increasingly challenged in the developing world with the growing success of state capitalists such as China. Corruption—fueled in part by the growth of international organized crime—is aggravating what has been an already difficult operating environment for Western businesses, further undermining good governance in many developing states. The financial crisis has helped to accelerate these long-standing trends, bringing them into greater relief. Current U.S. and European efforts to regain our footing—while China, India, Brazil, and other emerging powers surge ahead—underline what could be an extended period of digging out from the high public and private debt levels existing in the West.

Most economists also believe achieving a new “normal” or stability in the global economy will involve correcting long-standing global imbalances. On the one hand, many economists believe the United States needs to redevelop its high-value export sectors, while China needs to increase consumer demand. This might be harder for China to do than for the United States, which has had more experience in successfully reinventing itself.

Europe and Japan face similar large-scale challenges—ones even more difficult to overcome because of the worsening demographic pictures for both. The large-scale social welfare programs that bought social peace in the post-World War II period no longer appear sustainable. Already decreasing defense budgets in Europe probably will be cut more.

The United States has begun to build strategic partnerships with Brazil, Russia, India, and China (the BRICs), but these partnerships are unlikely to rival our traditional alliances anytime in the foreseeable future. The four countries’ security perspectives vary widely and are different from those of the United States—in part because of the BRICs’ continuing economic development at home, which will remain a key focus for them. The BRICs tend to favor state capitalism and, in the cases of China and Russia, are authoritarian

governments and not democracies, with no clear signs of liberalizing in the foreseeable future.

China has the potential to be a peer competitor across several domains—economic, military, and technological. It is focused on establishing regional sway, which includes a military buildup aimed at preventing any U.S. military interference in a possible China-Taiwan conflict. Its concern over securing access to needed energy in the Persian Gulf appears to be spurring an interest in a blue-water navy. India-China tensions could result from Beijing’s expansion westward in the Indian Ocean.

Over the longer run, the advantage may turn back more in the United States’ favor. Some of the threats are likely to moderate over time. For example, youth bulges in many countries even in parts of Africa and the Middle East will begin to dissipate in the next ten to fifteen years, reducing the risk of some conflicts. The emergence of new economic tigers by 2015—Turkey and some North African countries—could occur where youth bulges mature into “worker bulges.” Unlike many advanced countries, the United States does not have to worry about a declining population, which enhances prospects for continued economic growth. International institutions may also catch up as they reform to better reflect the power shifts and enlarge their focuses to deal with newer challenges. Even as other countries begin to shoulder more global responsibilities, the United States’ international role is likely to remain key with many other rising powers looking to the United States as the “balancer” against competitors in their own regions. Over time, the “state capitalism” used by emerging powers to jump-start rapid development is likely to become a hindrance to growth.

The economic and security challenges facing the United States are largely the result of the multiple transitions—from the emergence of new players to the many simultaneous technological revolutions that are under way. Historically, transitions are treacherous periods. The risks of U.S. overextension are no doubt increasing with so many simultaneous challenges and threats at hand. At the same time, the United States’ continued preeminent position in the world is in part dependent on its success as guardian of an international system that has reaped huge benefits for many. This will be a difficult juggling act for Washington and one in which the United States does not necessarily have a large margin of error.

Topics discussed included the likelihood and consequences of an unanticipated slowdown in Chinese economic growth, the significance of Chinese ownership of U.S. sovereign debt, the role of ideological differences in the relationship between the United States and China, imperial overstretch, and the role of immigration in international competition.

Panel II: Federal Budget: Resourcing National Priorities

Addressing the Federal Deficit and Debt

Mr. Michael Ettliger, Vice President for Economic Policy, Center for American Progress

The Way Out of the Fiscal Hole: An Economist Mom's Perspective
Dr. Diane Lim Rogers, Chief Economist, The Concord Coalition

Moderator: Ambassador John A. Cloud, State Department Advisor to President, Naval War College

Michael Ettlinger states that as the economy recovers from the worst recession since the Great Depression policy makers will be turning to our nation's longer-term challenges. High on that list is the prospect of persistent and large deficits throughout the next decade and beyond. Unless action is taken, by 2019 we will be in the midst of the longest streak of consecutive years with deficits that exceed 4 percent of GDP in the nation's modern history.

The magnitude of the problem is daunting. Current projections suggest that annual deficits will decline from current peaks *down to* levels in the vicinity of 4 percent of GDP by 2014. After that, however, the deficits are expected to begin creeping back up.

These deficits are the result of long-existing structural issues that have been exacerbated by the current economic downturn. Though the impact of the recession has been significant, policies that predate the recession—especially repeated tax cuts and expanded military and domestic spending—have played a very large role in creating the spending and revenue gap that we see today.

The economic consequences of failing to get these deficits down to more reasonable levels could be dramatic. In addition, persistent deficits of such a magnitude will dampen our ability to direct resources to important priorities for future growth and security. Rising deficits mean a rising level of federal debt. If nothing is done, by 2019 the federal debt will be in the vicinity of 87 percent of GDP. That would be the highest level since 1947. Interest payments on our increasing debt are projected to exceed 11 percent of total federal spending by 2013 and top 15 percent by 2019. Those are dollars that would be better spent on a higher public purpose. For all these reasons, there is broad agreement that addressing our long-term deficits must be a priority. The hard part is deciding how.

Staying on our current budget path is dangerous, but trying to reduce the deficit too quickly, too much, or in the wrong way also poses serious risks. With the American economy slowly recovering from the Great Recession, attempts to rein in the deficit must acknowledge the very important role that deficit spending has played and will continue to play in pulling our economy back from the brink. To change the momentum of the economy and to spur continued growth, we still need policies that attack high unemployment—the most persistent legacy of the recession—even if that means higher deficits in the short term. Such efforts will ultimately improve the fiscal situation, with more jobs leading to higher overall tax revenues and lower safety-net spending. What's needed is a balance between deficit spending now to spur the economy and well-considered policies that will bring down the deficits of the future.

Any serious effort begun today should both lay the foundation for future policy responses and start with an honest discussion about our national

priorities. The first step of this process is to define the deficit reduction goals necessary to put us back on the road to fiscal health.

The Obama administration has defined an appropriate middle-term goal of reaching primary balance by 2015. Primary balance is when total federal spending, except interest on the debt, matches total federal revenues. Hitting this target in 2015 would mean an overall deficit of less than three percent of GDP, which will keep the total federal debt, as a share of GDP, stable. In other words, achieving primary balance would stop the fiscal bleeding. In dollar terms, this will require finding budget savings and revenue increases that together total a bit more than \$250 billion.

Though attainable, reducing the deficit by this amount and achieving primary balance is still going to be an extremely difficult task. And the reality is that any successful solution will have to include a mixture of spending cuts and increases in revenue.

To reach primary balance in 2015 solely by reducing federal spending would require a cut of 6.8 percent across the board. Such a widespread cut would have far-reaching consequences for everything from public health to national security. And, of course, it would be bad policy. Cutting everything by the same amount is not likely to produce the optimal use of public resources.

There are, for example, some areas of spending where substantial reductions in the next few years are either unlikely or unwise, such as Social Security, Medicaid, and Medicare. The consequence, however, of exempting some areas of the budget from cuts is that other areas will have to be cut even more deeply to achieve the overall target.

On the flip side, achieving primary balance by 2015 with just increases in revenue and no spending reductions at all is also unlikely. To reach primary balance and reduce the deficit by about \$250 billion by 2015 solely through increased revenues would require a 7.3 percent increase in all federal taxes and fees. That means a 7.3 percent hike in everyone's income tax, gasoline tax, payroll taxes, and all other federal charges.

If no additional revenue is to be raised at all, and certain programs like Social Security, Medicare, and Medicaid are protected from cuts, then the rest of the budget, from defense to education, will have to be cut by about 14 percent.

But the cuts needed to achieve primary balance come down significantly with small increases in revenue. For example:

- With a 2 percent increase in revenues, cuts to the federal budget, exempting Social Security, Medicare, and Medicaid, would have to average 10 percent (instead of 14 percent);
- With a 3 percent increase in revenues, cuts to the federal budget, exempting Social Security, Medicare, and Medicaid, would have to average 8.3 percent;
- With a 4 percent increase in revenues, cuts to the federal budget, exempting Social Security, Medicare, and Medicaid, would have to average 6.2 percent;

- With a 5 percent increase in revenues, cuts to the federal budget, exempting Social Security, Medicare, and Medicaid, would have to average 4.4 percent.

Sometime in the near future, hard choices are going to have to be made. These choices will likely affect major portions of the federal budget and, by extension, every American. Some programs will be cut, and some taxes will be raised. Understanding the interaction between these policy options is a crucial foundation for solving the overall problem.

Diane Lim Rogers states that the federal budget outlook has been an interest of hers since the time she began studying public sector economics in college in the early 1980s, because the growing and unsustainable public debt is a tremendous threat to the strength of the U.S. economy as a whole and well illustrates what can happen when the pursuit of individual self-interest runs contrary to the public good. But her concerns about the budget outlook deepened and became much more personal when she became a mother, when she realized that the burden of this debt—a debt projected to grow to unsustainable levels largely because of benefits promised to the “baby boom” generation—was being unfairly passed along to our kids’ generation.

That is why any parent should be particularly concerned about the budget outlook: it directly undermines all of our personal efforts to provide for our kids and set them on that good path. We contradict ourselves if on the one hand we are saving for our kids’ college educations but on the other hand are clamoring for more deficit-financed tax cuts or benefits for ourselves. Rogers believes most well-meaning parents and grandparents don’t understand this connection, because our leaders have not leveled with us about it. Many policy makers themselves don’t understand it, and even those who do understand still feel that fiscal responsibility is too hard a sell to the American public—because no matter how large the economic benefits of fiscally responsible policies, those benefits seem very diffuse and subtle, while the political costs of fiscally responsible policies (i.e., the risk of getting voted out of office for proposing politically unpopular tax increases or spending cuts) seem very obvious and certain, and indeed very personal to the politicians.

The current federal budget deficit, which represents how fast the *debt* is *growing* this year, is at an unsustainable level at nearly 10 percent of GDP. That is economically unsustainable because the economy typically grows at a rate of just around 3 percent per year—meaning that deficits of around 3 percent of GDP would stabilize the ratio of debt to GDP around its current level of about 60 percent. Fortunately today’s extremely high deficits are not expected to persist beyond the economic recovery; the Congressional Budget Office (CBO) forecasts that deficits under current law will recover to just around 2 to 3 percent of GDP within five years, which would be a sustainable level, at least temporarily. But the fiscal outlook is nevertheless unsustainable for two reasons: (i) in the nearer term (within the ten-year budget window) the Obama administration’s proposed policies lead to deficits in the 4 to 5 percent of GDP range (*greater* than the ballpark 3 percent “sustainable” level); and (ii) even under current law, the longer-term outlook beyond the first ten years shows rapidly

increasing debt as a share of GDP as the pressures of age-related entitlement spending (through demographic change and rising health costs) mount faster than the economy's capacity to pay for it. The Government Accountability Office's (GAO's) long-term fiscal outlook shows that under current law the debt-to-GDP ratio will exceed the historical post-WWII high of 109 percent by the mid 2030s, and under current *policy* extended would exceed this in just ten years (by 2020).

Few economists would dare label a particular level of debt to GDP as the "breaking point," but most economists would say that debt exceeding 100 percent of GDP likely qualifies as "too high" to be sustainable. (Also, about *half* of current debt is held by foreign investors versus virtually none of it post-WWII.)

In order to close the longer-term fiscal gap between spending and revenues, which in a number of analyses is estimated around the order of 10 percent of GDP, entitlement spending will have to be damped down and revenues will have to rise. The "solution" cannot come from the spending side alone, no matter the fact that most of the "cause" comes from rising health costs. Mathematically, given the growing share of the population dependent on programs that support retirees (Medicare and Social Security and to a large extent Medicaid), completely "flatlining" federal spending as a share of GDP (let alone bringing it *down*) would mean cutting many retirees off from these services—including retirees who cannot afford to be cut off. In Rogers's opinion, this cannot be a serious policy option for a compassionate society, and proposals that imply such draconian cuts in these entitlements are simply unrealistic and yet devoid of the details that would expose this flaw.

While health care reform offers the promise of slowing our fastest-growing spending programs, there are more certain and reliable policy levers on the tax side of budget, and we can start to pull them sooner, which would spread any "pain" over a longer period of time so the policy solutions are not so painful or disruptive at any point in time.

One of the easiest things we could do (legislatively) to "pull" the tax policy lever would be to end the Bush tax cuts. Actually, to "pull" this lever means to not do anything, as under current law the 2001 and 2003 tax cuts are scheduled to expire at the end of this calendar year (2010). But because policy makers will not want taxes to go up for middle-class households next year if the economy is still weak, it is more likely that this option would be exercised by only temporarily extending some of the Bush tax cuts.

If the Bush tax cuts were allowed to expire at *any* point over the next ten years, this would be contrary to what President Obama has proposed in his own budget, in which he calls for the permanent and *deficit-financed* extension of the bulk of the Bush tax cuts—over \$2 trillion worth over ten years. President Obama has repeatedly blamed the fiscal irresponsibility of the Bush tax cuts for the dismal fiscal outlook he inherited, and yet he proposes to extend them as the single most expensive proposal in his own budget, and he will have to sign a new piece of legislation to do so—effectively turning them into the "Obama tax cuts."

President Obama painted himself into this corner on tax policy, however, from the first time he uttered his campaign promise *not* to raise taxes on any

households with incomes under \$250,000, and from the first time he heard those in his own party say they didn't want to face any more accusations of proposing the "largest tax increase in American history." To keep this promise is to eliminate any hope of raising the badly needed additional revenue in an efficient way, through base-broadening income tax reform or the consideration of new, more socially efficient tax bases.

Letting the Bush tax cuts expire as scheduled without enacting any new tax policy would mean going back to Clinton-era tax policy, with a top marginal rate of 39.6 percent, which is far below the level that economists would consider detrimental to economic growth, and the CBO current-law baseline shows that letting current law happen like this would keep deficits in the economically sustainable range.

As an economist and a mom, Rogers believes that getting our nation back on a fiscally sustainable path is one of the most important ways we can ensure a bright future for our kids. To encourage this, fiscal policy experts need to do more than present the numbers and charts that warn of a scary but hypothetical future for the U.S. economy as a whole. We need to bring the issue down to the level of the family in order to make it immediately relevant to people right now. We need to remind parents that as they are working hard every day to provide for their kids, they need to demand that their politicians do the same for all our kids. Public education and engagement are crucial to not just sound an alarm but *create a movement* to promote fiscal responsibility as a duty to our kids and grandkids and make the "crisis" salient *now*.

Topics discussed included consideration of the U.S. budget problem as more a political problem than an economic one; whether President Obama's Budget Commission would reach consensus and, if so, whether such a consensus could make it through Congress; the freezing of nondefense discretionary funding; entitlement programs and budgets; the immediacy of the budget issue; and the effect of the overall budget situation on the defense budget.

Panel III: Quadrennial Defense Review

What the Quadrennial Defense Review Tells Us about Ends and Means
Dr. Patrick M. Cronin, Senior Advisor and Asia-Pacific Security Program Senior Director, Center for a New American Security

QDR 2010: What Exactly Was the Point?
Dr. Kori Schake, Research Fellow, Hoover Institution

Moderator: Dr. Thomas G. Mahnken, Jerome E. Levy Chair of Economic Geography and National Security, Naval War College

Patrick M. Cronin states that the Quadrennial Defense Review (QDR) represents one of the most comprehensive assessments of ends and means, of national security priorities and resources, within the U.S. Department of Defense and the entire U.S. government. Countless officials spent countless hours in countless meetings to compile, analyze, and synthesize their deliberations and

judgments. A deliberate process based on best practices of defense planning undergirded the effort. The result is an important document that simultaneously rationalizes what is being done and argues what should be done with respect to the world's largest defense budget. Thus, the roughly one-hundred-page *Quadrennial Defense Review Report* issued in February 2010 represents the most thorough and tested of assessments. The general trajectory of U.S. defense forces and the guiding philosophy behind them are well articulated in this keystone report. Cronin briefly addresses some of the key findings of the QDR report. But he also raises some questions that point to the document's inherent limits as a clear-cut guide for force planning, budget priorities, and defense strategy.

The 2010 Quadrennial Defense Review assesses the future of defense strategy and the armed forces, as well as the institutions and processes that support them. According to the QDR, the fundamental objective of U.S. defense strategy is "to further rebalance the capabilities of America's Armed Forces to prevail in today's wars, while building the capabilities needed to deal with future threats."

A first observation is that the 2010 *Quadrennial Defense Review Report* somewhat overreaches by claiming to be a "strategy driven" document. To be sure, officials overseeing the report were steeped in contingency plans and various military strategy discussions. But the fact that the QDR preceded by three months the publication of the *National Security Strategy* (and even this really is more a document of general strategic direction rather than a careful discussion of ends and means) is suggestive of a more general document than a strategy.

A closely related second observation is that even if the 2010 Quadrennial Defense Review is strategy driven, it falls short of making the case that the planned force structure alone is even financially sustainable. Thus, ends and means are not really tightly interwoven. Secretary Gates chose to deliver his most searing critique on both excessive defense spending and the need to live within increasingly constrained resources months after the QDR had been published. And the subsequent assessment of defense spending in a period of record deficits, in turn, suggests that perhaps the forces planned for in this report were the beginning of a resource debate rather than the answer to one. The generalizations about force sizing made on pages 41–45 of the document offer a conceptual framework but not much more than that for making difficult choices about force structure. In short, the QDR may be an essential planning document for structure, but it is by no means a comprehensive solution to the pressing trade-offs that must continue to be made every year.

A third critical observation that can be made about the 2010 Quadrennial Defense Review is that it makes a policy judgment about the requirement to prevail in Afghanistan and Iraq, but never even attempts to explain how to achieve the ambitious goals of doing so.

A fourth question that a critical analysis might ask of the QDR is to what extent it fully appreciates the difficulty of building the capacity of allies and partners. This expression of helping others to share the burdens of security, whether with respect to preserving assured access to the global commons, stabilizing Afghanistan and countering transnational terrorism, or deterring nuclear

proliferators, is more of an aspiration than a plan. Clearly, further analysis of the opportunities and limitations of strengthening security alliances and partnerships and delivering security assistance is required beyond the general identification of the need.

A fifth point in the QDR that invites further scrutiny concerns preventing and deterring conflict. The authors are to be commended for finally recognizing the comprehensive set of policy instruments—from development and diplomacy to military forces and strategic communications—that can contribute to these objectives. At the same time, the document fails to go much beyond this recognition and the general call for greater capacity for whole-of-government approaches and conflict prevention. We can talk about the need for defense, diplomacy, and development to work together, but the reality is that these so-called three Ds seldom seem to achieve a unity of effort needed to succeed in difficult situations.

A sixth criticism that can be directed at the 2010 Quadrennial Defense Review is that it points to a complex and uncertain future, ticks off a laundry list of threats and challenges, but does little to indicate priorities among them. Without such an assignation of risk and priority, a discussion on force structure and resources becomes moot.

These six questions do not detract from what may be the best QDR ever produced. However, they might help a critical reader begin to ask deeper questions about both what the document says and what it omits. While Department of Defense leaders never claimed to be crafting a single volume that would address all strategy and detailed defense plans, the level of effort expended cannot help but inflate expectations about what might be included. As future defense leaders contemplate the next Quadrennial Defense Review, they may want to bear the outcome in mind when deciding how much money and effort to put into the 2014 report.

Kori Schake states that one needn't go so far as Anthony Cordesman, who dismisses the entire QDR undertaking as “one of the most pointless and destructive exercises imaginable” to be left questioning the value of this most recent Quadrennial Defense Review. Secretary Gates published a national defense strategy in 2008 (reprinted in a January 2009 *Foreign Affairs* article) that stated his fundamental view on the need to “rebalance” U.S. military forces; this QDR shows no significant departures from that construct. So if developing a conceptual framework for thinking about defense policy were the point of the QDR undertaking, the secretary could have saved the Department of Defense (DoD) time and effort by minimizing the resources committed.

Statutorily, “the QDR results are intended to guide the services in making resource allocation decisions when developing future budgets.” It is a budget document. The Government Accountability Office concludes that “of the 17 required reporting items, DOD addressed 6, partially addressed 7, and did not directly address 4.” Strictly speaking, this QDR is nonresponsive to the questions it is required by law to answer to Congress.

The 2010 QDR fails at its crucial purpose of providing a robust strategy and corresponding defense program to minimize congressional cuts in important

areas or unwanted plus-ups in others. Moreover, it depends for success on an external condition—"whole-of-government operations"—that has proven unattainable.

The Gates strategy is a paean to "balance," but it set a course for the QDR strongly weighted toward counterinsurgency. In judging that "the most likely catastrophic threats to the U.S. homeland . . . are more likely to emanate from failing states than from aggressor states," he has set in motion a substantial revision to American defense strategy that goes much further than institutionalizing counterinsurgency warfare capabilities or wrestling with the means of fighting and winning hybrid wars.

Secretary Gates's signature contribution to the debate on defense during his tenure has been a belief that the force planning and programming apparatus of the Pentagon produce high-end capabilities at the expense of those forces and equipment necessary to win the wars we are actually fighting. He believes U.S. forces should be "rebalanced" and his own role to be crafting "a budget . . . to reshape the priorities of America's defense establishment. If approved, these recommendations will profoundly reform how this department does business." So it matters whether Secretary Gates has the right approach to restructuring. In Schake's judgment, he does not.

The Obama administration established a hard timeline for ending operations in Iraq. Vice President Biden's proposal for a "counterterrorism strategy" (by which he evidently means standoff strikes on terrorists with no effort to positively shape the political or economic environment fostering terrorism) received serious consideration as an alternative to counterinsurgency for prosecuting the war in Afghanistan. Even as the president announced his plus-up on forces for the war in Afghanistan, he emphasized they would be drawn down after eighteen months. The White House has several times subsequently reiterated the fixed drawdown timeline when Secretaries Clinton and Gates attempted to suggest it was contingent on events in Afghanistan. Given this political context of an administration committed to drawing to a close the counterinsurgencies we are fighting, and no evidence of leadership support for managing emergent campaigns (like those in Yemen and Somalia) with the same large-scale U.S. involvement, it would appear Secretary Gates is institutionalizing counterinsurgency as the major driver in force structure just as we cease to fight these kinds of war.

Moreover, optimizing U.S. forces to counterinsurgencies carries the opportunity cost of too little effort to address fundamental vulnerabilities in our forces that any thinking adversary would exploit—to mention just two examples, disruption of our operations by cyber attack and the inadequacy of our satellite constellation to meet the growing demands by operational forces. It would not require a "peer competitor" to drastically impede our military effectiveness by capitalizing on these weaknesses. If there is one overriding lesson an adversary should have learned from the war in Iraq, it is not to allow the U.S. military time to adapt. And unlike low-end conflicts, high-end challenges like these do not permit the luxury of time.

This QDR contains much of the usual nonsense that cloaks discussions of strategy, statements like the need for "shaping a system no longer defined," and

the importance of our “civilian expeditionary workforce.” These are occupational hazards in Pentagon documents. However, even the language designed to identify priorities makes doing so difficult. The QDR identifies four objectives: (1) prevailing in today’s wars, (2) preventing and deterring conflict, (3) preparing to defeat adversaries in a wide range of contingencies, and (4) preserving the all-volunteer force.

In describing the third objective, the QDR states that “our deterrent remains grounded in land, air, and naval forces capable of fighting limited and large-scale conflicts in environments where anti-access weaponry and tactics are used, as well as forces prepared to respond to the full range of challenges posed by state and non-state groups.” What force sizing and structuring direction does that provide? None. Where do those objectives come into conflict and how should programmers resolve those conflicts? Hard to say; the QDR provides no means to determine which objective merits funding first, or deconflicting contrary funding streams.

Secretary Gates has said that “strategy and risk assessment should drive procurement.” In fact, he has produced an unaffordable defense program without a strategy to guide budget reductions. He is cutting programs on managerial grounds—whether or not they are being run well and keeping to cost projections—rather than their importance to a cohesive whole.

Topics discussed included the continuity between the 2008 *National Defense Strategy* and the 2010 *Quadrennial Defense Review*; the completion of the QDR before the administration’s *National Security Strategy*; implications of the QDR for American interests in Asia; failure to link objectives to force structure priorities; and the lack of a force-sizing construct.

Panel IV: Defense Budget and Risks

The Dynamics of Defense Budget Growth, 1998–2011

Mr. Carl Conetta, Co-director, Project on Defense Alternatives

The New Guns-versus-Butter Debate

Mr. Todd Harrison, Senior Fellow, Defense Budget Studies, Center for Strategic and Budgetary Assessments

Moderator: Professor Sean C. Sullivan, Workshop Administrative Assistant and Assistant Professor, National Security Decision Making Department, Naval War College

Carl Conetta states that the rise in U.S. defense spending since 1998 has no precedent in all the years since the Korean War. The Department of Defense budget reached its post–Cold War ebb in 1998: \$361.5 billion (2011 U.S. dollars). Since then it has rebounded to \$708 billion—a 96 percent increase. The portion of the 2011 budget request that is unrelated to contingency operations (the so-called base budget) is \$549 billion, which is 54 percent higher in real terms than in 1998.

Whether one looks at the total DoD budget, or just that portion not attributable to today's wars, U.S. defense spending is now stabilizing at levels significantly above Cold War peaks (adjusted for inflation) and far above the Cold War average, in real terms.

As this is occurring, the United States has entered a period of acute economic uncertainty, marked by increasing demands and constraints on federal resources. Largely as a result of the 2008–2010 financial crisis and recession, gross federal debt will surpass 100 percent of GDP in 2011 and is projected to remain above the 100 percent threshold for much longer.

If the run-up to the 2010 midterm elections is any indication, the United States may be facing a “perfect political storm” of fiscal constraint as the electoral fates of its political leaders increasingly hinge on their stances regarding deficit reduction. As surely as some will target nondefense spending as a source of savings, others will look to DoD's budget, which, after all, has accounted for almost 65 percent of the rise in discretionary spending since 2001.

In this context, it is useful to look more closely at the recent dynamics of defense budget growth. These should provide clues relevant to containing or reversing that growth.

The most ready explanation for the post-1998 spending surge is that it is due largely to post-9/11 military operations. In fact, these operations account for just 22 percent of the 2011 budget request and about 52 percent of the total increase in expenditures since 2001. Moreover, the wars themselves have been exceptionally expensive by historical standards. Measured in 2010 dollars, the Korean conflict cost \$393,000 per person/year invested; the Vietnam conflict cost \$256,000; and the Iraq and Afghanistan commitments, \$792,000 so far. Rather than adequately explain the post-1998 spending surge, the high cost of recent military operations only adds to the explanatory burden.

Some insight into current cost drivers can be gleaned by comparing the recent surge in spending with two lesser ones that preceded it: the 1958–1968 surge of 43 percent and the 1975–1985 surge of 57 percent. The first of these involved the conduct of the Vietnam War (which was the principal cost driver) and an effort to expand and transform the force. The second surge emphasized recapitalization and a modest increase in force size. Notably, the percentage rise in spending between 1998 and 2008 was nearly as great as both of these previous two surges combined. And this comparison illuminates one factor that distinguishes the recent surge: it reflects the combined effect of a major war effort and a major effort at force recapitalization.

A second contributing factor, especially pertinent to the high cost of operations in Iraq and Afghanistan, is that America's armed forces are ill suited to fighting very large-scale and protracted counterinsurgency campaigns. In a sense, we have been attempting to fight “Mr. Johnson's war” using “Mr. Reagan's military”:

- Given the voluntary basis of today's armed services, long labor-intensive wars drive personnel costs sharply upward, as DoD must bid higher and higher to recruit and retain personnel.

- Today's wars also are unique in their high degree of dependence on contract labor. This is partly because the troop deployments are not large enough to do what we have attempted in Iraq and Afghanistan. This means that today's wars are relatively larger than they seem.
- Finally, much of the modernization spending over the past ten years has been irrelevant to counterinsurgency operations. Thus the wars required their own wave of equipment acquisition and modification—which national leadership has chosen to implement concurrently with other, previously planned modernization.

This quick survey of recent budget dynamics should be sufficient to illustrate that there is more to the recent spurt in defense spending than some immutable growth factor or constant. And simply pointing to the wars as a reason for cost growth barely scratches the surface. Instead, a variety of policy decisions and choices have led us to our current circumstance. Conetta takes a closer look at how DoD has allocated funds and how this allocation has changed over time.

Given our review of the recent dynamics of defense spending, several guidelines for budget reduction seem clear:

- *First*, greater restraint in committing ourselves to large-scale protracted counterinsurgency campaigns is key.
- *Second*, military modernization efforts have suffered from weak prioritization and poor integration. Partly, this reflects the decentralized nature of our acquisition process, in which, as a former U.S. comptroller general puts it, “[c]apabilities and requirements are based primarily on individual service wants versus collective defense needs.” The remedy is a much greater emphasis on joint planning and much stronger leadership from the center in *compelling* a more integrated and adaptive approach.
- *Third*, we need to reboot efforts to streamline service structures and functions. During the 1990s, reformers sought to trim redundancy in service missions, adopt much leaner command structures, and consolidate many of the individual services' support programs. The shortfall in achieving these goals deserves more than a shrug. Instead, an abiding and energetic recommitment to these ends should become a prerequisite for assuming major command responsibilities.
- *Finally*, the growth in the DoD workforce and in Operations and Maintenance expenditures does not simply reflect a decrement in efficiency. It also—and, perhaps, mostly—reflects an increment in activity and capability. Similarly with regard to cost growth in acquisition: the F-35 Lightning costs four times as much as a first-iteration F-16 partly because it is much more capable. This points to the fact that, while we precisely measure the budget *inputs* to our force development system, we only exceptionally measure its real *output*—

which is not numbers of platforms and personnel but, instead, levels of activity and power.

If today's armed forces are more costly than their 1989 precursors, despite being smaller, they also are more active and much more capable, unit for unit. The real question that circumstances may now force upon us is this: How much of our mounting power and activity is truly essential to our nation's security? And at what point does this power and activity cross the threshold of diminishing returns? We will not find an answer by fixating on end strength or numbers of air wings, brigades, and ships.

Todd Harrison explains that in the recently released fiscal year 2011 budget request, the administration proposed a freeze in non-security-related discretionary spending. While the base defense budget was one of the few discretionary accounts to receive a real increase, the rate of growth in defense spending slowed by half compared to the average rate of growth seen over the previous decade. The defense budget may have avoided a cut for the time being, but as Congress and the administration focus more attention on deficit reduction in the coming years, it will likely put downward pressure on everything in the budget, including defense spending.

Within the defense budget, a debate has been developing for some time between funding the personnel-related areas of the defense budget, such as pay, pensions, health care, and other benefits, and investing in the equipment-related areas of the budget, such as research and development and procurement. Over the past decade, overall growth in the base defense budget has allowed the Department of Defense to support increases in both people and equipment costs without having to choose between the two. However, as the fiscal situation of the federal government continues to deteriorate in the coming years, sustained growth in the defense budget is unlikely. When the defense budget ceases to grow above the rate of inflation, the department will have to make difficult choices between competing priorities, such as personnel and equipment. This is the new guns-versus-butter debate—a choice between taking care of the people who serve or the equipment they need to fight and prevail in current and future conflicts.

The guns-versus-butter debate has been a recurring theme in previous periods of fiscal austerity. The traditional argument is that a dollar spent on defense is a dollar not available for domestic programs. This is not true during periods of relative prosperity, since both defense and domestic spending can rise simultaneously, funded by increasing revenues or borrowing. But in times like the present, when the deficit and debt have reached historic highs and spending is under increased scrutiny, the battle over the budget quickly becomes a zero-sum game. In recent history, the guns-versus-butter debate has arisen during periods of economic and military transition: the end of the Cold War and the peace dividend of the early 1990s; the Vietnam War and the Great Society of the 1960s; and World War II and the New Deal. The current budget debate, however, does not fit the traditional guns-versus-butter model in several distinct ways.

First, it does not come at a time of rapid military buildup or during a drawdown at the end of a conflict—times when one would expect a significant increase or decrease in defense spending. The size of the military has remained relatively flat over the past decade, between about 1.4 and 1.5 million in end strength, with recent increases in the size of the Army and the Marine Corps largely offset by cuts in the size of the Air Force and Navy. And with the military still engaged in two ongoing wars, one of which may have yet to reach its peak in intensity, significantly reducing the size of the military to rein in costs is not a viable option. In short, this is not a time of rapid buildup or drawdown in the size of the military.

Second, the current situation also differs from the traditional guns-versus-butter model because the increase in the defense budget over the past decade has not mirrored previous military buildups. Unlike during the Cold War, the recent rise in defense spending arguably produced a “hollow” buildup because it did not result in the procurement of large quantities of equipment. In fact, the inventory of military equipment has become older and smaller due to the lagging pace of procurement. The increased cost of defense over the past decade is attributable to other factors, including the wars in Iraq and Afghanistan, rising personnel-related costs, and cost overruns in military acquisition programs. Cutting procurement is therefore not an easy way to rein in the defense budget, as it was at the end of the Cold War, because procurement now makes up a smaller proportion of the defense budget and many critical systems are nearing the end of their service lives and need replacement or upgrade.

For these reasons, the current debate is less a question of whether to spend federal dollars on defense or on other domestic programs, although this is surely a contributing factor in the discussion. Rather, the new guns-versus-butter debate is about how to spend dollars within the defense budget. It is a question of funding the “butter” items within the budget, such as pay, pensions, health care, and other personnel-related costs, or funding the “gun” items in the budget, such as new weapon systems, research and development, and ongoing military operations.

The new guns-versus-butter debate is also an intergenerational struggle—a question of providing benefits for those who served in the past or funding the equipment and training needed for those who will fight tomorrow’s wars. In a constrained budget environment, every dollar going to pay for health care, pensions, and other retiree benefits is a dollar not available to ensure tomorrow’s troops are the best equipped and trained military force in the world.

Topics discussed included the impact that transformation and defense reform had on rising per person costs, factors affecting personnel cost, potential problems with the use of contractors, and how much should be spent on defense.

Panel V: Land and Special Operations Forces

The Future of U.S. Ground and Special Operations Forces: One Proposal

Dr. T. X. Hammes, Senior Research Fellow, Institute for National Security Studies, National Defense University

Resourcing America's Land Forces

Dr. Frederick W. Kagan, Resident Scholar, American Enterprise Institute

*Dr. Christopher J. Lamb, Interim Director and Distinguished Research Fellow, Institute for National Security Studies, National Defense University**

Moderator: Dr. Mackubin Thomas Owens, Associate Dean of Academics for Electives and Directed Research, and Professor of National Security Affairs, Naval War College

T. X. Hammes explains that unfortunately, in a conference on resourcing, one has to divvy up the topics in a way the bureaucracy is organized. Thus this panel has been given the topic of land and special operations forces. And, like the force structure folks in the Pentagon, Hammes will propose a structure for ground forces without the benefit of knowing precisely what joint forces are available to support them. This is clearly a disconnect. We employ jointly in a cooperative environment but resource separately in a competitive environment.

Compounding the difficulty of thinking about future ground and special operations forces is the increasingly sharp debate over the future of conflict. Those labeled “COINdinistas” see future conflicts as driven primarily by nonstate actors and thus would optimize joint forces accordingly. In contrast, the conventional or “big war” proponents rail that U.S. ground forces have lost their capability to conduct major combat. They see the primary requirement as being to return U.S. ground and special operations forces to readiness for major conventional combat.

Hammes thinks both positions are too simple. War is inherently interactive and therefore, like all wicked problems, changes based on the actions of the participants. Secretary Gates provided a much more accurate view of the future, noting that “conflict most likely will range across a broad spectrum of operations and lethality. Where even near-peer competitors will use irregular or asymmetric tactics and non-state actors may have weapons of mass destruction or sophisticated missiles.”

Prior to making recommendations, it is essential to outline the strategic setting, the potential threats, and the assumptions upon which recommendations are based.

Even with our involvement in Afghanistan, in Iraq, and against terror organizations, America is essentially enjoying a strategic pause—the period before the emergence of a new peer competitor. This pause will continue for at least

* A paper by Dr. Christopher Lamb is not included in this volume due to publication restrictions.

another decade. Thus, despite the costs imposed by the current conflict, we have the luxury of time to shape our future forces.

At present, China is the only nation that has the potential to qualify as a near-peer competitor. However, as the Pentagon's own documents note, China will not be capable of projecting power in a significant fashion for at least a decade, and probably longer. Further, economic power is the basis of military power and China's gross domestic product will not match that of the United States until around 2040. And even when that happens, China will have to provide for a population that has a higher median age, is aging much more rapidly, and is more than three times that of the United States. Further, as a nation-state that is heavily reliant on international trade, many of China's security interests—such as the continued flow of raw materials, the maintenance of stable international markets, and the suppression of terrorist activities—call for cooperating with the United States rather than alienating it. Secretary Gates's 2008 *National Defense Strategy* recognizes this fact and encourages engagement with China. Those who think we should be prepared to fight China should explain where, when, and, most important, why we would do so. And of course, China's nuclear arsenal means that "how" will be a very sensitive question.

Two other nations are often highlighted as potential threats that require America to maintain major conventional forces—Russia and Iran. While Russia retains a powerful nuclear capability, it faces many strategic challenges. Its conventional forces have atrophied greatly, and due to the disintegration of the Soviet Union, its forces now have to start from locations 900 miles east of their Cold War bases in Germany. Further, Russia's population is declining at a rate of over 900,000 per year, and the country is slowly losing control of its far east to Chinese illegal immigration. Russia continues to face major problems in the Caucasus. Should Russia choose to rebuild its forces for significant extraterritorial operations, the buildup will require a major, visible effort over a significant period of time. Therefore, Russia's primary leverage remains its nuclear arsenal.

For its part, Iran can undoubtedly close the Strait of Hormuz. It would require a major effort to reopen. However, such an offensive action would both choke Iran's economy and unify most of the developed world against it in an effort to restore the flow of energy.

It's crucial that U.S. political leaders use this strategic pause to adapt our national security strategy, doctrines, and forces to the new realities. This should include the establishment of a joint force that is flexible enough to confront the broad range of twenty-first-century conventional and unconventional threats—whether those threats come from rival nations, nonstate entities, or hybrid enemies. It is only in the context of this joint force that we can consider the future of ground and special operations forces.

We squandered the first seventeen years of our post-Cold War strategic pause by pursuing expensive weapons designed to fight the Soviet Union—even though that threat no longer existed. It is essential that we use the remaining interval to think about whom we will fight, where we will fight, and how war

will change as a result. Only by considering such questions can we determine what kind of force we will need in the event of such a conflict.

Regardless of the future we face, there are some steps ground and special forces can use to prepare themselves to deal with the wide range of potential threats we face. Hammes suggests we can update our personnel system, maintain our technical edge, and think through how we will maintain high levels of training and readiness during a long period of severely reduced budgets. Hammes concludes with comprehensive force structure recommendations for Army, Marine Corps, special operations, Guard, and Reserve forces.

Frederick W. Kagan explains that March 2010 marked the beginning of the eighth year in which the United States has not mobilized while fighting two large and protracted wars. This is the first time in American history that the United States has deployed hundreds of thousands of soldiers to combat without mobilization. Every person deployed to Iraq or Afghanistan had volunteered for military or diplomatic service knowing that he or she might be sent to war. There has been no draft. Military industry has not been placed on a war footing. The process of closing military bases in the United States and abroad has gone on apace as though the wars were not occurring. The only major new weapons system deployed to support the ongoing wars was the MRAP (mine-resistant, ambush-protected vehicle). Ground forces end strength has grown (by temporary authorization) by less than 10 percent. The military services themselves have worked wonders to transform themselves while fighting, but the United States has fundamentally fought these two wars with the military it started with. Failing to fund America's military properly is a policy (or political) choice, not a fiscal requirement.

Kagan begins by examining the kinds of threats our land forces face today and are likely to face within the time frame of a planning cycle. No enemy today can plausibly threaten to invade the United States, Europe, Japan, Israel, India, or almost any of our other major strategic partners. Configuring America's land forces to be able to repel or reverse land invasions of its allies is thus a relatively low-priority requirement in the coming years. One corollary of this fact is that it undermines the utility of conventional force-requirement calculations based on net assessments and balance-of-power principles.

The discussion about shaping American ground forces must therefore shift from the realm of net assessment to an evaluation of possible and probable requirements beyond defeating the enemy's fielded forces. The key to understanding those requirements lies in the concept of troop-to-task analysis (TTT).

Conducting a TTT analysis requires determining what tasks the ground forces will be called upon to perform (in which regard also it is a superior approach to force sizing compared to net assessments metrics that do not necessarily examine in any detail the objectives and strategies of either side). The range of scenarios is wide, but the major tasks in most scenarios overlap considerably. The likeliest scenarios in which U.S. ground forces would be required are interventions in weak, failing, or failed states where significant terrorist organizations operate—Yemen, Somalia, Nigeria, Mauritania, Sudan, Ethiopia, Eritrea, and possibly other equatorial African states are the most probable. An

invasion of Iran is much less likely, but deserves consideration both because of the very high stakes that would be involved and because the United States and its allies are already engaged in an effort at managing the escalation of ongoing conflict with Iran—efforts that military planners cannot assume will be successful. Ground intervention in Pakistan in force is extremely unlikely, but not beyond the realm of the conceivable, particularly if Pakistani politics or civil-military relations implode again as they have before. Again, the high stakes in any such intervention require considering the nature of the challenge even if the probability of such an undertaking is very low. One could add the possibility of interventions in Latin America, particularly Colombia or Venezuela, but the nature of the requirements for U.S. ground forces does not change materially in those or similar cases.

In all of these cases, the U.S. military would likely have to undertake the following major tasks, among many others:

- Obtaining access, either through uncontested deployment or forced entry operations (or some combination);
- Establishing infrastructure in extremely sparse theaters to support U.S. military, diplomatic, political, and economic activities;
- Securing key lines of communication;
- Providing strategic, operational, and tactical mobility to U.S., host-nation, and international forces and civilian efforts;
- Providing intelligence, surveillance, and reconnaissance support, including analysis, to U.S., host-nation, and international forces and civilian efforts;
- Providing planning, command and control, and communications support to all friendly efforts;
- Supporting ongoing U.S. and international military, diplomatic, political, and economic activities;
- Developing a detailed and coherent intelligence picture of enemy forces, host-nation politics and social dynamics, and host-nation forces;
- Conducting counterterrorism operations;
- Supporting host-nation security sector reform and security force assistance;
- Restoring and maintaining civil order;
- Conducting humanitarian relief operations;
- Conducting counterinsurgency operations if necessary.

These requirements fall heavily on the U.S. military, because it is the only organization in the world that can meet most of them.

When it comes to determining how America's ground forces should be structured and resourced, the issue is not the desirability of particular military actions but the likelihood that they will be required and/or undertaken. The real

questions are as follows. Can responsible military planners and force designers assume with confidence that the United States will not intervene in any of the failing or failed states now known to harbor terrorist groups actively targeting the American homeland? Can they assume that the United States will neither launch nor be drawn unintentionally into war with Iran? Can they assume that no other contingencies will arise that lead to the deployment of significant combat forces into complex conflicts? In the world as it is and seems likely to be over the next decade, making any such assumptions would be irresponsible. However undesirable these scenarios are—and they are all extremely undesirable—they are all sufficiently probable that the U.S. military must be prepared for them. How many conflicts should the U.S. military be capable of fighting at once? How large will they be?

It is unlikely in the extreme that the current administration will adopt this method of evaluating the requirements for America’s ground forces or act on it. There is no appetite for increasing the size of the military and a strong desire in both parties to save money by cutting the defense budget. The experience of Iraq and Afghanistan has left policy makers exhausted by war and, for the most part, desiring to avoid thinking about, planning for, or preparing for it, let alone undertaking it. The world, however, is unlikely to shape itself to suit our desires. There is no strategic pause today if ever there was one, and no reason to imagine that peace will suddenly break out across the globe.

Topics discussed included the kind of conflict for which the United States should be preparing in the future, where the United States should focus its priorities, lessons of past wars, and the broad issue of force planning.

Panel VI: Air and Maritime Forces

American Airpower in the 21st Century: Reconciling Strategic Imperatives with Economic Realities

Major General Charles J. Dunlap, Jr., U.S. Air Force

An Analysis of the Force Structure Implications and Costs of the Navy’s Fiscal Year 2011 Shipbuilding Plan

Dr. Eric J. Labs, Senior Analyst for Naval Forces and Weapons, Congressional Budget Office

Programs vs. Resources: Some Options for the Navy

Mr. Ronald O’Rourke, Specialist in Naval Affairs, Congressional Research Service

Moderator: Dr. Thomas R. Fedyszyn, Professor of National Security Affairs, Naval War College

Charles J. Dunlap states that “vexing” is certainly the right word to describe the state of resource allocation in the national security community. Despite still sizable defense budgets, serious economic constraints combine with a wide range of complicated threats to create extremely difficult choices for policy

makers. To help them work through the decision-making process, Congress mandates Quadrennial Defense Reviews. QDRs “are intended to guide the services in making resource allocation decisions when developing future budgets.”

The 2010 QDR rightly insists that “America’s interests and role in the world require armed forces with *unmatched* capabilities.” Recent resource decisions, however, do not provide much comfort for those who believe that the high-tech equipment—to include especially advanced airpower—provides the most efficient, effective, and flexible means of addressing the most dangerous security challenges of the twenty-first century.

Indeed, this essay argues that such forces are deserving of stronger resource support than is currently the case. It contends that misapprehensions of key issues—reflected in the QDR and elsewhere—are eroding the United States’ “unmatched” capabilities, at least insofar as the air and space domains are concerned.

An (and perhaps “the”) essential issue of defense planning is the proper assessment of risks. The 2008 *National Defense Strategy* (NDS) properly defines risk “in terms of the potential for damage to national security combined with the probability of occurrence *and a measurement of the consequences should the underlying risk remain unaddressed.*” The reference to “consequences” is key because, as one expert puts it, a “probability factor tells us nothing about risk until coupled with a consequence.”

However, the NDS, the QDR, and other government pronouncements make it clear that *probability* is the defining factor underpinning resource allocation. The QDR very decidedly gives priority to the *nonexistent* threat of terrorism. Declaring that the “epicenter of the terrorist threat to the United States is rooted in Afghanistan and Pakistan,” the QDR’s top objective is to “prevail in today’s wars.” Operations in Afghanistan (and Iraq) will, the QDR informs, “substantially determine the size and shape of major elements of U.S. military forces for several years.” That will be the case because to perform those operations, the United States has selected the very manpower-intensive and largely low-tech approach set forth in the Army and Marine Corps’s *Counterinsurgency Field Manual 3-24* (FM 3-24). The extension of FM 3-24’s approach to Afghanistan has profound resource implications for the whole armed forces. Specifically, implementing it requires expensive deployments of considerable numbers of ground forces.

Such expenditures inevitably leave DoD “with less money to buy weapons.” Spending on personnel “eats away” at the ability to develop and acquire sufficient numbers of the high-tech weaponry upon which airpower is especially dependent. Predictably, the Air Force has been a target for budget cutters for some time, and the effects are showing. Today’s Air Force is increasingly geriatric by warplane standards: its F-15 fighters average twenty-five years old, KC-135 tankers average forty-seven years of service, and the typical B-52 bomber will celebrate its forty-eighth birthday this year.

To reiterate, the QDR and other reflections of the defense establishment thinking foresee a future of persistent conflict, mainly focused in failed and failing states. As this paper outlines, the current approach requires large numbers of ground troops ready to win “hearts and minds” via nation-building and

stability operations (which DoD now puts on a par with combat operations). Resources are flowing accordingly.

However, the American people are evincing a growing aversion toward involvement in another “Iraq-style” or, for that matter, “Afghan-style” operation. Despite the relative success U.S. forces achieved in Iraq, 60 percent of Americans still oppose the war. Likewise, the most recent poll of Americans regarding Afghanistan shows that a majority now believes the war was “not worth fighting.” Plainly, the American body politic has not shown any appetite for the very kind of operation the QDR favors—and prioritizes resources to conduct.

Consider as well that as the United States grows the mass of its ground forces in order to wage protracted, low-intensity conflicts against low-tech adversaries, its most formidable potential opponent is doing just the opposite. DoD’s own report to Congress about China’s military power reveals that “[t]he People’s Liberation Army is pursuing comprehensive transformation from a mass army designed for protracted wars of attrition on its territory to one capable of fighting and winning short-duration, high-intensity conflicts along its periphery against high-tech adversaries—an approach that China refers to as preparing for ‘local wars under conditions of informatization.’”

The American people seems to understand instinctively the gravity of the challenge that countries like China can present to vital U.S. interests. Perhaps perceiving the limited relevance of ground forces to threats from high-tech rivals, a 2009 poll found that the majority of the U.S. public believed that the Air Force would be the “most important [service] to America” in future wars.

Yet at the same time, the wisdom of diminishing the size of America’s ground forces in an era of great uncertainty is questionable—and likely unnecessary. As is well documented, even at 4.7 percent of the gross domestic product, that percentage for the defense budget is small as a wartime figure relative to other periods in U.S. history. The looming internecine fights among the services over budget need not take place—if the country truly recognizes it is at war, and mobilizes accordingly.

Regardless, the fact remains that America is making choices that carry great potential to erode the nation’s ability to enjoy air and space preeminence in areas of vital interest over the longer term. Such choices inevitably “provide incentives for [other countries] to build up where the U.S. is pulling back.” Objections to diminishing air capabilities, however, are rare and muted. Even General Schwartz admits that there are few vocal airpower supporters in Washington.

In short, unless others become airpower’s champion, it is quite possible that U.S. capabilities could decline to the point where an adversary could achieve air superiority at least in a given theater, and perhaps even further. Some have raised a cry: shortly before the F-22 program was terminated, author Mark Bowden warned: “Now we have a choice. We can stock the Air Force with the expensive, cutting edge F-22—maintaining our technological superiority at great expense to our Treasury. Or we can go back to a time when the cost of air supremacy was paid in blood of men. . . .”

We know now what choice was made. Only time will tell the wisdom of that “vexing” decision, as well as the prudence of forgoing airpower dominance in a world where America’s most dangerous competitors relentlessly seek it.

Eric J. Labs explains that in February 2006, the Navy presented a long-term shipbuilding plan for 2007 that called for expanding the battle force fleet from the then-current size of 285 ships to 313 ships by 2020. A few months later, the CBO issued a study analyzing that plan and estimating its potential costs. Since then, the Navy has released several updates to its 313-ship plan, the most recent being the plans for 2009 and 2011. (The Navy did not provide an update for 2010.) Those two plans differ sharply with respect to the Navy’s requirement for battle force ships, the number and types of ships the Navy would purchase over thirty years, and the amount of money needed to implement the plans.

As it has for each of the Navy’s long-term shipbuilding plans in recent years, CBO has examined the 2011 plan in detail and produced estimates of the costs of the proposed ship purchases using its own models and assumptions. CBO has also analyzed how those ship purchases would affect the Navy’s inventories of various types of ships over the next three decades. The key findings are as follows:

- The service’s requirement for battle force ships appears now to total at least 322—up from 313 in the Navy’s three previous long-term plans. (The battle force fleet currently numbers 286 ships.)
- The 2011 plan calls for buying a total of 276 ships over the 2011–2040 period: 198 combat ships and 78 logistics and support ships.
- In comparison, the 2009 shipbuilding plan envisioned buying 40 more combat ships and 20 fewer support ships over thirty years. Under that plan, the Navy would have purchased 238 combat ships and 58 logistics and support ships between 2009 and 2038, for a total of 296.
- The Navy estimates that buying the new ships in the 2011 plan will cost an average of \$15.9 billion per year, or a total of \$476 billion over thirty years (about 33 percent less than its estimate for the 2009 plan). Those figures are solely for construction of new ships, the only type of costs reported in the Navy’s shipbuilding plans. However, other activities that are typically funded from the Navy’s budget accounts for ship construction—such as refueling current nuclear-powered aircraft carriers and outfitting new ships with various small pieces of equipment after they have been built or delivered—will add about \$2 billion to the Navy’s average annual shipbuilding costs under the 2011 plan, in CBO’s estimation.
- Using its own models and assumptions, CBO estimates that the cost for new-ship construction under the 2011 plan will average \$19.0 billion per year, or a total of \$569 billion through 2040. Including the expense of refueling aircraft carriers as well as outfitting and postdelivery costs raises that average to \$20.9 billion per year, CBO estimates. (Those figures are

about 25 percent lower than CBO's estimates of analogous costs under the Navy's 2009 plan.)

- CBO's estimates of the costs of the 2011 shipbuilding plan are about 18 percent higher than the Navy's estimates overall. That figure masks considerable variation over time, however: CBO's estimates are 4 percent higher than the Navy's for the first ten years of the plan, 13 percent higher for the following decade, and 37 percent higher for the final ten years of the plan.

The report that the deputy secretary of defense submitted to the Congress on February 1, 2010, described the 313-ship fleet as the "baseline" for the Navy's 2011 goals for ship construction over the next three decades. However, the report went on to describe changes to several categories of ships that would ultimately alter the total inventory goal (or requirement, in military parlance) for battle force ships:

- The number of aircraft carriers required to support the Navy's operations was described as 10 to 11, compared with 11 in the previous plan.
- The 19 CG(X) future cruisers that the Navy had planned to build were cancelled, but the requirement for destroyers was raised from 69 to at least 88.
- The Navy's four guided-missile submarines, which are due to reach the end of their service lives starting in 2026, would not be replaced under the current plan.
- The requirement for ballistic missile submarines appears likely to fall from 14 to 12, consistent with the recommendation in DoD's recent Nuclear Posture Review.
- The requirement for amphibious ships would increase from 31 to 33.
- The sea-basing ships of the Maritime Prepositioning Force (Future), or MPF(F)—which were intended to help the Navy support and supply onshore Marine operations entirely from the sea—were cancelled. However, the Navy plans to buy a few other ships to enhance existing maritime prepositioning squadrons.
- Current command ships, which provide command-and-control capabilities for fleet commanders, will have their service lives extended but will not be replaced when they retire in 2029.
- The planned fleet of joint high-speed vessels (JHSV), which are intended to transport troops and equipment within a theater of operations, was expanded from 3 to 23 ships.

Those changes—some of which resulted from decisions made as part of DoD's recent Quadrennial Defense Review—would effectively increase the fleet requirement from 313 ships to at least 322 ships. The 2011 shipbuilding report also stated that the Navy plans to conduct a new force-structure analysis to officially determine what the future ship requirement will be. (The previous

force-structure analysis was conducted in 2005, and its results led to the 313-ship requirement.)

In short, the Navy's new plan appears to increase the required size of the fleet compared with earlier plans, while reducing the number of combat ships to be purchased—and thus costs for ship construction—over the next three decades. Despite those reductions, the total costs of carrying out the 2011 plan would be much higher than the funding levels that the Navy has received in recent years. If the Navy receives the same amount of funding for ship construction in the next thirty years as it has over the past three decades—an average of about \$15 billion a year in 2010 dollars—it will not be able to afford the purchases in the 2011 plan. Already short its requirements across a number of ship categories, the Navy is likely to face even greater shortfalls as the full implications of the overall federal fiscal situation, DoD funding requirements in general, and the Navy's gaps in its shipbuilding weigh on its ability to recapitalize its fleet.

Ronald O'Rourke states that the Navy, like other U.S. military services, faces a challenge in funding various program goals within a budget that is expected to experience little or no real growth. This challenge will be compounded if the change in the nation's projected budget and debt situation that has developed since the 2008 financial crisis leads to a real decline in the DoD budget. The total number of ships in the Navy is to be bolstered over the next decade by the entry into service of substantial numbers of relatively inexpensive Littoral Combat Ships and JHSVs. In addition, the unit capability of Navy ships, aircraft, and other systems will increase in coming years as a result of the introduction of new platforms and technologies. If, however, the Navy's budget does not increase in real terms, the Navy faces a longer-term prospect of a decline in ship and aircraft numbers that would offset at least some of the gains realized in unit capability. The resulting fleet could have a rich collection of capabilities for performing various missions but lack the capacity (i.e., numbers) for performing those missions simultaneously in all desired geographic areas.

If Navy budget pressures are compounded by a real decline in the DoD budget, policy makers could face difficult choices to fund programs for some kinds of Navy capabilities but not others. If so, the resulting fleet could have gaps in capability as well as capacity. These developments could occur at a time when the United States faces various international security challenges, including a potentially significant challenge from a modernized Chinese military capable of acting as a maritime antiaccess force and otherwise influencing events in the western Pacific.

Although the Navy forms only a part of the U.S. military, which in turn forms only a part of the nation's overall tool kit for defending its interests and pursuing its policy goals, a Navy with insufficient ability to maintain desired levels of forward-deployed presence and engagement, to respond to contingencies and contain crises, or to conduct combat operations of certain kinds could contribute to a situation in which American policy makers might need to prioritize key U.S. interests and goals and reconsider the national strategy for defending those interests and pursuing those goals.

If the Navy is not able to afford all 276 ships in the thirty-year shipbuilding plan, the total number of ships in the fleet would, other things held equal, be less than that shown in the thirty-year plan. A fleet below three hundred ships, perhaps closer to 250 ships, is a possibility. The Navy might also experience shortfalls in some aircraft types, such as strike fighters (where a shortfall is already projected).

Although tomorrow's ships will in many cases have more individual capability than today's, a fleet of fewer than three hundred ships, and perhaps closer to 250, could be hard-pressed to meet regional combatant commander requests for forward-deployed Navy ships. If limits on resources lead not only to reduced ship and aircraft numbers but also to smaller investments in capabilities, the Navy's margin of superiority in certain high-end combat scenarios could be reduced, which could increase operational risks in conflict situations.

The implications of a Navy that is substantially below its force-level goals and perhaps lacking certain desired mission capabilities could be particularly significant in the Pacific. U.S. Navy capabilities in that region could affect the likelihood or possible outcome of a potential U.S.-Chinese military conflict in the Pacific over Taiwan or some other issue. Some observers consider such a conflict to be very unlikely, in part because of significant U.S.-Chinese economic linkages and the tremendous damage that such a conflict could cause on both sides. In the absence of such a conflict, the U.S.-Chinese military balance in the Pacific could influence day-to-day choices made by other Pacific countries, including choices on whether to align their policies more closely with China or the United States. In this sense, decisions on U.S. Navy programs for countering improved Chinese maritime military forces could influence the political evolution of the Pacific, which in turn could affect the ability of the United States to pursue goals relating to various policy issues, both in the Pacific and elsewhere.

Options for dealing with the prospect described above include but are not limited to the following. The options are not mutually exclusive, are in some cases overlapping, and are presented in no particular order. Each option poses either feasibility challenges or potential downsides.

- Increase DoD's budget in real terms.
- Increase the Navy's share of DoD's budget.
- Find more Navy cost-saving efficiencies.
- Exploit joint Navy–Air Force combat effectiveness, particularly in the Pacific, through the Air-Sea Battle concept.
- Reduce the cost of Navy shipbuilding programs.
- Shift to a more highly distributed fleet architecture.
- Extend the service lives of in-service ships and aircraft.
- Increase the use of forward homeporting, multiple crewing, and long-duration deployments with crew rotation.

- Increase the use of unmanned vehicles to augment or substitute for manned ships and aircraft.
- Reduce levels of forward deployments in some regions while maintaining them in others.
- Transfer Navy responsibilities to other U.S. military forces or federal agencies.
- Transfer “low end” Navy missions to allied and partner navies and coast guards, concentrating available Navy resources on programs for “high end” combat capabilities for countering improved Chinese maritime military forces.
- Encourage allies and partners to do more in terms of fielding naval and other forces for countering Chinese forces.

Topics discussed included the relationship between the Navy’s maritime strategy and its shipbuilding plan; the dilemma of force planning labeled the “likelihood fallacy”—building forces around the most likely current threat; forward deployment challenges given limited numbers of ships; the various options offered by the panelists; and the Air Force’s challenges.

Panel VII: Strategic Nuclear, Space, and Cyber Forces

Investing in Nuclear Weapons

Ms. Amy F. Woolf, Specialist in Nuclear Weapons Policy, Congressional Research Service

Economics and Security: Resourcing National Priorities—the U.S. Space Program

Ms. Marcia S. Smith, President, Space and Technology Policy Group

Wringing Deterrence from Cyberwar Capabilities

Dr. Michael C. Libicki, Senior Management Scientist, RAND Corporation

Moderator: Colonel Dana E. Struckman, U.S. Air Force, National Security Decision Making Department, Naval War College

Amy F. Woolf explains that in a speech in Prague, in the Czech Republic, on April 5, 2009, President Obama said, “I state clearly and with conviction America’s commitment to seek the peace and security of a world without nuclear weapons.” President Obama recognized that this “goal will not be reached quickly—perhaps not in my lifetime.” But he pledged to take concrete steps to put the United States on a trajectory toward this objective. This statement and the concrete steps he identified at the time define the agenda his administration has pursued to address the nuclear dangers facing the United States and the international community in the twenty-first century.

The Obama administration has added context to the programs and proposals that it has placed on the U.S. nuclear agenda with its view of the threats the

United States faces in the current international security environment. The administration stated clearly, at the front of its Nuclear Posture Review (NPR), that “the most immediate and extreme threat today is nuclear terrorism.” It went on to state that “today’s other pressing threat is nuclear proliferation.” The NPR also, however, noted that “the United States must continue to address the more familiar challenge of ensuring strategic stability with existing nuclear powers—most notably Russia and China.”

Hence, the administration’s agenda for nuclear weapons policies and programs seeks to achieve three goals, as Vice President Biden noted in a speech at the National Defense University in January 2010. He said that “by acting on a number of fronts, we can ensure our security, strengthen the global non-proliferation regime, and keep vulnerable nuclear material out of terrorist hands.”

The Obama administration has identified two distinct tracks for U.S. nuclear weapons policies and programs. On one track, the administration has pledged to pursue bilateral and multilateral arms control mechanisms that might address the threats posed by nuclear weapons, nuclear proliferation, and nuclear terrorism. In response, the United States and Russia have negotiated a new Strategic Arms Reduction Treaty (New START) to reduce the size of their nuclear arsenals; they signed this on April 8, 2010. The president has also said that the United States and Russia would pursue further cuts in their nuclear arsenals in a subsequent agreement. Moreover, he pledged that his administration would immediately and aggressively pursue U.S. ratification of the Comprehensive Test Ban Treaty, although this effort is likely to wait until after the Senate votes on the ratification of the New START. Finally, he pledged to “seek a new treaty that verifiably ends the production of fissile materials intended for use in state nuclear weapons.”

These arms control measures are designed to reduce and contain the numbers of nuclear weapons and the stockpiles of nuclear materials around the world. But the administration has indicated that they are also designed to support the nonproliferation agenda by demonstrating to the international community, and, particularly, the parties to the Nuclear Nonproliferation Treaty (NPT), that the United States and Russia are serious about meeting their obligations under the NPT. The administration and many in the arms control community argue that the United States will then be better positioned to win the cooperation of other nations when seeking to increase pressure on Iran and North Korea, or other potential nuclear weapons states.

The second track contains the U.S. programs and policies that will affect the size, shape, and role of the U.S. nuclear arsenal. They are the steps that the United States will take to maintain and sustain its nuclear deterrent, both to address emerging threats and to maintain strategic stability with existing nuclear states. For, although the president stated that the United States would “put an end to Cold War thinking” by reducing the “role of nuclear weapons in our national security strategy,” he added that, “as long as these weapons exist, the United States will maintain a safe, secure and effective arsenal to deter any adversary, and guarantee that defense to our allies.”

This paper reviews the programs that the Obama administration plans to fund so that the United States can maintain a safe, secure, and effective nuclear arsenal. This plan indicates that the United States may invest \$180 billion over 10 years on the nuclear weapons delivery systems, warheads, and infrastructure. They demonstrate that the United States is prepared to invest a significant amount of money in its nuclear weapons programs, even as it seeks to reduce the dangers of nuclear proliferation and nuclear terrorism and as it takes steps on the path to a world free of nuclear weapons.

But these programs also raise questions about the relationship between U.S. nuclear weapons programs and U.S. nuclear nonproliferation policy. During its eight years in office, the Bush administration failed to convince Congress to fund the programs that it sought to maintain and sustain the U.S. nuclear arsenal and nuclear weapons infrastructure. This was in spite of the fact that the administration argued that nuclear weapons would play a continuing role in U.S. national security policy for the foreseeable future. The Obama administration, in contrast, may succeed in winning support for its funding requests and nuclear weapons programs, in spite of its support for the long-term goal of eliminating nuclear weapons. It may win the support of those who actively support enhanced efforts and increased funding to maintain and sustain the nuclear arsenal. It may also win the support of many who support the arms control agenda but recognize that a safe and secure U.S. arsenal can be consistent with U.S. nonproliferation goals if the United States is reducing the numbers and restraining the roles for those weapons.

Marcia S. Smith explains that in the wake of the launch of Sputnik 1 by the Soviet Union on October 4, 1957, Congress and the Eisenhower administration crafted the 1958 National Aeronautics and Space Act that created NASA to conduct U.S. civil space activities and put DoD in charge of military space programs. One goal was to demonstrate to the world that the United States was interested in peaceful uses of outer space, while recognizing that it has important military applications as well.

This bifurcated structure remains today, and other agencies have become important components of the U.S. government space program over the decades. In particular, the National Oceanic and Atmospheric Administration (NOAA, part of the Department of Commerce) operates the nation's civil weather satellites. Interagency cooperation among the U.S. space agencies is common, if not always successful.

Although the civil and national security space programs are separate in terms of mission and management, they share launch vehicles, technologies, and, importantly, an industrial base. Aerospace workers have skills equally applicable to both sectors. Military satellites are close cousins to their civilian counterparts.

In addition to the government space program and the contractor workforce that supports it, "commercial" space companies are making gains after decades of trying. The intelligence community, for example, relies on two commercial remote-sensing companies, GeoEye and DigitalGlobe, for imagery with a

resolution of 0.5 meters. A substantial portion of unclassified military communications is routed through commercial communications satellites.

On the civilian side, even the nation's human spaceflight program may be "outsourced" if Congress approves President Obama's new plan for NASA. It would end NASA's ability to send people into low earth orbit (LEO) and instead subsidize the emergence of a "commercial crew" business to fill that requirement. NASA already subsidizes a "commercial cargo" business to take cargo to the International Space Station in LEO. The national security space sector may well take advantage of these commercial capabilities, if successful, although the Obama plan is very controversial and not assured of congressional approval.

"Partnering" with the commercial sector, as well as international allies, has become a common refrain for both national security and civil space programs as both struggle to obtain the resources they feel they need to meet their goals.

The most recent overarching national space policy was issued by President George W. Bush in 2006. Four earlier policies on specific topics had been issued during the Bush administration—commercial remote-sensing satellites (2003); human spaceflight (2004); positioning, navigation, and timing satellites (2004); and space transportation (2005)—but the 2006 National Space Policy sets the broad framework. It has been criticized for its nationalistic tone, and shortly after taking office President Obama ordered a complete review of U.S. space policy. That review is ongoing.

At the same time, DoD was conducting the QDR and a Space Posture Review (SPR) at the direction of Congress, along with a Nuclear Posture Review and a Ballistic Missile Posture Review. The QDR barely touched on space, and the Space Posture Review has been delayed until the review of U.S. space policy is completed. An interim SPR was provided to Congress in March, but it was "for official use only" and not made public. However, members of the House Armed Services Committee's Subcommittee on Strategic Forces reacted to it at an April 21, 2010, hearing, and were clearly unimpressed.

Thus, the Obama administration's space policy is not yet clear and declarative. U.S. space policy continues to be that which is expressed in the Bush administration documents. However, the FY 2011 budget request for NASA proposed a total paradigm shift in U.S. human spaceflight policy, and it seems clear from official statements by administration officials that changes are in the wind for national security space as well. Deputy Secretary of Defense for Space Policy Robert Butler says that it is "not a go-it-alone strategy" anymore.

Though it has been almost two decades since the end of the Cold War, some argue that national security space policy has not adapted to the current environment. A repeatedly expressed theme today is that space is "congested, competitive, and contested," requiring new policies and strategies. In particular, there is a need for the many users of space—commercial and government—to work together for better space situational awareness to avoid catastrophes like the 2009 Iridium 33–Cosmos 2251 collision.

The concept of focusing on affecting how countries and companies behave rather than relying on "space control" measures seems to be taking hold. One suggestion, for example, is that instead of viewing space as the high ground that

needs to be militarily defended, the United States should look at space as a “global commons” subject to mutually agreeable rules of the road.

Another critical policy issue for the space sector is export controls, specifically, the International Traffic in Arms Regulations (ITAR). Many studies over the past decade have concluded that ITAR restrictions on exporting satellites hurt the U.S. space industrial base more than they protect sensitive American technologies. The Obama administration and Secretary of Defense Gates in particular are calling for export control reform.

In terms of resources, the civil and national security space programs are closely tied. Both are undergoing changes at this time and close coordination would be beneficial to ensuring that the nation at least knows what resources are needed to implement whatever policies and programs are adopted. Whether those resources will be made available is a matter of priority setting across the government along with determining where commercial services can substitute for or augment government assets if they can be shown to save money. Whatever level of funding is provided, both sectors need to avoid the cost overruns and schedule delays that have characterized government space programs in the past.

Michael C. Libicki states that no serious policy maker doubts what would happen if a nuclear-armed power dropped its big weapon on a city, even though no city has been hit by a nuclear bomb in sixty-five years. The physics are clear and they work pretty much anywhere. The same cannot be said for cyber capabilities. No one knows exactly or even approximately what would happen if one state (or comparable nonstate entity) carried out a full-fledged cyber attack on another—despite the plethora of hostile activity in cyberspace that shows no signs of abating.

Three reasons explain why. First, systems are vulnerable only to the extent that they have unknown errors that can be exploited—the extent of which is inherently unknown (by the defenders) almost by definition. Second, the impact of any cyber attack is usually proportional to the time required to recover the attacked system, something neither defender nor attacker has a good idea about. Third, national cyberwar capabilities are a closely guarded secret. None of these facts are apt to change. The first two follow from how the systems work. As for the third, if a state revealed exactly which vulnerabilities it targeted, they would cease to be vulnerabilities sooner or later.

This would seem to present a dilemma to states developing cyberwar capabilities (as differentiated from similar capabilities used for espionage, which is how such states do use them today). Having spent so much time and trouble developing them, they have nothing to show for their efforts until and unless they go to war. Being invisible, cyber capabilities cannot be easily used for deterrence, much less compellance (aka intimidation). As such, they differ from many, perhaps most, other tools of war, whose possessors can, at least, rationalize their efforts by telling themselves that their arts keep the peace by keeping enemies at bay.

That they cannot easily be used for deterrence, however, does not mean they cannot be used at all. What this paper explores are some ways that cyber

capabilities can be so used, the circumstances under which some deterrence effect can be achieved, the obstacles to realizing such achievement, and some realistic limits on our expectations.

The areas covered are: whether to look large or make others look small; whether simply showing up says enough; inducing fear, uncertainty, and doubt; making it seem as though the attacks themselves created counterattacks; attacking a hapless friend of the state that needs to be impressed; if all else fails, try direct intimidation; and what is the point of intimidation, anyway?

Topics discussed included whether DoD was doing too much or too little in the area of cyberwar, the implications of potential underinvesting by DoD in some areas such as nuclear weapons development, and the Obama administration's plans for NASA.

Opening Remarks

Rear Admiral James P. Wisecup, U.S. Navy President, Naval War College



Good morning, ladies and gentlemen. I want to welcome you again to our workshop on “Economics and Security: Resourcing National Priorities,” hosted by the William B. Ruger Chair of National Security Economics. I was pleased that all of you were able to join us last night for dinner at the Officers’ Club. It was my pleasure to meet you and to welcome back old friends.

This workshop could not be better timed. Our nation faces very significant economic and security challenges. Our intent is to provide a collegial forum for you, a small and select group of professionals, to evaluate and recommend economic and security choices for our nation’s future.

The global financial crisis and the resulting deep recession have significantly changed the strategic landscape for the United States. We not only need to work in the short run on economic recovery, but we must also deal with long-term structural imbalances within our economy and within the federal budget. And to date these challenges have not been fully addressed. This economic crisis has only accelerated the day when we must seriously deal with unsustainable deficits and levels of debt. Our political, economic, and military power, and therefore our future, depends on a strong and vibrant economy.

The recent financial crisis in Europe is just another reminder of the need to balance ends, ways, and means, and of what can happen when there are significant mismatches. Thus, we need to rethink and adjust our national priorities. After all, strategy is all about aligning ends, ways, and means. And, ultimately, it is about the allocation of scarce resources. We can no longer live beyond our means.

These challenges are why we have asked you to share your expertise and perspectives with us as we confront today’s realities and tomorrow’s challenges. As distinguished authorities in your fields of expertise, you will provide an interdisciplinary approach to the challenges we face. As you can tell from the agenda, we want to approach the issues in a top-down, integrated fashion, as opposed to just focusing on a subset of our problems. Stove-piped solutions will not do. This is what is unique about this Ruger Workshop—the tackling of large problems by professionals with broad-ranging areas of expertise.

For our panelists, we greatly appreciate the extensive research you have done in formulating your ideas and preparing your papers for presentation. For all, we are looking forward to an extensive strategic dialogue throughout the workshop. Your work here will result in a monograph that will be distributed widely throughout the policy and national security communities. We thank you for taking the time to join us in this most important endeavor.



Panel I

Economics and Security



Dr. Ronald Findlay

Ragnar Nurkse Professor of Economics, Economics Department, Columbia University

Dr. Mathew J. Burrows

Counselor and Director, Analysis and Production Staff, National Intelligence Council

Moderator:

Dr. Colin F. Jackson

Professor of Strategy and Policy, Naval War College

Economics and Security: The Evolving Global Geopolitical Equilibrium

Dr. Ronald Findlay
Ragnar Nurkse Professor of Economics
Economics Department
Columbia University

As a complete neophyte on matters of national security the most useful contribution I can make to our discussion is perhaps to offer some reflections on the present state of the global economy and polity and likely trends for the future and then to draw whatever implications they might have for U.S. defense and foreign policy. As an economist my natural tendency is to search for an equilibrium of the system under study, see what factors might disrupt that equilibrium, and then to try to discern the outlines of the new equilibrium toward which the system might be heading. I shall argue that the present international situation in which the United States is the sole superpower, arising out of its victory in the Cold War, is not a stable one but a stage in the transition to a new bipolar world order with the United States and China as the opposite poles.

My general approach to these geopolitical issues is to relate them to the continuation, and perhaps culmination, of three fundamental long-term trends in world history over the last few hundred years, as discussed in my book *Power and Plenty: Trade, War and the World Economy in the Second Millennium* with Kevin O'Rourke (to be cited subsequently in this paper as Findlay and O'Rourke 2007). First is the Industrial Revolution, which originated in Britain around 1800 and has been gradually extending itself subsequently all over the globe, beginning in Western Europe before spreading to North America and other "offshoots," and which has now reached the two Asian giants of China and India with already notable consequences that will undoubtedly further ramify as time goes on. Second is the associated switch from what Anthony Wrigley (1988) in his stimulating little book *Continuity, Chance and Change: The Character of the Industrial Revolution in England* has called the "advanced organic economy" to the "mineral-based energy economy," or from wind, water, and wood as sources of energy from the surface of the earth to fossil fuels extracted from its interior. Third is the apparent shift in the balance of geopolitical power back to what Halford Mackinder, in his celebrated 1904 article "The Geographical Pivot of History" and subsequently in his 1919 book, called the "Heartland" of Eurasia, away from the "Rimland" of the maritime powers—first Spain and Portugal, then Great Britain, and lastly the United States.

These three trends do not simply run parallel to each other but interact incessantly in myriad ways, without any one of them being solely determinative of the others, as in the familiar Marxist distinction between the economic "basis" and the sociopolitical "superstructure." Thus the Industrial Revolution

both created, and was created by, the “Energy Revolution” from renewable resources to fossil fuels, while at the same time shifting the geopolitical balance of global power away from the land-based Ming and later Qing empires of China and the Ottoman, Safavid, and Mughal “gunpowder empires” of the Islamic world to the maritime empires of Western Europe. The dependence of the industrial nations on coal, petroleum, and natural gas, and on the trade routes that connect their sources and destinations, in turn create new conflicts and tensions in the geopolitical arena. Are these essential resources transported by land or sea, and who controls these routes? From this standpoint it is easy to see why any discussion of current geopolitics must confront the eternal “Mahan versus Mackinder” issue of the relative fortunes of land and sea power in military affairs and their economic and political consequences.

The valuable report of the National Intelligence Council, *Global Trends 2025: A Transformed World*, gives on page 26 some interesting estimates of state power relative to global power (expressed as percentages, with global power equal to 100) of what it sees as the six major contenders between 2008 and 2025. The U.S. index falls slightly from about 23 percent to 22 percent, while China rises from about 11 percent to about 14 percent, and India from about 7.5 percent to about 9.5 percent. The European Union (EU) falls sharply from about 18 percent to about 13 percent, while Japan falls slightly and Russia rises slightly in the low single digits. The index clearly undervalues Russia relative to Japan, since the former is the second major nuclear power in the world, while Japan only shelters under a U.S. umbrella, and also relative to India, which is far short of Russia’s nuclear capability. Despite these obvious limitations these figures underline the basic shift from West to East in both “power” and “plenty” between now and 2025, which is the major conclusion of the report. The Islamic world does not appear in these estimates but it is clear that there are four significant states capable of exerting substantial regional influence in this part of the world, namely, Turkey, Iran, Pakistan, and Indonesia. Of these only Pakistan is as yet a nuclear power but Iran carries very substantial clout because of its vast reserves of oil and natural gas and Turkey because of its successful industrialization and strategic location between Europe, Central Asia, and the Middle East, while Indonesia is clearly the dominant power in Southeast Asia.

Since the EU is so closely allied with the United States it is apparent that the two main protagonists of the global competition for power and influence in the coming decades will be the United States and China. Clearly the balance of economic power, as measured by relative total gross domestic product (GDP), is going to be moving steadily in China’s favor for a long time to come. We of course cannot simply project the current 3 percent or so of the U.S. growth rate against 10 percent for China indefinitely, but 6–8 percent for China over the next two decades is a reasonable forecast by two distinguished experts, Dwight Perkins and Thomas Rawski (2008), while the United States will very likely be less than half that even after the recession is over. Furthermore, the U.S. national debt is both much higher and rising faster relative to GDP than China’s, making it extremely difficult for the United States to sustain its defense expenditures at the same ratio as currently to GDP, while China’s ratio will probably

increase. China's technological capability, already very high for a developing country, will probably converge to equality with the United States in most areas by 2030 as it continues to rapidly expand its training of scientists and engineers. Unlike the Soviet Union in its unsuccessful competition with the United States, China will not be making all these efforts to "overtake and surpass" its great rival in relative isolation from it and the rest of the advanced world, but with the closest possible links in trade, finance, and education. Yet another advantage of China relative to the Soviet Union is that it is not attempting to export its presumably communist ideology to the developing countries where it is seeking natural resources, markets, and influence. Relative to the United States China is not hindered by considerations of democracy and human rights in its dealings with these regimes. There is thus very little doubt that China will be an increasingly formidable geopolitical contender for global "primacy" with the United States in the coming decades, with the balance of forces steadily shifting in its favor. Unlike other latecomers to industrial maturity such as Germany before the First World War and Japan before the Second, China is not likely to engage in rash diplomatic and military initiatives that will provoke a strong reaction from the established power. With almost completely unfettered access to both raw materials and markets for its burgeoning industrial sectors, its rulers will rightly feel that time is on their side. Even the touchy issue of Taiwan will most probably be handled by ever closer economic and cultural ties with the mainland rather than by military action against the "unsinkable aircraft carrier" of the United States.

Taking these trends as given, what should be the response of the United States? Let us consider the menu of options, beginning with passive acquiescence. It could be argued that China's growth will slacken as it attains higher levels of well-being and that private consumption and public welfare expenditures will absorb increasing fractions of GDP, leaving the military balance of power in equilibrium with the United States at a stable level acceptable to both sides, though undoubtedly more favorable to China than it is now. The other extreme option is to argue that China will become increasingly assertive as its relative power rises, requiring "preemptive" action to prevent it from rising to intolerable levels at which the United States feels our vital national interests are threatened, say by threats to essential energy supplies or by having a major ally subverted or overthrown. Plausible scenarios might begin with sanctions imposed that then have to be escalated, provoking a military response that then leads to general hostilities. The third option, which I think is the most appropriate, is to accept the fact that China's economic rise is inevitable but to actively maintain a system of close economic and looser military alliances with some other Asian and Pacific states that will collectively maintain the balance of power sufficiently in our favor to ensure, rather than merely wish for, continued compliance by China with mutually acceptable rules of the game in international relations. China will of course itself engage with these same states to promote its own interests but the United States should not be deterred on that account. What I envisage is an active promotion of commercial, diplomatic, and military ties particularly with the key nations of Japan, Korea, the Philippines, Indonesia, Malaysia, Singapore, and Vietnam in East and Southeast

Asia as well as Australia and New Zealand in the Pacific. For reasons to be explained I think that Burma, Thailand, and Cambodia will be brought closer within the Chinese orbit, while India will undoubtedly follow its own independent course as a regional superpower, but nevertheless having more interests in common with the United States than with China. Russia will of course act independently, but would also wish to contain Chinese expansion and influence in Central Asia, which will work to our advantage.

To consider these geopolitical matters more concretely I find it illuminating, as does Robert Kaplan (2010) in the current issue of *Foreign Affairs*, to begin with the Mackinder article on the “geographical pivot of history,” which he considered to be the Central or inner Asian “Heartland” of Eurasia. Mackinder, writing in 1904, felt that the prevailing global geopolitical equilibrium of the previous century, based on the long reign of the European maritime powers—the “Age of Columbus,” as he called it—was coming to an end and that the future belonged to whichever power could dominate this “pivot area” by means of the railway, most probably either Germany or Russia. In the last paragraph of his 1904 article, however, he makes the following fascinating observation:

In conclusion, it may be well expressly to point out that the substitution of some new control of the inland area for that of Russia would not tend to reduce the geographical significance of the pivot position. Were the Chinese, for instance, organized by the Japanese, to overthrow the Russian Empire and conquer its territory, they might constitute the yellow peril to the world’s freedom just because they would add an oceanic frontage to the resources of the great continent, an advantage as yet denied to the Russian tenant of the pivot region (437).

So much has changed in the more than a century since these words were written, and still so much remains unchanged! The Russian Empire of the Romanovs was defeated by the Japanese in the war that began shortly after Mackinder gave his address to the Royal Geographical Society, while the decadent Manchu ruling dynasty of China would fall in 1911, soon to be followed by the Romanovs in 1917. The Japanese invaded, rather than “organized,” the Chinese, but were defeated by the Chinese themselves in 1945, in an alliance with the Western maritime powers whose demise Mackinder was predicting in 1904, along with their ally the new Germany of Adolf Hitler, whose own attempt to secure the Heartland failed with Operation Barbarossa on his eastern front. The Bolsheviks, who overthrew the Romanovs and defeated Hitler, succumbed without even a whimper to the economic might of the United States and the passive resistance of the people of their East European satellites, leaving the Heartland to be contested between a no-longer-communist Russia and a still-communist but newly market-oriented and outward-looking China.

A key geopolitical question of the present era as I see it is whether, and if so to what extent, China can turn the geographic advantage of its “oceanic frontage” into genuine “blue water” naval power in the Pacific and Indian oceans. As is well known, China has not been a major naval power even though it led the world in shipping technology from the Sung to the early Ming period—that is to say, from about 1000 to the first half of the fifteenth century—which saw the celebrated voyages to the Indian Ocean by the great fleets of the Muslim admiral Zheng He, discontinued in preference to the more urgent needs of border

defense against a potential return of the Mongols or other Central Asian nomads (Findlay and O'Rourke 2007, 134–135). The middle of the seventeenth century saw the maritime merchant-pirate empire of Koxinga and his family that expelled the Dutch from Taiwan and resisted the Manchu for decades, while conducting lucrative trade from Japan to Indonesia and Siam, but his base was captured and destroyed by the Manchu soon after his death (Findlay and O'Rourke 2007, 286–289). The Manchu, like the Ming before them, were hostile to unregulated maritime trade and had no naval ambitions, preferring to concentrate on the conquest and colonization of adjacent areas in inner Asia. Thus they fell as relatively easy prey to British naval intrusion during the Opium Wars of 1840–1842, and later to Japan in the Sino-Japanese War over Korea in 1894–1895. It is only since about 1980 and the opening under Deng Xiaoping that China has begun to seriously build up its naval forces. As a global trading power China now obviously needs a navy to protect its commercial activities and particularly its imports of oil from the Middle East, which constitute about 60 percent of its energy supplies, and has the economic means to acquire an increasingly powerful one.

The Strait of Malacca therefore once again becomes a key global geopolitical “choke point,” just as it has been throughout Southeast Asian history from the days of Srivijaya and Melaka, with its successive Portuguese, Dutch, and British occupations marking the shifting fortunes of the European maritime powers in global trade. As the Portuguese Tomé Pires proclaimed in the early sixteenth century, the “Lord of Melaka has his hand on the throat of Venice,” since the spices of the Indies had to pass through the strait on their way to the markets of the Middle East and Europe (Findlay and O'Rourke 2007, 136). Now it is the oil of the Middle East that has to pass through the strait on its way to China, Korea, and Japan. The *de facto* “Lord of Melaka” today is of course the U.S. Navy, a fact that the Chinese are obviously well aware of. The intriguing question to me is whether they are prepared to accept it for the foreseeable future—in effect to implicitly acknowledge that for all its dazzling accomplishments the outward-oriented economic development of China can only take place under the aegis of the *Pax Americana*.

There are two possible responses that the Chinese can have to this situation, which are not mutually exclusive. One is to actively build up their naval power in the South China Sea and beyond, with submarines and surface craft, including eventually aircraft carriers, which they are of course doing. The other is to expand as rapidly as possible energy supplies that can either come overland from Central Asia, or by sea but not through the strait, an obvious possibility being through the Burmese ports of Rangoon (Yangon) and Akyab (Sittwe) and then overland to Yunnan. This route would still be to some extent a hostage to the U.S. Navy but less so than travel through the narrow passage of the strait. These ports and islands in the Bay of Bengal could also be developed as naval bases, undoubtedly to the chagrin of India, which is also engaged on an ambitious naval expansion in the Indian Ocean, in which it has not launched any expeditions since the Chola raid on Srivijaya in 1025 (Findlay and O'Rourke 2007, 67) apart from brief incursions into Ceylon (Sri Lanka) and the Maldives. It is therefore no accident that Chinese economic and political

influence is already so strong with the Burmese military junta and is likely to rise even further in the future. Meanwhile Thailand, which seemed set to be on a sure path to a prosperous and democratic future, has become locked in a debilitating standoff between urban and rural factions that seriously endangers this possibility, and makes it more likely to accommodate China. Cambodia and Laos will also very likely be tied more closely to China.

Paradoxically, Vietnam, which is the closest country culturally to China in Southeast Asia, and which successfully imitates China's politico-economic model of "market communism," is nevertheless likely to be the most independent politically from China's influence. Despite the vast damage and misery of the Vietnam War, Vietnam's ruling elite would undoubtedly be sufficiently astute to balance the important role that China will continue to play in its economic relations by seeking a strong presence for the United States as well. One can say this rather confidently on the basis of many centuries of history. Indonesia, Malaysia, and Singapore—the most maritime in orientation of all the Southeast Asian states—will clearly be interested in maintaining full freedom of commerce and international relations and therefore be anxious to encourage a continued active American presence in the Indian Ocean and the region generally, as Mr. Lee Kuan Yew has himself said repeatedly. Along with our close allies Australia and New Zealand this gives the United States a strong basis for balancing China's growing power and influence in this vital part of the world. China depends heavily on Australia's iron ore and other natural resources, so Australia benefits directly in China's own rapid growth, while at the same time being closer to the United States in all other respects. There is thus no reason to feel that Southeast Asia must simply be consigned to the "sphere of influence" of a resurgent China. If the United States plays its diplomatic and economic cards correctly it can ensure that this vibrant segment of the global trading world remains free to steer its own path without subordination to Chinese influence and interests.

In northeast Asia the relative position of the United States can be even stronger. Our staunch ally Japan will still have one of the top five economies in the world for the next decade at least, while South Korea, a still rapidly growing industrial powerhouse with a substantial defense capability, also has strong ties to the United States and no particular reason to feel close politically to China despite, if not even because of, the two millennia of history that they have shared together. The North Korean links to China are more of a liability than an asset to China because of the likelihood of a massive refugee problem if the regime implodes. Reunification of the two Koreas, however, if and when it happens, will create many problems for the United States. First, the larger unified country is likely to be more unstable, both politically and economically, than South Korea is now. Second, the withdrawal of U.S. forces that this will entail is likely to create anxieties in Japan that the United States will have to find some way to satisfactorily assuage. All of this assumes that the nuclear issue of the North is settled somehow, though it is difficult to foresee any plausible scenario under which it consents to being disarmed. Japan might need to raise its defense expenditure both absolutely and relative to its GDP in order to balance

the rising military power of China, rather than merely continuing to rely on the United States for protection.

Turning to China's western borders we encounter the former Soviet republics of Central Asia. For the most part these continue to be one-party authoritarian states with abundant energy resources that will be actively competed for by China, Russia, and possibly India. Their Islamic populations also make them of concern to China, with its restive Uighur minority in Xinjiang province, and also to Russia, with its ongoing troubles in Chechnya and the Caucasus generally. Better infrastructure could replicate the effects of the ancient Silk Road in bringing more trade and stimulating the production of goods other than oil and natural gas. The situation is set to replicate the old competition between the Qing and the Romanovs for control and influence over this region, Mackinder's Heartland—now traversed by the pipelines for oil and gas that he never envisaged but that only serve to raise the stakes of this other "great game" even higher (Findlay and O'Rourke 2007, 295–304, 539–546). The old relationship between the overland and overseas trade routes between East and West, so much a part of the history we discuss in *Power and Plenty*, is now as alive as ever if not even more so, with the transport of oil and gas replacing that of silks and spices. The Chinese, just as in the days of the Ming and Qing, will have to balance trade and defense between their western land border and their eastern ocean border, army and navy, but now with a decisive tilt toward the latter of these options.

China and India share a disputed land border and both compete for influence in Tibet, despite its being absorbed into the Chinese state, because of the presence of the Dalai Lama and a substantial Tibetan diaspora in India. The rivalry between India and Pakistan has meant that they have been on opposite sides of international alliances since the Cold War but the United States now has good relations with both, closer than either of them has with China. Continuation of this situation would be very much in the U.S. national interest and vital to the possibility of an acceptable outcome in Afghanistan.

An important economic but also geopolitical fact is that both the United States and China, as well as India, are all substantial net importers of oil and other energy resources. This not only makes them competitors for access to these scarce resources but also gives them a joint interest in preventing disruptions of total supply and keeping prices stable. A pacified Afghanistan that enables energy supplies from Central Asia to be piped through its terrain would be in the interest of all three. It also gives one some hope that China would not like to see the conflict between the United States and Iran reach the point of overt hostilities that will foreclose this possibility, as well as endanger China's own imports from the Persian Gulf. Russia, as a net exporter of energy supplies, is on the opposite side of this equation but also has an interest in preventing a violent global Islamic reaction to hostilities against Iran.

The global geopolitical equilibrium that I see the world evolving toward is a return to the bipolarity that ended in 1989, but now with the United States and China as the opposite poles in place of the United States and the Soviet Union, thus making the era of the United States as the sole superpower only a brief interregnum. But unlike the era of what Odd Arne Westad (2007) has called the

“global Cold War” we do not now have a conflict between rival economic systems or models—capitalism based on the market and communism based on central planning, each one out to destroy or supplant the other. The Chinese wish to preserve their centralized one-party political system but have embraced, and benefited enormously from, the global market economy. They therefore have a joint interest with the United States in seeing that this open trading and financial system, in which all states now participate, continues to flourish without disruptions. Looking ahead to, say, 2030 I think the United States will probably still have the largest GDP and defense establishment but China will be close behind in both dimensions, while also having closed the present gaps in scientific and technological capabilities. The world will not have solved the “Hobbesian Problem” by having a single global sovereign but rather by evolving into an untidy but workable sort of *Pax Sino-Americana*, a global geopolitical duopoly in which the two superpowers trade and invest actively with each other as well as with all the other countries of the world to everyone’s advantage, while at the same time keeping a wary eye on each other on land and at sea and in space as well, jointly providing global public goods along with expanded and reformed versions of the WTO, IMF, and a corresponding environmental agency. Each will maintain armed forces proportionate to the increases in GDP that they attain—China of course relatively much more than the United States, even though a substantially reduced per capita income gap will still remain. Both will compete for influence and advantage in Africa and Latin America. Russia, India, and perhaps Brazil also will each vigorously pursue their own interests, navigating between the two leviathans as they best see fit, while the Europeans continue to enjoy the benefits of the welfare state freed from the shackles of a single currency and the Middle East still smolders. Things could, and perhaps even might, be much worse.

References

Findlay, R., and K. H. O'Rourke. 2007. *Power and plenty: Trade, war and the world economy in the second millennium*. Princeton, NJ: Princeton University Press.

Kaplan, R. 2010. The geography of Chinese power: how far can Beijing reach on land and at sea? *Foreign Affairs*, May/June.

Mackinder, H. J. 1904. The geographical pivot of history. *Geographical Journal*, April.

———. 1919. *Democratic ideals and reality*. Ed. Henry Holt. Repr. Washington, DC: National Defense University Press, 1996.

National Intelligence Council. 2008. *Global trends 2025: A transformed world*. Washington, DC: GPO.

Perkins, D. H., and T. G. Rawski. Forecasting China's growth to 2025. In *China's great economic transformation*, ed. L. Brandt and T. G. Rawski. New York: Cambridge University Press, 2008.

Westad, O. A. 2007. *The global Cold War*. New York: Cambridge University Press.

Wrigley, E. A. 1988. *Continuity, chance and change: The character of the Industrial Revolution in England*. New York: Cambridge University Press.

U.S. Security in a Changing Global Economy: The Worst of Both Worlds?

**Dr. Mathew J. Burrows
Counselor and Director
Analysis and Production Staff
National Intelligence Council¹**

Key Points

We are headed into an extended period of a decade or more in which the rapidly changing geoeconomic landscape is likely to put an increased security burden on the United States.² There is little doubt the United States will remain the preeminent world power for the foreseeable future, but values such as liberal markets, democracy, and free trade—on which U.S. power was established in the post–World War II era—are likely to be under siege. Moreover, potential peer competitors—particularly China—will continue to chip away at the United States’ historic economic and technological edge. The battle for future dominance is likely to be fought over ideas and innovation—areas of historic U.S. strength—but ones over which we can no longer be as confident of success. Even if there were no state rivals on the horizon, hostile nonstate actors—such as terrorist groups and cyber criminals—would threaten U.S. resources and power. The number and extent of conflicts may increase in the coming years, in part because of contention over growing resource constraints. All of these factors point to a growing burden for the United States as we and the rest of the world transition from a unipolar “moment” to a multipolar world. Over the longer term, however, some of the threats are likely to moderate, and other countries will be better positioned to shoulder more global responsibilities.

Financial Crisis—More Than a Recession

Most commentators cite the recent financial crisis as a turning point for U.S. fortunes, with increasing talk about decline or relative decline of the United States’ economic clout. In truth, many of these trends were evident before 2008 and are a function of the globalization that began to pick up steam in the 1990s. In the National Intelligence Council’s (NIC’s) *Global Trends* publication in 2004, we talked about a world that would no longer be dominated by the United States and West and in which other norms—brought to bear by the emerging powers—would come to the fore.³ Democratic governance, for example, has been increasingly challenged in the developing world with the growing success of state capitalists such as China. Corruption—fueled in part by the growth of international organized crime—is aggravating what has been an already difficult operating environment for Western businesses, further undermining good governance in many developing states. The financial crisis has helped to

accelerate these long-standing trends, bringing them into greater relief. Current U.S. and European efforts to regain our footing—while China, India, Brazil, and other emerging powers surge ahead—underline what could be an extended period of digging out from the high public and private debt levels existing in the West.

Most economists also believe achieving a new “normal” or stability in the global economy will involve correcting long-standing global imbalances. On the one hand, many economists believe the United States needs to redevelop its high-value export sectors, while China needs to increase consumer demand. Such an approach would allow income levels to rise and create a great social safety net for what will be a rapidly aging society. This might be harder for China to do—considering the political implications of a more self-assured middle class for continued Party control—than for the United States, which has had more experience in successfully reinventing itself. Many economists assess that the success of either the United States or China will be critical to stabilizing the global economy. At a minimum, such large transformations entail more political and social changes than is the case with most recoveries, pointing to a longer period of potential volatility and instability than is usual for many recoveries.

Europe and Japan face similar large-scale challenges—ones even more difficult to overcome because of the worsening demographic pictures for both. The large-scale social welfare programs that bought social peace in the post-World War II period no longer appear sustainable. The recent eurozone crisis appears a harbinger of more belt-tightening on a much wider scale throughout the European continent. Already decreasing defense budgets in Europe probably will be cut more. Even more important, European countries’ growing inward focus on domestic economies will increasingly tax their abilities to tackle global challenges.

The eurozone crisis also has wider implications for rebalancing the global economy. The currently sinking euro is likely to impede U.S. exports and because it raises doubts about prospects for global recovery will make China leery of revaluing its currency—one of the steps in global rebalancing—when the outlook remains so dicey.

Japan faces even greater demographic challenges and an economy suffering high levels of government debt, having lost a decade or more of growth. On the political front, Japan faces an identity crisis as China overtakes it economically and plays a greater role on the regional and global stages.

End to Rapid Globalization?

Slower economic growth—especially among Organization for Economic Cooperation and Development (OECD) countries—is not the only likely casualty stemming from the financial crisis. There is a widespread sense that we are in historically uncharted waters regarding the future of trade, with 2009 experiencing the first decline in world trade since World War II. Future global trade liberalization will be complicated by a shift in the global economic balance toward emerging powers, a tattered free market model and growing state-centered capitalism, and the potential difficulties of liberalizing agricultural and

service sectors. A decline in what has been the rapid growth in global trade will also be a further brake on globalization with a shift toward more regional economic clusters—North America, the European Union (EU), and Asia. A 1930s-type protectionism and breakdown in the international order probably is unlikely, but more subtle protectionist measures causing a fraying in global cooperation and governance are probable. Likely protectionist actions include currency manipulation, nationalist “buy local” procurement policies, challenges to intellectual property rights, “green” protectionism, and exclusionary regional trade arrangements—all of which could tilt the balance away from cooperation toward more “beggar-thy-neighbor” competition with ramifications beyond economics into the political and security spheres.

With a Rebalanced Global Economy Comes a New Geopolitical Landscape

The United States has begun to build strategic partnerships with Brazil, Russia, India, and China (the BRICs), but these partnerships are unlikely to rival our traditional alliances anytime in the foreseeable future. The four countries’ security perspectives vary widely and are different from those of the United States—in part because of the BRICs’ continuing economic development at home, which will remain a key focus for them. Although giants in size, they will remain, in terms of per capita income, well below Western standards, despite their burgeoning middle classes. The BRICs tend to favor state capitalism and, in the cases of China and Russia, are authoritarian governments and not democracies, with no clear signs of liberalizing in the foreseeable future.

China has the potential to be a peer competitor across several domains—economic, military, and technological. It is focused on establishing regional sway, which includes a military buildup aimed at preventing any U.S. military interference in a possible China-Taiwan conflict. Its concern over securing access to needed energy in the Persian Gulf appears to be spurring an interest in a blue-water navy. India-China tensions could result from Beijing’s expansion westward in the Indian Ocean.

But the Global Burden Remains Largely with the West

Important to U.S. security interests is the degree to which China will increase its global burden sharing. There is no clear indication of how this will play out. Last year Beijing contributed to the G-20’s pledge to increase International Monetary Fund resources, deployed naval forces to the international antipiracy operation in the Gulf of Aden, and supported new UN Security Council sanctions against North Korea. Beijing has been more temperate in its cooperation, however, in areas such as Iran where China views its interests or priorities as differing from those of the United States.

Other emerging countries are probably even less able or willing to shoulder global and regional burdens. South Asia has an embattled state in Pakistan, an ongoing Taliban insurgency in Afghanistan, and the potential for mass migration out of Bangladesh with rising sea levels and growing vulnerability to cyclones or other violent weather. India’s ability to act regionally to reverse these

worrisome trends is limited, in part because of historic enmities with Pakistan. For the foreseeable future, regional security will have to be borne by the United States and its allies.

Equally in the Middle East, the United States and, to a more limited extent, Europe remain vital global actors in trying to advance the Arab-Israeli peace process and counter Iran's nuclear ambitions. In addition to China, India, Brazil, and Russia are opposed to or remain reluctant to support strong measures against Iran.

Moreover, on many new transnational issues such as climate change, most emerging powers believe the onus remains more on the established and developed world to cut back emissions and provide the technology necessary to clean the environment. At Copenhagen, China, India, and others were closely eyeing the United States and dubious of the administration's ability to legislate strong measures against U.S. emissions levels. The emerging powers—with China in the lead—which agreed to voluntary and self-policing reduction targets, rejected more stringent limits, arguing that it was the West's historic responsibility to deal with climate change because the West's development in the nineteenth and twentieth centuries caused the large amounts of carbon in the atmosphere.

Multipolarity without Multilateralism

Global institutions—which have been a mainstay of the U.S.-dominated world order—may themselves be undergoing transition and may not be in a position to relieve the burden on the United States. The NIC—in cooperation with the EU's Institute for Security Studies—has been undertaking a study of global governance that involves discussions with officials and experts in many of the emerging—especially BRIC—powers.⁴ Multilateralism and many of the existing global institutions retain their legitimacy in their eyes. However, the institutions are not seen as reflecting shifting power dynamics and the priorities of the emerging states. Conflicting views on the BRICs' part as well as an inherent distrust of Western motives and underlying concern about noninterference in domestic matters mean the BRICs and others have no activist agenda for reforming institutions. Inclusion at the decision-making high table, not effectiveness of the institutions, is their overriding focus. In the post-World War II period, many global and regional institutions were U.S. partners, helping to expand and root democratic and free market values worldwide. Over time, there is the potential for them to assume more of the burden of global security as institutions reform to mirror the changing geopolitical landscape and emerging powers put more trust and reliance in them. In the meantime, as threats mount—from proliferation to climate change and cybersecurity—the burden is likely to be shouldered increasingly through shifting ad hoc coalitions of the willing. In most cases, the United States will be expected to take the initiative—even by emerging countries and others who are otherwise oftentimes suspicious of U.S. motives.

New Transnational Threats

The growing burden-sharing imbalance is occurring while threats are proliferating. In the cyber realm, the United States confronts a dangerous combination of known and unknown vulnerabilities as well as adversaries whose capabilities are rapidly expanding. The United States faces nation-states, terrorist networks, organized criminal groups, individuals, and other cyber actors with varying combinations of access, technical sophistication, and intent. Many have the capabilities to target elements of the U.S. information infrastructure for intelligence collection, intellectual property theft, or disruption. Cyber criminals particularly operate a pervasive, mature online service economy in illicit cyber capabilities and services, which are available to anyone willing to pay. While offensive and defensive technologies associated with cyberspace are dynamic, the existing balance in network technology favors malicious actors and is likely to continue to do so for the foreseeable future.

Two global trends within the information technology environment, while providing greater efficiency and services to users, also potentially increase vulnerabilities and the consequences of security failures. *Network convergence*—the merging of distinct voice and data technologies to a point where all communications are transported over a common network structure—will probably come close to completion in the next five years. This convergence increases the opportunity for, and consequences of, disruptive cyber attacks. The second trend, *channel consolidation*, is the concentration of data captured on individual users by service providers through e-mails or instant messaging, Internet search engines, or social networking. Channel consolidation increases the potential for and consequences of exploitation of personal data by malicious entities. These trends pose potential threats to the confidentiality and integrity of critical information infrastructures.

Maintaining the Technological Edge

One could make the case that the United States' long-term security is likely to rest on the degree to which it remains a technological leader. Various scientific surveys indicate continuing U.S. leadership in most domains, but with other countries—particularly the BRICs—beginning to chip away at U.S. superiority. The changed nature of knowledge creation—fluid movement of talent, the global supply chains, and the communications revolution—is catapulting the BRICs up to world-class levels. Current trends indicate that by 2025, Brazil, Russia, India, and China will be among the major technology competitors of the United States and other countries that now excel at science and technology in Western Europe, East Asia, and elsewhere. Ventures worldwide, most notably in China, are offering lucrative compensation packages and enticing projects to lure talent. The United States is in a good position to retain its leadership: our universities still draw many of the best Ph.D. candidates and postdoctorate researchers to work—at least temporarily—in this country. The challenges themselves—such as cybersecurity and development of alternative energy sources—provide huge opportunities for the United States to demonstrate its continuing technological edge. However, many academic studies highlight areas that need improvement, particularly higher levels of science and

mathematics achievement in U.S. primary and secondary education and more funding for research. Growing technological innovation promotes economic vitality and is also key to having sufficient indigenous capabilities to produce advanced military technologies.

A New Energy Insecurity

The next couple of decades could be particularly turbulent in the energy realm, raising new security issues. The past four decades have been characterized by seven oil shocks (four oil price spikes and three oil price collapses). Most experts agree that oil prices probably will remain volatile over the next couple decades, while the stakes are growing for both consumers and producers. In 1973–1974 at the time of the first oil price shock, countries in the developing world had not become emerging countries; China was not a net importer of oil. Sustained price spikes now would have a bigger impact on emerging countries—such as China and India—which are increasingly dependent on foreign supplies. Even more than the emerging states, energy-poor countries such as Pakistan and many other developing states are likely to suffer profoundly from any economic slowdown, potentially triggering political instability. At the same time, oil spikes will increase the resources for military expenditures and increasingly aggressive actions by oil-rich Russia, Iran, and Venezuela. Owing to a growing concentration of oil production in unstable areas, the risks of disruption will increase for the whole world, endangering the global economy.

The United States and other countries' dependence on foreign energy supplies almost certainly will lessen over time, but the transition is likely to take several decades. The exploitation of shale gas in the United States and Europe over the next decade would make the United States completely self-sufficient, while drastically reducing Europe's dependence on Russian supplies of natural gas. Most experts believe that a transition away from fossil fuels to alternative fuels—currently in the beginning stages—will completely sever energy dependence, potentially reducing the salience of the Middle East for the world economy.

Scarce Resources: A Potential Source of New Conflict

The global aggregate demand for food in the coming decade promises to be substantially increased because of the expected additional 700 million people in Asia, Africa, and Latin America; increasing dietary preferences for protein; and a high likelihood of a rise in demand for grain-based biofuel. On the supply side, global climate change trends are likely to depress agricultural productivity in some regions. In 2010, twenty-one countries, accounting for about 600 million people, are assessed as either cropland or freshwater scarce. Owing to the high cost of current agricultural technologies and “inputs” such as fertilizers and genetically modified organism (GMO) seeds, many poor countries cannot achieve food self-sufficiency today. On the basis of population growth, another fifteen countries are projected to join their ranks by 2025. By that year, 1.4 billion people are projected to live in twenty-six countries that will experience cropland scarcity.

The water situation is probably worse and is a major driver of food scarcity. As population and average per capita water use have grown, the amount of freshwater withdrawn globally each year has increased too, from 579 cubic kilometers in 1900 to 3,973 cubic kilometers in 2000. Demand is projected to rise further to 5,235 cubic kilometers by 2025. Worldwide, 1.2 billion people live in areas where human use of available water supplies has exceeded sustainable limits; by 2025 this figure will rise to 1.8 billion, with up to two-thirds of the world's population living in water-stressed conditions, mostly in non-OECD countries. Climate change will exacerbate the scarcity problem: more than a sixth of the world's population lives in river basins fed by glaciers or snowmelt—including the Indus, Ganges, Mekong, Yangtze, and Yellow rivers, all of which rely on the Himalayas.

Most experts believe that food and water scarcities will not inevitably lead to conflict. Historically, shared understandings and agreements between countries have averted resource conflicts and spawned cooperation. However, the scale and potential speed of the onset of current and projected scarcities increase the risk of conflict, particularly in areas with already existing ethnic, religious, or nationalistic tensions. Numerous studies indicate the growing fragility of many low-income developing states. Many of these states—particularly in Africa, South and west Asia, and the Middle East—are already weakly governed and have unresolved ethnic or tribal divisions. In addition, parlous countries such as Afghanistan, Democratic Republic of the Congo, Ethiopia, Nigeria, Pakistan, and Yemen will retain youth bulges—age structures with large proportions of young adults—a demographic feature that is associated with the emergence of political violence and civil conflict.

Long-Standing Threats Persist

In our *Global Trends 2025: A Transformed World* report, we hypothesize based on past trends that the current “terrorist wave” may burn itself out, as has been the case historically with many terrorist movements and groups.⁵ We may be beginning to see that burnout as the organized al Qaeda “core” comes under pressure, making the possibility of large-scale coordinated attacks—similar to 9/11—less likely. However, individuals motivated by the ideas generated by al Qaeda are posing increasing threats. Tracking single individuals or small groups to disrupt any planned terrorist attacks is more difficult than monitoring the activities of large, hierarchical organizations. Moreover, the diffusion of technologies and scientific knowledge will increasingly place some of the world's most dangerous capabilities within the reach of more individuals. The globalization of biotech industries, for example, is spreading expertise and capabilities and increasing the accessibility of biological pathogens suitable for disruptive attacks.

The weapons of mass destruction (WMD) proliferation threat is also increasing: Iran is keeping open the option to develop nuclear weapons. It has the scientific, technical, and industrial capacity to eventually produce nuclear weapons, making the central question whether it has the political will to do so. North Korea's export of ballistic missiles and associated materials to several countries, including Iran and Pakistan, and its assistance to Syria in the

construction of a nuclear reactor, exposed in 2007, illustrate the reach of the North's proliferation activities. The degree to which the proliferation threat triggers a nuclear arms race will add markedly to U.S. burdens in countering and seeking to protect U.S. friends and allies against potential attack.

Worst-Case Scenarios—Extra Burden for the United States

As interdependence grows, so do the risks of local or regional crises escalating to the point that they have a more global impact. Many see this as the price of globalization. Unfortunately, as the only true global power with worldwide interests, the United States has to prepare for the worst and, despite "*the rise of the rest*," is looked to for leadership on the increasing number of global challenges. Efforts to prioritize are difficult because of the wide span of potential threats and the increasing lethality of many of them. The kinds of possible scenarios for which there is increasing preparation run a wide gamut from humanitarian disasters—like the earthquake in Haiti or tsunami relief in Southeast Asia—to growing insurgencies and the need for nation building to WMD proliferation. A nuclear arms race and the specter of nuclear use in the Middle East or South Asia present a new level of threat potentially requiring an even greater outlay of security by the United States.

Far Rosier Longer-Term Prospects

Over the longer run, the advantage may turn back more in the United States' favor. Some of the threats enumerated above are likely to moderate over time. For example, youth bulges in many countries even in parts of Africa and the Middle East will begin to dissipate in the next ten to fifteen years, reducing the risk of some conflicts, even as societies in the developing world start to age. The emergence of new economic tigers by 2015—Turkey and some North African countries—could occur where youth bulges mature into "worker bulges." Unlike many advanced countries, the United States does not have to worry about a declining population, which enhances prospects for continued economic growth. International institutions may also catch up as they reform to better reflect the power shifts and enlarge their focuses to deal with newer challenges. Even as other countries begin to shoulder more global responsibilities, the United States' international role is likely to remain key with many other rising powers looking to the United States as the "balancer" against competitors in their own regions. Over time, the "state capitalism" used by emerging powers to jump-start rapid development is likely to become a hindrance to growth, particularly in the ideas and innovation sectors; demand within these societies for private sector initiatives and individual rights probably will increase.

The economic and security challenges facing the United States are largely the result of the multiple transitions—from the emergence of new players to the many simultaneous technological revolutions that are under way. Historically, transitions are treacherous periods. While the handoff between the British Empire and the United States was fairly smooth by historical standards, the tragic consequences that followed with the rise of Germany and Japan in the late nineteenth and early twentieth centuries largely shaped much of the world we

still inhabit. The rapid upending of traditional societies in the cases of China, India, Brazil, Indonesia, and others is redolent of nineteenth-century Europe, adding another measure of insecurity and *unpredictability* to the global picture. The risks of U.S. overextension—as many commentators have highlighted—are no doubt increasing with so many simultaneous challenges and threats at hand. At the same time, the United States' continued preeminent position in the world is in part dependent on its success as guardian of an international system that has reaped huge benefits for many. This will be a difficult juggling act for Washington and one in which the United States does not necessarily have a large margin of error.

Notes

1. This paper is based upon work produced by the National Intelligence Council, but has not been coordinated with rest of the intelligence community.
2. “Security” is used in the broadest sense throughout the paper and does not refer simply to situations requiring military intervention. In our definition, U.S. security also depends on factors such as access to free trade, the health and vitality of the United States' traditional alliances, and the spread of liberal market and political liberalization ideas.
3. Since 1996 the U.S. National Intelligence Council has published every four years an unclassified work on global trends over the next fifteen years or so. The 2004 publication was entitled *Mapping the Global Future: Global Trends 2020*. It and the 2008 publication (*Global Trends 2025: A Transformed World*) dealt extensively with the implications of the rise of emerging powers. Full texts are available on the Director of National Intelligence website (www.dni.gov).
4. The unclassified study is to be completed in summer 2010. The text will be available on the DNI website, www.dni.gov/nic/NIC.
5. National Intelligence Council, *Global Trends 2025: A Transformed World* (Washington, DC: U.S. Government Printing Office, 2008), p. 69.

Panel I: Economics and Security

Summary of Discussion

Dr. Colin F. Jackson
Professor of Strategy and Policy
Naval War College

The panel opened with brief presentations by the authors of the workshop papers: Dr. Ronald Findlay of Columbia University and Dr. Matthew Burrows of the National Intelligence Council.

Dr. Findlay's paper examined the rise of China and the emergence of a new, bipolar world system. Findlay portrayed these changes as the culmination of three long-term trends: the Industrial Revolution, the transition from organic to mineral economies, and the shift in power from the rimlands to the Eurasian heartlands. Findlay argued that the rise of China would likely rekindle the Mahan/Mackinder debates of the twentieth century as the rimland power of the United States encountered the rise of a continental power in China. The resulting competition will be shaped by Chinese moves to secure energy supplies either through the development of a blue-water navy or the development of continental pipeline systems. Findlay painted a portrait of a new, bipolar international system, perhaps a *Pax Sino-Americana*, in which the remaining great powers are forced to cope with the mixed cooperation and competition of China and the United States.

Dr. Burrows outlined a series of challenges facing the United States in a period of rising security obligations and constrained resources. He highlighted the emergence of state and nonstate threats to the postwar, U.S.-led, international order. On the state front, he singled out China as a rising economic power and a potential peer competitor. On the nonstate front, he identified a series of challenges ranging from the more familiar terrorist threats to the emerging problems of cyber attacks and resource-driven conflicts. Burrows argued that the United States will confront these challenges in the face of the financial and entitlement crises and rising protectionist pressures. While Burrows argued that rising threats and shrinking resources would impinge upon U.S. influence in the short to medium run, he highlighted the significance of American economic, social, and demographic advantages over the longer run.

Five major topics emerged in the discussion that followed.

The first centered on the likelihood and consequences of an unanticipated slowdown in Chinese economic growth. Both papers emphasized the role of continued 6–8 percent Chinese economic growth in recasting the international order. One participant identified a number of possible threats to Chinese growth: total factor productivity slowdowns, banking crises, real estate bubbles, and the like. If all these factors played significant roles in the collapse of Japanese power in the last two decades of the twentieth century, then might China

not succumb to a similar set of risks? What might such a slowdown mean in the context of a Chinese political order in which state authority is a function of prosperity?

While acknowledging the existence of a number of these risks, other participants were more sanguine about Chinese growth prospects and skeptical of the historical analogies of the Soviet Union and Japan. Several participants argued that Chinese labor demographics make robust economic growth the most likely scenario for the next three decades. Only after that time would demographic shifts within China constrain economic growth. They were also relatively skeptical about the applicability of the Krugman thesis on the limits of factor input-driven growth in the Soviet Union and the Asian newly industrialized countries. They pointed out the essential differences between the Soviet and Chinese models—one predicated on a denial of markets and international integration, the other propelled by markets and price signals. The same participants pushed back on the Japan analogy. They argued that Japan at the time of the bubble economy was relatively mature, slow-growing, and demographically constrained. These contrasts, they argued, make a sustained economic and political rise of China more likely than a plateau or collapse.

The second topic was the significance of Chinese ownership of U.S. sovereign debt. One participant asked whether the outsized accumulation of U.S. debt suggested a more than economic motive on the part of the Chinese government. Simply put, could China use its Treasuries to coerce the United States?

One respondent argued that the Chinese accumulation of Treasuries was neither economically irrational nor outsized. Instead, the Chinese government had amassed these reserves to insure against future banking or currency crises. This behavior was entirely consistent with International Monetary Fund prescriptions for the developing world and a long tradition of mercantilist reasoning. Second, the purchase of large quantities of U.S. debt makes the Chinese “as much a hostage to us as we are to them.”

A second participant argued that the greater concern was the illusion of American prosperity that large Chinese purchases of debt conferred. If the United States continues to live beyond its means, then Americans may ignore the need to reduce consumption and increase investment in technology.

The third topic was the role of ideological differences in the relationship between the United States and China. One participant argued that the papers implicitly shared an assumption that Sino-American relations would follow a pattern similar to that seen between prerevolutionary France and Great Britain: great-power competition, economic rivalry, and competitive alliance formation. The participant suggested that this view of the Sino-American relationship ignores the fundamental ideological tensions between the two countries over regime type and basic political principles.

One respondent argued that the democracy issue was less significant in Sino-American relations than the problem of rule of law. The current economic relationship trades Western technology for market access. Widespread theft of intellectual property increasingly irritates Western investors and there is a question of whether this implicit trade-off will be attractive to the West over the

longer term. While the Chinese model of autocratic, state capitalism is compatible with economic growth and stable relations with the United States, the respondent argued that rising prosperity in China would likely produce long-term pressures for broader political participation.

A second participant argued that the combination of state capitalism and Chinese nationalism offers a viable alternative, at least over the near to medium term, to democratic reform. Other states in Asia, Latin America, Africa, and the Middle East might be drawn to a formula that appears to offer robust growth and tight political control.

A third participant raised three challenges. First, could the Chinese Communist Party survive prosperity? Second, could Chinese democracy resemble Western democracy more closely than advocates of a distinctive Chinese model might assume? Third, what would a democratic revolution in a prosperous China look like?

Several participants argued that democratic revolution, while possible, remains less likely than a renewed emphasis on rule of law and a conscious attempt on the part of the Chinese government to move toward a Singaporean model of governance.

One workshop participant argued that the discussion seemed overly focused on things over which the United States had little control, particularly the internal organization of other countries. Given the recent failures of the United States to reshape the Middle East, the participant argued that the discussion should center on things the United States can control. Strategy in this sense was more about American choices than American desires or concerns.

The fourth topic was imperial overstretch. The discussion opened with an observation that economic strength and security outlays were inextricably linked. The participant asked whether the United States faced its own “Suez moment” and how the United States might prepare to face such a crisis.

One participant noted that the challenge was as much bureaucratic as analytical. The United States produces periodic assessments of the risks to U.S. power but the economic and security communities seldom share the same perspective on or assign similar relative weights to a range of possible threats. Instead, each community tends to highlight the risks within its domain and downplay risks outside it. The real challenge for the United States will be to think in more integrative terms about national strategy and seek to build buffers against the full range of threats.

The fifth theme was the role of immigration in international competition. One participant observed that the relatively open immigration policy of the United States has long been a competitive advantage. Would this U.S. advantage remain intact or would other countries supplant the United States as destinations for highly skilled emigrants?

The other participants were generally sanguine about the attraction of America and the benefits of openness. American soft power rests in some measure on the inflows and even outflows of gifted immigrants. As one participant observed, empires that have sought to constrict immigration have generally done so in periods of decadence and decline. The real challenge today is to deal with what might be called the “Pakistan problem.” What if the admission

of large numbers of talented immigrants involves the acceptance of a small number of bad apples? What is the appropriate trade-off between the advantages of openness and the risks of terrorism?

Panel II

Federal Budget: Resourcing National Priorities



Michael Ettlinger

Vice President for Economic Policy, Center for American Progress

Dr. Diane Lim Rogers

Chief Economist, The Concord Coalition

Moderator:

Ambassador John A. Cloud

State Department Advisor to President, Naval War College

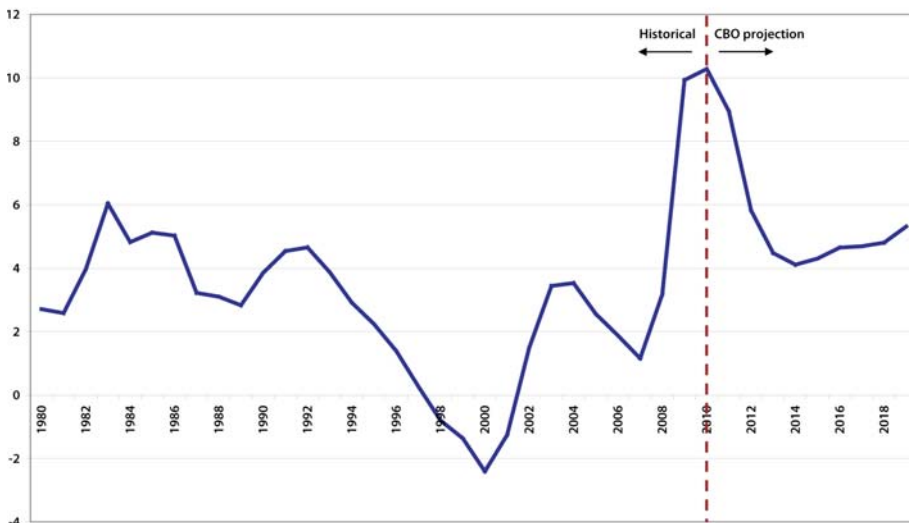
Addressing the Federal Deficit and Debt

Michael Ettlinger
Vice President for Economic Policy
Center for American Progress

As the economy recovers from the worst recession since the Great Depression policy makers will be turning to our nation’s longer-term challenges. High on that list is the prospect of persistent and large deficits throughout the next decade and beyond. Unless action is taken, by 2019 we will be in the midst of the longest streak of consecutive years with deficits that exceed 4 percent of gross domestic product (GDP) in the nation’s modern history.

The magnitude of the problem is daunting. Current projections suggest that annual deficits will decline from current peaks *down to* levels in the vicinity of 4 percent of GDP by 2014.¹ After that, however, the deficits are expected to begin creeping back up.

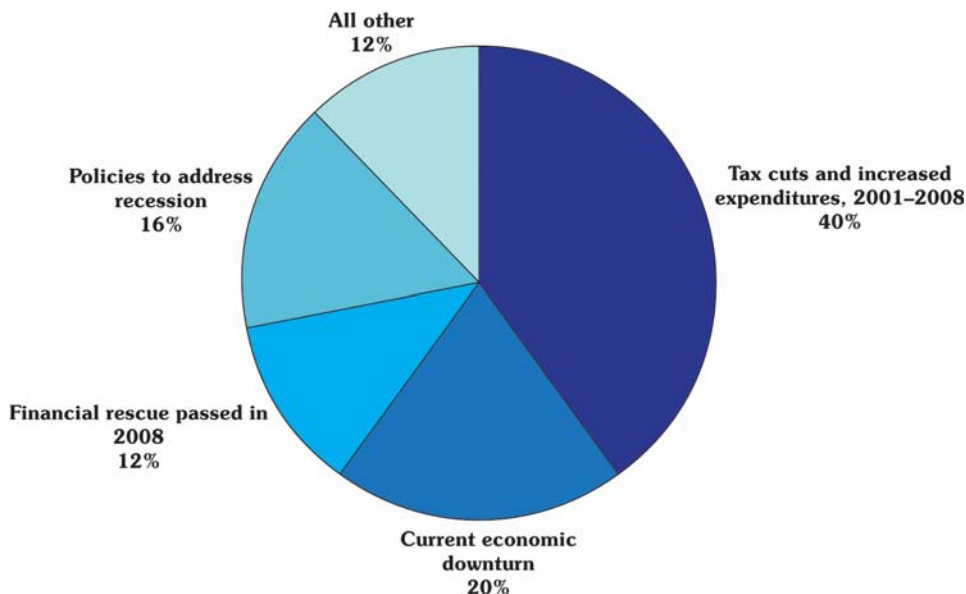
Figure 1
Federal Deficit/Surplus, as a Percentage of GDP (1980–2019)



Source: Congressional Budget Office, “Analysis of the President’s 2011 Budget” (2010).

These deficits are the result of long-existing structural issues that have been exacerbated by the current economic downturn. Though the impact of the recession has been significant, policies that predate the recession—especially

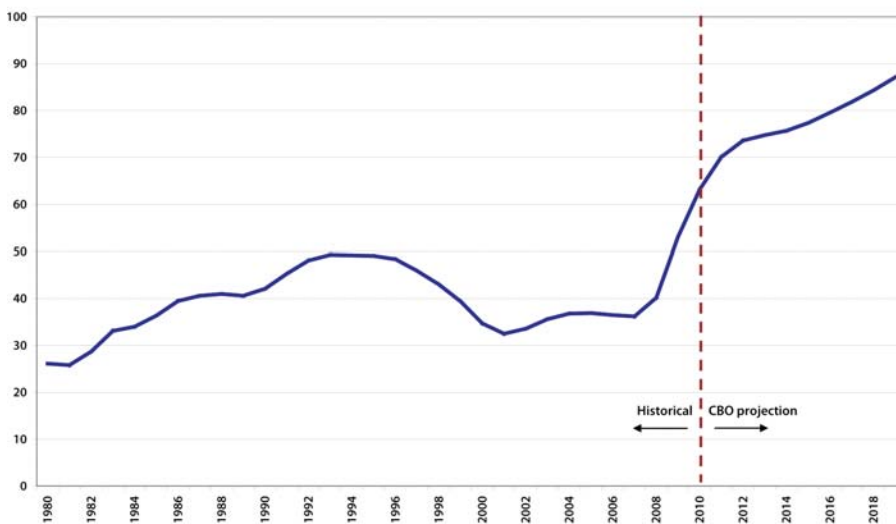
Figure 2
Contribution to Fiscal Deterioration, 2009 and 2010



repeated tax cuts and expanded military and domestic spending—have played a very large role in creating the spending and revenue gap that we see today.

The economic consequences of failing to get these deficits down to more reasonable levels could be dramatic. In addition, persistent deficits of such a

Figure 3
Total Publicly Held Debt, as a Percentage of GDP (1980–2019)



Source: Congressional Budget Office, “Analysis of the President’s 2011 Budget” (2010).

magnitude will dampen our ability to direct resources to important priorities for future growth and security. Rising deficits mean a rising level of federal debt. If nothing is done, by 2019 the federal debt will be in the vicinity of 87 percent of GDP. That would be the highest level since 1947. Interest payments on our increasing debt are projected to exceed 11 percent of total federal spending by 2013 and top 15 percent by 2019. Those are dollars that would be better spent on a higher public purpose. For all these reasons, there is broad agreement that addressing our long-term deficits must be a priority. The hard part is deciding how.

Seriously Addressing Our Deficit and Debt Problem

Staying on our current budget path is dangerous, but trying to reduce the deficit too quickly, too much, or in the wrong way also poses serious risks. With the American economy slowly recovering from the Great Recession, attempts to rein in the deficit must acknowledge the very important role that deficit spending has played and will continue to play in pulling our economy back from the brink. To change the momentum of the economy and to spur continued growth, we still need policies that attack high unemployment—the most persistent legacy of the recession—even if that means higher deficits in the short term. Such efforts will ultimately improve the fiscal situation, with more jobs leading to higher overall tax revenues and lower safety-net spending. What's needed is a balance between deficit spending now to spur the economy and well-considered policies that will bring down the deficits of the future.

Any serious effort begun today should both lay the foundation for future policy responses and start with an honest discussion about our national priorities. The first step of this process is to define the deficit reduction goals necessary to put us back on the road to fiscal health. It is not necessary to fully balance the budget within the next few years. Such an aggressive goal would require drastic cuts and dramatic revenue increases, and would likely end up being economically counterproductive. In addition, setting such a goal would practically ensure that it would never be met. History tells us that when goals are unrealistic, the political system finds ways to skirt them.

The Obama administration has defined an appropriate middle-term goal of reaching primary balance by 2015. Primary balance is when total federal spending, except interest on the debt, matches total federal revenues. Hitting this target in 2015 would mean an overall deficit of less than three percent of GDP, which will keep the total federal debt, as a share of GDP, stable. In other words, achieving primary balance would stop the fiscal bleeding. In dollar terms, this will require finding budget savings and revenue increases that together total a bit more than \$250 billion.

Though attainable, reducing the deficit by this amount and achieving primary balance is still going to be an extremely difficult task. And the reality is that any successful solution will have to include a mixture of spending cuts and increases in revenue. The difficulty lies in choosing which mix of spending cuts and revenue raisers is best. To do so, we must have an honest conversation about our national priorities—identifying, defining, and translating them into

budget policy. And we must also understand how our choices in one area affect the menu of options in others.

Federal Spending

To reach primary balance in 2015 solely by reducing federal spending would require a cut of 6.8 percent across the board. Such a widespread cut would have far-reaching consequences for everything from public health to national security. And, of course, it would be bad policy. Cutting everything by the same amount is not likely to produce the optimal use of public resources.

There are, for example, some areas of spending where substantial reductions in the next few years are either unlikely or unwise. The consequence, however, of exempting some areas of the budget from cuts is that other areas will have to be cut even more deeply to achieve the overall target.

One program not likely to contribute to deficit reduction in 2015 is Social Security. At \$880 billion and 19.4 percent of the total budget, Social Security is the largest single federal program. But there are several barriers to gaining savings from Social Security in the near term. The first is that Social Security, for the time being, actually pays for itself through the dedicated payroll tax. Though experts agree that, in its current form, Social Security will begin running in the red sometime in the next decade, by 2015 the program is still projected to be in surplus.

Second, though there have been various plans offered to change Social Security, one thing most such plans have in common is that they don't substantially reduce benefits for current retirees or for those who are soon to retire. To do so would mean cutting benefits that these retirees and those near retirement have counted on in calculating their retirement needs. This would be unfair as well as politically unpalatable. These realities make substantial cuts to Social Security very unlikely. If the cost of the Social Security program is not lower than current projections for 2015, then the rest of the budget would need to be cut by 9 percent to reach primary balance.

The story is similar for Medicare and Medicaid. In the long run, there is reason to believe that savings in these programs could be far beyond what has been officially projected to be achieved from this year's health reform legislation.² But the likelihood of squeezing any substantial further savings from these programs by 2015 without seriously undermining the quality of the health care provided is very small. If most federal spending on health is also exempt from significant additional reductions by 2015, then everything else in the federal budget would have to be cut by 14 percent to achieve primary balance.

Cuts of 14 percent to so much of the budget would be simply untenable, but the reductions could actually be larger still. Earlier this year, when submitting his budget request to Congress, President Obama proposed a three-year freeze in government spending, but exempted defense spending from this freeze. If, when push comes to shove, and \$250 billion in spending cuts are needed to reach primary balance, the Department of Defense is held harmless again, then the rest of the budget would have to suffer cuts of 22 percent in order to reach the goal.

The “rest of the budget” that would face such draconian cuts includes a variety of mandatory programs like Pell Grants, federal support for agriculture, and the School Lunch Program, and the entire nondefense discretionary budget. The nondefense discretionary category, despite making up less than one-sixth of all federal spending, is home to a large range of programs, including the Veteran’s Health Administration, which delivers health care to over 8 million veterans, the Food and Drug Administration, the National Park System, the Coast Guard, the Federal Aviation Authority, the FBI, the Transportation Safety Administration, and many, many more. It is hard to imagine Congress or the American people accepting such a massive cut to such a wide array of government services.

Even without cordoning off certain parts of the federal budget, getting to primary balance merely by reducing spending is very difficult. Cutting everything the government does by almost 7 percent would require a massive recalibration of services, programs, and benefits. But, of course, there is no realistic chance that the entire budget will be subject to these kinds of cuts. And once you protect one program, everything else must be cut even deeper. The fact is that some programs will be protected, because of either practical or political concerns, and that means that achieving primary balance without a dime in new revenue will require major sacrifices in most spending areas.

Revenues

On the flip side, achieving primary balance by 2015 with just increases in revenue and no spending reductions at all is also unlikely. To reach primary balance and reduce the deficit by about \$250 billion by 2015 solely through increased revenues would require a 7.3 percent increase in all federal taxes and fees. That means a 7.3 percent hike in everyone’s income tax, gasoline tax, payroll taxes, and all other federal charges.

It is important to note that, from an economic perspective, such an increase would hardly be disastrous. The United States as a whole currently pays a historically low level of taxes as a share of GDP. The extra \$250 billion raised to reach primary balance by 2015 would put revenues at the same level as they were from 1998 through 2001. Raising taxes by such an amount, however, isn’t politically likely, given the decades-long campaign to demonize taxes as inherently damaging.

Figure 4
What Would It Take to Achieve Primary Balance by 2015?

<u>Spending Cuts Alone</u>	<u>Tax Increases Alone</u>
If we cut:	If we increased taxes on:
Everything—6.8% cut	Everyone: 7.3% increase
Everything but . . .	Only those making over \$250,000 and corporations: ~25% increase
<ul style="list-style-type: none"> • Social Security: 9% cut • SS, Medicare & Medicaid: 14% cut • SS, Medicare & Medicaid, Defense: 22% cut 	

Note: Rough estimates based on projected primary deficit of 2.7% of GDP.

Another constraint on increasing revenues comes from the Obama administration itself. The president has stated that he will not propose raising taxes on those making less than \$250,000. Raising around \$250 billion just on those who make more than \$250,000 a year plus corporations would require an increase for those affected of approximately 25 percent.

Finding the Right Mix

Any solution to our budget dilemma will almost certainly include some spending reductions and those reductions will probably apply to a wide swath of the federal budget. The magnitude of these reductions is primarily dependent on which programs are exempt from cuts, and how much additional revenue will be raised.

As discussed, if no additional revenue is to be raised at all, and certain programs like Social Security, Medicare, and Medicaid are protected from cuts, then the rest of the budget, from defense to education, will have to be cut by about 14 percent.

But the cuts needed to achieve primary balance come down significantly with small increases in revenue. For example:

- With a 2 percent increase in revenues, cuts to the federal budget, exempting Social Security, Medicare, and Medicaid, would have to average 10 percent (instead of 14 percent);
- With a 3 percent increase in revenues, cuts to the federal budget, exempting Social Security, Medicare, and Medicaid, would have to average 8.3 percent;
- With a 4 percent increase in revenues, cuts to the federal budget, exempting Social Security, Medicare, and Medicaid, would have to average 6.2 percent;
- With a 5 percent increase in revenues, cuts to the federal budget, exempting Social Security, Medicare, and Medicaid, would have to average 4.4 percent.

Conclusion

The federal budget deficit poses significant dangers to the economic well-being of the country. As the economy recovers, it will become ever more important for Congress and the president to act to bring the budget onto a more sustainable path. The first steps have already been taken, with the convening of the bipartisan fiscal commission and the selection of an appropriate intermediate deficit target.

Sometime in the near future, hard choices are going to have to be made. These choices will likely affect major portions of the federal budget and, by extension, every American. Some programs will be cut, and some taxes will be raised. Understanding the interaction between these policy options is a crucial foundation for solving the overall problem.

The more spending is cut, the less taxes will have to go up. The more revenue we raise, the less programs will have to be reduced. Similarly, if some

programs are deemed “untouchable” then any cuts to the remaining programs will be larger, while if the whole budget is on the table, the magnitude of cuts to any one program will be smaller.

There is no easy path to a sustainable federal budget, and any solution is going to require some shared sacrifices. The task of finding \$250 billion in deficit reductions is sufficiently large and difficult that few are going to be able to get off scot-free. But the impact will be greatest and most concentrated if we choose not to spread out the burden. Cuts of up to 22 percent on fundamental government services like health care for veterans and food and drug safety would be devastating. Raising all corporate taxes by 25 percent would be counterproductive. Instead, we must agree that, to achieve our fiscal goals, everything has to be on the table.

Notes

1. The calculations used in this paper are based on the Congressional Budget Office’s “Analysis of the President’s 2011 Budget,” and are adjusted for CBO projections for the impact of the recently passed health reform legislation. Thus, they include several proposals by the administration to reduce the deficit from the policy baseline as well as the deficit reduction that was legislated as part of health reform. Whether or not all of the measures proposed by the president are enacted, in aggregate these projections are a reasonable basis for doing the calculations presented in this paper.
2. D. M. Cutler, K. Davis, and K. Stremikis, *Why Health Reform Will Bend the Cost Curve* (Washington: Center for American Progress and The Commonwealth Fund, 2009).

The Way Out of the Fiscal Hole: An Economist Mom's Perspective

**Dr. Diane Lim Rogers
Chief Economist
The Concord Coalition¹**

Introduction: Why Care about the Fiscal Outlook?

The federal budget outlook has been an interest of mine since the time I began studying public sector economics in college in the early 1980s, because the growing and unsustainable public debt is a tremendous threat to the strength of the U.S. economy as a whole and well illustrates what can happen when the pursuit of individual self-interest runs contrary to the public good. But my concerns about the budget outlook deepened and became much more personal when I became a mother, when I realized that the burden of this debt—a debt projected to grow to unsustainable levels largely because of benefits promised to my “baby boom” generation—was being unfairly passed along to my kids’ generation.

As parents, many of us baby boomers make “investing” in our kids a priority in our household budgets. We pay for our kids’ music and dance lessons, team sports, and after-school academic enrichment and health-promoting (fitness) programs. We make sure they go to the doctor and dentist regularly, and we even pay to give them perfectly straight teeth as a warm-up to paying for college. And we pay for tutoring and test-preparation classes and encourage them to do their best with their studies in the hopes that they will get into a good college that we can manage to pay for and will turn out to be a “good investment.” What makes all of our parental efforts worthwhile isn’t always measured in purely monetary terms, but all of us certainly hope that we help set our kids on a path to a high “quality of life.” And I think most of us hope that our kids’ lives will be of even *higher* quality than ours have been.

That is why any parent should be particularly concerned about the budget outlook: it directly undermines all of our personal efforts to provide for our kids and set them on that good path. We contradict ourselves if on the one hand we are saving for our kids’ college educations but on the other hand are clamoring for more deficit-financed tax cuts or benefits for ourselves. I believe most well-meaning parents and grandparents don’t understand this connection, because our leaders have not leveled with us about it. Many policy makers themselves don’t understand it, and even those who do understand still feel that fiscal responsibility is too hard a sell to the American public—because no matter how large the economic benefits of fiscally responsible policies, those benefits seem very diffuse and subtle, while the political costs of fiscally responsible policies (i.e., the risk of getting voted out of office for proposing politically unpopular tax increases or spending cuts) seem very obvious and certain, and indeed very personal to the politicians.

Until we are able to change this dynamic and get the American people to clamor for politicians to “do the right (fiscally responsible) thing,” we will not be successful in changing our fiscal course. That is why public education and outreach are the core mechanisms through which my organization, the Concord Coalition, pursues its mission of promoting fiscal responsibility and inter-generational equity.

What Makes the Fiscal Outlook “Unsustainable”?

Budget policy experts often get a bum rap as “bean counters” who are obsessed with narrow accounting goals that mean nothing from an economic perspective. But as an economist, my concern about the deficit is not about its current level (the specific number) but rather the path it’s on and how it compares to the path our economy is on. I consider myself a “deficit hawk,” but I certainly don’t think the goal should be a perfectly balanced budget with a zero deficit in every year. Running a debt can be valuable, because it can allow us (whether as a society or as a family) to achieve a higher standard of living than what is possible if relying on current income alone, particularly when the borrowing makes possible investments that increase future income. But if we borrow too much and use it to buy things that do not increase our future income, we can get into an economically “unsustainable” situation where the burden of the debt we carry grows faster than our income—and we cannot keep up. (Examples from the family budget: borrowing for college is less worrisome if college boosts future income; borrowing to buy a home is not a problem if the interest rate will not “balloon” in the future and if the home’s value is expected to rise; borrowing for a flat-panel TV because you don’t have a job right now to pay for it . . . *not* so smart!) What matters is what we choose to buy with that debt, and how the burden of that debt is expected to grow compared with our capacity to pay it back, in judging if going into that debt is a good idea.

The current federal budget deficit, which represents how fast the *debt* is *growing* this year, is at an unsustainable level at nearly 10 percent of gross domestic product (GDP). That is economically unsustainable because the economy typically grows at a rate of just around 3 percent per year—meaning that deficits of around 3 percent of GDP would stabilize the ratio of debt to GDP around its current level of about 60 percent. Fortunately today’s extremely high deficits are not expected to persist beyond the economic recovery; the Congressional Budget Office (CBO) forecasts that deficits under current law will recover to just around 2 to 3 percent of GDP within five years,² which would be a sustainable level, at least temporarily. But the fiscal outlook is nevertheless unsustainable for two reasons: (i) in the nearer term (within the ten-year budget window) the Obama administration’s proposed policies lead to deficits in the 4 to 5 percent of GDP range (*greater* than the ballpark 3 percent “sustainable” level); and (ii) even under current law, the longer-term outlook beyond the first ten years shows rapidly increasing debt as a share of GDP as the pressures of age-related entitlement spending (through demographic change and rising health costs) mount faster than the economy’s capacity to pay for it. The Government Accountability Office’s (GAO’s) long-term fiscal outlook shows that under current law the debt-to-GDP ratio will exceed the historical post-WWII

high of 109 percent by the mid 2030s, and under current *policy* extended (more on this difference later) would exceed this in just ten years (by 2020).³ Few economists would dare label a particular level of debt to GDP as the “breaking point,” but most economists would say that debt exceeding 100 percent of GDP likely qualifies as “too high” to be sustainable. (Also, about *half* of current debt is held by foreign investors versus virtually none of it post-WWII.)

How Did We Get Here?

How did the United States get into this unsustainable fiscal situation? We overpromised benefits to a segment of our population (the retired) that we have known for decades would suddenly grow rapidly (because of the swell of the baby-boom generation that began to retire two years ago), and we got a little unlucky with the very rapidly rising costs of providing health care per health care beneficiary (which admittedly were encouraged by some of our unwise and inefficient health care policies). Once we committed to a system where we promised more than we were willing to pay for, getting out of the situation has proven nearly impossible for us Americans. Our dysfunctional political climate encourages only *costly* “compromises” where politicians from both sides say, “If you get this thing you want, then I get that thing I want,” rather than “I’ll give up on this thing I want, if you give up on that thing you want.” Then there’s Americans’ inherent nearsightedness, impatience, and tendency toward immediate gratification (very different from many Asian cultures, by the way), which coupled with our perhaps overoptimism (or denial?) about our future encourages all the borrowing to proliferate—whether that be our own personal borrowing or the government’s.

The Economic Challenge

Another reason why “zero” is not the right answer for the “right size” of the budget deficit is because deficit spending is a necessary fiscal policy tool to counter the weakness of an economy in recession. During a short-term economic downturn, the problem facing the economy is unused (“idle”) capacity—unemployed workers, shuttered factories, and vacant office buildings and storefronts. Government spending and tax cuts are often the best way to immediately boost the demand for goods and services and put that capacity to work. Government can boost GDP by directly purchasing goods and services, or by putting money in the hands of households and businesses, who in turn purchase goods and services.

Unfortunately, the short-term economic goal of stimulating consumption and aggregate demand is very different from the longer-term goal of encouraging economic growth—or the expansion of the country’s productive capacity (aggregate supply). Consumption is precisely the opposite of saving, and it’s saving that increases the capital stock (whether human or physical) that allows future generations to earn the income that will hopefully grow as fast as their debt burden and other demands on their resources. So the current challenge facing economic policy makers (in the United States and globally) is how to carefully segue from our “stimulate demand” stance to a “grow the supply”

one, as the economy recovers and the adverse fiscal outlook begins to threaten even the immediate-term economy.

Deficit-financed spending and tax cuts may be beneficial when the economy is in a slump, but they are typically harmful to a full-employment economy, because deficits represent negative public saving, which directly subtracts from national saving (the sum of public plus private saving). An important lesson learned from the Clinton administration is that being on the other side of the “Laffer curve,” where revenues move inversely to marginal tax rates, is a rare phenomenon. Tax cuts very rarely pay for themselves, and tax increases rarely lose revenue. When the Clinton administration raised marginal tax rates, national saving rose with public saving as the deficits shrunk and then turned into surpluses.

The current situation in Greece is a disturbing example of what can happen when a fiscally unsustainable path suddenly turns into a crisis. While the United States has much more economic policy flexibility because of our greater control over our own currency and global financial markets, the International Monetary Fund’s (IMF’s) latest “fiscal monitor” asserts that in terms of our fiscal outlook, the United States is in the same category as Greece in terms of having to make the largest adjustments (of around 10 percent of GDP) to get to a sustainable level of debt.⁴

What Is the “Right” Size of Government?

Advocating for “fiscally responsible” government is not the same thing as arguing for a smaller government. Often people who say they want a smaller government really don’t want a smaller government; they just want lower taxes. The “right” size of government from a fiscally responsible perspective is that which we are willing to pay for in taxes. And the “right” level of taxes is that which is adequate to cover the cost of the government programs we deem worthwhile.

Americans have lost sight of this connection between the government we desire and the taxes we are willing to pay, because we have become too accustomed to persistent budget deficits as the norm, and too often our political leaders mislead us into thinking that there are no budget constraints and that deficit financing is “free.” While it is true that the federal government does have the luxury of running budget deficits in some years, over the long term the debt will ultimately have to be repaid—so there will have to be surpluses in some years to offset the deficits in others. We cannot sustain a government that is *persistently* larger (in terms of spending and tax preferences) than the taxes we pay.

Those who argue for lower taxes often claim that the historical evidence shows that taxes are not the problem, *spending* is, because the level of federal taxes as a share of GDP has been around 18 percent of GDP over the past forty years and is projected to remain at or above that level under either current law or even current policy extended. But maintaining a level of revenues consistent with the past proves nothing about their adequacy for the future. In fact, it says nothing about even their past adequacy; over the past forty years the average level of federal spending was over 20 percent of GDP, and that 2 to 3 percent

gap between spending and revenues would be sustainable only if it were projected to stay in that range.

In order to close the longer-term fiscal gap between spending and revenues, which in a number of analyses is estimated around the order of 10 percent of GDP,⁵ entitlement spending will have to be damped down and revenues will have to rise. The “solution” cannot come from the spending side alone, no matter the fact that most of the “cause” comes from rising health costs. Mathematically, given the growing share of the population dependent on programs that support retirees (Medicare and Social Security and to a large extent Medicaid), completely “flatlining” federal spending as a share of GDP (let alone bringing it *down*) would mean cutting many retirees off from these services—including retirees who cannot afford to be cut off. In my opinion, this cannot be a serious policy option for a compassionate society, and proposals that imply such draconian cuts in these entitlements are simply unrealistic and yet devoid of the details that would expose this flaw. In contrast, it may be more reasonable to believe that the optimal size of government grows over time as our nation becomes wealthier and our capacity to pay for public goods and services increases—that many public goods (including the public provision of health care, for example) can be considered “luxury goods.”

Certainly we must do all we can to control the growth in government spending, however, particularly where higher spending does not translate into higher-quality goods and services. On health care reform, we must learn from the demonstration projects and improve the flow of information in the health care market so that wiser public and private decisions can be made and wasteful spending eliminated. But the longer-term challenge will not be solved by cutting only the spending that is genuinely or even sounds like “waste, fraud, and abuse.” Tough choices on what kind of health care the public sector can subsidize and for whom (in other words, decisions about how to “ration” publicly provided health care) will have to be made. Because those choices are tough both economically and politically and will likely take a long time to both be implemented and to make a difference, health care and entitlement reform cannot be our only strategies to close the fiscal gap. Tax policy has to be a big part of the solution, too.

Finding the Courage to Grab the Big Tax Policy Lever

While health care reform offers the promise of slowing our fastest-growing spending programs, there are more certain and reliable policy levers on the tax side of budget, and we can start to pull them sooner, which would spread any “pain” over a longer period of time so the policy solutions are not so painful or disruptive at any point in time. (Both CBO’s and GAO’s long-term outlook reports make this point about the costs of delaying action.) “Sooner” doesn’t mean now or even this year, and given the still-fragile economy, no economists are recommending that taxes be broadly increased anytime soon.

One of the easiest things we could do (legislatively) to “pull” the tax policy lever would be to end the Bush tax cuts. Actually, to “pull” this lever means to not do anything, as under current law the 2001 and 2003 tax cuts are scheduled to expire at the end of this calendar year (2010). But because policy

makers will not want taxes to go up for middle-class households next year if the economy is still weak, it is more likely that this option would be exercised by only temporarily extending some of the Bush tax cuts.

If the Bush tax cuts were allowed to expire at *any* point over the next ten years, this would be contrary to what President Obama has proposed in his own budget, in which he calls for the permanent and *deficit-financed* extension of the bulk of the Bush tax cuts—over \$2 trillion worth over ten years. President Obama has repeatedly blamed the fiscal irresponsibility of the Bush tax cuts for the dismal fiscal outlook he inherited, and yet he proposes to extend them as the single most expensive proposal in his own budget, and he will have to sign a new piece of legislation to do so—effectively turning them into the “Obama tax cuts.” While the CBO shows that the Obama budget proposals increase the ten-year deficit by \$3.8 trillion, the Obama administration claims its proposals reduce the deficit by \$2.1 trillion.⁶ This is because the Obama administration has framed its proposals against a redefined “baseline” that assumes the permanent, deficit-financed extension of the entirety of the Bush tax cuts, even though no such extension is provided for under current law. By redefining the baseline as a “current policy extended” one, the administration is able to claim deficit reduction from the Bush tax cuts it does propose to let expire—those for the richest households that are worth around \$700 billion over ten years.

I believe that these budget baselines really matter—and not just to budget analysts who obsess over how large the deficit is or to policy makers who have to worry about budget rules such as “pay as you go” (PAYGO). They frame our fiscal situation relative to a standard that colors the policy makers’ and American public’s views of how big a problem we’re in and what we can do to fix it. In setting up a baseline that is based on Bush administration policies extended, the Obama administration encourages Americans to believe its budget tale about having inherited a fiscal mess for which it is not to blame but at the same time is powerless to change, and to believe that it is reducing the deficit and making things better when in fact it is not.

President Obama painted himself into this corner on tax policy, however, from the first time he uttered his campaign promise *not* to raise taxes on any households with incomes under \$250,000, and from the first time he heard those in his own party say they didn’t want to face any more accusations of proposing the “largest tax increase in American history.” To keep this promise is to eliminate any hope of raising the badly needed additional revenue in an efficient way, through base-broadening income tax reform or the consideration of new, more socially efficient tax bases.

President Obama’s choosing the Bush tax cuts as the centerpiece of his tax policy strategy is difficult to comprehend given how much he has complained about the Bush tax cuts and given what he could choose instead. (The Bush tax cuts have been deemed a “failure” from even a conservative perspective in that they failed to either pay for themselves or “starve the beast” of government spending. Reagan tax policy advisor Bruce Bartlett has written most extensively on these supply-side failures of Bush administration fiscal policy.) Letting the Bush tax cuts expire as scheduled without enacting any new tax policy would mean going back to Clinton-era tax policy, with a top marginal rate of 39.6

percent, which is far below the level that economists would consider detrimental to economic growth, and the CBO current-law baseline shows that letting current law happen like this would keep deficits in the economically sustainable range. In contrast, the Tax Policy Center has analyzed how high marginal tax rates would have to rise in order to reduce the deficit entirely on the backs of the “rich” (those in the top marginal rate brackets), and they show that under such a constraint rates would have to rise into the “Laffer curve” range of 70–80 percent that economists (even those not known as “supply-siders”) would indeed worry about.⁷

Is the President’s Fiscal Commission the Cure?

In its fiscal year 2011 budget, the Obama administration admitted that the “deficit reduction” achieved under the policy proposals in its budget (a “reduction” only relative to Bush administration policy extended, not relative to current law) is not enough to get to a sustainable level. The president’s policy proposals result in a deficit in 2015 that is around 4 percent of GDP. Therefore, the president’s budget called for a bipartisan fiscal commission to recommend additional policies that would further reduce the deficit to a more sustainable level of around 3 percent of GDP (“to stabilize the debt-to-GDP ratio at an acceptable level once the economy recovers”), and the commission was established by the president’s executive order in February—with previous congressional attempts to legislatively establish such a commission having failed.

Will the commission work? Some, including myself, believe the commission is necessary in order to give the president political cover to “do the right thing” and renege on his campaign promise of avoiding tax increases on the middle class—because the commission would surely come to the conclusion that broad-based revenue increases will be necessary. Others more pessimistically believe that the commission will give policy makers an excuse to not do anything and simply “wait” in a holding pattern until the commission issues its report in December. Some question the meaningfulness or usefulness of the relatively short-term and narrow goal of getting the deficit down to 3 percent of GDP by 2015—without any longer-term goal that more adequately would assure fiscal sustainability. I think the 2015 goal is useful and necessary as a sort of way station along the way to the real, longer-term goal, but it is certainly not sufficient to ensure we will have solved the fiscal challenge. The optimist in me hopes the commission’s deliberations will be public enough to at a minimum disprove the current prevailing myth that we can solve the long-term problem by simply cutting *wasteful* spending (“waste, fraud, and abuse”) and raising taxes on only “evil corporations” or really rich people. And I believe the commission will end up advising President Obama (publicly or not) that he cannot simultaneously honor his commitment to get the deficit down to a sustainable level *and* keep his campaign promise not to raise taxes on the vast majority of American families.

Conclusion: Moving from “Budget Scolds” to “Fiscal Inspirers”

As an economist and a mom, I believe that getting our nation back on a fiscally sustainable path is one of the most important ways we can ensure a bright future for our kids. To encourage this, fiscal policy experts need to do more than present the numbers and charts that warn of a scary but hypothetical future for the U.S. economy as a whole. We need to bring the issue down to the level of the family in order to make it immediately relevant to people right now. We need to remind parents that as they are working hard every day to provide for their kids, they need to demand that their politicians do the same for all our kids. Public education and engagement are crucial to not just sound an alarm but *create a movement* to promote fiscal responsibility as a duty to our kids and grandkids and make the “crisis” salient *now*. Instead of allowing our leaders to perpetuate the irrational notion that everything will be fine without having to make any tough choices, we need to tap into the inherent optimism of the American people to prove that what Paul Tsongas said (as he started the Concord Coalition in the early 1990s) was and still is right—that “we are better than what we are being asked to be by our leaders.”

Notes

1. Dr. Diane Lim Rogers is the chief economist for the Concord Coalition and author/blogger of EconomistMom.com.
2. Congressional Budget Office, *An Analysis of the President’s Budgetary Proposals for Fiscal Year 2011* (March 2010).
3. U.S. Government Accountability Office, *The Federal Government’s Long-Term Fiscal Outlook: January 2010 Update*, GAO-10-468SP.
4. International Monetary Fund, *Fiscal Monitor: Navigating the Fiscal Challenges Ahead* (May 14, 2010), p. 32.
5. See IMF, *Fiscal Monitor*, and GAO, *An Analysis of the President’s Budgetary Proposals for Fiscal Year 2011*; CBO, *The Long-Term Budget Outlook* (June 2009); and Alan J. Auerbach and William G. Gale, “Déjà vu All Over Again: On the Dismal Prospects for the Federal Budget” (The Brookings Institution, April 2010).
6. Office of Management and Budget, *Budget of the U.S. Government, Fiscal Year 2011* (Washington, DC: Government Printing Office, February 2010), table S-2, p. 147.
7. Rosanne Altshuler, Katherine Lim, and Robertson Williams, “Desperately Seeking Revenue” (Tax Policy Center, January 2010).

Panel II: Federal Budget— Resourcing National Priorities

Summary of Discussion

**Ambassador John A. Cloud
State Department Advisor to President
Naval War College**

Mr. Michael Ettliger and Dr. Diane Lim Rogers were in agreement that the budget path—not the current level—anticipated by the Obama administration and the Congress will lead to persistent and large budget deficits over the medium and long terms. They characterized a growing and unsustainable budget deficit as a tremendous threat to the U.S. economy. Mr. Ettliger said these budgetary imbalances resulted from repeated tax cuts and expanded military and domestic spending prior to the recent recession. He foresaw a situation where the federal deficit will grow from its current level of about 60 percent of gross domestic product (GDP) to 87 percent of GDP and interest on the debt will total 15 percent of total federal spending by 2019.

At the same time, both cautioned that immediate efforts to reduce the deficit while the United States is still recovering from the recent recession would be counterproductive. Mr. Ettliger described the current budget deficits as “appropriate and inevitable.” In the immediate term, Mr. Ettliger called for the United States to define the deficit reduction goals necessary to put us back on the road to fiscal health. Dr. Rogers said the main challenge for policy makers was to segue from our “stimulate demand” stance to a “grow the supply” one. Both Mr. Ettliger and Dr. Rogers supported the Obama administration’s goal of primary balance (i.e., excluding interest payments) by 2015.

Mr. Ettliger, in his paper “Addressing the Federal Deficit and Debt,” described the need for balance between deficit spending now to attack high unemployment and well-considered policies that will bring down deficits in the future. He said this approach would keep the deficit stable and “stop the fiscal bleeding.” He described this goal as “reachable but quite tough.” Given our inability to reduce—particularly in the short term—Social Security and health-care costs, Mr. Ettliger concluded that it would take a combination of spending cuts and increased revenues (i.e., taxes) to achieve this goal. Dr. Rogers agreed that the solution could not come from reduced spending alone. She concluded that the easiest solution would be to allow the Bush tax cuts to lapse at the end of 2010. She argued that the Bush tax cuts had not paid for themselves. At the same time, she acknowledged that President Obama was proposing keeping the tax cuts in place for those making less than \$250,000. She questioned whether this approach was politically wise in that it allows those earning less than \$250,000 to argue that the deficit is not their problem.

Dr. Rogers, in her paper “The Way Out of the Fiscal Hole: An Economist Mom’s Perspective,” emphasized the family level in her analysis. She noted

that most parents want to ensure their children have every opportunity, but then are passing on this unsustainable debt to them. She argued that getting the nation back on a fiscally sustainable path is the most important thing we can do to assure a bright future for our children. She concluded that it was crucial to educate the public so that it would press politicians to be fiscally responsible for the benefit of the next generation.

Both Mr. Ettlenger and Dr. Rogers expressed their frustration with a political situation in which changes in the drivers of the budget deficits (e.g., entitlement reform, tax increases) are all viewed as being not politically viable. In their view, continuing deficits at 4 percent of GDP is also not viable. Hence, something is going to have to give. In describing this, Mr. Ettlenger noted that we have a political problem, not an economic one. The United States can afford what it is spending. The United States has options on the revenue and spending sides, rather than having the International Monetary Fund come in and tell the country what is needed.

The panel discussion opened with an extended consideration of the meaning of Mr. Ettlenger's statement that the U.S. budget problem is more a political problem than an economic one. The first questioner expressed skepticism that the U.S. political system was going to be able to act to reduce dramatically the budget deficit. The questioner noted the absence of a Ross Perot-type political figure, the lack of legal constraints such as the Gramm-Rudman amendment, the increased polarization of the electorate, and the aging population to forecast great difficulty in getting politicians to impose pain on voters as would be required to achieve President Obama's goal of a 3 percent deficit by 2015. A respondent acknowledged the political complexity. As an aside, the respondent noted that it could be easier in a parliamentary democracy to solve these issues. Nevertheless, the respondent noted that there are outside forces that can prompt action. When markets rejected the Carter administration's 1978 budget proposal, the administration had to pull it back and rework it. The respondent anticipated that the United States could resolve this situation in two different ways: a rational decision-making process or something like what happened in 1978. However, the United States would be better off if this was done intelligently and not when forced. The respondent predicted that people are going to look for higher returns than they are currently getting on Treasuries as the economy grows. This will lead to an increase in interest rates and a recognition that something needs to be done. This change can happen fast and hard. If this were to happen it could create a broad consensus to take action. At the same time, the respondent commented that he believed the Obama administration is committed to deficit reduction and is prepared to put political capital behind it after the 2010 midterm elections. The respondent anticipated that something positive would come out of the Budget Commission, although probably not enough. The respondent concluded by saying it was better to have a political problem than an economic one. With an economic problem, you have both political and economic problems. A political problem is easier to solve and helps you avoid cures that are worse than the disease.

A questioner asked whether the Tea Party movement will help solve the budget deficit problem. A respondent expressed concern that the Tea Party

movement was more focused on reducing taxes than on having smaller government. Another respondent thought the Tea Party movement was reacting to a sense that government spending is out of control. The movement might be willing to tolerate increased government spending—even on areas where it disagreed with the government—if it thought the government was being fiscally responsible.

Another questioner asked whether President Obama's Budget Commission would reach a consensus by December 1, 2010, and, if so, could such a consensus make it through the Congress. One respondent thought the commission would use the time between now and 1 December to hold public meetings and educate the people on budgetary realities. This respondent believed the most important thing the commission could do would be to dispel the conventional wisdom that our budget problems can be solved just by eliminating waste, fraud, and abuse. However, this respondent did not expect a consensus, since that requires a supermajority, but hoped the chairmen would be able to issue some type of report that would note areas of consensus or near consensus. The respondent also questioned how the commission could move this issue further given that the political process is moving it to the extremes and the solutions are found in the middle. The hope is that if the American people really knew the situation "they would pull the politicians into the middle." Another respondent did not expect deep substantive conclusions from the commission. This respondent disagreed with the entire commission process, arguing that these issues were fundamental ideological and philosophical questions that should be debated by our elected officials and not farmed out. This respondent dismissed comparisons to the Base Realignment and Closure (BRAC) process in the Department of Defense, arguing that these are not objective questions of geography and cost, but more fundamental questions to the country. One respondent argued that the United States might be more successful in reducing our budget deficits if the United States had a divided government that would require both parties to seek solutions. Under the current situation, the party in power is discouraged from taking the risks necessary to resolve these issues, because of the political cost of doing so.

A questioner asked why President Obama had frozen nondefense discretionary funding if the budget problem had to do with entitlements. The questioner noted that this freeze could devastate smaller budgets like that of NASA. A respondent noted that while you cannot solve the budget problem by cutting only discretionary funding, it is significant and it is the part of the budget that can be affected in the short term. At the same time, since the Defense Department budget amounts to about 50 percent of discretionary funding, it is very difficult to look at budget solutions without touching defense. With regard to NASA and other small agencies, people do not understand what the government does.

A major discussion of entitlement programs versus social welfare programs ensued when one questioner asked whether the public wouldn't play a more constructive role if it understood what percentage of entitlement programs (e.g., Social Security) represented funds paid in by individuals and what percentage represented pure social welfare payments. Another questioner posited

that you could break the psychology of entitlements if people understood what parts of their Social Security checks represented what they paid in and what parts represented a social welfare payment. Another discussant said you might even be able to means-test the social welfare portion of Social Security, if it was clear that everybody was being refunded what they paid in plus interest. There was a general consensus among the questioners that the members of the public believe that others get entitlements, they do not. A respondent agreed that the public needs to be educated about entitlements, citing calls at town hall meetings last summer “to keep the government’s hands off Medicaid.” The respondent also noted that you are not able to make changes in entitlement programs in the short term. Traditionally changes have not been made that would decrease benefits for those retiring in the near future, because they have little time to adjust. It is important to keep in mind that the United States can afford Social Security. The United States only needs to make a “few tweaks” in the system and it would no longer be in deficit. We also need to recognize that Social Security is a huge accomplishment. Prior to Social Security, the United States had a major problem with elderly poverty. Now, the country basically does not. On Medicare and Medicaid, the problem is the rise of health-care costs nationally, which is independent of the federal budget. Health care is the big driver of the deficits. The United States spends more than 16 percent of our economy on health care. This is more than the United Kingdom spends, even though we cover only the elderly and the poor, while the UK covers everyone. In addition, we need to get revenues up. If we had Canada’s tax system, we would be running a surplus. Another respondent noted that advocates for Social Security are opposed to means-testing because they believe that would turn Social Security into a welfare program rather than a national retirement system.

A discussant noted that there are other reasons to disaggregate the issue. The discussant argued that there are parts of the budget—possibly capital investment—the public may be more willing to be taxed to pay for than other parts.

A questioner asked what was the theoretical basis for saying that a deficit of 100 percent of GDP was dangerous. The questioner noted that Japan has a deficit of about 200 percent of GDP. A respondent said deficit levels were of greater concern than debt levels. But the big problem with debt levels is that the interest payments start to “eat up your budget.” Japan has also paid in lower growth for the level of its debt.

A discussion ensued over the immediacy of the issue. The respondents agreed, particularly given that the United States is still recovering from the recent recession, that this is not an immediate crisis. One questioner asked whether education was the main tool to empower the public—whether the United States was looking at only long-term solutions. A respondent noted that the issue with education was how many teachable moments there were. Given the recent recession and the Greece crisis, there have been recent teachable moments. The challenge is how immediate you can make the issue. To engage the public, this cannot just be about the long term.

Another major discussion developed over the effect of the overall budget situation on the defense budget. A respondent noted that politicians are

generally hesitant to propose cuts in defense. Hence, President Obama's freeze does not now include security-related expenditures. At the same time, it is hard to imagine scenarios that do not include defense, given the size of the defense budget. Several of the discussants agreed. One noted that in the wake of the end of the Vietnam War and the end of the first Gulf War, defense spending had declined by about a third, only to increase later by about 50 percent. Defense is now well above historical budget levels—although for the Navy, this is problematic since procurement and the Navy's industrial base did not benefit from the recent surge in funding. The Navy comes out of the surge with fewer ships, fewer people, and a weaker industrial base. In this situation, where do the cuts come from? If we further weaken the industrial base, will it be able to recover when the economy improves? Another discussant doubted there was a magic bullet. Instead, incremental steps should be expected that would include scrutinizing programs at Defense, NASA, and other agencies. At Defense, this will probably include the cost of the all-volunteer force, how personnel costs are driving up the overall DoD budget, and the cost of offering retirement after twenty years of service. The national security community needs to be prepared for this scrutiny.

Panel III

Quadrennial Defense Review



Dr. Patrick M. Cronin

Senior Advisor and Senior Director, Asia-Pacific Security Program, Center for a New American Security

Dr. Kori Schake

Research Fellow, Hoover Institution

Moderator:

Dr. Thomas G. Mahnken

Jerome E. Levy Chair of Economic Geography and National Security, Naval War College

What the Quadrennial Defense Review Tells Us about Ends and Means

Dr. Patrick M. Cronin
Senior Advisor and Senior Director
Asia-Pacific Security Program
Center for a New American Security

The Quadrennial Defense Review (QDR) represents one of the most comprehensive assessments of ends and means, of national security priorities and resources, within the U.S. Department of Defense and the entire U.S. government. Countless officials spent countless hours in countless meetings to compile, analyze, and synthesize their deliberations and judgments. A deliberate process based on best practices of defense planning undergirded the effort. The result is an important document that simultaneously rationalizes what is being done and argues what should be done with respect to the world's largest defense budget. Thus, the roughly one-hundred-page *Quadrennial Defense Review Report* issued in February 2010 represents the most thorough and tested of assessments. The general trajectory of U.S. defense forces and the guiding philosophy behind them are well articulated in this keystone report. This chapter will briefly address some of the key findings of the QDR report. But it will also raise some questions that point to the document's inherent limits as a clear-cut guide for force planning, budget priorities, and defense strategy.

The QDR Review

The 2010 Quadrennial Defense Review assesses the future of defense strategy and the armed forces, as well as the institutions and processes that support them. This chapter concentrates on the former subject, even though some of the questions that will be raised will impinge on issues of personnel and process.

According to the QDR, the fundamental objective of U.S. defense strategy is "to further rebalance the capabilities of America's Armed Forces to prevail in today's wars, while building the capabilities needed to deal with future threats."¹ The goals with respect to current conflicts are defined as disrupting, dismantling, and defeating al Qaeda and the Taliban in Afghanistan; advising, training, and supporting Iraqi forces "as part of a responsible transition and drawdown"; and remaining engaged in a broader global struggle against al Qaeda and its associates.² Against these immediate challenges, the report describes an uncertain security environment of rising power centers and proliferating technology and weapons of mass destruction, interspersed with an array of complex trends such as resource scarcity, rapid urbanization, climate change, new diseases, and shifting demographics. The report then tries to reconcile the specificity of the first set of challenges and the uncertainty of the second set of trends, by highlighting, in addition to prevailing in today's wars, three

additional priorities: preventing and deterring conflict through a comprehensive set of forces backed by diplomacy and development, preparing to defeat adversaries and succeed in a diverse set of contingencies, and preserving and enhancing the all-volunteer force. All of this is the preamble to a discussion about how precisely to achieve “rebalancing” of the armed forces.

The report focuses on six facets of rebalancing the armed forces, and each facet has specific implications for defense forces and the budget. The first way to achieve the necessary rebalancing, according to the 2010 Quadrennial Defense Review, is to recognize the increased importance of the homeland. In a globalized world, there is a heightened need to provide further support for U.S. civil authorities. Hence, improving awareness and consequence management are critical, as are the need to develop better detection capabilities for dirty bombs and nuclear weapons and means of countering improvised explosive devices.

A second facet of rebalancing has to do with institutionalizing and mainstreaming the lessons of the current wars by improving the capability of the armed forces to conduct counterinsurgency, stabilization, and counterterrorism operations. Special operations forces; helicopters; unmanned vehicles for intelligence, surveillance, and reconnaissance (ISR); strategic communications; expertise in key regions such as Southwest Asia; and agile general-purpose forces: all of these are deemed essential to bolster this second aspect of rebalancing.

The third facet of rebalancing centers on building the security capacity of partner states, especially with respect to their security forces, defense hardware, and security ministries. Recent experience in security force assistance in Iraq and Afghanistan, of course, has demonstrated that the U.S. armed forces were ill prepared for the scale, speed, and specific cultural context of each of these Herculean enterprises. The QDR hopes to redress this shortcoming.

A fourth issue deals with defeating potential anti-access and area-denial military strategies, such as those often associated with China’s asymmetric military approaches to the East and South China Seas and reaching into the Pacific and Indian Oceans. Specifically, the report recommends concentrating on expanding long-range strike capabilities, exploiting advantages in submarines, dispersing and making more resilient forward bases, bolstering ISR capabilities and the ability to defeat enemy sensors and targeting systems, and enhancing presence and responsiveness of U.S. forces overseas.

Preventing proliferation and countering weapons of mass destruction is a fifth facet of rebalancing U.S. armed forces. The report calls for integrating efforts to plan, train, and conduct seize-and-secure missions by establishing a Joint Task Force for Elimination Headquarters. In addition, the QDR directs that further research into countermeasures and defense against nontraditional agents is needed, as well as an expansion of the biological threat reduction program. It further calls for improving nuclear forensics and the securing of vulnerable nuclear materials.

Sixth and finally, rebalancing between today’s wars and tomorrow’s complex, hybrid warfare requires assured and effective operations in cyberspace. The document emphasizes the general concept of maintaining access to the global commons—the air, space, maritime, and cyber domains that compose

the globalization highway for both commercial and military operations—but it places special emphasis on cyberspace. Here the QDR in a sense admits the embryonic nature of the challenge by directing a more comprehensive approach to Defense Department operations in cyberspace and developing greater cyber expertise and awareness. It also centralizes command of Department of Defense (DoD) cyber operations (with the new military command), and underscores the need to strike up partnerships across the government and internationally. Less is said about the dependence on commercial cyber technology and networks.

Beyond these facets of rebalancing, the remainder of the report focuses on the covenant to take care of the men and women in uniform (from wounded warrior care and managing the deployment tempo to recruitment and retention, supporting families, developing future leaders, and improving a civilian expeditionary workforce); strengthening foreign relationships and U.S. whole-of-government approaches; and reforming business practices within the Defense Department (from reforming security assistance and acquisition to strengthening the industrial bases, reforming export controls, and creating a strategic approach to climate change and energy).

Eventually the report gets down to the main means of the Defense Department and the DoD budget: force structure. The main elements of U.S. force structure that are derived from the QDR represent more of an evolutionary than a revolutionary change. Thus, the Army should plan for four corps headquarters and eighteen division headquarters, but be capable of sustained counterinsurgency and counterterrorism operations. Naval forces—including but not limited to ten aircraft carrier air wings, some eighty-eight large surface combatants, about thirty amphibious warfare ships, and fifty-five attack submarines—will continue a robust forward presence despite growing anti-access capabilities in the hands of potential adversaries. The Air Force, which is projected to become more survivable as fifth-generation fighters join the force, is planning for eight ISR wing equivalents with up to 380 primary-mission aircraft, ten to eleven theater strike wing equivalents with 72 primary-mission aircraft per wing equivalent, and four long-range bomber wings with up to 96 primary-mission aircraft, among other assets. The Marines are to maintain three expeditionary forces, and there are to be some 660 special operations teams.

Relatively little is said about budget trade-offs, although the report does point out recent decisions by the secretary of defense to end production of the fifth-generation F-22 fighter, restructure the procurement of the DDG-1000 destroyer and the Future Combat Systems programs, and defer or stretch out other ships. In addition, it notes that the Defense Department is proposing to end production of the C-17 airlift aircraft and delay the command ship replacement (LCC) program, cancel the CG(X) cruiser, and terminate the Net Enabled Command Capability program.

It is curious that Secretary of Defense Robert Gates did not launch an offensive on defense costs until a full three months after the QDR report was released. Speaking at the Eisenhower Library in Abilene, Kansas, on May 8, 2010, the secretary invoked the experience of President Dwight D. Eisenhower as he sought to avert the rise of a large defense industrial complex. As Gates said:

Eisenhower was wary of seeing his beloved republic turn into a muscle-bound, garrison state—militarily strong, but economically stagnant and strategically insolvent. He once warned that “we must not destroy from within what we are trying to defend from without.” This fueled his passionate belief that the U.S. should spend as much as necessary on national defense—but not one penny more. And with his peerless credentials and standing, he was uniquely positioned to ask hard questions, make tough choices, and set firm limits.

Thanks to the archives of this library, we have first-hand documentary insight into how probing (and ruthless) this five-star general could be when it came to forcing the military establishment to justify its programs and priorities. Consider an account of just one White House meeting in March 1956. Eisenhower sat down with his top defense advisors to discuss the Pentagon budget. The meeting notes show Eisenhower becoming exasperated that “no one ever comes up to him and says ‘let’s get rid of something.’” He then observed that it took the Army 50 years to get rid of horses. Ike questioned why the new Navy missiles cost so much more than the weapons they replaced and queried why the Army should have a 1500-mile ballistic missile program, since, in his words, “the Army does not have the equipment to see where they are hitting.”

Eisenhower told his senior defense team that he wanted the Pentagon cut down to a “Spartan basis,” lamenting that “people he had known all his life were asking for more and more.” He went on to say: “I say the patriot today is the fellow who can do the job with less money.”³

Secretary Gates’s own trenchant comments just weeks after the QDR offer a reason to pause and ask what other questions might be raised about the report’s ability to tackle contentious issues about resourcing national security. The omission, from the QDR, of such a sharp call for holding down defense spending highlights the value in considering other questions about what the document says about planning assumptions and calibrating ends and means.

Questions about the QDR

A first observation is that the 2010 *Quadrennial Defense Review Report* somewhat overreaches by claiming to be a “strategy driven” document. To be sure, officials overseeing the report were steeped in contingency plans and various military strategy discussions. But the fact that the QDR preceded by three months the publication of the *National Security Strategy* (and even this really is more a document of general strategic direction rather than a careful discussion of ends and means) is suggestive of a more general document than a strategy. Indeed, expecting the QDR to approximate a strategy would be naïve, and the authors and decision makers in the Pentagon never really intended it to serve as a precise articulation of goals matched by a clearly defined means. Consider just one small example: although the report talks about improving military education, it barely scratches the surface when considering how to develop strategic leaders, both in the military and in civilian positions of power in the U.S. government; and yet surely such education speaks to a vital, cost-effective intervention to hedge against an uncertain future.

A closely related second observation is that even if the 2010 Quadrennial Defense Review is strategy driven, it falls short of making the case that the

planned force structure alone is even financially sustainable. Thus, ends and means are not really tightly interwoven. As stated above, Secretary Gates chose to deliver his most searing critique on both excessive defense spending and the need to live within increasingly constrained resources months after the QDR had been published. And the subsequent assessment of defense spending in a period of record deficits, in turn, suggests that perhaps the forces planned for in this report were the beginning of a resource debate rather than the answer to one. The discussion of wanting to end the C-17 tanker, for instance, is done with the foreknowledge that Congress may well obstruct curtailing the program. No real trade-off has necessarily been made so much as a proposal placed on the resource bargaining table. Perhaps it could not be otherwise when Congress controls the purse strings and is driven more by local constituencies than by long-range strategy. But as Secretary Gates would imply in his subsequent speeches, the United States has become all too comfortable with the absence of making sober choices because of limited resources. The generalizations about force sizing made on pages 41–45 of the document offer a conceptual framework but not much more than that for making difficult choices about force structure. In short, the QDR may be an essential planning document for structure, but it is by no means a comprehensive solution to the pressing trade-offs that must continue to be made every year.

A third critical observation that can be made about the 2010 Quadrennial Defense Review is that it makes a policy judgment about the requirement to prevail in Afghanistan and Iraq, but never even attempts to explain how to achieve the ambitious goals of doing so. For instance, the issue of how the United States will be able to truss up and find sufficient political legitimacy and will on the part of its Afghan (and Pakistani) partners is something the reader is meant to glean from previous policy reviews on the conflict centered on Afghanistan. But including a broad goal such as stopping the “momentum of the Taliban” suggests a clear political strategy and a degree of political will abroad and at home that may not be forthcoming. Since 2001, the United States has spent more than a trillion dollars on the Iraq and Afghan wars; if it spends that much over the next decade, will it have purchased a sustainable security in these areas and at what further reductions to the rest of the armed forces? Thus, for all the facets of rebalancing, the QDR cannot fully reconcile the uncertainty over what it would take to prevail in the current wars (even less, whether prevailing is even possible) with the growing needs for a more agile, resilient set of forces for a wide array of contingencies. By making objective number one to prevail in the current wars, the report in essence makes a short-term choice that all other aspects of the armed forces will have to make sacrifices to support the effort, whatever the cost. That may be the necessary choice, but it conceals far more implications for budget and defense planning than the authors would like to acknowledge and, in fairness, can reasonably predict.

A fourth question that a critical analysis might ask of the QDR is to what extent it fully appreciates the difficulty of building the capacity of allies and partners. This expression of helping others to share the burdens of security, whether with respect to preserving assured access to the global commons, stabilizing Afghanistan and countering transnational terrorism, or deterring nuclear

proliferators, is more of an aspiration than a plan. At a time when the North Atlantic Treaty Organization is having difficulty fielding even enough military and police trainers for Afghanistan or when Japan is having difficulty declaring full support for the maintenance of U.S. military bases in Okinawa, combined with a global recession, how realistic is it to expect that traditional allies will be able to shoulder more burdens? Similarly, while it may be possible to improve relations among major powers, the desire for cooperation with Russia and China or even India is not the same as forging meaningful security cooperation. Meanwhile, building other partners' capacities—from Pakistan to Yemen and Indonesia to Nigeria—is at best a gradual process. Clearly, further analysis of the opportunities and limitations of strengthening security alliances and partnerships and delivering security assistance is required beyond the general identification of the need.

A fifth point in the QDR that invites further scrutiny concerns preventing and deterring conflict. The authors are to be commended for finally recognizing the comprehensive set of policy instruments—from development and diplomacy to military forces and strategic communications—that can contribute to these objectives. At the same time, the document fails to go much beyond this recognition and the general call for greater capacity for whole-of-government approaches and conflict prevention. We can talk about the need for defense, diplomacy, and development to work together, but the reality is that these so-called three Ds seldom seem to achieve a unity of effort needed to succeed in difficult situations. The QDR could not be expected to tell us how to achieve such a unity of purpose, but neither should it assume that more of these capabilities will necessarily act in concert on the battlefield. Similarly, it is far from clear whether the QDR really leaves the United States and its allies more ready to prevent conflict with Iran or with North Korea.

A sixth criticism that can be directed at the 2010 Quadrennial Defense Review is that it points to a complex and uncertain future, ticks off a laundry list of threats and challenges, but does little to indicate priorities among them. Without such an assignation of risk and priority, a discussion on force structure and resources becomes moot. Because it is impossible to prevent all threats, there is no practical policy alternative to managing risk. This means preparing for the most probable threats while only hedging against the more extreme but less likely challenges. The authors of the report do in the end recognize this dilemma, and there are also limits as to how public the United States should be with respect to its threat perceptions. No doubt more could be said in classified discussions about weighing the likelihood and risk associated with various contingencies. But the broad environmental dangers envisaged in the document can suggest something of cognitive chaos and are therefore not all that helpful to an informed public or members of Congress trying to make tough choices affecting the future of the armed forces and the U.S. government in general.

These six questions do not detract from what may be the best QDR ever produced. However, they might help a critical reader begin to ask deeper questions about both what the document says and what it omits. While Department of Defense leaders never claimed to be crafting a single volume that would address all strategy and detailed defense plans, the level of effort expended

cannot help but inflate expectations about what might be included. As future defense leaders contemplate the next Quadrennial Defense Review, they may want to bear the outcome in mind when deciding how much money and effort to put into the 2014 report.

Notes

1. *Quadrennial Defense Review Report* (Washington, DC: U.S. Department of Defense, February 2010), p. iii.
2. Ibid.
3. Robert M. Gates, Eisenhower Library Remarks (Abilene, KS, May 8, 2010), available at <http://www.defense.gov/speeches/speech.aspx?speechid=1467>.

QDR 2010: What Exactly Was the Point?

Dr. Kori Schake
Research Fellow
Hoover Institution

One needn't go so far as Anthony Cordesman, who dismisses the entire Quadrennial Defense Review (QDR) undertaking as "one of the most pointless and destructive exercises imaginable" to be left questioning the value of this most recent Quadrennial Defense Review.¹ Secretary Gates published a national defense strategy in 2008 (reprinted in a January 2009 *Foreign Affairs* article) that stated his fundamental view on the need to "rebalance" U.S. military forces; this QDR shows no significant departures from that construct.² So if developing a conceptual framework for thinking about defense policy were the point of the QDR undertaking, the secretary could have saved the Department of Defense (DoD) time and effort by minimizing the resources committed.

Roughly 250 political appointees come into the Pentagon in a new administration, and the QDR process serves to educate them on what the department has been doing, and provides the services an opportunity to make their cases for programs and practices the new team may either be unaware of or feels are inconsistent with campaign positions of the new administration. Educating the new team is nontrivial, even when the Secretary of Defense has not changed, and this the QDR surely did.

But that is its least important function. Statutorily, "the QDR results are intended to guide the services in making resource allocation decisions when developing future budgets."³ It is a budget document. The Government Accountability Office concludes that "of the 17 required reporting items, DOD addressed 6, partially addressed 7, and did not directly address 4."⁴ Strictly speaking, this QDR is nonresponsive to the questions it is required by law to answer to Congress.

It also seems to connect only vaguely to the budget Secretary Gates submitted, or to his major statements of policy in the subsequent *Foreign Affairs* article and Kansas speech.⁵ Secretary Gates has made it sound as though budget axes will be falling all over the Department of Defense even while he submitted a budget with a 3.4 percent increase in spending and anticipates a further supplemental spending bill later in the year.

The 2010 QDR fails at its crucial purpose of providing a robust strategy and corresponding defense program to minimize congressional cuts in important areas or unwanted plus-ups in others. Moreover, it depends for success on an external condition—"whole-of-government operations"—that has proven unattainable.

The Strategy

The Gates strategy is a paean to “balance,” but it set a course for the QDR strongly weighted toward counterinsurgency. In judging that “the most likely catastrophic threats to the U.S. homeland . . . are more likely to emanate from failing states than from aggressor states,” he has set in motion a substantial revision to American defense strategy that goes much further than institutionalizing counterinsurgency warfare capabilities or wrestling with the means of fighting and winning hybrid wars.⁶

Secretary Gates’s signature contribution to the debate on defense during his tenure has been a belief that the force planning and programming apparatus of the Pentagon produce high-end capabilities at the expense of those forces and equipment necessary to win the wars we are actually fighting. He believes U.S. forces should be “rebalanced” and his own role to be crafting “a budget . . . to reshape the priorities of America’s defense establishment. If approved, these recommendations will profoundly reform how this department does business.”⁷ So it matters whether Secretary Gates has the right approach to restructuring. In my judgment, he does not.

The Obama administration established a hard timeline for ending operations in Iraq. Vice President Biden’s proposal for a “counterterrorism strategy” (by which he evidently means standoff strikes on terrorists with no effort to positively shape the political or economic environment fostering terrorism) received serious consideration as an alternative to counterinsurgency for prosecuting the war in Afghanistan. Even as the president announced his plus-up on forces for the war in Afghanistan, he emphasized they would be drawn down after eighteen months.⁸ The White House has several times subsequently reiterated the fixed drawdown timeline when Secretaries Clinton and Gates attempted to suggest it was contingent on events in Afghanistan.⁹ Given this political context of an administration committed to drawing to a close the counterinsurgencies we are fighting, and no evidence of leadership support for managing emergent campaigns (like those in Yemen and Somalia) with the same large-scale U.S. involvement, it would appear Secretary Gates is institutionalizing counterinsurgency as the major driver in force structure just as we cease to fight these kinds of war.

Moreover, optimizing U.S. forces to counterinsurgencies carries the opportunity cost of too little effort to address fundamental vulnerabilities in our forces that any thinking adversary would exploit—to mention just two examples, disruption of our operations by cyber attack and the inadequacy of our satellite constellation to meet the growing demands by operational forces. It would not require a “peer competitor” to drastically impede our military effectiveness by capitalizing on these weaknesses. If there is one overriding lesson an adversary should have learned from the war in Iraq, it is not to allow the U.S. military time to adapt. And unlike low-end conflicts, high-end challenges like these do not permit the luxury of time.

His emphasis on institutionalizing counterinsurgency sounds remarkably like fighting the last war, and too little effort has been directed toward redressing those vulnerabilities in American military power most likely to produce losses in

future wars. We are already reasonably good at counterinsurgency, as a result of the Iraq war, and the equipment has adapted relatively quickly despite a balky Pentagon bureaucracy. His is a conservative approach that will make other, harder adaptations like handling cyber attacks more difficult in the future.

This QDR contains much of the usual nonsense that cloaks discussions of strategy, statements like the need for “shaping a system no longer defined,” and the importance of our “civilian expeditionary workforce.” These are occupational hazards in Pentagon documents. However, even the language designed to identify priorities makes doing so difficult. The QDR identifies four objectives: (1) prevailing in today’s wars, (2) preventing and deterring conflict, (3) preparing to defeat adversaries in a wide range of contingencies, and (4) preserving the all-volunteer force.

In describing the third objective, the QDR states that “our deterrent remains grounded in land, air, and naval forces capable of fighting limited and large-scale conflicts in environments where anti-access weaponry and tactics are used, as well as forces prepared to respond to the full range of challenges posed by state and non-state groups.”¹⁰ What force sizing and structuring direction does that provide? None. Where do those objectives come into conflict and how should programmers resolve those conflicts? Hard to say; the QDR provides no means to determine which objective merits funding first, or deconflicting contrary funding streams.

The Program

Without question, the defense program outlined in budgets corresponding to Secretary Gates’s strategy is unaffordable. It is built on projections of defense spending that Secretary Gates himself said are unlikely to materialize.¹¹ Joint Forces Command’s *Joint Operating Environment 2010* lists the crowding out by federal debt of discretionary spending allocatable to defense as the preeminent risk.¹² Yet nowhere in the QDR does one have the sense of resource constraint.

That by itself calls into question the value of the QDR, because it does not provide a strategy to prioritize effort and determine where to take cuts. By assuming the availability of defense spending rather than exploring a variety of defense programs at different levels of spending, Secretary Gates has missed a very important opportunity to prepare DoD for the resource-constrained environment he himself acknowledges is looming.

The QDR also does not acknowledge the enormous bow wave of expense coming just to replace equipment that was programmed by the services at slower rates of usage than have proved, given the wars. The Marine Corps is utilizing some equipment at 700 percent of programmed rates, yet the defense program does not identify the challenge of reequipping the force or prepare Congress for the enormous demand. It is difficult to tell from the QDR where these replacements fit.

Secretary Gates has said that “strategy and risk assessment should drive procurement.”¹³ In fact, he has produced an unaffordable defense program without a strategy to guide budget reductions. He is cutting programs on

managerial grounds—whether or not they are being run well and keeping to cost projections—rather than their importance to a cohesive whole.

The Externality

The intellectual construct guiding Secretary Gates's QDR is the belief that threats emanate from weak and failing states. It flows from this that the use of military force must be subordinated to efforts that build governance capacity in states where the United States intervenes with military force. The premise is problematic, is little help in structuring military forces, and is at best unsuccessful unless the nonmilitary agencies of the U.S. government are capable of achieving those effects.

It is very much in vogue to claim that weak and failing states generate the threats we are concerned about. Terrorists certainly migrate to poorly governed areas, but the poorly governed areas are not the cause of terrorism. Focusing on the need to improve governance is a way of diffusing responsibility and a recipe for diverting effort to the margin of the problem rather than concentrating effort on its core.

Well-governed states may not be the source of the individuals that commit acts of terror, but those individuals often live in such states, including our own. Bringing all states up to our standard of civil society may not relieve us of the threat, as it likewise exists in our own country. Just to give an example of the magnitude of the problem: the British government has 400,000 citizens that receive visas to visit Pakistan every year. Britain is a well-governed country, yet it is unlikely to be able to determine which of those 400,000 people will become a threat.

The *National Defense Strategy*, the QDR, and Secretary Gates's *Foreign Affairs* article that came out after the QDR¹⁴ all highlight the need to “build partner capacity.” He has made it the central element of preventing the threats emanating from weak and failing states. There are three reasons to be concerned about the weight he accords to this effort.

First, while military engagement with other militaries is generally beneficial, it is far outrunning capacity-building efforts in civilian engagement by the U.S. government. This is likely to be problematic, producing military leaders with a predilection for stepping into the governance of their societies. Not only is that not the intended effect of this policy, but it has a questionable history in advancing U.S. interests.

Second, military training is a scarce resource, and absent a national security strategy—and possibly even with one, given that document's historic tendency to hang every ornament on the Christmas tree—there is no means to determine which countries should receive it. From reading the QDR, it is impossible to determine whether Mexico or Thailand should receive the assistance Secretary Gates argues for.

Third, we may be providing superb military training to our enemies. The American military has been involved in training militia in Yemen to help that government deal with the rise of al Qaeda affiliates there. The program was deemed a success . . . until a thousand of the trainees went over to the other side of the fight. Providing military training to forces of questionable

commitment to our objectives may end up producing better trained adversaries we have to then fight.

Moreover, as a government we have proven incapable of the “whole-of-government operations” mythically projected as essential to successfully prosecuting such an approach. The nonmilitary agencies do not have the culture, the people, or the funding to be real partners to DoD. Secretary Gates has admirably advocated greater spending for the Department of State; but he surely knows it will take at least a decade of sustained funding increases to produce a State Department capable of succeeding at those tasks and yet he built a budget dependent on it now.

Conclusion

At the end of the day, does it matter? It does. Secretary Gates’s priorities have not yet “rebalanced” the force—in fact, force structure has hardly been affected at all. But the Department of Defense is a planning organization and will align itself to the secretary’s priorities. The Marine Corps, for example, is already examining whether the secretary’s commitment to training partner militaries will necessitate creating a new formation within the Marine Corps solely dedicated to training.

The QDR piously claims that we will “buy weapons that are useable, affordable, and truly needed.”¹⁵ One would think Secretary Gates had not been at the helm these past several years—was that standard not met by him in the three previous budgets he submitted? Congress is sure to use his prior support for programs to defend their continuation. By not producing a strategy to guide the program of defense spending, Secretary Gates has left himself open to the programmer of last resort: Congress.

Notes

1. Anthony Cordesman, speaking at National Defense University, March 10, 2009.
2. Robert Gates, “A Balanced Strategy: Reprogramming the Pentagon for a New Age,” *Foreign Affairs*, January/February 2009.
3. Government Accountability Office, *Quadrennial Defense Review: 2010 Report Addressed Many but Not All Required Items*, GAO-10-575R (April 30, 2010).
4. Ibid.
5. Robert Gates, “Helping Others Defend Themselves: The Future of U.S. Security Assistance,” *Foreign Affairs*, May/June 2010; Robert Gates, Eisenhower Library remarks (Abilene, KS, May 8, 2010), available at <http://www.defense.gov/speeches/speech.aspx?speechid=1467>.
6. Gates, “A Balanced Strategy.”
7. Robert Gates, “Defense Budget Recommendation Statement” (speech, Arlington, VA, April 6, 2009).
8. White House, “Remarks by the President in Address to the Nation on the Way Forward in Afghanistan and Pakistan,” news release, December 1, 2009, available at <http://www.whitehouse.gov/the-press-office/remarks-president-address-nation-way-forward-afghanistan-and-pakistan>.
9. For a review of the testimony and White House reaction, see James Joyner, “Afghanistan Deadline: What Happens in July 2011?” Atlantic Council, http://www.acus.org/new_atlanticist/afghanistan-deadline-what-happens-july-2011.

10. *Quadrennial Defense Review* Report (Washington, DC: Department of Defense, February 2010), p. v.
11. Robert Gates, testimony before the Senate Armed Services Committee, *Hearing to Receive Testimony in Review of the Defense Authorization Request for Fiscal Year 2010 and the Future Years Defense Program*, 111th Cong., 1st sess., May 14, 2009, available at <http://armed-services.senate.gov/Transcripts/2009/05%20May/09-31%20-%205-14-09.pdf>.
12. U.S. Joint Forces Command, *The Joint Operating Environment 2010* (Suffolk, VA: February 18, 2010), available at http://www.jfcom.mil/newslink/storyarchive/2010/JOE_2010_o.pdf.
13. Gates, "A Balanced Strategy."
14. Gates, "Helping Others Defend Themselves."
15. *Quadrennial Defense Review*, p. iii.

Panel III: Quadrennial Defense Review

Summary of Discussion

Dr. Thomas G. Mahnken
Jerome E. Levy Chair of Economic Geography and
National Security
U.S. Naval War College

The Ruger Chair Workshop's panel on the Quadrennial Defense Review (QDR) was charged with examining how the 2010 Quadrennial Defense Review reflected budgetary priorities and provided force-planning guidance to the Defense Department.

The first presentation was by Dr. Patrick Cronin, who is senior advisor and senior director of the Asia-Pacific Security Program at the Center for a New American Security. He argued that although the QDR claims to be a strategy-driven document it is not, in that it fails to set priorities and identify and make difficult choices.

Although the QDR places the highest priority on winning the wars that we are in, Cronin questioned whether the United States had an effective strategy for doing so in Afghanistan. In his view, we need to think about how much we can afford to expend on Afghanistan. He is also concerned about the ability of the Afghan government to be a strong partner for U.S. counterinsurgency efforts. He is also worried about the opportunity costs of the U.S. focus on counterinsurgency.

Finally, the United States faces real problems with its traditional allies; the partners that we assume have the ability and will to assist us in many cases possess neither.

The second presentation was by Dr. Kori Schake, who is a research fellow at the Hoover Institution at Stanford University. In her presentation, she questioned the value of the 2010 Quadrennial Defense Review. She argued that the QDR failed to fulfill the requirement that Congress established in mandating that the Defense Department complete a quadrennial review. In her view, it connected only vaguely to the budget Secretary Gates submitted or to his major statements of policy. Moreover, it depends for success on an external condition—"whole-of-government operations"—that has proved unattainable.

Secretary Gates believes that the United States should emphasize winning the wars we are in and institutionalizing counterinsurgency. However, given the political context of an administration committed to drawing to a close the counterinsurgencies we are fighting, and no evidence of leadership support for managing emergent campaigns (like those in Yemen and Somalia) with the same large-scale U.S. involvement, it would appear Secretary Gates is institutionalizing counterinsurgency as the major driver in force structure just as we cease to

fight these kinds of war. His emphasis on institutionalizing counterinsurgency sounds remarkably like fighting the last war, and too little effort has been directed toward redressing those vulnerabilities in American military power most likely to produce losses in future wars.

Schake argued that the defense program outlined in budgets corresponding to Secretary Gates's strategy is unaffordable. It is built on projections of defense spending that Secretary Gates himself said are unlikely to materialize. By assuming the availability of defense spending rather than exploring a variety of defense programs at different levels of spending, Secretary Gates has missed a very important opportunity to prepare DoD for the resource-constrained environment he himself acknowledges is looming. The QDR also does not acknowledge the enormous bow wave of expense coming just to replace equipment that was programmed by the services at slower rates of usage than have proved, given the wars.

Finally, she argued that there are three reasons to be concerned about U.S. efforts to build partner capacity. First, although military engagement with other militaries is generally beneficial, it is far outrunning capacity-building efforts in civilian engagement by the U.S. government. Second, military training is a scarce resource, and absent a national security strategy—and possibly even with one, given that document's historic tendency to hang every ornament on the Christmas tree—there is no means to determine which countries should receive it. Third, we may be providing superb military training to our enemies. The nonmilitary agencies do not have the culture, the people, or the funding to be real partners to DoD.

The discussion period began with the observation that there is a strong thread of intellectual continuity between the 2008 *National Defense Strategy*, Secretary of Defense Gates's January/February 2009 *Foreign Affairs* article, and the 2010 Quadrennial Defense Review. All demonstrate Secretary Gates's emphasis on winning the wars we are in as well as seeking balance in U.S. defense policy. Some participants agreed with Dr. Schake that the Defense Department is devoting too much attention to irregular warfare to the detriment of other contingencies. Conversely, another participant noted that in fact irregular warfare only accounts for about ten percent of the defense program.

A number of participants noted that the QDR was completed before the Obama administration's *National Security Strategy*, which in theory should have driven it. Others noted that previous administrations had completed their defense reviews before they completed their national security strategies. Still others noted that this was practically inevitable, given the timelines associated with confirming presidential appointees as well as the budget cycle.

Participants discussed the implications of the 2010 QDR for American interests in Asia. Some believed that the document's discussion of antiaccess and area-denial threats was something that America's allies and friends in the region would find reassuring. Others argued that the document, while strong rhetorically, did not adequately address the force structure the United States needs to deal with a rising China and other challenges in Asia and the Pacific. All saw the Air-Sea Battle concept as a good starting point, but some expressed disappointment that the concept does not have resources associated with it.

Some participants criticized the 2010 QDR, as well as past reviews, for failing to link objectives to force-structure priorities. One participant noted that the Defense Department lacks the joint analytical resources needed to analyze force-structure options and alternative concepts of operations.

One participant noted that a QDR should serve three purposes: it should (1) provide a force-sizing construct, (2) offer a budget top line, and (3) start or terminate programs. A number of participants singled out the lack of a force-sizing construct in the document as a major shortfall. One participant argued that the force-sizing construct is one of the most powerful and underappreciated instruments that the secretary of defense has for providing direction to the Pentagon. Similarly, participants noted that the QDR does not articulate a force-structure requirement. Rather, it merely codifies the existing program.

Several participants noted that since the QDR was released in February 2010, Secretary Gates has made a number of speeches that seem to prefigure additional defense cuts. If this is in fact the case, then one has to question how authoritative the QDR was.

There was agreement that the QDR does not look twenty years into the future, as it was supposed to do; rather, it is squarely focused on challenges and capabilities over the next five to seven years. Participants noted, however, that previous QDRs had also largely adopted a short-term perspective. They differed as to whether it is feasible to look two decades into the future. Some argued that the world is too uncertain to predict events twenty years in the future. Others countered that given the timelines involved in procuring major weapon systems, the Defense Department has no choice but to try to forecast.



Panel IV

Defense Budget and Risks



Carl Conetta

Co-director, Project on Defense Alternatives

Todd Harrison

Senior Fellow, Defense Budget Studies, Center for Strategic and Budgetary Assessments

Moderator:

Professor Sean C. Sullivan

Workshop Administrative Assistant and Associate Professor, National Security Decision Making Department, Naval War College

The Dynamics of Defense Budget Growth, 1998–2011

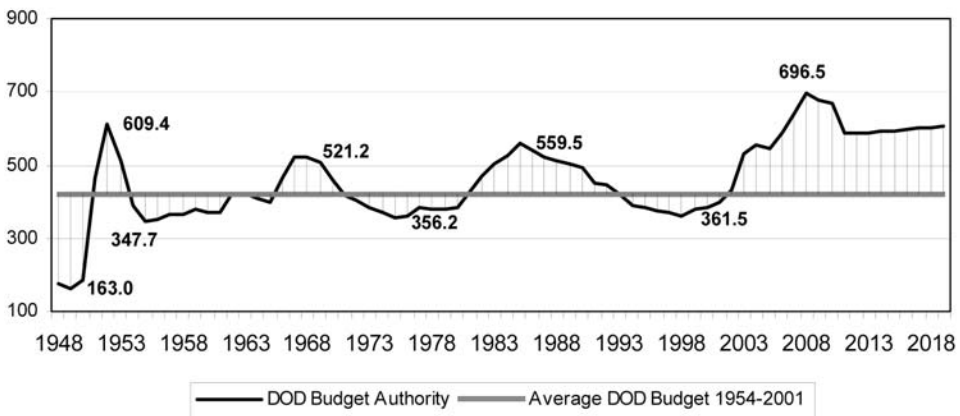
Carl Conetta
Project on Defense Alternatives

1. Introduction

The rise in U.S. defense spending since 1998 has no precedent in all the years since the Korean War (figure 1). The Department of Defense (DoD) budget reached its post–Cold War ebb in 1998: \$361.5 billion (2011 U.S. dollars [USD]). Since then it has rebounded to \$708 billion—a 96 percent increase. The portion of the 2011 budget request that is unrelated to contingency operations (the so-called base budget) is \$549 billion, which is 54 percent higher in real terms than in 1998.

Figure 1
DoD Budget Authority 1948–2019

(billions of 2010 USD)



Sources: U.S. Department of Defense (DoD), *National Defense Budget Estimates for FY 2010* (Washington, DC: DoD, June 2009), table 6-8 and table 7-5; DoD, *FY 2010 Budget Request Summary Justification* (Washington, DC: DoD, May 2009), fig. 1.1; U.S. Office of Management and Budget, *Analytical Perspectives, Budget of the United States Government: Fiscal Year 2010* (Washington, DC: GPO, May 2009), table 26-1; and DoD, *Budget Amendment to the FY 2010 President’s Budget Request for Overseas Contingency Operations (OCO): Summary and Explanation of Changes* (Washington, DC: Office of the Under Secretary of Defense [Comptroller], August 2009), pp. 6–9.

Whether one looks at the total DoD budget, or just that portion not attributable to today’s wars, U.S. defense spending is now stabilizing at levels significantly above Cold War peaks (adjusted for inflation) and far above the Cold

War average, in real terms. Measured in 2011 dollars, average DoD budget authority was

- \$430 billion for the period 1954–2001;
- \$525 billion for the Reagan years; and
- \$503 billion for the Vietnam War “high tide” years 1966–1970.

As this is occurring, the United States has entered a period of acute economic uncertainty, marked by increasing demands and constraints on federal resources. Largely as a result of the 2008–2010 financial crisis and recession, gross federal debt will surpass 100 percent of gross domestic product (GDP) in 2011. Although not as high as during the Second World War, the debt-to-GDP ratio is projected to remain above the 100 percent threshold for much longer.

If the run-up to the 2010 midterm elections is any indication, the United States may be facing a “perfect political storm” of fiscal constraint as the electoral fates of its political leaders increasingly hinge on their stances regarding deficit reduction. As surely as some will target nondefense spending as a source of savings, others will look to DoD’s budget, which, after all, has accounted for almost 65 percent of the rise in discretionary spending since 2001.¹

In this context, it is useful to look more closely at the recent dynamics of defense budget growth. These should provide clues relevant to containing or reversing that growth. By contrast, not very useful is the notion that the rise in defense spending can be understood as resulting from some immutable growth factor or “constant.” Some observers have noted that over the past sixty years or so, DoD’s budget has grown at an average annual rate of approximately 2 percent over inflation per full-time person in uniform.² Others have promoted the 2 percent “constant” as a criterion for assessing the adequacy of planned budgets.³ But this view mistakes observation for explanation. Any empirical trend in budget growth is no more an explanation of itself than is global warming. Instead, it is something needing an explanation or, perhaps, multiple explanations.

The most ready explanation for the post-1998 spending surge is that it is due largely to post-9/11 military operations. In fact, these operations account for just 22 percent of the 2011 budget request and about 52 percent of the total increase in expenditures since 2001. Moreover, the wars themselves have been exceptionally expensive by historical standards. Measured in 2010 dollars, the Korean conflict cost \$393,000 per person/year invested; the Vietnam conflict cost \$256,000; and the Iraq and Afghanistan commitments, \$792,000 so far. Rather than adequately explain the post-1998 spending surge, the high cost of recent military operations only adds to the explanatory burden.

Some insight into current cost drivers can be gleaned by comparing the recent surge in spending with two lesser ones that preceded it: the 1958–1968 surge of 43 percent and the 1975–1985 surge of 57 percent. The first of these involved the conduct of the Vietnam War (which was the principal cost driver) and an effort to expand and transform the force. The second surge emphasized recapitalization and a modest increase in force size. Notably, the percentage rise in spending between 1998 and 2008 was nearly as great as both of these

previous two surges combined. And this comparison illuminates one factor that distinguishes the recent surge: it reflects the combined effect of a major war effort and a major effort at force recapitalization.

A second contributing factor, especially pertinent to the high cost of operations in Iraq and Afghanistan, is that America’s armed forces are ill suited to fighting very large-scale and protracted counterinsurgency campaigns. In a sense, we have been attempting to fight “Mr. Johnson’s war” using “Mr. Reagan’s military”:

- Given the voluntary basis of today’s armed services, long labor-intensive wars drive personnel costs sharply upward, as DoD must bid higher and higher to recruit and retain personnel.
- Today’s wars also are unique in their high degree of dependence on contract labor. This is partly because the troop deployments are not large enough to do what we have attempted in Iraq and Afghanistan.

In 2009, the Central Command area hosted over 240,000 DoD contractors (compared to 280,000 military personnel supporting war operations there).⁴ This ratio of nearly 1:1 contrasts with a 5:1 ratio in Vietnam and 5:2 ratio in Korea. This means that today’s wars are relatively larger than they seem. The added contract personnel register in the budget mostly as increased operations and maintenance costs.

- Finally, much of the modernization spending over the past ten years has been irrelevant to counterinsurgency operations. Thus the wars required their own wave of equipment acquisition and modification—which national leadership has chosen to implement concurrently with other, previously planned modernization.

These factors help explain the differences in how the Vietnam conflict and today’s wars affected DoD budget growth, as summarized in table 1.

Table 1
Comparison of DoD Budget Growth across Two War Decades

	% change 1959–1969	% change 1999–2009
Procurement and RDT&E	18.5%	98%
Operations & Maintenance	46%	86%
Personnel Costs	37%	47.5%
Total Budget Authority	33%	78%
Full-Time End Strength	38%	3%

Source: DoD, *National Defense Budget Estimates for FY 2011* (March 2010).

This quick survey of recent budget dynamics should be sufficient to illustrate that there is more to the recent spurt in defense spending than some immutable growth factor or constant. And simply pointing to the wars as a reason for cost growth barely scratches the surface. Instead, a variety of policy decisions and choices have led us to our current circumstance.

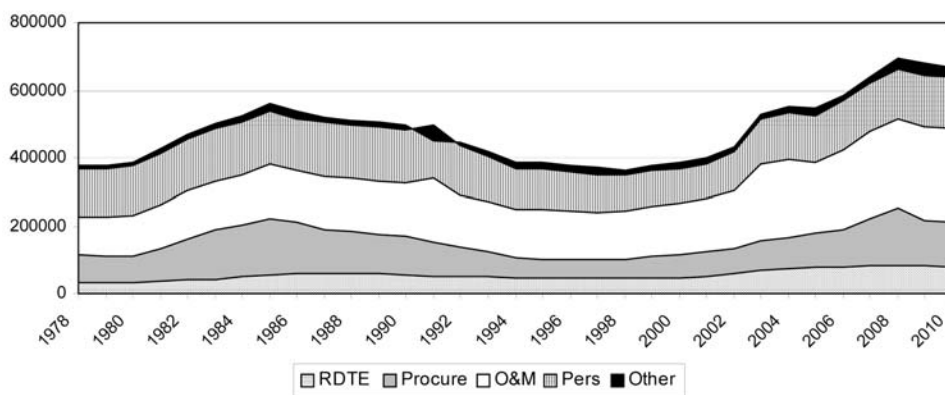
In the next sections we take a closer look at how DoD has allocated funds among appropriation categories and how this allocation has changed over time. In this our aim is to illustrate how yesterday’s choices have structured today’s. Our time frame is 1978–2010—a period spanning both the transition to an all-volunteer military and the geostrategic revolution of 1989–1992.

2. The Allocation of DoD Resources, 1978–2010

Figures 2 and 3 cover the period 1978–2010, giving different views of the allocation of DoD funds among key congressional appropriation categories: Military Personnel; Operations and Maintenance (O&M); Procurement; and Research, Development, Testing, and Evaluation (RDT&E—henceforth R&D). Figure 2 shows the change in total budget authority for each “account” in 2010 dollars. Figure 3 shows the same, but on a *per person* basis, which is a way of filtering out those changes due to fluctuations in end strength. (“Per person” here means “per full-time person in uniform”).

Figure 2
DoD Budget Authority by Appropriation Title 1978–2010

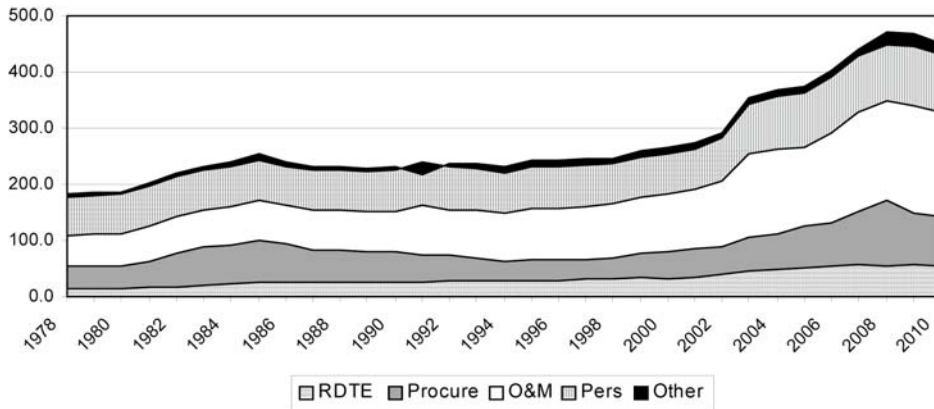
(millions 2010 USD)



Sources: U.S. Department of Defense (DoD), *National Defense Budget Estimates for FY 2010* (Washington, DC: DoD, June 2009), table 6-8 and table 7-5; DoD, *FY 2010 Budget Request Summary Justification* (Washington, DC: DoD, May 2009), fig. 1.1; U.S. Office of Management and Budget, *Analytical Perspectives, Budget of the United States Government: Fiscal Year 2010* (Washington, DC: GPO, May 2009), table 26-1; and DoD, *Budget Amendment to the FY 2010 President’s Budget Request for Overseas Contingency Operations (OCO): Summary and Explanation of Changes* (Washington, DC: Office of the Under Secretary of Defense [Comptroller], August 2009), pp. 6–9.

Figure 3
DoD Per Person BA by Appropriation Title 1978–2010

(thousands 2010 USD)



Sources: U.S. Department of Defense (DoD), *National Defense Budget Estimates for FY 2010* (Washington, DC: DoD, June 2009), table 6-8 and table 7-5; DoD, *FY 2010 Budget Request Summary Justification* (Washington, DC: DoD, May 2009), fig. 1.1; U.S. Office of Management and Budget, *Analytical Perspectives, Budget of the United States Government: Fiscal Year 2010* (Washington, DC: GPO, May 2009), table 26-1; and DoD, *Budget Amendment to the FY 2010 President’s Budget Request for Overseas Contingency Operations (OCO): Summary and Explanation of Changes* (Washington, DC: Office of the Under Secretary of Defense [Comptroller], August 2009), pp. 6–9.

2.1 Overall Spending

When measured on a *per person* basis, DoD budget authority appears remarkably stable during the twenty-five-year period 1983–1998. It began to rise in 1998, however, accelerating sharply with the onset of the Iraq War, before settling at an average of \$459,000 *per person* for the years 2007–2010. This is 78 percent higher than the Reagan peak, 95 percent higher than on the eve of the first Gulf War, and nearly three times the inflation-adjusted peak during the Vietnam era. Setting aside war costs, the Obama administration plans to stabilize *per person* expenditures at about \$377,000 *per person* in today’s dollars, which is 57 percent higher than the average for 1983–1998.

2.2 O&M Spending

An important contributing factor to the general rise in spending has been the O&M account. Calculated on a *per person* basis, O&M spending began to climb sharply upward in the early 1990s. Its climb accelerated further with the onset of the post-9/11 wars, before settling at a level in 2010 that is 160 percent higher than the 1989 level in real *per person* terms. Today, DoD is allocating more than 2.5 times as much *per person* to O&M as it was at the peak of the Reagan surge.

The proportion of the DoD budget allocated to O&M has been rising steadily since 1979. Most of the growth in O&M as a portion of the budget

occurred between 1989 (31 percent) and 1999 (39 percent). Today, it claims about 41 percent of the total DoD budget.

2.3 Civilian & Contractor Labor

An important factor in the O&M rise during the mid-1990s was the balance between DoD civilian and military payrolls. The civilian payroll—which is largely paid out of O&M—went from being 49 percent as large as the military payroll during the 1980s to being 57 percent as large during the 1990s. Subsequently, it receded back to 44 percent during 2000–2008. Complementing this trend (and eventually overtaking it) was increased reliance on “outsourcing” or contracting. This registers as part of “nonpay” O&M expenditures. Beginning in the 1990s and accelerating sharply after 1998, DoD has allocated much more of its resources to nonpay O&M, including contracts.

2.4 R&D and Procurement Spending

Over the thirty-year period 1980–2010, “modernization spending” (procurement and R&D together) has moved in a typical boom-bust cycle. Total modernization spending was 32 percent lower in the 1990s than in the 1980s. However, in 2000–2009, total modernization spending rebounded to near the 1980s level in real terms. Measured in *per person* terms, 1990s modernization spending was only 14 percent lower than 1980s spending, while spending during 2000–2009 was fully 47 percent higher in real terms than during the 1980s. During the past four years, *per person* modernization spending has averaged 53 percent higher than the highest year of Reagan modernization spending.

2.5 Personnel Spending

During the twenty-year period 1981–2001, budget authority for personnel varied by only a few percent around an average of \$73,200 (2010 USD) *per person*. However, between 2001 and 2010, it rose 40 percent. The increase was sufficient to bring total personnel expenditures back up to Cold War levels—for a military only 69 percent as large. Slightly more than half of the post-1998 boom in personnel spending was due to the wars.

3. Dilemmas of the Drawdown

3.1 Long-Term Development Trends

The post–Cold War changes in America’s armed forces occurred in the context of already ongoing efforts at force transformation. One effort began in the 1970s with the transition to a volunteer military. Another began in the 1980s with the effort to recapitalize the post-Vietnam military and improve its readiness. Both of these fit into an even longer-term force development strategy that has emphasized quality over quantity. This strategy aims to build on America’s presumed competitive advantages over likely opponents: its greater technological competency and its more skilled and motivated workforce.

The switch to a professional military produced a more reliable and ready cadre.⁵ It also significantly increased personnel costs, which averaged 23 percent higher in real *per person* terms during the 1980s than during the 1960s. The “quality over quantity” strategy, and the dependence on high-cost personnel, also implied increased *per person* allocations for research, development,

and procurement—an objective that came more into reach once America had exited its consumptive commitment in Southeast Asia. But the resultant posture carries with it an inherent constraint: there is a size threshold beyond which the cost of competing for and adding quality personnel becomes prohibitive.⁶ Where that threshold sits depends on both intrinsic and extrinsic factors. The intrinsic factors include the amount of pressure the Pentagon puts on its personnel and the general state of military morale; the extrinsic include general economic conditions and population demographics.

3.2 A More “Ready” and Deployable Force

Both the George H. W. Bush and Clinton administrations began to implement force reductions in ways generally consonant with the “quality over quantity” strategy, aiming to match cuts with an increase in the readiness and flexibility of the resultant, smaller force. Force structure—that is, numbers of divisions, air wings, and ships—was reduced more than personnel, so that the residual units could be better filled. And there was increased investment in mobility assets.

As noted previously, operations and maintenance spending per person also took a sharp upward turn during this period—rising 30 percent in real terms. (Although total O&M expenditures declined by 12 percent, the decline in total personnel numbers was greater.) Especially benefiting were mobility capabilities, logistics, and central support and administration.⁷

The relative rise in O&M spending was partly a “forced choice” and partly a free one. It is simply easier to slice away combat units (which come in discrete multiples) than it is to appropriately downsize the complex web of supporting structures (and infrastructure). Thus, whenever force size is reduced rapidly, we might expect a rise in per person expenditures on infrastructure, operations, and maintenance allocations—at least temporarily. Restoring lost efficiencies would depend on a subsequent reengineering of support services and infrastructure.

There was more to the post-1990 rise in relative O&M expenditures than losses in economy of scale, however. O&M spending had already been rising during the 1980s—up about 22 percent per person in real terms during that decade. This rise is perfectly consonant with a “quality over quantity” force development strategy—one that seeks to bolster combat forces with “enabling” assets and services. The relative rise in infrastructure and support expenditures also accords with the transition to a volunteer military, as MIT researcher Cindy Williams has pointed out.⁸ Part of attracting and holding higher-quality personnel is providing better personnel and family services, including better provisions for health care and housing.

In sum, policy regarding operations and maintenance expenditures during the 1990s was complex, seeking simultaneously to trim unnecessary excess while enhancing force multipliers and enablers.

3.3 The Struggle to Recapitalize

Procurement was the account that suffered the most during the 1990s. It reached its post-Cold War nadir in 1997: \$54 billion (2010 USD). Average budget authority for procurement during the decade was 44 percent lower in real terms than in the 1980s. The decline in average *per person* expenditure

was somewhat less: 31 percent—still, a considerable cut. However, two factors helped mitigate it:

- *First*, the Reagan-era DoD had capitalized a larger arsenal, which it then bequeathed to the 1990s. This was Reagan’s gift to Clinton. When reductions took hold, the retirement of older equipment effectively lowered the average age of equipment pools, thus achieving what might be called “virtual modernization.”
- *Second*, total spending on R&D was sustained during the 1990s in real terms. Measured on a *per person* basis it actually rose by 32 percent. Looking at procurement and R&D spending together shows a combined, real decline of only 14 percent per person.

The above caveats notwithstanding, no one at the time doubted that procurement spending would have to rise again, soon. Barring further cuts in force structure, even a moderate program of recapitalization might aim to achieve an annual average of \$75 billion in procurement spending, once the Reagan cascade had been fully absorbed.

In light of increasing O&M expenditures and excess spending on infrastructure, the prospect of also boosting procurement expenditures put the “peace dividend” at risk. Something had to give. The prevailing conceit at the time was that much of the new funding for procurement could be found by trimming excess O&M and infrastructure spending. Also, proponents of military transformation contended that equipping and restructuring the armed forces along “information age” lines could achieve significant new efficiencies.

3.4 The Failure of Reform

In implementation, however, both the reform and the transformation agendas fell well short of their promise. In both cases, institutional resistance and bureaucratic inertia proved stronger than the impetus for change.⁹

The Government Accountability Office (GAO) points to competitive (out)sourcing efforts and military base reductions as the initiatives that probably have saved the most money.¹⁰ However, these two efforts taken together have not yielded reliable net savings exceeding 3 or 4 percent of annual budgets. Such a modest level of savings cannot even fund the growth in *peacetime* operational activity—to say nothing of war and full-bore modernization. The only thing left to give was the peace dividend, which quickly evaporated after 1998 as budgets rebounded to Cold War levels.

4. More Hands to the Task: Recent DoD Workforce Dynamics

From 1978 through 2002, the budget for military personnel showed little real (i.e., inflation adjusted) growth when measured on a *per person* basis. Thus, when the post–Cold War cuts in personnel numbers began, the personnel account became a true bill payer (second only to modernization in this regard). This circumstance abruptly ended in 2002, due mostly to pay and benefit hikes as well as war-related bonuses and incentives.

Today, the personnel account is comparable in real terms to that during the Reagan era, although the U.S. military is only 69 percent as large. Figured on a *per person* basis, personnel costs are 84 percent higher in real terms than in 1967, when last we were engaged in a large counterinsurgency effort. As noted earlier, the logic of the present personnel policy ensures that long, exhausting wars will drive personnel costs sharply higher. The policy was not designed with labor-intensive slogs in mind. Indeed, it evolved specifically as part of our recoiling from such an effort—the Vietnam War—and its effects.

4.1 The High Cost of Military Labor and Its Effects

In 2004, the life-cycle cost of a U.S. military officer amortized over a twenty-year career was approximately \$88,000 per year (current dollars); for enlisted personnel, \$43,400 per year. This is considerably more expensive than comparable civilian labor.¹¹ The high cost of U.S. military personnel undergirds DoD's reluctance to increase end strength. Thus, most of the recent additions to the Army and Marine Corps have been matched by reductions in the Navy and Air Force. The total number of full-time U.S. military personnel by the end of 2010 will be barely 50,000 more than the post-Cold War low point—and 22,000 of these will be temporaries. Rather than add substantially to military end strength, DoD has tried to squeeze more out of the high-priced labor on hand (or substitute civilian labor for it where it can).

The cost of military labor is not the only limiting factor on end strength. As noted, the Pentagon's prevalent force development strategy seeks to build on the high quality of U.S. military personnel by supporting and equipping them to a peerless standard. In this approach, it makes no sense to pit personnel, O&M, and modernization spending against each other. Doing so only serves to bust the formula. A degree of control can be imposed on the process by strictly setting the key independent variable: the number of military personnel. The high cost of military personnel also creates substantial pressure to restrict their use to roles that closely correspond to their unique skills and skill level—the rule being: use them where their use is most cost-effective and not elsewhere.

4.2 Adding and Cascading Labor

Looking at the evolution of the Pentagon's workforce overall, we see several types of initiatives in play since 1989:

- *First* (and obviously), the post-Cold War cuts in the number of military personnel and DoD “in-house” civilians (with a small percentage of military positions recently restored).
- *Second*, some migration of military personnel from the “nondeployable” to the “deployable” segment of the forces. All told, the annual *Defense Manpower Requirements Reports* show a migration of 59,000 military positions from the infrastructure category to the “operating forces” category during the period 2000–2009.¹²
- *Third*, the replacement of military personnel in some roles by civilians (either DoD employees or contracted labor). Similarly, DoD civilian employees have been increasingly subject to replacement by cheaper, contract labor. And,

- *Fourth*, a general growth in the proportion of the Pentagon workforce that is private contract labor. This growth far exceeds the replacement of DoD military and civilian personnel just cited.

There is more to this program than just the desire to optimize the use of military personnel or to achieve “savings” by having government and private entities compete for jobs. Principally, there is a drive to bring more hands to the task in a cost-effective way because the task list is ever expanding.

Between 1994 and 2004 as many as 15,000 military personnel were transferred (or due to be transferred) to new positions as a result of competitive outsourcing efforts. As noted by the GAO, “when work performed by uniformed personnel is outsourced, the personnel generally are assigned to other duties.”¹³ Between 2004 and 2010, another 48,000+ military positions were slated to be soon filled by DoD civilians or contract personnel. Of these 48,000 personnel, 19,000 (all Army and Marine Corps) are being transferred to other duties—many in support of the Army’s new modular brigades.

Competitive outsourcing has affected DoD civilian personnel more than uniformed personnel. But, in this case too, many of those displaced simply moved to other jobs. According to a 2004 study, between 1995 and 2003, more than 65,000 DoD civilian positions were subject to public-private competition under the stringent guidelines set out in OMB Circular A-76.¹⁴ As a result, nearly 25,000 DoD civilian positions were cut. However, 11,000 of the displaced employees simply moved to other positions.

4.3 DoD Contracting Trends

By far, most DoD contracting occurs outside the A-76 process. And it has been growing exponentially. Between 1989 and 1999, DoD purchases of outside goods and services grew as a part of the budget from 45 percent to 47.5 percent. Between 1999 and 2009 it grew further to approximately 57 percent of the budget.¹⁵ GAO estimates that DoD’s total contract obligations were over \$387 billion in 2008, having doubled since 2001.¹⁶ This growth has occurred in the context of a longer-term trend: the proportion of purchases that are “services” has been steadily growing, while the proportion that is “goods” has been falling. According to one study of DoD contracts, “services” constituted more than one-third of purchases in 1984, but 56 percent by 2003.¹⁷ Together, these trends underline DoD’s increasing reliance on contract labor—the so-called shadow workforce.

4.4 The Growth of DoD Contract Labor

In tandem with the increasing role of service contracts, contract labor is growing as a proportion of the DoD total workforce. Indeed, DoD’s shadow workforce may have grown by as much as 40 percent since 1989 (while the pools of military and DoD civilian personnel each declined by 32 percent). The growth rate of contract labor is suggested by a series of studies conducted by Paul C. Light of the Brookings Institution and New York University’s Wagner Graduate School of Public Service.¹⁸ These use the U.S. Bureau of Economic Analysis’s input-output model of the U.S. economy to resolve every dollar of federal contracting (whether for goods or for services) into a labor value. The estimate is rough and surely overstates the size of the DoD contractor force (partly because

it also captures secondary workers, such as contractors' own accountant services). But it remains valuable as an indicator of scale and, especially, as a foundation for trend analysis. Light's 2006 study, *The New True Size of Government*, indicates that DoD contracts employed as many as 5.2 million workers in 2005, either directly or indirectly.

Even if one substantially discounts Light's absolute numbers, his trend analysis provides an important insight into DoD workforce dynamics: *between 1989 and 2005, the pool of DoD contract labor has grown more than the pool of uniformed and civilian employees has declined*. If we cautiously discount the study's absolute numbers by 30 percent, it would still suggest that DoD's total workforce—military, civilian, and contractor—was *as large in 2005 as it was in 1989*, at the close of the Cold War. And this would certainly entail that it is today *larger* than in 1989.

A sharp rise in the proportion of the budget devoted to contracting, and in the proportion of the workforce that is contract labor, comports well with the observed dynamics of O&M spending since 1990.

4.5 O&M Spending and Workforce Dynamics

O&M spending mostly divides between the DoD civilian payroll and the purchase of goods and services. During the 1990s, the civilian payroll declined much less than the military pay account as budget cuts initially exempted many support and infrastructure activities. The ratio between the civilian and military payrolls did not return to its earlier balance until 2003, and this happened largely due to the war-related surge in military personnel spending. *Nonpay O&M expenditures*, which cover many contract activities, held steady during the 1990s despite overall budget cuts. They then began to rise sharply in 1998—as did R&D and procurement spending. Together these trends indicate that

- The reduction in military personnel after 1989 was mitigated, first, by reducing civilian DoD workers more slowly and, later, by adding large numbers of contract workers.
- A fair portion of this mitigation had to do with retaining and then expanding support personnel. This reflected (i) the effects of losing economies of scale in support activities as the force grew smaller, (ii) the difficulty of trimming excess support and infrastructure, (iii) the desire to retain all facets of U.S. military power even as the number of military personnel declined, and (iv) the adoption of policies that compelled higher readiness levels and greater operational tempo.

4.6 Reinflating the Pentagon Workforce

In sum: America's military workforce has been fully reinflated, with most of the regrowth displaced to the defense contractor segment. Military end strength has recovered only marginally. However, there has been some migration of military personnel toward the "sharp end"—that is, from the nondeployable to the deployable segment of the forces. But this migration probably does not and will not exceed one hundred thousand troops, including those recently added, both permanent and temporary.

5. Discordant Modernization

Since reaching a low point in the late 1990s, procurement spending has rebounded substantially, rising by more than 160 percent in real terms. Not since the nation undertook crash rearmament for the Korean War has as much been spent in a single year as in 2008, when the procurement account was allotted \$170 billion.

Comparing recent spending with that during the last recapitalization surge (1979–1990) provides some perspective:

- Total budget authority for procurement during the period 1999–2010 has been approximately \$1.25 trillion (2010 USD)—which compares well with the 1979–1990 recapitalization, when \$1.48 trillion (2010 USD) was authorized.
- Calculated on a *per person* basis, procurement spending during 1999–2010 was 25 percent higher in real terms than during the period 1979–1990.
- Only about 20 percent of procurement spending since 1998 has been related to the wars in Iraq and Afghanistan.
- Research and Development spending during 1999–2010 was much higher than in 1979–1990: \$822 billion *versus* \$571 billion.

Taken together, procurement and R&D constitute the “modernization” category. Total modernization spending was marginally higher in 1999–2010 than in 1979–1990. Viewed on a *per person* basis, however, recent budget authority for modernization is 50 percent higher in real terms than during the 1979–1990 period.

5.1 A Period of Troubled Modernization

Beginning in the early 1990s, DoD acquisition practice has evinced several, contending “modernization imperatives” or visions. And DoD has failed to adequately prioritize among them or compel choices. Given resource constraints, few have developed in a satisfactory way, and this generates unrelenting upward pressure on the budget. We might call this phenomenon *discordant modernization*.

Looking back, post–Cold War modernization trends can be usefully divided into three categories: legacy, transformational, and adaptive.

- *Legacy efforts* ideally reflect past adaptations that may nonetheless offer an insurance policy in the present as the force adapts to new circumstances, goals, and opportunities;
- *Transformational efforts* pursue new opportunities for more effective action based on new technology, techniques, and forms of organization;
- *Adaptive efforts* correspond to new security missions and circumstances (such as war).

If strategic discipline is lax, legacy modernization will predominate, at least for a while. This is because legacy efforts enjoy considerable institutional

momentum. Countervailing pressures must mount to overcome this momentum. Once they do, external circumstances may compel a rush of *ad hoc* measures. Subsequently, these may come to redefine the main thrust of modernization, although their long-term relevance could be more limited than appreciated in the moment. This is the circumstance DoD finds itself in today with regard to procurement for counterinsurgency.

5.2 The Tracks of Discordant Modernization

The Army provides a good example of discordant modernization with its efforts to (i) modernize or replace with similar systems its equipment stocks from the 1980s; (ii) digitalize and modularize its units; (iii) field unmanned aerial vehicles (UAVs), tactical robots, and various directed-energy weapons; (iv) pursue the Future Combat Systems; and (v) add Stryker armored vehicles, MRAPs (mine-resistant, ambush-protected vehicles), and up-armored HMMWVs (high mobility multipurpose wheeled vehicles) for stability and counterinsurgency operations.

However, the Army does not stand alone in this regard. The tracks of discordant modernization are evident elsewhere as well:

- In the Air Force, high-end modernization of platforms for stealthy, penetrating strike has predominated even as capacities to use standoff weapons, simpler platforms, and UAVs have advanced.
- In the Navy, emphasis remains on numerous big-deck aircraft carriers even as (i) the missile attack capability of the fleet has grown exponentially and (ii) UAVs—which can be launched in large numbers from the Navy’s amphibious assault ships—are playing an ever larger role as attack platforms. Largely irrelevant to current needs, two new classes of attack submarines have entered service since 1997. And, despite a much smaller fleet, the Navy intends to maintain four classes of surface combatants.
- Despite significant investment, the effort to build force networks is lagging, especially between services, facing both technical and integration problems. A principal conceit of networking is that it lessens the need to load individual platforms and units with capabilities. There is only limited evidence of progress in exploiting this putative benefit.

6. Conclusion: View to a Change

To restate the problem: Coming efforts to bring U.S. federal deficits down to a level below real growth in GDP may seek as much as a \$250 billion reduction in annual federal expenditures. Currently, the DoD budget accounts for 19 percent of the total federal budget and 56 percent of discretionary spending. Additionally, service plans do not yet fit inside the administration’s projected budgets. It is likely that DoD will face a budget reckoning—and soon.

We have reviewed the recent dynamics of DoD budget growth with an eye toward finding its independent variables, which we might manipulate to effect change. Several guidelines for budget reduction seem clear:

- *First*, greater restraint in committing ourselves to large-scale protracted counterinsurgency campaigns is key. Of course, few would step willingly into a known quagmire. So, practically speaking, this proviso implies a de-emphasis on seeking “regime change” by military means and strict limits on “postconflict reconstruction” operations in cases where these face substantial indigenous opposition.
- *Second*, military modernization efforts have suffered from weak prioritization and poor integration. Partly, this reflects the decentralized nature of our acquisition process, in which, as a former U.S. comptroller general puts it, “[c]apabilities and requirements are based primarily on individual service wants versus collective defense needs.”¹⁹ The remedy is a much greater emphasis on joint planning and much stronger leadership from the center in *compelling* a more integrated and adaptive approach.
- *Third*, we need to reboot efforts to streamline service structures and functions. During the 1990s, reformers sought to trim redundancy in service missions, adopt much leaner command structures, and consolidate many of the individual services’ support programs. The shortfall in achieving these goals deserves more than a shrug. Instead, an abiding and energetic recommitment to these ends should become a prerequisite for assuming major command responsibilities.
- *Finally*, the growth in the DoD workforce and in O&M expenditures does not simply reflect a decrement in efficiency. It also—and, perhaps, mostly—reflects an increment in activity and capability. Similarly with regard to cost growth in acquisition: the F-35 Lightning costs four times as much as a first-iteration F-16 partly because it is much more capable. This points to the fact that, while we precisely measure the budget *inputs* to our force development system, we only exceptionally measure its real *output*—which is not numbers of platforms and personnel but, instead, levels of activity and power.

If today’s armed forces are more costly than their 1989 precursors, despite being smaller, they also are more active and much more capable, unit for unit. The real question that circumstances may now force upon us is this: How much of our mounting power and activity is truly essential to our nation’s security? And at what point does this power and activity cross the threshold of diminishing returns? We will not find an answer by fixating on end strength or numbers of air wings, brigades, and ships.

Notes

1. *Debt, Deficits, and Defense* (Washington, DC: Sustainable Defense Task Force, June 11, 2010), available at <http://www.comw.org/pda>.
2. Stephen Daggett, Congressional Research Service, statement before the House Committee on Armed Services hearing “Resourcing the National Defense Strategy: Implications of Long-Term Defense Budget Trends,” November 18, 2009.
3. Michael O’Hanlon, “Obama’s Defense Budget Gap,” *Washington Post*, June 10, 2009.

4. Moshe Schwartz, *Department of Defense Contractors in Iraq and Afghanistan: Background and Analysis* (Washington, DC: Congressional Research Service, August 13, 2009); also see *DoD, State, and USAID Continue to Face Challenges in Tracking Contractor Personnel and Contracts in Iraq and Afghanistan* (Washington, DC: GAO, October 2009); and *Contractors' Support of US Operations in Iraq* (Washington, DC: Congressional Budget Office, August 2008).
5. Trends in the quality of military personnel are presented yearly in the *Population Representation in the Military Services* report, produced by the Office of the Deputy Under Secretary for Military Personnel Policy. Also see Bernard Rostker and Curtis Gilroy, "The Transition to an All-Volunteer Force: The U.S. Experience," in *Service to Country: Personnel Policy and the Transformation of Western Militaries*, ed. Curtis Gilroy and Cindy Williams (Cambridge, MA: Belfer Center for Science and International Affairs, 2006).
6. John Warner and S. Negrusa, "The Economic Case for All-Volunteer Forces," in *Service to Country*, ed. Gilroy and Williams.
7. Amy Belasco, *Paying for Military Readiness and Upkeep: Trends in Operation and Maintenance Spending* (Washington, DC: Congressional Budget Office, September 1997), pp. 25–47.
8. Cindy Williams, Principal Research Scientist, Security Studies Program, MIT, "The U.S. Defense Budget," statement before the U.S. Senate Committee on the Budget hearing "Defense Budget and War Costs: An Independent Look," February 23, 2010.
9. Cindy Williams, "Holding the Line on Infrastructure Spending," in *Holding the Line: U.S. Defense Alternatives for the Early 21st Century*, ed. C. Williams (Cambridge, MA: MIT Press, 2001), p. 60.
10. On outsourcing see *Defense Budget: Trends in Operation and Maintenance Costs and Support Services Contracting* (Washington, DC: GAO, May 2007); and *Defense Outsourcing: The OMB Circular A-76 Policy* (Washington, DC: Congressional Research Service, 23 January 2001).
On infrastructure reduction see *Military Base Realignments and Closures: Estimated Costs Have Increased While Savings Estimates Have Decreased since Fiscal Year 2009* (Washington, DC: GAO, November 2009); *Military Base Realignments and Closures: DoD Faces Challenges in Implementing Recommendations on Time and Is Not Consistently Updating Savings Estimates* (Washington, DC: GAO, January 2009); and *Military Base Closures: Observations of Prior and Current BRAC Rounds* (Washington, DC: GAO, May 2005).
11. Carl J. Dahlman, *The Cost of a Military Person-Year: A Method for Computing Savings from Force Reductions* (Santa Monica: RAND, 2007), p. 108.
12. *Defense Manpower Requirements Report FY-2009, FY-2008, FY-2006, FY-2005, FY-2003, FY-2001* (Washington, DC: Office of the Under Secretary of Defense for Personnel and Readiness, 2000–2009).
13. *Defense Budget*.
14. Jacques S. Gansler and William Lucyshyn, *Competitive Sourcing: What Happens to Federal Employees?* (Washington, DC: IBM Center for the Business of Government, October 2004).
15. Derived from *Federal Procurement Report* (Washington, DC: Federal Procurement Data Center, 1989); and *Consolidated Federal Funds Report for FY 2008* (Washington, DC: Census Bureau, July 2009).
16. *DoD's High-Risk Areas: Actions Needed to Reduce Vulnerabilities* (Washington, DC: GAO, March 2009).
17. Larry Makinson, *Outsourcing the Pentagon: Who Benefits from the Politics and Economics of National Security?* (Washington, DC: Center for Public Integrity, September 29, 2004).
18. Paul C. Light, *The New True Size of Government*, Organizational Performance Initiative Research Brief 2.

19. David M. Walker, Comptroller General of the United States, "DOD Transformation: Challenges and Opportunities" (presentation, Army War College, Carlisle Barracks, PA, February 17, 2007).

The New Guns-versus-Butter Debate

Todd Harrison
Senior Fellow, Defense Budget Studies
Center for Strategic and Budgetary Assessments

Introduction

As the economy begins to emerge from the deepest recession since the Great Depression, the federal government faces a dire fiscal situation. In fiscal year (FY) 2009, the budget deficit rose to a record high of \$1.4 trillion, and it is forecasted to reach as high as \$1.6 trillion in FY 2010. These record deficits are due in no small part to increased spending on fiscal stimulus programs and a sharp reduction in tax revenues due to the recession. But underlying the current fiscal situation is a structural deficit that the economic downturn has only exacerbated. A telling indicator of this is that one of the fastest-growing items in the budget is net interest on the national debt. According to Office of Management and Budget (OMB) projections, in FY 2018 the federal government will begin spending more on net interest payments than on national defense for the first time in modern history.¹

In the recently released fiscal year 2011 budget request, the administration proposed a freeze in non-security-related discretionary spending. While the base defense budget was one of the few discretionary accounts to receive a real increase, the rate of growth in defense spending slowed by half compared to the average rate of growth seen over the previous decade. The defense budget may have avoided a cut for the time being, but as Congress and the administration focus more attention on deficit reduction in the coming years, it will likely put downward pressure on everything in the budget, including defense spending.

Within the defense budget, a debate has been developing for some time between funding the personnel-related areas of the defense budget, such as pay, pensions, health care, and other benefits, and investing in the equipment-related areas of the budget, such as research and development (R&D) and procurement. Over the past decade, overall growth in the base defense budget has allowed the Department of Defense (DoD) to support increases in both people and equipment costs without having to choose between the two. However, as the fiscal situation of the federal government continues to deteriorate in the coming years, sustained growth in the defense budget is unlikely. When the defense budget ceases to grow above the rate of inflation, the department will have to make difficult choices between competing priorities, such as personnel and equipment. This is the new guns-versus-butter debate—a choice between taking care of the people who serve or the equipment they need to fight and prevail in current and future conflicts.

Background: Guns versus Butter Revisited

The guns-versus-butter debate has been a recurring theme in previous periods of fiscal austerity. The traditional argument is that a dollar spent on defense is a dollar not available for domestic programs. This is not true during periods of relative prosperity, since both defense and domestic spending can rise simultaneously, funded by increasing revenues or borrowing. But in times like the present, when the deficit and debt have reached historic highs and spending is under increased scrutiny, the battle over the budget quickly becomes a zero-sum game. In recent history, the guns-versus-butter debate has arisen during periods of economic and military transition: the end of the Cold War and the peace dividend of the early 1990s; the Vietnam War and the Great Society of the 1960s; and World War II and the New Deal. The current budget debate, however, does not fit the traditional guns-versus-butter model in several distinct ways.

First, it does not come at a time of rapid military buildup or during a drawdown at the end of a conflict—times when one would expect a significant increase or decrease in defense spending. The size of the military has remained relatively flat over the past decade, between about 1.4 and 1.5 million in end strength, with recent increases in the size of the Army and the Marine Corps largely offset by cuts in the size of the Air Force and Navy. And with the military still engaged in two ongoing wars, one of which may have yet to reach its peak in intensity, significantly reducing the size of the military to rein in costs is not a viable option. In short, this is not a time of rapid buildup or drawdown in the size of the military.

Second, the current situation also differs from the traditional guns-versus-butter model because the increase in the defense budget over the past decade has not mirrored previous military buildups. Unlike during the Cold War, the recent rise in defense spending arguably produced a “hollow” buildup because it did not result in the procurement of large quantities of equipment. In fact, the inventory of military equipment has become older and smaller due to the lagging pace of procurement. The increased cost of defense over the past decade is attributable to other factors, including the wars in Iraq and Afghanistan, rising personnel-related costs, and cost overruns in military acquisition programs. Cutting procurement is therefore not an easy way to rein in the defense budget, as it was at the end of the Cold War, because procurement now makes up a smaller proportion of the defense budget and many critical systems are nearing the end of their service lives and need replacement or upgrade.

For these reasons, the current debate is less a question of whether to spend federal dollars on defense or on other domestic programs, although this is surely a contributing factor in the discussion. Rather, the new guns-versus-butter debate is about how to spend dollars within the defense budget. It is a question of funding the “butter” items within the budget, such as pay, pensions, health care, and other personnel-related costs, or funding the “gun” items in the budget, such as new weapon systems, research and development, and ongoing military operations.

The “Butter” Budget

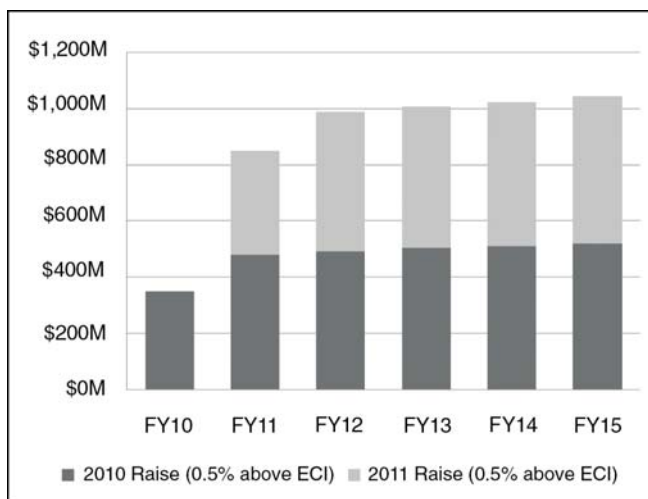
The “butter” portion of the defense budget, as the term is used here, refers to funding that is used for the care and welfare of people, most of which is through the operation and maintenance (O&M) and military personnel (MILPERS) budgets.² O&M and MILPERS fund the cost of military personnel and most DoD civilian personnel, bases and facilities, and benefits, such as pensions and health care. Since FY 2000, the total military personnel and health-care cost per active-duty service member has risen 73 percent in real terms, from \$73,300 in FY 2000 to \$126,800 in the FY 2011 request.³ A key factor underlying this rapid rise in personnel costs is the increasingly important role DoD plays as an employer, health-care provider, and educator for millions of Americans.

Employment

The Department of Defense is the single largest employer in the United States. With a total of 2,250,000 full-time civilian and military personnel (not including part-time members of the Guard and Reserve), DoD personnel make up 51 percent of the total federal government workforce.⁴ DoD employs more Americans than Walmart (1,400,000)⁵ and the U.S. Postal Service (599,000)⁶ combined. Because of the sheer size of DoD’s payroll, changes in pay and benefits have a significant impact on the overall budget.

In recent years, Congress has focused particular attention on military pay raises, due to the stresses the wars in Iraq and Afghanistan have placed on members of the military and their families and the need to induce people to enlist and reenlist. The FY 2004 National Defense Authorization Act mandated that military pay raises equal or exceed the Employment Cost Index (ECI) in all future budget submissions. Military pay raises have varied considerably from

Figure 1
Estimated Cost of Pay Raises above ECI for FY 2010 and FY 2011



Source: CBO, *S. 1390 National Defense Authorization Act for Fiscal Year 2010* (Washington DC: CBO, July 14, 2009), p. 8.

the ECI in the past, with raises falling below the ECI for much of the 1980s, tracking more closely during the 1990s, and exceeding the ECI nearly every year since FY 2000.⁷ Pay raises for DoD civilians have, in most years, tracked closely with military pay raises. The FY 2011 budget request proposes a military and civilian pay raise equal to the current ECI, 1.4 percent, but Congress may again choose to increase the raise above the ECI, as it has done in recent years.

The budget impact of pay raises in excess of the ECI is relatively small in the year they are enacted, but because of compounding and cumulative effects, the long-term budget impact is significant. According to the Congressional Budget Office (CBO), the 0.5 percent pay increase above the ECI enacted in FY 2010—a 3.4 percent raise instead of 2.9 percent—cost an additional \$351 million in the FY 2010 budget. However, because pay raises compound from year to year, next year's raise—even if it does not exceed the ECI—will be higher because it will be applied to a higher base pay. And the cost will continue to accumulate year after year from this single-year raise above the ECI, costing an additional \$2.4 billion over five years even if no additional raises above the ECI are enacted.⁸

Increasing pay above the ECI year after year further magnifies the future budget impact because raises accumulate. For example, an increase of 0.5 percent above the ECI in FY 2011—a 1.9 percent raise instead of the ECI level of 1.4 percent—would add to the previous increase enacted in the FY 2010 budget. The CBO estimates the cost of this additional raise in FY 2011 would be \$367 million in FY 2011 and \$2.4 billion over the next five years.⁹ Therefore, the additional cost of raises above the ECI in both FY 2010 and FY 2011 would total some \$850 million in FY 2011 alone and \$4.9 billion over the next five years (FY 2011 to FY 2015). If pay raises above the ECI continue to be enacted in future years, the cycle of cumulative and compounding costs would continue to spiral upward.

Health Care

DoD provides health care and health insurance coverage to 9.6 million eligible beneficiaries, including active-duty troops, retirees, members of the Guard and Reserve, and their dependents. The department currently operates 59 hospitals, 364 military medical clinics, and 275 dental clinics around the world and employs 130,000 medical professionals.¹⁰ Private-sector care is funded through the TRICARE program. In recent years, military health-care costs have grown at a pace significantly above the rate of inflation. The Defense Health Program in particular increased at a real annual rate of 6.9 percent from FY 2000 to FY 2010. The president's budget request grows the Defense Health Program by another 4.8 percent in FY 2011. Total military health-care costs are up 3.4 percent in real terms for FY 2011 to a total of \$50.7 billion—nearly one-tenth of the total DoD base budget.

The continuing increase in military health-care costs is due to a combination of factors: new and expanded benefits, general health-care cost inflation, and increased usage of health-care benefits by eligible beneficiaries. An example of a new health-care benefit enacted by Congress is the TRICARE for Life program. TRICARE for Life provides premium-free supplemental insurance for

military retirees enrolled in Medicare, and applies retroactively to retirees who retired before the benefit was enacted. As a 2004 RAND study noted, the newly added benefit “provides Medicare-eligible military retirees age 65 or older with one of the most comprehensive health insurance benefit packages in the United States.”¹¹ Accrual payments for this fund total \$10.9 billion in the FY 2011 request, more than one-fifth of the overall military health-care budget and nearly as much as the funding for the Joint Strike Fighter program (\$11.4 billion, which includes \$2.3 billion in continued R&D and the procurement of forty-three aircraft).

The TRICARE program has become an increasingly expensive benefit to provide for members of the military and military retirees. According to the 2010 *Military Health System Stakeholders' Report*, the cost to the military of the TRICARE program has risen from less than \$4,000 per family in 1996 to nearly \$12,000 in 2008. However, fees for TRICARE Prime, the basic HMO-like health-care plan, have not increased since its inception in FY 1995. TRICARE Prime is free for active-duty members and their dependents, with no annual premium or co-pays for use. The annual premium for military retirees is \$460 for a family, or \$38.33 per month, with a co-pay of \$12 per doctor visit and no annual deductibles. Prescription medications are free if filled at a military installation and are \$3 for generics and \$9 for brand-name if filled at an in-network TRICARE pharmacy.¹²

Because TRICARE fees have not increased since FY 1995, the gap between the average annual health insurance premiums paid by American workers and the cost of TRICARE Prime has widened. According to the Kaiser Family Foundation, the average annual premium for a family plan has more than doubled in the last ten years from \$1,543 in 1999 to \$3,515 in 2009.¹³ This widening gap makes the use of TRICARE increasingly attractive for military retirees. A 2007 study by the RAND Corporation found that 76 percent of military retirees have access to health insurance through a civilian employer or other group plan, yet only 42 percent of military retirees are enrolled in a civilian insurance plan. Of those enrolled in a civilian plan and paying a premium, 51 percent said they would give up their civilian plan if their premium rose by 25 percent or more.¹⁴ If the cost of civilian health insurance plans continues to increase and TRICARE fees do not, DoD should expect more retirees to give up their civilian health insurance in favor of less expensive TRICARE coverage, further adding to the already rising cost of military health-care.

Another reason for rising health-care costs is increased usage of the military health-care system by beneficiaries. The number of outpatient visits at military treatment facilities is projected to remain relatively flat at 34 million visits in FY 2011, but the number of outpatient visits to private-sector care facilities is expected to jump by more than 9 percent to 56.6 million visits.¹⁵ The number of visits to dental clinics is also on the rise at over 15,000 visits per day and climbing. As a result, the cost of military health-care on a per capita basis rose 42 percent above the rate of inflation from FY 2002 to FY 2009.¹⁶ DoD projects that the overall cost of military health-care will continue to increase at a rate of 5 to 7 percent annually through FY 2015.¹⁷

Education

DoD is also responsible for the education of thousands of students each year, from prekindergarten through graduate degree programs. The DoD Education Activity (DoDEA) operates 191 schools at the prekindergarten through 12th-grade levels and employs over 12,000 personnel to serve 84,000 students.¹⁸ If considered as a single school district, DoD's primary and secondary school system would be among the forty largest school districts in the United States, ranking near the total enrollment of schools in a major U.S. city, such as Baltimore, Maryland, or Austin, Texas.¹⁹ The budget for DoDEA totals \$2.3 billion in the FY 2011 request, up from \$2.1 billion in FY 2010. The increase in funding for DoDEA is in part due to the initiation of a five-year program to replace or modernize half of DoD's primary and secondary schools.

DoD also operates the three military academies at the undergraduate level, which together graduate about 3,000 officers annually, and the Reserve Officer Training Corps, which in FY 2004 produced 3,625 scholarship and 3,241 non-scholarship officers.²⁰ DoD also operates the largest community college in the world, the Community College of the Air Force.²¹ In addition, the services each fund numerous degree-awarding graduate schools, such as the Naval Postgraduate School, the Air Force Institute of Technology, and the Uniformed Services University of the Health Sciences. The department operates a number of professional schools for members of the military and civilian leaders, including the Services' war colleges, command and staff colleges, and the National Defense University, to name a few. Service members are also eligible to receive tuition assistance of up to \$4,500 per year for college courses taken during off-duty hours, and military spouses can receive up to \$6,000 in college tuition assistance, among other education benefits.²² In addition, many service members and their dependents qualify for education benefits under the GI Bill; however, this funding is through the Department of Veterans Affairs and is not part of the defense budget.

The "Guns" Budget

The "guns" portion of the defense budget is the cost of acquiring and employing military equipment. It is funded through the research, development, test, and evaluation (RDT&E); procurement; and O&M accounts. RDT&E funding is generally used to pay for basic and applied research, technology and component development, and system development. Procurement funding generally supports the purchase of weapon systems that have already been developed and are in production. The O&M budget funds the cost of using that equipment, including maintenance, peacetime operations, and wartime operations, which in recent years has been handled through supplemental appropriations.

Acquisition

Over the past twenty-five years, the share of the base defense budget allocated to acquisitions has fallen from 45 percent in FY 1985 to its current level of 34 percent. But while the share of the defense budget used for acquisitions has fallen, in recent years the amount of funding for acquisitions has risen well above the rate of inflation. Over the past ten years, from FY 2000 to FY 2010,

RDT&E and procurement funding grew at real annual rates of 5.2 percent and 4.2 percent, respectively. As Secretary Gates has noted, DoD modernization initiatives have been plagued by the piling on of “exquisite” requirements, which have driven up costs, stretched out procurement schedules, and lowered procurement quantities.²³

Cost overruns in acquisition programs are a contributing factor in the lagging pace of procurements. In the most recent Selected Acquisition Report (SAR), DoD reported that 75 percent of the major acquisition programs had exceeded their baseline program acquisition unit cost (PAUC), up from 66 percent in the previous report.²⁴ In the FY 1985 budget (at the peak of the Reagan arms buildup) DoD bought 338 tactical fighters and 23 ships, among other items. In the FY 2008 budget, which exceeded the FY 1985 by 33 percent in real terms, DoD bought just 56 tactical fighters and 7 ships.²⁵ Much of the cost overrun in acquisitions is due to overruns in RDT&E. In 2009 the Government Accountability Office (GAO) found that of the ninety-six major defense acquisition programs in the acquisition portfolio, total acquisition cost (including both procurement and RDT&E) had increased 25 percent from first estimate while RDT&E cost alone had increased 42 percent.²⁶

Procurement funding, \$106 billion in the FY 2010 base budget, is well below its previous peak level of funding in FY 1985 of \$177 billion (both figures are in FY 2011 dollars). RDT&E funding, however, is near a record high at \$81 billion in FY 2010, compared to \$57 billion in FY 1985 (also in FY 2011 dollars). As a result, the ratio of procurement to RDT&E has fallen from a peak of 3.5 to 1 during the early 1980s to a level of 1.3 to 1 in the FY 2010 base budget. The FY 2011 budget request begins to reverse this trend by proposing a real increase of 6.6 percent in procurement and a real decrease of 6.0 percent in RDT&E in the base budget, bringing the ratio up to 1.5 to 1, due in part to more programs coming to maturity and few new-start programs. Under the Future Years Defense Program (FYDP) submitted with the budget, funding for procurement is projected to continue rising and RDT&E is projected to continue declining. As a result, the ratio of procurement to RDT&E in the base budget will increase to 2.0 to 1 by FY 2015, the highest level since FY 1990.

Peacetime Operations

The base budget for O&M provides for the peacetime operation, training, and support of military forces around the world. The proposed FY 2011 base budget for peacetime operation of air, ship, and land forces provides a collective increase of \$3.8 billion in real terms, but this is only sufficient to fund a similar or, in some cases, significantly lower peacetime operational tempo (OPTEMPO) compared to FY 2010. Air operations funds the day-to-day operation and maintenance of aviation assets in the Army, Navy, Air Force, and Marine Corps. Overall funding for air operations is up 7.3 percent in real terms to \$37.7 billion, but a key measure of operational tempo—flying hours per crew per month—is down by 26 percent and 19 percent, respectively, for active-duty Air Force bombers and fighters. Army and Navy flying hours per crew per month are up slightly by 2.5 and 3.6 percent, respectively.²⁷ Funding for ship operations is up 12 percent in real terms to \$10.7 billion in the FY 2011 request, while a key measure of operational tempo—the number of steaming days per

quarter—remains at the same level as FY 2010. Funding for land forces O&M also grows by 3 percent in real terms to \$6.1 billion, with a 5.5 percent increase in OPTEMPO miles, the Army’s metric for the rate of activity of weapons systems (such as tank miles or vehicle miles), and no change in USMC deployable days, the Marine Corps’s preferred metric for the rate of activity of weapon systems.²⁸

Wartime Operations

The wars in Iraq and Afghanistan have been among the most expensive in American history, second only to World War II in inflation-adjusted dollars. From FY 2001 to FY 2010, nearly 20 percent of the defense budget was used for the wars in Iraq and Afghanistan, totaling more than \$1 trillion. In terms of the annual cost per active-duty service member, the current wars may be the highest ever, averaging \$1,186,000 per active-duty service member in Afghanistan and \$685,000 per active-duty service member in Iraq (in FY 2011 dollars). In comparison, at the height of World War II in 1945, the cost per active-duty service member was \$67,000 (in FY 2011 dollars),²⁹ and the cost per active-duty service member at the height of the Vietnam War in 1968 was \$132,000 (in FY 2011 dollars).³⁰

The increase in cost on a per-active-duty-service-member basis can be attributed to several factors. U.S. forces in Iraq and Afghanistan are drawn entirely from an all-volunteer force that has undergone more rigorous training, is more experienced, and is better paid. The equipment troops use today, from the vehicles they drive to the sensors and unmanned systems they employ, is more technologically advanced and, therefore, more expensive to field and maintain. The operating environment in Iraq and Afghanistan, particularly the supply routes into and within these countries, drives up costs even further, especially considering the logistics trail required for modern weapon systems and the need for extensive force protection along supply routes.

Annual war funding has varied over the years, based on such factors as the operational tempo and the number and composition of forces deployed in each theater. The recent surge of troops into Afghanistan comes as U.S. forces are withdrawing from Iraq. If current plans prove true and forces return to pre-surge levels in Afghanistan in FY 2012 and continue falling in the following years, it is conceivable that war funding could be largely, but not entirely, eliminated by the end of the FYDP.

Conclusion

The Department of Defense faces a critical question in the coming years as budgets become tight and each dollar of federal spending comes under greater scrutiny. Will DoD continue to fund the growing personnel costs needed to “preserve and enhance the All-Volunteer Force,” as was called for in the Quadrennial Defense Review (QDR)? Or will it continue to fund the growing acquisition and operational costs needed to “prevent and deter conflict” and “prepare to defeat adversaries and succeed in a wide range of contingencies,” also called for in the QDR? The fiscal reality is that in a flat or declining

budgetary environment, it cannot continue to do both to the same extent that it does today.

The new guns-versus-butter debate is also an intergenerational struggle—a question of providing benefits for those who served in the past or funding the equipment and training needed for those who will fight tomorrow’s wars. In a constrained budget environment, every dollar going to pay for health care, pensions, and other retiree benefits is a dollar not available to ensure tomorrow’s troops are the best equipped and trained military force in the world.

Current trends tend to favor the “butter” budget. Increases in pay and benefits have what economists call “stickiness” in that they are resistant to reductions. It is highly unlikely Congress or the administration would rescind raises or benefits enacted over the past decade while shielding the “guns” accounts from cuts. As these raises and benefits continue to accumulate they will crowd out investments in future capabilities.

Indeed, acquisition funding has traditionally proven easier to cut. While existing programs with active production lines have a large constituency that can be mobilized, new-start programs or programs still early in development do not have such a constituency. Over time, a reduction in new-starts can reduce the acquisition budget substantially as existing programs reach the end of planned production and new programs are coming online at a reduced rate. Moreover, excessive cost overruns in high-profile programs can cast all defense acquisitions in a bad light and make acquisition funding more difficult to defend both to members of Congress and to the public at large.

There are also unknown factors that could influence the outcome of the new guns-versus-butter debate. While war funding is expected to decline in the coming years, lessening the overall stress on the federal budget, a worsening of conditions on the ground could slow the withdrawal from Iraq or extend the surge in Afghanistan. The cost of resetting the force, in terms of repairing and replacing damaged equipment, could prove to be more than currently planned and could displace funding in the base budget. The department also began a number of acquisition reform initiatives over the past year, such as in-sourcing more of the acquisition workforce, and it is too soon to tell whether the expected savings from these initiatives will materialize.

Ultimately, the challenge for DoD, as it has always been, is finding the right balance between competing priorities. There are no easy solutions for reining in personnel or equipment costs, and many of the solutions that do exist come with risks and complications of their own. The department would be wise to make these decisions within the context of a coherent strategy that consciously accepts risk in some areas in order to balance risk elsewhere. As Secretary Gates said recently at the Eisenhower Library, these are the questions that the department must “be willing to ask and answer in order to have a balanced military portfolio geared to real world requirements and a defense budget that is fiscally and politically sustainable over time.”³¹ In these difficult times, with the challenging budget years that lie ahead, DoD can no longer afford to spend its way out of problems. Making the hard decisions now will make for a more efficient and effective defense in the future.

Notes

This article was originally prepared for and delivered to the workshop “Economics and Security: Resourcing National Priorities,” sponsored by the Naval War College’s William B. Ruger Chair of National Security Economics and held at the Naval War College on May 19–21, 2010. Subsequently, in slightly different form, it was published online by the Center for Strategic and Budgetary Assessments. That version is available at http://www.csbaonline.org/4Publications/PubLibrary/B.20100524.The_New_Guns_Versu/B.20100524.The_New_Guns_Versu.pdf.

1. OMB, *Budget of the United States Government, Fiscal Year 2011* (Washington, DC: GPO, February 1, 2010), Summary Tables, available at <http://www.whitehouse.gov/omb/budget/fy2011/assets/tables.pdf>.
2. While most personnel-related funding is through O&M and MILPERS, not all O&M and MILPERS funding is personnel related. O&M in particular funds a variety of other activities, including maintenance of equipment, military operations in Iraq and Afghanistan, and the peacetime operation of air, sea, and land forces.
3. Calculated by dividing the total of the MILPERS budget and Defense Health Program budget by the end strength for the same fiscal year.
4. DoD, *National Defense Budget Estimates for FY 2011* (Arlington, VA: DoD, March 2010), pp. 216–221, available at http://comptroller.defense.gov/defbudget/fy2011/FY11_Green_Book.pdf.
5. Walmart Corporation, *Corporate Factsheet* (Bentonville, AR: Walmart, March 2010), available at <http://walmartstores.com/download/2230.pdf>.
6. Includes 343,300 mail carriers, 75,800 clerks, and 179,900 mail sorters. Data current as of 2008 from the Bureau of Labor Statistics, *Career Guide to Industries*, 2010–2011 ed. (Washington, DC: GPO), available at <http://www.bls.gov/oco/cg/>.
7. Military pay raises are compared to the ECI for the twelve-month period ending the September before the budget request is released, as required by law. ECI data are from the Bureau of Labor Statistics’ Employment Cost Index Historical Listing, table 9, available at <http://www.bls.gov/web/eci/ecicois.pdf>. Military pay raise data are from DoD, *National Defense Budget Estimates for FY 2011*, p. 56.
8. CBO, *S. 1390 National Defense Authorization Act for Fiscal Year 2010* (Washington, DC: CBO, July 14, 2009), p. 8, available at <http://www.cbo.gov/ftpdocs/104xx/doc10459/s1390.pdf>.
9. CBO, *Evaluating Military Compensation* (Washington, DC: CBO, April 28, 2010), p. 8, available at <http://www.cbo.gov/ftpdocs/114xx/doc11463/04-28-MilitaryPay.pdf>.
10. According to the Military Health System website, http://www.health.mil/About_MHS/index.aspx; and DoD, *2010 Military Health System Stakeholders’ Report* (Arlington, VA: DoD, 2010), available at http://www.health.mil/Libraries/Documents_Word_PDF_PPT_etc/2010_MHS_Stakeholders_Report.pdf.
11. Michael Schoenbaum et al., *Health Benefits for Medicare-Eligible Military Retirees: Rationalizing TRICARE for Life* (Santa Monica, CA: RAND, 2004), p. 1.
12. TRICARE costs taken from DoD’s “TRICARE: Summary of Beneficiary Costs” publication, available at http://tricare.mil/mybenefit/Download/Forms/Summary_of_Beneficiary_Costs_Unlinked.pdf.
13. Data on average health insurance premiums paid by workers from Kaiser and HR&ET, *Employer Health Benefits 2009 Annual Survey* (Menlo Park, CA: Kaiser, 2009), pp. 70–71.
14. Louis T. Mariano et al., *Civilian Health Insurance Options of Military Retirees: A Pilot Study* (Santa Monica, CA: RAND, 2007), pp. 28–47.
15. DoD, *Operation and Maintenance Overview: Fiscal Year 2011 Budget Estimates* (Arlington, VA: DoD, February 2010), p. 194, available at http://comptroller.defense.gov/defbudget/fy2011/fy2011_OM_Overview.pdf.
16. DoD, *2010 Military Health System Stakeholders’ Report*.

17. DoD, *Fiscal Year 2011 Budget Request Overview* (Arlington, VA: DoD, February 2010), p. 3-3.
18. Data current as of September 11, 2009, from the DoD Education Activity website, <http://www.dodea.edu/home/about.cfm?cld=facts>.
19. Based on Fall 2006 Department of Education data, Thomas D. Snyder et al., *Digest of Education Statistics 2008* (Washington, DC: U.S. Department of Education, March 2009), p. 151.
20. Based on DoD data available at http://prhome.defense.gov/poprep2004/appendixb/b_39a.html.
21. According to the Community College of the Air Force website, <http://www.au.af.mil/au/ccaf/>.
22. The My Career Advancement Account (MyCAA) program was temporarily suspended in early 2010 due to the overwhelming response of military spouses seeking financial assistance.
23. Robert Gates, "Defense Budget Recommendation Statement" (speech, Arlington, VA, April 6, 2009).
24. PAUC is calculated by dividing the total program acquisition cost, including R&D and procurement, by the total quantity of items planned. This accounts for cost increases that can occur due to an increase in quantity, which is not truly a cost overrun. For systems that do not have a projected quantity listed in the SAR, the increase in the total program cost is used instead.
25. Stephen Daggett, *Cost of Current Defense Plans* (Washington, DC: CRS, February 2010), p. 7.
26. GAO, *Defense Acquisitions: Assessments of Selected Weapon Programs* (Washington, DC: GAO, March 2009).
27. DoD, *Operation and Maintenance Overview*.
28. Ibid.
29. This figure is calculated using the total funding for the war effort in FY 1945 of \$810 billion in FY 2011 dollars, or 35.8 percent of GDP; Stephen Daggett, *Cost of Major US Wars* (Washington, DC: CRS, July 24, 2008), p. 2. The number of active-duty service members used is the total end strength in 1945 of 12 million, assuming a total mobilization of the armed forces; DoD, *National Defense Budget Estimates for FY 2011*, p. 216.
30. This figure uses the peak year of funding (1968), which is \$104 billion in FY 2011 dollars (2.3% of GDP; Daggett, *Cost of Major US Wars*, p. 2). The total number of active-duty service members deployed to Southeast Asia as of September 30, 1968, was 785,809; DoD Military Personnel Historical Reports for 1968, available at <http://siadapp.dmdc.osd.mil/personnel/MILITARY/history/309hist.htm>.
31. Robert M. Gates, "Eisenhower Library (Defense Spending)" (speech, Abilene, KS, May 8, 2010), available at <http://www.defense.gov/Speeches/Speech.aspx?SpeechID=1467>.

Panel IV: Defense Budget and Risks

Summary of Discussion

Professor Sean C. Sullivan
Workshop Administrative Assistant
Associate Professor of National Security Affairs
Naval War College

The Ruger Workshop's panel on defense budget and risks included Mr. Carl J. Conetta and Mr. Todd Harrison as panel members and Professor Sean Sullivan as the moderator. The panel analyzed defense budgets trends, and significant budget challenges, choices, and risks.

In the first presentation, Mr. Conetta presented his paper, "The Dynamics of Defense Budget Growth, 1998–2011." Mr. Conetta observed that the rise in U.S. defense spending since 1998 has no precedent in all years since the Korean War. In 2011 dollars, the Department of Defense (DoD) budget authority was \$430 billion per year from 1954 to 2001; \$525 billion per year during the Reagan buildup; and \$503 billion per year during the Vietnam War (1966–1970). Current DoD spending is now stabilizing far above Cold War averages.

Conetta discussed his analysis of DoD funding using a "per person" measurement (i.e., "per person" means "per full-time person in uniform"). When measured on a *per person* basis, the period from 1983 to 1998 remained remarkably stable. In 1998, *per person* cost accelerated sharply with Operation Iraqi Freedom and reached an average of \$459,000 per person from 2007 to 2010. The per person cost is currently 78 percent higher than the Reagan years peak and three times the Vietnam War peak. The current Obama administration budget plan stabilizes the *per person* cost at \$377,000, which is 57 percent higher than the average from 1983 to 1998.

Operations and Maintenance (O&M) spending calculated on a *per person* basis started to climb sharply in the early 1990s. After the attack on September 11, 2001, the climb accelerated to a level 160 percent higher than the real *per person* cost of O&M in 1989. Today, DoD is allocating more than 2.5 times as much per person to O&M as it did during the Reagan buildup.

Procurement was the account that suffered the most during the 1990s. It reached its post-Cold War low point in 1997: \$54 billion (2010 USD). Average budget authority for procurement during the 1990s decade was 44 percent lower in real terms than in the 1980s. The decline in average *per person* expenditure was somewhat less: 31 percent—still, a considerable cut. However, two factors helped mitigate it.

In light of increasing O&M expenditures and excess spending on infrastructure, the prospect of also boosting procurement expenditures put the "peace dividend" at risk. Something had to give. The prevailing consensus at the time was that much of the new funding for procurement could be found by trimming excess O&M and infrastructure spending. Also, proponents of military

transformation contended that equipping and restructuring the armed forces along “information age” lines could achieve significant new efficiencies.

In implementation, however, both the reform and the transformation agendas fell well short of their promises. In both cases, institutional resistance and bureaucratic inertia proved stronger than the impetus for change. These two efforts taken together have not yielded reliable net savings exceeding 3 or 4 percent of annual budgets.

From 1978 to 2002, the budget for military personnel showed little real (inflation adjusted) growth when measured on a *per person* basis. When the post-Cold War personnel cuts occurred, personnel accounts became a true bill-payer along with modernization. In contrast, today, the personnel account is comparable in real terms to that during the Reagan era, although the U.S. military is only 69 percent as large.

The post-Cold War changes in America’s armed forces occurred in the context of already ongoing efforts at force transformation. One effort began in the 1970s with the transition to a volunteer military. Another began in the 1980s with the effort to recapitalize the post-Vietnam military and improve its readiness. Both of these fit into an even longer-term force development strategy that has emphasized quality over quantity. This strategy aims to build on America’s presumed competitive advantages over likely opponents: its greater technological competency and its more skilled and motivated workforce.

The switch to a professional military produced a more reliable and ready cadre. It also significantly increased personnel costs, which averaged 23 percent higher in real *per person* terms during the 1980s than during the 1960s. The “quality over quantity” strategy and the dependence on high-cost personnel also implied increased *per person* allocations for research, development, and procurement—an objective that came more into reach once America had exited its consumptive commitment in Southeast Asia. But the resultant posture carries with it an inherent constraint: there is a size threshold beyond which the cost of competing for and adding quality personnel becomes prohibitive. Where that threshold sits depends on both intrinsic and extrinsic factors. The intrinsic factors include the amount of pressure the Pentagon puts on its personnel and the general state of military morale; the extrinsic include general economic conditions and population demographics.

Coming efforts to bring U.S. federal deficits down to a level below real growth in GDP may seek as much as a \$250 billion reduction in annual federal expenditures. Currently, the DoD budget accounts for 19 percent of the total federal budget and 56 percent of discretionary spending. Additionally, service plans do not yet fit inside the administration’s projected budgets. It is likely that DoD will face a budget reckoning—and soon.

Mr. Conetta reviewed the recent dynamics of DoD budget growth with an eye toward finding its independent variables, which could be manipulated to effect change. First, greater restraint in committing ourselves to large-scale protracted counterinsurgency campaigns is key. Of course, few would step willingly into a known quagmire. So, practically speaking, this proviso implies a de-emphasis on seeking “regime change” by military means and strict limits on “postconflict reconstruction” operations in cases where these face substantial indigenous opposition.

Second, military modernization efforts have suffered from weak prioritization and poor integration. Partly, this reflects the decentralized nature of our acquisition process. Greater emphasis on joint planning and stronger leadership could compel a more integrated and adaptive approach.

Third, renewed efforts to streamline service structures and functions could improve performance. During the 1990s, reformers sought to trim redundancy in service missions, adopt much leaner command structures, and consolidate many of the individual services' support programs. The shortfall in achieving these goals deserves more than a shrug. Instead, an abiding and energetic recommitment to these ends should become a prerequisite for assuming major command responsibilities.

Finally, the growth in the DoD workforce and in O&M expenditures does not simply reflect a decrement in efficiency. It also—and, perhaps, mostly—reflects an increment in activity and capability. Similarly with regard to cost growth in acquisition: the F-35 Lightning costs four times as much as a first-iteration F-16 partly because it is much more capable. This points to the fact that while defense planners precisely measure the budget inputs to our force development system, we only exceptionally measure its real output—which is not numbers of platforms and personnel but, instead, levels of activity and power.

In conclusion, Mr. Conetta observed that today's armed forces are more costly than their 1989 precursors. Despite being smaller, U.S. armed forces are more active and much more capable, unit for unit. He proposed two questions that circumstances may force on defense planners. First, how much of our mounting power and activity is truly essential to our nation's security? Second, at what point do this power and activity cross the threshold of diminishing returns? Fixating on end strength or numbers of air wings, brigades, and ships may not provide the answers.

In the second presentation, Mr. Todd Harrison presented his paper, "The New Guns-versus-Butter Debate." Mr. Harrison argued that DoD faces a critical question in the coming years as budgets become tight and each dollar of federal spending comes under greater scrutiny. Will DoD continue to fund the growing personnel costs needed to "preserve and enhance the All-Volunteer Force," as was called for in the Quadrennial Defense Review (QDR)? Or will it continue to fund the growing acquisition and operational costs needed to "prevent and deter conflict" and "prepare to defeat adversaries and succeed in a wide range of contingencies," also called for in the QDR? The fiscal reality is that in a flat or declining budgetary environment, it cannot continue to do both to the same extent that it does today.

The new guns-versus-butter debate is also an intergenerational struggle—a question of providing benefits for those who serve now and those who served in the past or funding the equipment and training needed for those who will fight tomorrow's wars. In a constrained budget environment, every dollar going to pay for health care, pensions, and other retiree benefits is a dollar not available to ensure tomorrow's troops are the best equipped and trained military force in the world.

Current trends tend to favor the “butter” budget. Increases in pay and benefits have what economists call “stickiness” in that they are resistant to reductions. It is highly unlikely Congress or the administration would rescind raises or benefits enacted over the past decade while shielding the “guns” accounts from cuts. As these raises and benefits continue to accumulate they will crowd out investments in future capabilities.

Indeed, acquisition funding has traditionally proven easier to cut. While existing programs with active production lines have a large constituency that can be mobilized, new-start programs or programs still early in development do not have such a constituency. Over time, a reduction in new-starts can reduce the acquisition budget substantially as existing programs reach the end of planned production and new programs are coming online at a reduced rate. Moreover, excessive cost overruns in high-profile programs can cast all defense acquisitions in a bad light and make acquisition funding more difficult to defend both to members of Congress and to the public at large.

There are also unknown factors that could influence the outcome of the new guns-versus-butter debate. While war funding is expected to decline in the coming years, lessening the overall stress on the federal budget, a worsening of conditions on the ground could slow the withdrawal from Iraq or extend the surge in Afghanistan. The cost of resetting the force, in terms of repairing and replacing damaged equipment, could prove to be more than currently planned and could displace funding in the base budget. DoD also began a number of acquisition reform initiatives over the past year, such as in-sourcing more of the acquisition workforce, and it is too soon to tell whether the expected savings from these initiatives will materialize.

Ultimately, the challenge for DoD, as it has always been, is finding the right balance between competing priorities. There are no easy solutions for reining in personnel or equipment costs, and many of the solutions that do exist come with risks and complications of their own. DoD would be wise to make these decisions within the context of a coherent strategy that consciously accepts risk in some areas in order to balance risk elsewhere.

In these difficult times, with the challenging budget years that lie ahead, DoD can no longer afford to spend its way out of problems. Making the hard decisions now will make for a more efficient and effective defense in the future.

The discussion period was initiated by a question concerning the impact that transformation and defense reform had on rising per person costs within DoD. The respondent clarified defense reform and transformation as efforts to streamline the military based on information-age innovations and development as well as infrastructure reductions. The expected savings from reform and transformation were used to fund operations in Iraq and Afghanistan and were never applied directly to investment in transformation.

A follow-on comment from a participant discussed that the historically unprecedented capability of the U.S. military comes from the training revolution in the 1970s and 1980s and the Goldwater-Nichols Act. The next step in the evolution of the U.S. military was a reform of the decision-making processes in the department for more agility, and more joint decision making on trade-offs. Secretary Rumsfeld initiated decision-making reform but this effort stalled.

A participant discussed the personnel decisions made within the 2010 QDR. First, personnel costs were considered in the process as well as reductions in military personnel, platforms, equipment, and infrastructure. However, these reductions and savings were negated by contractor equivalent costs. Additionally, much of the department's personnel costs are nondiscretionary within the service budgets. Only bonuses offer a discretionary source of funding. Although recruiting and retention are currently excellent, manipulation of bonuses to generate additional savings for the personnel account in time of war is not likely. Further, many personnel benefits have been extended to retirees and are not discretionary therefore are not a potential source of savings.

The participant continued and added that in the Navy over the last ten years the number of ships has come down. The number of planes has come down. Footprint has come down. Acreage has come down. All of these reductions have been in the order of 5 to 10 percent each. People have come down—uniformed people by 15 percent on active duty and 25 percent for reserves. The number of civilians has stayed at the same level. Contractor equivalents have grown by over 60 percent for a net gain of about 1 percent despite reductions to equipment and military personnel. One challenge for the management of civilians and contractors is that the service does not have a central database for civilian and contractor management. This is an impediment to solving that problem.

The participant continued that when the Navy personnel leadership put the budget together for 2012, 96 percent of what the Navy had to fund was nondiscretionary—it was all pay. So the personnel account that is discretionary is bonuses. [Ironically] despite the war, bonuses are getting cut right now because retention is at an all-time high and we are retaining the people that we need. Navy personnel leadership recognizes that bonuses will have to return at some point. But even outside of times of war, benefits continue to grow. It seems that we have to get together with the lobby organizations that represent military retirees and collaborate on a solution that diminishes the impact on the Navy budget.

A participant in response made a comparison to the retiree relationship between General Motors and the unions. General Motors gave incredible benefits to current employees and retirees but with the agreement that future employees would start at a much lower pay and have much less in benefits. And General Motors thought that over time the company would work its way out of the problem. General Motors did not make it that far for that to happen. DoD is in a similar position. And its associations—military associations—are driving this and they have a huge influence on Congress. Cuts in benefits are really going to have to be initiated by the military because the participant does not see the will outside of the military to make cuts.

Another participant commented that the presentations made actual recommendations regarding the defense budget and compensation rather than considering this topic as unapproachable. The participant asked if the current budget under congressional review will make a difference in defense planning and the defense issues facing the department.

There are many caveats and exceptions that occur in the congressional budget process that challenge reform. Program cost estimates are a significant problem. In the area of cost estimation for programs, a participant noted that cost estimates with a 50 percent confidence level were rare and often inflated.

A participant asked if tighter budget constraints imposed on the department in the late 1980s and 1990s when compared to the constraints of the decade of 2000 to 2010 could explain the \$2 trillion growth in defense spending in real terms. The respondent stated that constraints could slow or diminish some of the growth, as the growth is the result of decisions made by defense planners and leaders. More discipline in the decision-making process could have saved a fair amount of money.

A participant commented that the lack of prioritization and the lack of binding constraints on the budget are not just a Defense Department problem but extend to the entire federal budget and other departments and agencies within the government.

The discussion shifted to contractors that provide services for the government and Defense Department. A participant stated that a conversion of contractors to government employees was conducted several years ago and it did not result in the savings that were expected, due to several contract-to-government-employee conversion conventions that kept costs relatively the same.

A participant discussed the potential problems associated with contractors supervising the work of other contractors. This activity removed the U.S. government or military oversight on the contracts and in several cases led to mismanagement or negligent actions by contract companies. Government accountability and contract oversight are critical in cost management.

A different participant took a contrarian point of view on the presentations. The participant looked at the defense budget and the cost of the military relative to the U.S. population (i.e., a military of 1.5 million and a U.S. population of 350 million). The United States receives a substantial return from the relatively small number of people serving in the military. Mathematically, we have 150,000 people in Iraq and 50,000 people in Afghanistan, as compared to the 500,000 people who served in Vietnam during that war. This inflates the *per person* cost of a military member.

The participant continued that military personnel costs are distinct from the current health-care debate. Military personnel costs are not entitlements. They are a contractual agreement between those who enter the service and render their services and those who choose not to do that. The market has set these costs, which yield the quality of service that you want. You can change that, but you're probably going to get lesser quality of service. We've gone down this road before. We've seen the effects on retention.

There is another choice for the United States and that is to devote more than the current 4 percent of GDP to defense. Four percent is half of the historic norm in the postwar period. The participant stated that if 4 percent is the constraint that is used to drive the defense budget, then the United States risks breaking the contract with its military. A respondent stated that breaking a

contract with service members is a difficult argument to make domestically in the United States.

A participant concluded by stating that prior to 1998 many people in the United States would have seen the period of growth in the defense budget from 1998 to 2010 as not possible. Not all of the growth in the defense budget relates directly to personnel costs. However, the choice in defense is to recruit and retain high-quality personnel. As a country, the United States is paying a cost for defense and the country is not getting a bad deal.

The concluding questions posed were what the United States wants from its citizen and military relationship and how much the United States is willing to expend on military personnel. A market relationship between the U.S. economy and potential military recruits could exist and impact this decision. The general point is whether or not the United States is getting a bad deal on paying as much as the nation does for the military. The participant stated that domestic political leaders and public opinion in the United States do not feel that the investment in the military is not valuable.

Panel V

Land and Special Operations Forces



Dr. T. X. Hammes

Senior Research Fellow, Institute for National Security Studies, National Defense University

Dr. Frederick W. Kagan

Resident Scholar, American Enterprise Institute

Dr. Christopher J. Lamb*

Interim Director and Distinguished Research Fellow, Institute for National Security Studies, National Defense University

Moderator:

Dr. Mackubin Thomas Owens

Associate Dean of Academics for Electives and Directed Research, and Professor of National Security Affairs, Naval War College

* A paper by Dr. Christopher Lamb is not included in this volume due to publication restrictions.

The Future of U.S. Ground and Special Operations Forces: One Proposal

Dr. T. X. Hammes
Senior Research Fellow
Institute for National Security Studies
National Defense University

Unfortunately, in a conference on resourcing, one has to divvy up the topics in a way the bureaucracy is organized. Thus this panel has been given the topic of land and special operations forces. And, like the force structure folks in the Pentagon, I will propose a structure for ground forces without the benefit of knowing precisely what joint forces are available to support them. This is clearly a disconnect. We employ jointly in a cooperative environment but resource separately in a competitive environment.

Compounding the difficulty of thinking about future ground and special operations forces is the increasingly sharp debate over the future of conflict. Those labeled “COINdinistas” see future conflicts as driven primarily by nonstate actors and thus would optimize joint forces accordingly. In contrast, the conventional or “big war” proponents rail that U.S. ground forces have lost their capability to conduct major combat. They see the primary requirement as being to return U.S. ground and special operations forces to readiness for major conventional combat.

This author thinks both positions are too simple. War is inherently interactive and therefore, like all wicked problems, changes based on the actions of the participants. Secretary Gates provided a much more accurate view of the future, noting that “conflict most likely will range across a broad spectrum of operations and lethality. Where even near-peer competitors will use irregular or asymmetric tactics and non-state actors may have weapons of mass destruction or sophisticated missiles.”¹

Strategic Setting

Prior to making recommendations, it is essential to outline my view of the strategic setting, the potential threats, and the assumptions upon which my recommendations are based.

Even with our involvement in Afghanistan, in Iraq, and against terror organizations, America is essentially enjoying a strategic pause—the period before the emergence of a new peer competitor. This pause will continue for at least another decade. Neither the economic growth of China nor the regional military adventures of Russia should distract us from this vital truth. Thus, despite the costs imposed by the current conflict, we have the luxury of time to shape our future forces.

At present, China is the only nation that has the potential to qualify as a near-peer competitor. However, as the Pentagon's own documents note, China will not be capable of projecting power in a significant fashion for at least a decade, and probably longer.² Further, economic power is the basis of military power and China's gross domestic product will not match that of the United States until around 2040.³ And even when that happens, China will have to provide for a population that has a higher median age, is aging much more rapidly, and is more than three times that of the United States.⁴ Further, as a nation-state that is heavily reliant on international trade, many of China's security interests—such as the continued flow of raw materials, the maintenance of stable international markets, and the suppression of terrorist activities—call for cooperating with the United States rather than alienating it. Secretary Gates's 2008 *National Defense Strategy* recognizes this fact and encourages engagement with China.⁵ Those who think we should be prepared to fight China should explain where, when, and, most important, why we would do so. And of course, China's nuclear arsenal means that "how" will be a very sensitive question.

Two other nations are often highlighted as potential threats that require America to maintain major conventional forces—Russia and Iran. While Russia retains a powerful nuclear capability, it faces many strategic challenges. Its conventional forces have atrophied greatly, and due to the disintegration of the Soviet Union, its forces now have to start from locations 900 miles east of their Cold War bases in Germany. Further, Russia's population is declining at a rate of over 900,000 per year,⁶ and the country is slowly losing control of its far east to Chinese illegal immigration. Russia continues to face major problems in the Caucasus. Should Russia choose to rebuild its forces for significant extraterritorial operations (that is, something of greater scope than its foray into Georgia), the buildup will require a major, visible effort over a significant period of time. Therefore, Russia's primary leverage remains its nuclear arsenal.

For its part, Iran can undoubtedly close the Strait of Hormuz. It would require a major effort to reopen. However, such an offensive action would both choke Iran's economy and unify most of the developed world against it in an effort to restore the flow of energy. Reopening the strait would be a naval and air campaign supported with limited ground-force involvement. Further, such a campaign would find willing allies. On land, Iran has very little capability to project power outside its borders. It is likely that Iran would defend its territory based on lessons observed in the Iraqi and Afghan insurgencies.

It's crucial that U.S. political leaders use this strategic pause to adapt our national security strategy, doctrines, and forces to the new realities. This should include the establishment of a joint force that is flexible enough to confront the broad range of twenty-first-century conventional and unconventional threats—whether those threats come from rival nations, nonstate entities, or hybrid enemies. It is only in the context of this joint force that we can consider the future of ground and special operations forces. The first step in analyzing our ground-force requirements is developing a clear understanding of the threats we face.

This is an economic imperative as well as a strategic necessity. The United States spends more on defense than the rest of the world combined.⁷ A major

driver of this budgetary overreach is the services' strategic disposition toward a conventional war against a world power—a war that seems quite unlikely in the short term. At a time when the federal budget is under acute and growing strain, it is incumbent upon us to spend our military dollars more prudently.

The Evolving Threat

We squandered the first seventeen years of our post–Cold War strategic pause by pursuing expensive weapons designed to fight the Soviet Union—even though that threat no longer existed. It is essential that we use the remaining interval to think about whom we will fight, where we will fight, and how war will change as a result. Only by considering such questions can we determine what kind of force we will need in the event of such a conflict.

Nuclear weapons have dramatically reduced the odds of major conventional wars between world powers. During the forty years the United States and the Soviet Union confronted each other, both sides strove to limit any conflict that could bring about a direct and potentially devastating confrontation. Those analysts who insist that U.S. military planning continue to revolve around war with a near-peer competitor have failed to explain how two nuclear powers can engage in a conflict that significantly threatens the well-being of either without facing a nuclear riposte.

Instead, for more than a decade, potential opponents have aggressively sought ways to neutralize America's advantage in conventional war. This effort has led in two directions. First China, with its Unlimited War Concept, seeks ways to neutralize the U.S. command network or drive U.S. forces to operate from beyond effective range. At the same time, China seeks to improve its own network capabilities and power projection capability with an apparent goal of denying foreign access to the region of the second island chain.

Less capable enemies have sought solutions through irregular war. They have observed American dominance of conventional warfare, and have decided to exploit our weaknesses in irregular combat. We have seen this pattern of nontraditional engagement in Afghanistan, Somalia, Lebanon, and Iraq, when inferior forces disappeared into the population and waged a “war among the people.”

Of particular concern, long-term trends in technology will place much greater power at the disposal of nonstate actors, even individuals and very small groups. While it took an organized, well-funded, and disciplined cell to execute the 9/11 attacks, the increasing destructive power of commercially available products—from fertilizer to synthetic biological agents—will raise the destructive potential of small groups to that previously reserved for nation-states. This capability is increasing exponentially with the explosive commercial growth of nanotechnology and biotechnology. As these technologies become widely available on the open market, we can expect various groups to adopt deadly variants. These groups and even individuals will become “superempowered” with the ability to project destruction beyond traditional limits.

We can predict threats will come from a variety of enemies across the spectrum of war; however, the exceptional interactive complexity of national security virtually assures specific predictions will not be accurate. Thus, rather than

optimizing for one possible future, we must develop ground and special operations forces that will be effective across a range of possible futures. Threats to the United States will include a mix of conventional powers fighting limited wars, insurgents seeking control of a territory, and superempowered individuals and groups who will fight for a cause rather than a country or territory. And, of course, hybrid opponents will mix all these elements.

Strategic Assumptions

The ground and special operations forces this paper advocates are based on the following assumptions:

- The United States will remain engaged in Iraq and Afghanistan for the next several years, but will be very hesitant to engage in other long-term, large-scale counterinsurgency (COIN) operations. However, the United States will engage in such operations if needed to protect critical interests.
- NATO and the European Union (EU) will not operate out of area unless there is a major threat to European welfare such as threats to the global energy supply.
- China is our only potential near-peer adversary. However, China's ability to project military power beyond its immediate periphery is limited. Any proposal for significant increases in forces to fight China must address the issue of how to prevent escalation to a strategic nuclear exchange in a major conflict. In particular, it is difficult to see how a conflict with China will require major ground forces.
- U.S. strategists cannot discount the possibility that the United States will suffer a major terrorist attack within its borders.

Resetting the Force

Of course any discussion of the future has to start with where we are now. Heavily engaged in one conflict and drawing down in a second, we are consuming critical assets faster than we are replacing them. As Secretary Gates has noted, an inevitable step to the future will be resetting the force. "Reset" is shorthand for the reorganizing, reequipping, and retraining of our forces for new security challenges as they return to the United States following a drawdown in Iraq and eventually in Afghanistan. Clearly, America must retain its core military competencies while adjusting to future threats. Just as clearly, significant budget cuts will mean a much smaller force. Thus the debate has shifted from transforming our forces to resetting them. But the key question remains: "Reset for what?"

As noted earlier in this paper, there is a serious debate as to whether we should focus on preparations to fight a near-peer (such as China) and assume those forces can defeat other threats, or whether we should prepare to fight the irregular counterinsurgency wars exemplified by Iraq, Afghanistan, and Lebanon. This is a high-stakes debate with major procurement programs resting on the outcome—in particular, the division among resources for ground, air, sea,

space, and cyber forces. Clearly a conflict with China will be dominated by sea, air, space, and cyber forces. Ground forces will be strictly supporting forces.

Regardless of the future we face, there are some steps ground and special forces can use to prepare themselves to deal with the wide range of potential threats we face. We can update our personnel system, maintain our technical edge, and think through how we will maintain high levels of training and readiness during a long period of severely reduced budgets.

Update the Personnel System

A fundamental requirement in succeeding in an uncertain future is selecting, training, educating, and promoting intellectually flexible and operationally effective personnel. Thus a fundamental strategic challenge is to upgrade our personnel systems. As Army major Don Vandegriff (Ret.) has ably demonstrated, our military-personnel system is based on the needs and logic of a bureaucratic institution originally designed by Secretary of War Elihu Root in 1900.⁸ That system was well suited to prepare personnel for World War I, but it is insufficient for today's needs.

Our soldiers, sailors, airmen, and Marines are evaluated and promoted within a very traditional, top-down, bureaucratic structure. That any innovation at all occurs in such a hierarchical, inherently risk-averse system is a tribute to the improvisational skills of our people. But America's military personnel should not have to fight both our enemies and their own bureaucracy.

As part of revamping our personnel system, we must adjust officer and non-commissioned officer (NCO) career patterns. In order to remain competitive for promotion, military personnel have to race through "career enhancing" assignments. In the name of fairness, the services established a system that theoretically gives every second lieutenant a chance to be chairman. This results in very frequent job changes—often coming once a year. This high level of churn makes it rare for a military officer to become a genuine expert in his or her field.

In fact, the system is unfair to those officers who wish to gain true expertise in a given area. To take one example of this institutional tendency, consider the rising importance of the military-advisory role within our armed forces. In 2008, Secretary Gates told West Point cadets that "from the standpoint of America's national security, the most important assignment in your military career may not necessarily be commanding U.S. soldiers, but advising or mentoring the troops of other nations as they battle the forces of terror and the instability within their own borders."⁹

Unfortunately, the military-personnel system does not reflect this reality. Instead, officers who focus on a region long enough to become truly expert in its culture, history, and language are punished by the system for not following the "recommended" career path. That path places service with U.S. forces at a premium and downgrades the importance of any time spent advising foreign troops.

Conversely, NCOs are faced with an ever-increasing range of responsibilities but our personnel systems focus on training rather than the broader mix of training and education needed. NCO career progression must include a series of professional schools like those for officers.

Contractors as Force Structure

As we face serious force reductions in our ground forces, there will be a strong temptation to plan for the use of contractors in order to justify eliminating some units. Obviously, the Pentagon has reintroduced substantial numbers of armed and unarmed contractors to the battlefield in the last decade. This policy should be reconsidered.

In a counterinsurgency campaign, armed contractors are dangerous for three reasons. First, despite any contract language, the American military does not control the quality of the personnel hired by the contracting firms. Second, we do not have effective control over the contractors' actions in a foreign country. While we now have the laws on the books to prosecute offending contractors, to date we have not brought any of these offenders to justice. As a result, contractors know they will not be held responsible for their actions.

This leads us to the last and most serious issue surrounding the use of contractors: The people of Iraq and Afghanistan hold us responsible for everything the contractors do. Even worse, they are acutely aware that contractors are essentially above the law. While the vast majority of contractors perform in a professional manner, the very fact the Iraqis and Afghans perceive them as being accountable to no authority dramatically undermines the legitimacy of our position.

Further, a recent contract dispute has essentially brought the Afghan police training program to a halt. The government terminated DynCorp's contract for failure to perform and put the training contract out for bid. DynCorp filed a protest and, as of this writing, the most important training program in Afghanistan is currently on hold pending legal action in the United States. In the interim, DynCorp, despite its documented failure, continues to run the program.

While contractors clearly have a role in future operations, we should carefully consider that role. The default position should be to limit contractors to noncombat roles with minimal contact with the local populations—and preferably keep them outside the area in conflict.

Updating the education and rewards program of our personnel systems and limiting the role of contractors in combat operations is critical to developing the breadth of skills and capability our people will need to carry out the missions they are likely to face.

Maintain America's Technological Edge

The growing threat of irregular conflict does not mean we should ignore the threat from nation-states. We must continually survey the strategic horizon and keep our forces ahead of potential competitors. While reliance on technology will not allow America to dominate across the full spectrum of warfare, we must maintain our conventional forces' technological edge to guard against the rise of unfriendly conventional military threats. However, we must do so without bankrupting ourselves.

The current defense budget—with the supplemental funds for the wars—approaches \$800 billion. Even at that level of expenditure, the Congressional Research Service states we cannot afford our currently programmed weapons.¹⁰ The American taxpayer will not be willing to sustain this level

of investment indefinitely—particularly in the face of increasing demands from Social Security, health care, and infrastructure repair. In fact, the Congressional Budget Office projects our future defense budgets to be in the \$500 billion range,¹¹ which must cover not only new weapons systems but also replacing the equipment worn out by two wars.

The Department of Defense (DoD) resource allocation needs a radical overhaul. Clearly, we cannot sustain our forces, field the currently planned weapons systems, and develop the next generation of weapons within these budget constraints. Therefore, we will have to make some hard choices about where to invest. A review of our weapons systems is a logical point of departure. Most scheduled weapons for procurement were primarily designed to fight a near-peer competitor. Since China is a minimum of a decade away from filling this role, building those big-ticket items today is a bad investment. Indeed, any system fielded this year will be a decade or more old before China is prepared to seriously contest U.S. conventional forces. What is more, any such expenditure now will only cannibalize funds needed to develop the next generation of weapons.

This brings us to an essential tension. We desperately need to replace the equipment worn out by the wars in Iraq and Afghanistan, yet our procurement system is still producing systems designed in the late 1980s and early 1990s to fight a massive conventional conflict. These systems are vastly too sophisticated and expensive for the manpower-intensive wars of today, yet they are not sophisticated enough to serve as frontline equipment in two decades.

We need to purchase the less expensive equipment appropriate for current military realities. At the same time, we need to produce a limited number of carefully vetted weapon-design programs in order to maintain our industrial base. We can then focus the rest of our available funds on developing systems to be fielded in ten to fifteen years, when we might be facing a true near-peer competitor.

COIN-specific equipment such as mine-resistant, ambush-protected vehicles can be recovered, repaired, and stored in depots for future use. A limited number can be kept in training allowance pools to be used to maintain some proficiency at operations with these systems.

The cancellation of the Future Combat Systems program was a good decision. The Army can retain the most promising aspects and continue to develop the concept without investing the huge amount necessary to field a system. Instead it can make use of the continuing strategic pause to develop a system for the future.

For its part, the Marine Corps must be able to execute its traditional roles of amphibious operations, contingency response, and stability operations. This is a wide range of missions—one that includes rebuilding skills that have eroded due to the rotation cycles into Iraq and Afghanistan. The recent troop reductions in Iraq and the planned expansion of the Corps will ease some of its problems. But the Marines also have serious equipment issues. While the Corps is currently fielding the MV-22 tilt-rotor as a replacement for all its CH-46 helicopters, there is a coherent argument that the MV-22 is too expensive to purchase in the necessary quantities.

The Marine Corps should seriously examine a mix of MV-22s and another, less expensive substitute—perhaps the newly fielded and highly capable UH-1Y. Further, the sheer expense and unreliability of the Expeditionary Fighting Vehicle (EFV) combined with the fact the Navy has stated it will not bring its amphibious ships to the EFV's 25 nm launch range means this program should be cancelled. A more affordable concept that deals with the probable weapons the United States will face in future amphibious operations must be developed. The Corps will still require a surface capability for amphibious operations but it must make use of the current strategic pause to develop a more practical alternative.

Special operations forces will continue to field small numbers of best-in-class systems. However, they may not be able to purchase enough sets of equipment for each unit to have its own. In the coming austere budget environment, special operations forces must be prepared to use equipment allowance pools as a money-saving device.

Reduced Ground Force Structure

As we withdraw from Iraq and Afghanistan, the demand for ground combat forces will decrease. In addition, if traditional decision-making patterns hold true, the nation will cut troop strength in order to pay for new weapons systems. It is critical we structure the reduced forces for two purposes. First, we must have sufficient forces for immediate, probable contingencies with a cushion to deal with the inevitable unforeseen crises. Second, each element of the force must maintain enough structure to provide a viable training and manpower base. Given the state of our defense industry, mobilization is clearly not a viable option and thus should not be a significant consideration.

We need a flexible force that can organize to fight nation-states as well as nonstate actors. Rather than optimizing our ground forces to fight conventional opponents, we need to establish a joint force capable of fighting well-trained units equipped with highly capable weapons systems, as well as very lightly armed irregulars who learn on the job. In short, we need a medium-weight joint force capable of operating across the spectrum of war rather than one optimized for fighting high-intensity warfare against nation-states.

This force must be armored well enough to fight against infantry, tanks, and artillery. It should also contain large numbers of dismounted and specialty troops required for “war among the people.” The United States must maintain a heavy capability. This can be achieved by maintaining one corps (two heavy divisions plus corps troops) capable of fighting on a heavily mechanized battlefield. We must also maintain a forcible-entry capability that will allow us to rapidly build up a corps-sized force ashore. This capability must take into account the dramatic increase in antiaccess capabilities and recognize the requirement for operational-level maneuver.

With these two relatively specialized niches filled, the balance of the ground force should be structured as medium-weight general-purpose forces. In the same way a Marine division can be reinforced to fight mechanized, the medium-weight forces should be able to accept reinforcements from the reserve and National Guard to do so. At the same time, the Marine division can provide the

general-purpose ground forces essential for hybrid conflicts and insurgencies. Essentially, the bulk of U.S. ground forces should be a large tool kit to build forces for specific conflicts. While the training required to operate across the spectrum will be challenging, it is doable. When U.S. ground forces reach the point when they have eighteen months at home prior to deployment, it will be possible. Marine units did so for decades prior to 9/11. Each Marine expeditionary unit embarked without knowing if it would conduct humanitarian operations or contest the invasion of Korea. The Corps developed training programs accordingly. Tank battalions and fighter squadrons focused the majority of their training on fighting a peer enemy. Infantry split its time and trained across the spectrum. Civil affairs units focused on low-end conflict. A similar program can be developed to ensure the bulk of our ground forces are capable of reinforcing all along the spectrum.

The Guard and Reserve will continue to maintain the bulk of our ground forces and are the components with the most scope for change. Over the last decade, these forces have responded exceptionally well to a situation for which they were not trained, organized, equipped, or structured. As we draw down from our commitments in Iraq and Afghanistan, we should work to ensure that the Guard and Reserve are not required for persistent conflicts.

Instead, they should be made responsible for two major missions. First, they should serve as the primary units for our homeland-security and disaster-response needs. Second, they should act as a strategic reserve (not an operational reserve) for major conventional conflict. There are sufficient forces for both roles within the existing structure.

The disaster-response mission is critical. We know al Qaeda or another terrorist group will likely attempt and could very well succeed in conducting an attack on American soil. And of course, Mother Nature will surprise us with a major earthquake, hurricane, or even a new epidemic. Any of these events will most likely overwhelm local responders—particularly if the attack creates large contaminated areas.

In order to prepare for our response to any such catastrophe, a National Guard brigade should be detailed to each of the Federal Emergency Management Agency's (FEMA's) ten regions. These brigades must be organized, trained, and equipped to fill those niche requirements that either do not exist in the civilian sector or take a long time to mobilize. The Guard should become the military's repository of domestic-response skills. With only minor modifications to the current training schedule, the Guard could maintain company-sized all-hazard response forces on alert in each FEMA region to respond immediately to requests from state and local authorities. This addresses a serious shortage in civilian all-hazard response capacity.

Even after dedicating ten brigades for domestic response, the Guard will have an additional eight divisions and five enhanced separate brigades to dedicate to a strategic wartime reserve. We have used fewer than ten divisions in each of our last two major conflicts. The remaining Guard and Reserve units, along with the active Army and Marine divisions, should be sufficient for any conceivable conflict. The Guard and Reserve must also be able to respond

across the spectrum of conflict. They too should maintain a single corps of heavy forces and dedicate the rest of the force to medium-weight forces.

The ground forces must also be able to deploy military and nonmilitary advisors to assist other nations in building their national institutions. Given that State and other government agencies have proven unable to respond effectively after eight years of war, we have to assume they will not do so in the future. While the State Department is working to establish a civilian reserve corps, this organization remains very small and lacks significant capabilities. Further, despite having several hundred officers signed up and trained, the organization has not deployed them in significant numbers to Afghanistan. Thus, DoD—particularly the ground forces—will have to step in to fill these roles. Since military advisors must be relatively senior personnel, we may have to expand the number of field-grade officers and senior noncommissioned officers available for such assignments.

Given the personnel cuts that will come with reduced budgets, we will have to dramatically reduce the number of officers at senior headquarters to make advisors available. We can do this without crippling our staff operations by starting the cuts at the very top of the military pecking order. Otherwise, the higher headquarters will not reduce the amount of staff work inflicted on subordinate offices. Any cut at the top can be matched by lower staff all the way down to about the division level. At the division level and below, staffs do not have much fat and require little or no reduction.

Black Swan

The author Nassim Nicholas Taleb defines a “black swan” as a low-probability, high-impact event—one whose existence we have come to regard as impossible.¹² It is this presumed impossibility—the belief that simply because certain events have not occurred in the past, they therefore cannot occur in the future—that gives certain occurrences their outsized impact.

U.S. military planners must be mentally prepared for rare and unforeseeable possibilities—the strategic equivalent of a black swan. While it is, by definition, impossible to be truly prepared for all the possible black swans that may fly across our horizons, we can prepare by building flexible, well-educated defense institutions and forces.

The recommendations in this paper were all made with “black swan” events in mind. By building a balanced, medium-weight force that is trained and equipped to fight across the range of potential conflicts, rather than specialized to fight a high-technology near-peer competitor, we can provide a measure of preparation for such an event.

Notes

1. Robert M. Gates, “Command and General Staff (Army Leadership)” (speech, Ft. Leavenworth, KS, May 7, 2010), available at <http://www.defense.gov/speeches/speech.aspx?speechid=1465> (accessed May 14, 2010).
2. Office of the Secretary of Defense, *Military Power of the People’s Republic of China 2008*, Annual Report to Congress (Washington, DC: Department of Defense, 2008) p. 1.

3. "Top 10 GDP Countries 2000–2050," Geographic.org, http://www.photius.com/rankings/gdp_2050_projection.html (accessed May 14, 2010).
4. United Nations Department of Economic and Social Affairs, Population Division, *World Population Prospects: The 2008 Revision* (New York: United Nations Department of Economic and Social Affairs, 2008), available at http://esa.un.org/unpd/wpp2008/wpp_documents.htm (accessed May 2, 2010).
5. Department of Defense, *National Defense Strategy* (Washington, DC: June 2008), p. 3.
6. "Scholar Predicts Serious Population Decline in Russia," Woodrow Wilson International Center for Students, http://www.wilsoncenter.org/index.cfm?fuseaction=news.item&news_id=56906 (accessed August 3, 2008).
7. International Institute for Strategic Studies, *Military Balance 2007* (London: 31 January 2007), pp. 406–411.
8. D. F. Vandegriff, *The Path to Victory: America's Army and the Revolution in Human Affairs* (Presidio, CA: 2002).
9. Robert Gates, "Evening Lecture at the U.S. Military Academy (West Point, NY)" (speech, U.S. Military Academy, West Point, NY, April 21, 2008), available at www.defenselink.mil/speeches/speech.aspx?speechid=1233 (accessed May 28, 2008).
10. Stephen Dagget, *Defense Budget: Long-Term Challenges for FY 2006 and Beyond*, CRS Report for Congress RL32877 (Washington, DC: Congressional Research Service, April 20, 2005).
11. Congressional Budget Office, *Long-Term Implications of Current Defense Plans*, CBO Paper (October 2006), available at <http://www.cbo.gov/ftpdocs/76xx/doc7671/10-18-LongTermDefense.pdf> (accessed July 29, 2008).
12. Nassim Nicholas Taleb, *The Black Swan: The Impact of the Highly Improbable*, (New York: Random House, 2007).

Resourcing America's Land Forces¹

Dr. Frederick W. Kagan
Resident Scholar
American Enterprise Institute

March 2010 marked the beginning of the eighth year in which the United States has not mobilized while fighting two large and protracted wars. This is the first time in American history that the United States has deployed hundreds of thousands of soldiers to combat without mobilization. Every person deployed to Iraq or Afghanistan had volunteered for military or diplomatic service knowing that he or she might be sent to war. There has been no draft. Military industry has not been placed on a war footing. The process of closing military bases in the United States and abroad has gone on apace as though the wars were not occurring. The only major new weapons system deployed to support the ongoing wars was the MRAP (mine-resistant, ambush-protected vehicle). Ground forces end strength has grown (by temporary authorization) by less than 10 percent. The military services themselves have worked wonders to transform themselves while fighting, but the United States has fundamentally fought these two wars with the military it started with.

It is bizarre, therefore, that the *New York Times* this week hailed the announcement by Defense Secretary Robert Gates of his intention to reduce defense spending as an end to the military “feeding frenzy” since 9/11.² The editorial wrongly claims that defense spending has doubled since the attacks on the World Trade Center and the Pentagon even without supplementals (it has, in fact, grown by 37.5 percent in constant dollars).³ It is even more bizarre to speak of a defense “feeding frenzy” when the sum of all additional spending for the wars contained in supplemental appropriations (roughly \$880 billion in current dollars between 2001 and 2009) is contrasted with the \$700 billion worth of TARP funding, \$787 billion worth of stimulus funding, and nearly \$1 trillion in health-care funding approved in the last two years. The total federal budget, finally, has grown by about 65 percent in constant dollars since 2001.⁴ The “feeding frenzy” has not been in the Defense Department.

Failing to fund America's military properly is a policy (or political) choice, not a fiscal requirement. There is, moreover, a growing misperception that this war, like previous wars, should have some sort of “peace dividend” in the form of reduced defense expenditures. Expenditures will fall as actual war costs diminish, but since the military was never mobilized to begin with, the baseline defense budget does not offer reasonable prospects for major savings. On the contrary, 2010 marks the end of the second decade in which the U.S. government has chosen to delay or cancel needed modernization programs and, in general, to refit the military for the threats we face today. As I have argued elsewhere, the 1990s left the military with a significant unfunded backlog.⁵ Trying to fight two wars without mobilizing has only made that backlog greater. Assuming that resources for America's military henceforth will be characterized by severe budgetary constraints virtually ensures that the United States will not

maintain the military it needs to manage risk appropriately in an increasingly dangerous world.

Requirements for national security obviously vary with the current international environment and probable future developments. Planners and budgeteers have to start by examining the possible scenarios. We cannot build a military to handle all possible threats, so the next step is to evaluate probabilities and risks. This is all Grand Strategy 101—the problem is that the debate over desirable force structures is both heated and politicized. Some argue for minimalist approaches to failed and failing states and the threat of international terrorism, accusing those who disagree with them of irrational commitment to the principles of counterinsurgency, or COIN (so-called COINdinistas). Others argue for maximalist solutions that eschew the principles of COIN in favor of larger-scale conventional approaches. Then there are passionate splits within all of these camps.

Rather than plunging directly into this controversy, let us begin by examining the kinds of threats our land forces face today and are likely to face within the time frame of a planning cycle. No enemy today can plausibly threaten to invade the United States, Europe, Japan, Israel, India, or almost any of our other major strategic partners. Assuming that the United States establishes long-term partnerships with Iraq and Afghanistan, there is no plausible invasion threat to either of those states either on the horizon: Iran does not have the capacity to project ground forces beyond its borders in strength, and although Pakistan could, in principle, launch a conventional invasion of an Afghan state partnered with the United States, that eventuality is so unlikely that it can be safely disregarded. A North Korean conventional invasion of South Korea has also become extremely unlikely. Configuring America's land forces to be able to repel or reverse land invasions of its allies is thus a relatively low-priority requirement in the coming years. It is worth noting that most of America's major wars in the twentieth century resulted from precisely such a contingency, and the U.S. military at the end of the Cold War was designed almost exclusively to meet that precise challenge.

One corollary of this fact is that it undermines the utility of conventional force-requirement calculations based on net assessments and balance-of-power principles. Only a small handful of states in the world have conventional land forces that could pose a significant threat to American military power, and most of them are our allies. Russia has focused on developing a limited capability to project power into its "near abroad" in support of potential imperial reconquest, but its land forces are no match for the U.S. military even massed, let alone dispersed as they are. The People's Liberation Army (PLA) in China would be a very significant challenge for the U.S. military to defeat—but what would such a war look like? Short of an invasion of mainland China, the full power of the PLA is not a meaningful yardstick for determining the requirements for U.S. land forces. The Iranian military is not a significant challenge in any conventional sense. Neither is Venezuela's army or even Pakistan's. Conventional military forces of potential adversaries are not the long pole in the tent any longer in determining what the American ground forces should look like.

The discussion about shaping American ground forces must therefore shift from the realm of net assessment to an evaluation of possible and probable requirements beyond defeating the enemy's fielded forces. The key to understanding those requirements lies in the concept of troop-to-task analysis (TTT), the mechanism by which military staffs determine the nature and number of forces required to accomplish a given objective. TTT may or may not relate directly to the size and capability of enemy forces in an area. Counterinsurgency doctrine provides the most obvious example of this principle—population protection requirements depend more on the size of the population than on the number of enemy in the area. The same principle can apply to the protection of long lines of communication—there is a minimum amount of force required to guard a road of a given length.

Conducting a TTT analysis requires determining what tasks the ground forces will be called upon to perform (in which regard also it is a superior approach to force sizing compared to net assessments metrics that do not necessarily examine in any detail the objectives and strategies of either side). The range of scenarios is wide, but the major tasks in most scenarios overlap considerably. The likeliest scenarios in which U.S. ground forces would be required are interventions in weak, failing, or failed states where significant terrorist organizations operate—Yemen, Somalia, Nigeria, Mauritania, Sudan, Ethiopia, Eritrea, and possibly other equatorial African states are the most probable. An invasion of Iran is much less likely, but deserves consideration both because of the very high stakes that would be involved and because the United States and its allies are already engaged in an effort at managing the escalation of ongoing conflict with Iran—efforts that military planners cannot assume will be successful. Ground intervention in Pakistan in force is extremely unlikely, but not beyond the realm of the conceivable, particularly if Pakistani politics or civil-military relations implode again as they have before. Again, the high stakes in any such intervention require considering the nature of the challenge even if the probability of such an undertaking is very low. One could add the possibility of interventions in Latin America, particularly Colombia or Venezuela, but the nature of the requirements for U.S. ground forces does not change materially in those or similar cases.

In all of these cases, the U.S. military would likely have to undertake the following major tasks, among many others:

- Obtaining access, either through uncontested deployment or forced-entry operations (or some combination);
- Establishing infrastructure in extremely sparse theaters to support U.S. military, diplomatic, political, and economic activities;
- Securing key lines of communication;
- Providing strategic, operational, and tactical mobility to U.S., host-nation, and international forces and civilian efforts;
- Providing intelligence, surveillance, and reconnaissance (ISR) support, including analysis, to U.S., host-nation, and international forces and civilian efforts;

- Providing planning, command and control (C2), and communications support to all friendly efforts;
- Supporting ongoing U.S. and international military, diplomatic, political, and economic activities;
- Developing a detailed and coherent intelligence picture of enemy forces, host-nation politics and social dynamics, and host-nation forces;
- Conducting counterterrorism (CT) operations;
- Supporting host-nation security sector reform and security force assistance;
- Restoring and maintaining civil order;
- Conducting humanitarian relief operations;
- Conducting counterinsurgency operations if necessary.

These requirements fall heavily on the U.S. military, because it is the only organization in the world that can meet most of them. There is no other military that can provide seamless strategic, operational, and tactical mobility into and around contested areas. No other organization can provide the level of ISR, C2, and communications support that the U.S. military maintains. Only the U.S. military has the capability to develop detailed and coherent intelligence pictures of large and challenging problems. Only the U.S. military has the resources, skill, and organization to undertake serious security sector reform and security force assistance on a large scale. If those tasks are required almost anywhere in the world, the U.S. military will be called upon to play a major role in performing them.

This fact does not result from American unilateralism. It results, rather, from the fact that America's principal allies have designed their militaries to depend upon the logistical, command and control, and ISR capabilities of the United States rather than paying for them. Allies today can provide troops, ships, planes, and money, but they cannot support major operations without large-scale American involvement. The trend lines in allied defense spending were already bad, moreover, even before the current eurozone crisis. It is highly improbable that this situation will change anytime soon. The structure of the international system today, therefore, rests on the ability and willingness of the United States to maintain the capabilities to support significant undertakings by the United States and by our allies. As a purely technical matter, the only alternative is for the United States to foreclose the ability of any Western state to intervene substantially beyond its own borders.

This limitation applies to large-scale humanitarian assist operations as well as major conflict or COIN. From Indonesia to Haiti to Pakistan, the American military has repeatedly proven the only organization in the world that can move massive amounts of supplies, people, and equipment into devastated areas in short order. Refusing to maintain or to use that capability will lead to the collapse of the international community's ability to respond to large-scale humanitarian disasters.

It is vitally important to recognize that this discussion is not primarily or even secondarily about technology. France, Britain, Japan, and other allies either have or could purchase and operate the C2, ISR, logistics, communications, and other advanced technologies that underlie the capabilities of the American military. The limitation on their ability to replace the United States in these areas lies mainly in the structures of their armed forces, particularly senior headquarters.

British, French, or Israeli pilots can put bombs on targets as well as Americans. But they cannot plan or execute large-scale protracted air campaigns, because they do not have the staff capacity or the experience. The troops of many NATO and non-NATO allies have demonstrated their ability to fight well at the tactical level in Iraq, Afghanistan, and elsewhere. But only one country other than the United States has established and run division-sized commands (the United Kingdom in Basra and southern Afghanistan), and its ability to do so relied on extensive U.S. theater support. Allied militaries, in fact, have been very hard-pressed to piece together even brigade combat team headquarters of their own, partly because very few of them have more than a handful of standing brigade headquarters.

These comments are not meant to denigrate our allies. On the contrary, many of them could certainly develop and maintain higher-level headquarters and capabilities if their governments chose to spend the money on maintaining larger forces. But armies of one hundred thousand, like the British and French, simply cannot support large higher headquarters, a full logistics suite, and all the other apparatus that the United States provides and still have fighting forces to use anywhere.

This discussion is also meant to highlight the underestimated importance of headquarters in modern warfare. The 1970s-era discussions of “tooth-to-tail” ratios have entirely skewed our understanding of how wars are won, especially complex conflicts of the sort we are fighting today. The heavy burdens on military headquarters have been articulated elsewhere in detail.⁶ Suffice it to say here that if recent experience in Iraq has shown anything it is that the number of trigger pullers in the field does not relate directly to the outcome of the effort. Commanders and staffs at every echelon from battalion to theater played vital roles in understanding the challenges; developing strategies, operational approaches, and tactics to meet them; understanding the resource requirements and finding ways to fulfill them; and also interacting with the local population, local government, and national host-nation governments. The military as a collection of individuals has learned an enormous amount about the capabilities of headquarters and staffs at various levels—and about how many battalion, brigade, division, and corps headquarters are required in a conflict of any particular size and variety. The military as an institution, however, does not appear to have learned these lessons as well, and current theory and doctrine do not adequately embody them.

Experience in Iraq and Afghanistan shows the importance of three-star headquarters not only in designing and implementing campaign plans but also for implementing security force assistance and elements of security sector reform. In particular, it has shown the value that a standing corps headquarters

can bring to the design and conduct of military activities at the operational level of war. Afghanistan has long suffered from the absence of that level of command—which places the whole burden of operational design squarely on the shoulders of the overall theater commander and his ad hoc staff. Even today, although the Intermediate Joint Headquarters in Afghanistan is built around the remnants of the mostly deactivated V Corps, it is mainly another ad hoc organization, a fact that has posed significant challenges for its commander, Lieutenant General David Rodriguez, and limited his ability to lift some of the burdens of operational planning and execution from the theater commander.

The necessity to have a corps headquarters to oversee the operations of four to five divisions should be obvious to anyone familiar with the history of operational corps. Yet the U.S. Army now has only four standing corps headquarters (I Corps at Fort Lewis, III Corps at Fort Hood, XVIII Airborne Corps at Fort Bragg, and V Corps in Germany). It is not possible, therefore, to construct a rotational model that maintains a corps headquarters in both Iraq and Afghanistan without requiring year-on-year-off deployments. Iraq and Afghanistan have also required the deployment of ad hoc three-star headquarters to oversee support to host-nation security forces (MNSTC-I in Iraq and NTM-A in Afghanistan). These headquarters have functioned well enough without using standing corps headquarters, but they do compete for a limited pool of senior officers with those organizations.

It should also be unnecessary to argue that a single three-star headquarters cannot adequately supervise the operations of anywhere from ten to twenty-two combat brigades. Iraq has required the deployment of four U.S. division headquarters; Afghanistan will soon have three (RC East [101st Air Assault Division], RC South in Kandahar [10th Mountain Division], and RC Southwest [Marine Expeditionary Force] in Helmand). The rotational base to avoid year-on-year-off deployments would be twenty-one division headquarters. Even for year-on-year-off deployments it is fourteen. The U.S. Army has ten. The Marines can generate one at a time out of their three. With great difficulty the U.S. Army Reserve Component managed to put one together. America's ground forces are significantly understructured at the higher echelons of command for the wars they are currently fighting.

The paucity of combat brigades has forced theater commanders to imaginative uses of nonstandard brigade headquarters. Fires brigades have owned battlespace. So have maneuver enhancement brigades. Such headquarters are neither structured nor trained to perform such missions, although they have stepped up to the task. Relying on such imaginative remissioning, however, puts important specialized capabilities at risk.

One could also examine the hollowing-out of the Generating Force (formerly known as the Institutional Army) over the past decades as successive chiefs of staff have sought to preserve combat power under tremendous budgetary and military stress. The Army has outsourced a large portion of its thinking and some of its teaching and training to contractors, and even so TRADOC (Training and Doctrine Command) is nothing like fully staffed. America's ground forces are badly understructured at every level, in fact, for the conflicts they are now engaged in.

Very few people would disagree with that conclusion. The debate, rather, revolves around the likelihood or desirability of continuing to wage war in this manner and the possibility of protecting America's vital interests without deploying large numbers of ground forces into complex situations. This debate has largely devolved into an argument about the relative desirability of counterinsurgency operations compared with purely counterterrorism operations that rely exclusively on special forces, drones, and long-range precision strike assets.

Technical objections to a purely CT strategy as an effective approach to defeating terrorist organizations have been outlined elsewhere and need not be repeated here.⁷ Recent experience in Pakistan, Somalia, and Yemen further undermines the idea that such a strategy can neutralize, let alone defeat, an established terrorist network. The notion that there are real "COINdinistas" who see counterinsurgency as the solution to all problems is a straw man, moreover. Counterinsurgency is an appropriate strategy with which to fight insurgencies. It is not desirable to destroy states in order to create insurgencies in order to use COIN. No serious analyst—the author included—has advocated invading and conducting COIN operations in Pakistan, Yemen, Iran, or Somalia. Arguing that a purely CT strategy is unlikely to defeat terrorist organizations is not equivalent to arguing for three, four, or five additional invasions.

The question at hand, however, is somewhat different. When it comes to determining how America's ground forces should be structured and resourced, the issue is not the desirability of particular military actions but the likelihood that they will be required and/or undertaken. There are some who argue that the undesirability of conducting additional interventions is reason to strip away the military's capability to do so in order to prevent future presidents from making such mistakes. This argument should be rejected quickly. Presidents throughout American history have shown a remarkable willingness both to commit to military actions and to take nonmilitary actions leading to conflict for which the military was unprepared. At the end of the day, service members and the nation pay the price for these kinds of attempts to preempt presidential decisions.

The real questions are as follows. Can responsible military planners and force designers assume with confidence that the United States will not intervene in any of the failing or failed states now known to harbor terrorist groups actively targeting the American homeland? Can they assume that the United States will neither launch nor be drawn unintentionally into war with Iran? Can they assume that no other contingencies will arise that lead to the deployment of significant combat forces into complex conflicts? In the world as it is and seems likely to be over the next decade, making any such assumptions would be irresponsible. However undesirable these scenarios are—and they are all extremely undesirable—they are all sufficiently probable that the U.S. military must be prepared for them.

How many conflicts should the U.S. military be capable of fighting at once? How large will they be? There is really no clear analytical answer valid over a long period of time. Current stated policy is that the United States will continue to have substantial combat forces in Afghanistan for a number of years and some forces in Iraq until 2012. Current international trend lines would suggest

that interventions in Yemen and Somalia are likely at some point in the next five to ten years. The probability of some kind of military conflict with Iran is high, although the likelihood of an invasion of Iran is very low. The likelihood of American ground forces involvement in Pakistan is very hard to determine, but is probably low. The deployment of significant American military forces in Latin America also appears very unlikely at this moment.

Given the sizes and challenges of Yemen, Somalia, and Afghanistan and the probability of interventions there, prudent force-sizing requires maintaining ground forces that can sustain something like the present deployment and operational tempo for the foreseeable future—in other words, ground forces that are substantially larger than they are now. Ground forces of that size could likely handle most conceivable scenarios in which U.S. troops move into Pakistan. They might be able to handle an occupation of Iran (which, again, to be very clear, the author is not in any way advocating) with severe strain if they were not doing anything else of significance.

A number of potential wild cards could move the requirements for ground forces onto a completely different level, however. Pakistan, Nigeria, Indonesia, and Mexico are all strategically important fragile states with ongoing insurgencies and populations between 110 and 240 million people (Iran, by contrast, is the largest of the contingencies considered above, with roughly 80 million). Should the Mexican government, for instance, collapse under the weight of drug cartels and poor governance, it is difficult to imagine the United States taking no action to restore order along its southern border. U.S. land forces should not be structured to undertake such an intervention, but force designers must keep such contingencies in mind in order at least to hedge against the possibility that they might arise.

It is unlikely in the extreme that the current administration will adopt this method of evaluating the requirements for America's ground forces or act on it. There is no appetite for increasing the size of the military and a strong desire in both parties to save money by cutting the defense budget. The experience of Iraq and Afghanistan has left policy makers exhausted by war and, for the most part, desiring to avoid thinking about, planning for, or preparing for it, let alone undertaking it. The world, however, is unlikely to shape itself to suit our desires. There is no strategic pause today if ever there was one, and no reason to imagine that peace will suddenly break out across the globe. On the contrary, storm clouds are gathering and getting darker in many lands. Americans may try to persuade themselves for a time that those clouds are not their concern. But our history, to say nothing of the current ongoing efforts of our enemies to bring the war into our homeland, suggests that such efforts at denial will ultimately fail. When they do, we will once again go to war with the military that we have, and the blame will be ours if we have not prepared it adequately for the fight.

Notes

1. This paper draws on work the author did in conjunction with Thomas Donnelly, in particular, the two books they produced on the subject: *Ground Truth* (AEI, 2008) and *Lessons for a Long War* (AEI, 2010).
2. "Mr. Gates and the Pentagon Budget," *New York Times*, 17 May 2010.

3. Department of Defense, *National Defense Budget Estimates for FY 2011* (March 2010), pp. 65–66, available at http://comptroller.defense.gov/defbudget/fy2011/FY11_Green_Book.pdf (accessed 17 May 2010).
4. From roughly \$2 trillion in 2001 to \$3.3 trillion in 2010 in constant 2005 dollars. “Historical Tables,” Office of Management and Budget, <http://www.whitehouse.gov/omb/budget/Historicals/> (accessed 17 May 2010).
5. Frederick W. Kagan, *Finding the Target* (New York: Encounter Books, 2006).
6. Kimberly Kagan, *The Surge: A Military History* (New York: Encounter Books, 2009); Kimberly and Frederick Kagan, “The Patton of Counterinsurgency,” *Weekly Standard*, 10 March 2008; see also various products on the Institute for the Study of War website, <http://www.understandingwar.org>.
7. David Kilcullen has done some of the most extensive theoretical work on this issue.

Panel V: Land and Special Operations Forces

Summary of Discussion

Dr. Mackubin Thomas Owens
Associate Dean of Academics for Electives and
Directed Research
Professor of National Security Affairs
Naval War College

In his paper for this panel, Fred Kagan of the American Enterprise Institute (AEI) laments the current and likely future state of U.S. land forces. He observes that the United States has not mobilized its resources while fighting two large and protracted wars in Iraq and Afghanistan, a situation that has had its greatest impact on land forces. “There has been no draft,” he writes. Military industry has not been placed on a war footing. The process of closing military bases in the United States and abroad has gone on apace as though the wars were not occurring. The only major new weapons system deployed to support the ongoing wars was the MRAP (mine-resistant, ambush-protected vehicle). Ground forces end strength has grown (by temporary authorization) by less than 10 percent. The military services themselves have worked wonders to transform themselves while fighting, but the United States has fundamentally fought these two wars with the military it started with.

The fact is, he concludes, U.S. land forces are badly understructured at every level for the conflicts in which they are currently engaged and in which they could conceivably be engaged in the future. The issue, he argues, is not the desirability of particular conflicts, but the likelihood that U.S. forces may be committed to conflicts in the future. He argues that the current problems we face arise when a nation decides that it is not going to spend on defense what its defense actually requires.

In order to properly size U.S. forces for the future, he contends, planners must answer a number of questions. Can responsible military planners and force designers assume with confidence that the United States will not intervene in any of the failing or failed states now known to harbor terrorist groups actively targeting the American homeland? Can they assume that the United States will neither launch nor be drawn unintentionally into war with Iran? Can they assume that other contingencies requiring the deployment of significant combat forces will not arise? These scenarios are all extremely undesirable, but planners must recognize that they are sufficiently probable that the U.S. military must be prepared for them. How many conflicts should the U.S. military be capable of fighting at once? How large will they be?

In his paper, Kagan opts for a “hedging” force designed to be fully capable across the spectrum of conflict. He contends that the strategic environment

should drive the size and capability of the force, rather than budgetary constraints.

In his paper, T. X. Hammes agrees that the land forces of the United States should be prepared for a variety of scenarios that span the spectrum of conflict from conventional wars to “hybrid” and irregular conflicts. However, he argues that budgetary considerations must always be taken into account. Therefore, the United States will not be able to build what was once called a “minimum risk” force, one that is fully capable against any level of threat on any part of the spectrum of conflict.

He contends that the United States wasted seventeen years after the end of the Cold War by continuing to build weapon systems designed to fight the old Soviet Union. “It is essential that we use the remaining interval to think about whom we will fight, where we will fight, and how war will change as a result. Only by considering such questions can we determine what kind of force we will need in the event of such a conflict.”

America’s enemies have responded to U.S. conventional superiority in two ways. At one end of the spectrum, China has adopted what it calls a concept of “unlimited war,” seeking ways to neutralize the U.S. command network or drive U.S. forces to operate from beyond effective range. At the same time, China seeks to improve its own network capabilities and power projection capability with an apparent goal of denying foreign access to the region of the “second island chain,” which would project Chinese naval power to the Sea of Japan and the Philippine Sea, and cover Indonesia, the Kurils, the Marianas, and Palau.

At the other end of the spectrum, less capable enemies have sought solutions through irregular and “hybrid” war, exploiting U.S. weaknesses in irregular combat. This is the pattern U.S. adversaries have pursued in Afghanistan, Somalia, Lebanon, and Iraq, disappearing into the population and waging a “war among the people.”

Finally, Chris Lamb’s presentation addressed more specific issues dealing with the capabilities of special operations forces (SOF) and SOF as a case of operational innovation. Indeed, the first volley of comments and questions during the animated and wide-ranging discussion following the formal presentations focused attention on SOF. Of great interest was the ability of SOF to complement conventional forces in Iraq and Afghanistan, the way in which they made a “strategic difference” in recent conflicts, and the contributions of SOF to the inter-agency process.

The dominant theme of the ensuing discussion was the kind of conflict for which the United States should be preparing in the future. Given likely budgetary constraints, where should the United States focus its priorities? An additional set of questions and comments addressed certain planning assumptions regarding U.S. land forces, specifically the belief that the United States would be out of Iraq and Afghanistan soon and that once out, would avoid such conflicts in the future. Several participants expressed skepticism that the current administration would involve the United States in irregular wars in the foreseeable future. If this is indeed the case, the Army in particular will decline in size.

One participant raised the issue of learning past lessons. The participant pointed out that the United States had stumbled early in Iraq because it had forgotten or ignored the “lessons of Vietnam.” But the participant continued: Thank God we did because for the next thirty years—thirty years we got it right, and we pushed the Soviet Union into oblivion because we forgot the lessons of Vietnam. If we had reconfigured ourselves into a counterinsurgency organization as we are trying to do now the Soviet Union would not have collapsed under the weight of its defense spending. So yes, there were things that we learned in Vietnam that were not institutionalized, that hurt us especially in the beginning part of . . . the second Iraq war. But if you can get it right for thirty years that’s a pretty good record. If right now we could make a decision that would get it right for the next thirty years by forgetting the lessons of Iraq and Afghanistan, that’s a good trade-off.

A participant made the point that the primary future force planning consideration should be to provide future presidents with maximum flexibility. Another participant put this in terms of civil-military relations. Are our decisions today constraining the actions of future presidents? Where do we draw the line, the participant asked, between making reasonable decisions today and not constraining future presidents? The first participant’s answer was that we need to realistically assess the future security environment and hedge to the extent possible but recognize the existence of risk. An interesting element of the discussion concerned the extent to which the United States, although not an “empire” in the formal sense, still has to conduct something that looks like “imperial policing” in order to manage the “barbarians” on the periphery “of civilization.”

The discussion then returned to the “lessons” of past wars. A participant raised the matter in the context of teaching strategy and operations. History does not repeat itself, so the applicability of “lessons” from past war is limited, but war, especially insurgency, does involve the interaction of the two sides in the conflict and the people. In Iraq, the interplay was among the coalition, al Qaeda, and the Sunni sheikhs.

The first of the final questions addressed the broad issue of force planning—making decisions today about the size and mix of future military forces that will have to deal with a security environment that may differ from that of today, all while making trade-offs due to resource constraints. The second addressed the implications of the stress on the current force if the United States has to confront Iran over its nuclear program.

As was the case with their presentations, the panelists disagreed about force planning concerning the extent to which budgetary constraints must be taken into account. In the case regarding Iran, some participants argued that the problem is manageable and others that it changes the balance of power.

Panel VI

Air and Maritime Forces



Major General Charles J. Dunlap, Jr.
U.S. Air Force

Dr. Eric J. Labs
Senior Analyst for Naval Forces and Weapons, Congressional Budget Office

Mr. Ronald O'Rourke
Specialist in Naval Affairs, Congressional Research Service

Moderator:

Dr. Thomas R. Fedyszyn
Professor of National Security Affairs, Naval War College

American Airpower in the 21st Century: Reconciling Strategic Imperatives with Economic Realities

**Major General Charles J. Dunlap, Jr.*
U.S. Air Force**

The challenge is balancing support for the warfighter in an era of persistent conflict, where good-enough solutions are needed in months, weeks, or better yet, tomorrow, with an entirely different dynamic for conventional and strategic programs, which can take many years to achieve the desired level of technological overmatch. Reconciling these two paradigms is one of the most vexing challenges facing our military institutions.¹

Secretary of Defense Robert Gates

“Vexing” is certainly the right word to describe the state of resource allocation in the national security community. Despite still sizable defense budgets,² serious economic constraints³ combine with a wide range of complicated threats to create extremely difficult choices for policy makers. To help them work through the decision-making process, Congress mandates Quadrennial Defense Reviews (QDRs).⁴ QDRs “are intended to guide the services in making resource allocation decisions when developing future budgets.”⁵

The 2010 QDR rightly insists that “America’s interests and role in the world require armed forces with *unmatched* capabilities.”⁶ Recent resource decisions, however, do not provide much comfort for those who believe that the high-tech equipment—to include especially advanced airpower⁷—provides the most efficient, effective, and flexible means of addressing the most dangerous security challenges of the twenty-first century.

Indeed, this essay argues that such forces are deserving of stronger resource support than is currently the case. It contends that misapprehensions of key issues—reflected in the QDR and elsewhere—are eroding the United States’ “unmatched” capabilities, at least insofar as the air and space domains are concerned.

Assessing Risk

An (and perhaps “the”) essential issue of defense planning is the proper assessment of risks. Appropriately, the QDR says that “risk management is central to effective decision-making and is vital to our success.”⁸ The 2008 *National Defense Strategy* (NDS)⁹ properly defines risk “in terms of the potential for damage to national security combined with the probability of occurrence *and a measurement of the consequences should the underlying risk remain undressed.*”¹⁰ The reference to “consequences” is key because, as one expert puts

it, a “probability factor tells us nothing about risk until coupled with a consequence.”¹¹

However, the NDS, the QDR, and other government pronouncements make it clear that *probability* is the defining factor underpinning resource allocation. For example, the NDS claims that “[f]or the foreseeable future, [the strategic] environment will be defined by a global struggle against a violent extremist ideology that seeks to overturn the international system.”¹² The gravity of the potential consequences garners markedly less attention.

The QDR (and other expressions of contemporary defense thinking) rarely focus on the implications of the differences between serious threats and truly existential ones. While we may be in an era of persistent conflict, that circumstance is more usual than unusual as there have been fewer than a hundred years in the last ten thousand when there “has not been armed conflict someplace.”¹³ Moreover, the nature of today’s “persistent” conflicts are generally low-intensity, “irregular” wars.¹⁴ Although “insurgencies, civil wars and terrorist acts are always more common than large-scale interstate wars,” says analyst William Hawkins, are such conflicts, he asks, the “kind of warfare the United States needs to fight?”¹⁵

Of course, no one wants to see a repeat of the terrible events of 9/11, when a group of nonstate actors murdered over three thousand Americans. But to what degree should vicious acts by nonstate actors define defense resource allocation? Consider that in the years since the 9/11 tragedy over one hundred thousand Americans were murdered by other nonstate actors (typically common criminals).¹⁶

No doubt terrorism is a crucial concern, but risk-management experts John Mueller and Mark G. Stewart conclude from a survey of many studies that the risk of terrorism is “hardly existential” and is, in fact, “so low that spending further to reduce its likelihood or consequences is scarcely justified.”¹⁷ Although they understand the political pressure on policy makers, Mueller and Stewart maintain it does not relieve leaders “of their responsibility to expend public funds wisely [or] to inform the public about the risk that terrorism actually presents.”¹⁸ Regrettably, the QDR provides no such information.

Terrorism involving a weapon of mass destruction (WMD) is certainly a special concern. However, experts believe the chances of terrorists successfully using a nuclear weapon are “vanishingly small.”¹⁹ In any event, neither of “today’s wars”²⁰ in Iraq and Afghanistan that are devouring defense resources are direct counters to that threat. In fact, the evidence shows that Iraq’s WMD dreams ended in 1998 with Operation Desert Fox’s air strikes.²¹ Concerning Afghanistan, Professor Andrew Bacevich argued in late 2008, that—ironically—the “chief effect of military operations [there] has been to push radical Islamists across the Pakistan border . . . contributing to the destabilization” of that nuclear-armed country.²²

Regardless, even assuming such a dreadful scenario could occur, the United States would still survive. Only a nation-state possessing *numerous* WMDs *and* effective delivery vehicles could have the resources to stage an attack of sufficient dimensions to put the survival of the United States in jeopardy. In that respect, Ilan Berman of the American Foreign Policy Council warns that

“practically every nuclear weapon state is engaged in a serious modernization of its strategic arsenal” while the United States’ continues to “atrophy.”²³

Nonetheless, the QDR very decidedly gives priority to the *nonexistent* threat of terrorism. Declaring that the “epicenter of the terrorist threat to the United States is rooted in Afghanistan and Pakistan,”²⁴ the QDR’s top objective is to “prevail in today’s wars.”²⁵ Operations in Afghanistan (and Iraq) will, the QDR informs, “substantially determine the size and shape of major elements of U.S. military forces for several years.”²⁶ That will be the case because to perform those operations, the United States has selected the very manpower-intensive and largely low-tech approach set forth in the Army and Marine Corps’s *Counterinsurgency* (COIN), Field Manual 3-24 (FM 3-24).²⁷

The Impact of FM 3-24

Introduced in 2006, FM 3-24 is largely the product of analysis of Cold War–era COIN conflicts.²⁸ Airpower technology of that period had little to offer counterinsurgents, so FM 3-24 does not internalize fully what today’s aerial platforms can provide in terms of persistent surveillance and precision strike. This is unfortunate because their impact on contemporary operations is so dramatic that retired Army general Barry McCaffrey insists that the very nature of warfare has been “fundamentally changed.”²⁹

Instead of reflecting that fundamental change, the doctrine actually marginalizes airpower into a five-page annex that itself discourages its kinetic use.³⁰ In fairness, FM 3-24 seems to disdain the use of force generally. Indeed, Steven Coll wrote in the *New Yorker* that

[FM 3-24 is popular] among sections of the country’s liberal-minded intelligentsia. This was warfare for northeastern graduate students—complex, blended with politics, designed to build countries rather than destroy them, and fashioned to minimize violence. It was a doctrine with particular appeal to people who would never own a gun.³¹

As such, FM 3-24 acquired a public persona as being a “softer approach that won allies” after it was implemented in Iraq in 2007.³² Deriding the notion of “killing and capturing” insurgents, advocates of FM 3-24 see it as being all about winning “hearts and minds.” In truth, killing and capturing played a decisive role in pacifying Iraq in 2007.

Notwithstanding the “surge” of U.S. troops, it took the incarceration of tens of thousands of Iraqis³³ and a fivefold increase in air strikes to produce success.³⁴ And those air strikes involved a lot of killing;³⁵ one source even claimed that “90% of the terrorists [who were] killed [were] killed by airpower.”³⁶

Furthermore, it appears that FM 3-24’s reputed “softer” approach actually won few hearts for U.S. forces. Despite the increased security, a 2008 survey of Iraqis found that 61 percent still believed that the presence of U.S. forces made security worse in their country, and of those who thought the security was improved, only 4 percent believed U.S. forces deserved the most credit.³⁷

Resource Implications

The extension of FM 3-24's approach to Afghanistan has profound resource implications for the whole armed forces. Specifically, implementing it requires expensive deployments of considerable numbers of ground forces. For example, the doctrine calls for a "minimum troop density" of twenty counterinsurgents per one thousand residents.³⁸ Because FM 3-24 envisions COIN as overwhelmingly the province of soldiers and Marines,³⁹ both services have grown significantly to support the doctrine.⁴⁰ The Army alone is due to swell its ranks to 569,000 active-duty soldiers.⁴¹

The perception that ground forces are "stressed . . . disproportionately" by "multiple combat tours" drives the manpower increase.⁴² The facts are, however, more complicated because the COIN doctrine requires a special kind of troop. Quoting COIN expert David Galula, FM 3-24 says the "soldier must be prepared to become . . . a social worker, a civil engineer, a school teacher, a nurse, a boy scout."⁴³

This creates a difficult challenge for the Army because relatively few service personnel are suitable for these diverse, graduate-level roles. Although more than 50,000 soldiers have deployed three or more times, it is also true that nearly 237,000 soldiers in the active-duty Army have *never* deployed, and of the 310,000 who have, nearly 155,000 of those have only deployed once.⁴⁴ Only a small percentage of the Army can be said to be genuinely overstressed.

The expense of this additional manpower is staggering. Personnel costs generally are rising so radically that Pentagon officials recently told the *Washington Post* that the Department of Defense (DoD) was facing "fiscal calamity" because the "government's generosity [toward military personnel] is unsustainable."⁴⁵ Additionally, the price tag of *deploying* troops to "today's wars" is also rising rapidly; the cost of sending just one soldier to Afghanistan is now about \$1 million.⁴⁶

Such expenditures inevitably leave DoD "with less money to buy weapons."⁴⁷ Spending on personnel "eats away" at the ability to develop and acquire sufficient numbers of the high-tech weaponry upon which airpower is especially dependent.⁴⁸ Predictably, the Air Force has been a target for budget cutters for some time,⁴⁹ and the effects are showing. Today's Air Force is increasingly geriatric by warplane standards: its F-15 fighters average twenty-five years old, KC-135 tankers average forty-seven years of service, and the typical B-52 bomber will celebrate its forty-eighth birthday this year.⁵⁰

Although the QDR repeatedly expresses concern about potential adversaries fielding antiaccess capabilities,⁵¹ the production of the Air Force's premier counter to that challenge—the F-22—was terminated. In acquiescing to capping the program at 187 fighters, Secretary of the Air Force Michael Donley and chief of staff General Norton Schwartz both acknowledged that the Air Force had previously concluded that a 243-aircraft F-22 fleet "would be a moderate-risk force."⁵² They agreed to the lower number mainly due to "zero-sum" budget pressures.⁵³

Some believe the acquisition of the F-35 Joint Strike Fighter (JSF) obviates the need for the F-22. Actually, many airmen consider the F-22 a *much* more capable aircraft, especially because of its "less advertised capabilities as an

airborne command and control node, an intelligence, surveillance, and reconnaissance sensor package and information warfare weapon.”⁵⁴ Furthermore, *Aviation Week* quoted Brigadier General Peter Pawling of the Hawaii National Guard in the summer of 2009 as saying:

It’s just that the F-35 and F-22 are such different airplanes. . . . There are those who think you can simply build more F-35s. . . . But the F-22 is one of those once-in-a-lifetime airplanes. . . . If we had a major conflict [against someone with advanced air defenses], I can’t imagine going in there with anything but an F-22.⁵⁵

In a 2009 letter to Senator Saxby Chambliss, the then commander of Air Combat Command, General John Corley, insisted that there were “no studies” to justify the 187 figure.⁵⁶ In his judgment, 187 F-22s was a “high risk” number. The *Christian Science Monitor* reported that in response Air Force officials simply said that the “service must spend more of its limited resources on remote controlled aircraft—used heavily in today’s wars.”⁵⁷

This illustrates one of the Air Force’s main quandaries. As Vice Admiral William R. Burke wrote in *Proceedings*, the Air Force and Navy must serve as the nation’s “strategic reserve” against “high-end competitors” armed with high-tech weaponry, yet at the same time provide full support to “today’s wars.”⁵⁸ Parenthetically, it is not lost on airpower supporters concerned about high-end threats that Secretary Gates is adamant that “any major weapons program, to remain viable, will have to show some utility and relevance to . . . irregular [warfare] campaigns.”⁵⁹

When the decision was made to end the production of F-22s, Air Force leaders conceded that “[m]uch rides on the F-35’s success.”⁶⁰ This is especially so since the Air Force is retiring some 250 fighters to pay for the JSF.⁶¹ Now, however, the F-35’s development is troubled by “delays and cost overruns” that have raised the price tag of each airplane to \$95 million.⁶² This spurs some analysts to advocate reviving production of the F-22 and scrapping the JSF.⁶³ They believe that the F-22 is significantly more capable than the F-35, and that only the F-22 can compete against sophisticated air defenses and fifth-generation fighters such as Russia’s Sukhoi T-50.⁶⁴

Even so, the QDR’s plan for the Air Force follows its overall preference for flowing resources toward fighting the low-tech, nonstate actors of “today’s wars.” For that reason, it calls for eight intelligence, surveillance, and reconnaissance (ISR) wing-equivalents composed primarily of remotely manned aerial vehicles and associated personnel.⁶⁵ Although proliferated throughout the armed forces,⁶⁶ such systems have limited utility outside low-tech, low-threat conflicts. According to published reports, remotely manned systems able to operate in contested environments may be years away.⁶⁷

To the extent defense spending is a “zero-sum” enterprise, the “opportunity cost” of the current allocations of defense resources is real. Although the “seeds” of the next-generation bomber are in the current budget proposal,⁶⁸ those who consider the need for an advanced manned penetrating bomber as indispensable to the nation’s security⁶⁹ may be disturbed by vice chairman

General James Cartwright's very recent comments that seem to question its relevance given "the wars we're in."⁷⁰

Air Force leaders are beginning to discuss publicly the consequences of resource decisions on capabilities. In a January 2010 speech, General Schwartz candidly warned of the growing vulnerability of the satellite Global Positioning System (GPS).⁷¹ Additionally, Congress was recently told that "the U.S.'s current aerial refueling capacity is as much as 20 percent shy of what could be needed in major conflict."⁷²

What is more is that as U.S. ground forces have grown, America's Air Force continues to shrink in an effort to save money for modernization⁷³—it will soon be its smallest size since its inception in 1947. To deal with reduced manpower, as well as overtaxed resources, General Schwartz announced that "calibrated ambition" was his "theme" for the reshaped Air Force.⁷⁴ As he put it, the Air Force "won't be able to do all its assigned tasks as comprehensively as it once did."⁷⁵ According to General Schwartz, the Air Force "will be aiming for simple sufficiency in areas where it's been accustomed to dominance."⁷⁶

Dr. Daniel Goure of the Lexington Institute says that General Schwartz's "words imply a willingness to cede at least a measure of air dominance to potential adversaries such as Russia or China" even though, he says, the lesson of "modern wars is that without dominance of the air the ability to project power forward, particularly on land, is at risk."⁷⁷ Moreover, it now appears that the Chinese will be fielding a fifth-generation fighter "in the ballpark" with the F-22 by 2018, significantly sooner than many anticipated.⁷⁸

Nevertheless, General Schwartz believes the "key" to meeting both irregular warfare and conventional conflict demands is to leverage and adapt existing capabilities.⁷⁹ Although many air platforms are geared toward conventional war, he believes they can be "tweak[ed] to meet irregular war requirements."⁸⁰ That may already be happening, as *Inside the Air Force* recently reported that U.S. airmen have been using traditional capabilities creatively to solve the "nuanced" problems of irregular war.⁸¹

Such creativity and flexibility may be exactly what is needed to more economically and effectively address "today's wars." In Afghanistan, for example, it is becoming increasingly clear that masses of foreign troops on the ground may be counterproductive. As former Army chief of staff General John Wickham said in late 2008, "[l]arge military forces alienate local populations, succeed less and cost more."⁸²

Last September *Time Magazine* gave this blunt assessment: "The Afghan insurgency is not a cohesive movement but rather a loose affiliation of groups united by a common goal: *the expulsion of foreign troops.*"⁸³ Thus, "surging" troops into Afghanistan may well exacerbate, not solve, the COIN problem there.⁸⁴

A recent RAND report raises problems that are even more troubling. Entitled *How Insurgencies End*, it makes a number of relevant observations.⁸⁵ In particular, it notes that modern insurgencies last approximately ten years, and that is clearly a problem for U.S. policy makers because even Secretary Gates believes that "Americans will not accept a 'long slog' in Afghanistan."⁸⁶

In addition, although supportive of “Iraq-style” COIN,⁸⁷ the RAND study nevertheless concedes that “anocracies” (which it defines as “a particularly weak form of government in that it is good at neither democracy nor autocracy”) win only about 15 percent of all COIN contests.⁸⁸ Given that the Afghan government is widely viewed as weak and corrupt,⁸⁹ this conclusion is ominous indeed; some observers are already saying that the “surge in Afghanistan isn’t working.”⁹⁰

However, by adopting an “enemy-centric” strategy it may be possible to devise a less resource-demanding solution.⁹¹ It would require reorienting the current “people-centric” approach of “protect[ing] the Afghan” people from the Taliban,⁹² to a more al Qaeda-centered effort. Though narrower in scope than that to which FM 3-24 aspires, it still seems consistent with the president’s “clear and focused goal to disrupt, dismantle, and defeat Al Qaeda.”⁹³ It is a more flexible and adaptive response to an al Qaeda that may be able to rapidly establish “epicenters” other than in Afghanistan.⁹⁴

Focusing on al Qaeda does not require enmeshing a massive American ground presence in a politicized and costly nation-building effort. However, it also would not require abandoning all COIN efforts such as training indigenous military and governmental personnel. True, it would put more emphasis on traditional military means in battling al Qaeda extremists, but that reorientation of resources could pay COIN dividends.

Ralph Peters—a former Army officer considered by many to be an astute military analyst—argues that history demonstrates that success in defeating insurgencies is “at least 90 percent a military mission.”⁹⁵ Peters says that “[w]ell-meaning generals insist that ‘we can’t kill our way out of an insurgency,’ even though, historically, success against insurgents—especially counterrevolutionaries seeking a religious restoration or ethnic supremacy—consistently required killing them in substantial numbers.”⁹⁶

Many experts have advocated airpower-oriented strategies aimed at fighting al Qaeda “from afar.”⁹⁷ This does not, however, mean ignoring the Taliban. If the fear is that they will provide a home for a resurgent al Qaeda, we should not assume FM 3-24’s “softer” approach is the only way to defeat them.

Edward Luttwak, the eminent security theorist, dissects the Israeli Gaza war of 2008 and concludes that aerial bombing can work in irregular war.⁹⁸ Luttwak sardonically observes that given Afghanistan’s muddled history and politics, even if General Stanley McChrystal executes a population-centric, nation-building effort as the “sacrosanct Field Manual 3-24 prescribes,” it may still need a “century or two” to work.⁹⁹ According to Luttwak: “The better and cheaper alternative would be to resurrect strategic bombing in a thoroughly new way by arming the Taliban’s many enemies to the teeth and replacing U.S. troops in Afghanistan with sporadic airstrikes. Whenever the Taliban concentrate in numbers to attack, they would be bombed.”¹⁰⁰

He admits that it would be an “imperfect solution” but, he says, it “would end the costly futility of ‘nation-building’ in a remote and unwelcoming land.”¹⁰¹ Imperfect solutions, however, may be the best that can be achieved in an austere funding environment.

The Way Ahead

To reiterate, the QDR and other reflections of the defense establishment thinking foresee a future of persistent conflict, mainly focused in failed and failing states. As this paper outlines, the current approach requires large numbers of ground troops ready to win “hearts and minds” via nation-building and stability operations (which DoD now puts on a par with combat operations).¹⁰² Thus, as one observer puts it, “Iraq-style counterinsurgency is fast becoming the U.S. Army’s organizing principle.”¹⁰³ Resources are flowing accordingly; even the chairman of the Joint Chiefs gushes that the “Army is the center of gravity for the U.S. military.”¹⁰⁴

However, the American people are evincing a growing aversion toward involvement in another “Iraq-style” or, for that matter, “Afghan-style” operation. Despite the relative success U.S. forces achieved in Iraq, 60 percent of Americans still oppose the war.¹⁰⁵ Likewise, the most recent poll of Americans regarding Afghanistan shows that a majority now believes the war was “not worth fighting.”¹⁰⁶

Plainly, the American body politic has not shown any appetite for the very kind of operation the QDR favors—and prioritizes resources to conduct. James S. Corum—one of the authors of FM 3-24—points out that the loss of blood and treasure in Iraq has dramatically eroded domestic American support for similar operations.¹⁰⁷ Accordingly, he says that it is unlikely that U.S. troops will be involved with them in a major way in the future “no matter how necessary or justified they might be.”¹⁰⁸

Consider as well that as the United States grows the mass of its ground forces in order to wage protracted, low-intensity conflicts against low-tech adversaries, its most formidable potential opponent is doing just the opposite. DoD’s own report to Congress about China’s military power reveals that “[t]he People’s Liberation Army is pursuing comprehensive transformation from a mass army designed for protracted wars of attrition on its territory to one capable of fighting and winning short-duration, high-intensity conflicts along its periphery against high-tech adversaries—an approach that China refers to as preparing for ‘local wars under conditions of informatization.’”¹⁰⁹

The American people seems to understand instinctively the gravity of the challenge that countries like China can present to vital U.S. interests. Perhaps perceiving the limited relevance of ground forces to threats from high-tech rivals, a 2009 poll found that the majority of the U.S. public believed that the Air Force would be the “most important [service] to America” in future wars.¹¹⁰

Yet at the same time, the wisdom of diminishing the size of America’s ground forces in an era of great uncertainty is questionable—and likely unnecessary. As is well documented, even at 4.7 percent of the gross domestic product, that percentage for the defense budget is small as a wartime figure relative to other periods in U.S. history.¹¹¹ The looming internecine fights among the services over budget need not take place—if the country truly recognizes it is at war, and mobilizes accordingly.

Regardless, the fact remains that America is making choices that carry great potential to erode the nation’s ability to enjoy air and space preeminence in areas of vital interest over the longer term. Such choices inevitably “provide

incentives for [other countries] to build up where the U.S. is pulling back.”¹¹² Objections to diminishing air capabilities, however, are rare and muted. Even General Schwartz admits that there are few vocal airpower supporters in Washington.¹¹³

At least in part, the absence of airpower advocates must be attributed to the Air Force itself. Consider these comments from Under Secretary of Defense Michèle Flournoy about the Air Force’s collective *ennui*:

During the 80s and early 90s, the Air Force was on the leading edge in innovative strategic thinking within DoD, driving the development of new concepts of operations and ways of war. The Air Force was the poster child for thought-leadership in the Pentagon. But that has become less and less true, even though we need such thinking more today than ever.¹¹⁴

In short, unless others become airpower’s champion, it is quite possible that U.S. capabilities could decline to the point where an adversary could achieve air superiority at least in a given theater, and perhaps even further. Some have raised a cry: shortly before the F-22 program was terminated, author Mark Bowden warned: “Now we have a choice. We can stock the Air Force with the expensive, cutting edge F-22—maintaining our technological superiority at great expense to our Treasury. Or we can go back to a time when the cost of air supremacy was paid in blood of men. . . .”¹¹⁵

We know now what choice was made. Only time will tell the wisdom of that “vexing” decision, as well as the prudence of forgoing airpower dominance in a world where America’s most dangerous competitors relentlessly seek it.

Notes

- * *Major General Dunlap retired on June 1, 2010, after more than thirty-four years’ service in the U.S. Air Force. The views and opinions expressed are his alone and do not necessarily reflect those of the U.S. government or any of its components.*
1. Robert Gates, “Remarks by Secretary of Defense Robert Gates at the Army War College,” (speech, Carlisle, PA, April 16, 2009), transcript available at <http://www.defense.gov/transcripts/transcript.aspx?transcriptid=4404>.
 2. “Congress appropriated \$626 billion for DoD’s fiscal year 2010 budget and to support current operations.” U.S. Government Accountability Office (GAO), *Quadrennial Defense Review: 2010 Report Addressed Many but Not All Required Items*, (Washington, DC: GAO, April 30, 2010), p. 1, available at <http://www.gao.gov/new.items/d10575r.pdf>.
 3. See, e.g., Jim Garamone, “Gates Calls for Significant Cuts in Defense Overhead,” American Forces Press Service, May 8, 2010, available at <http://www.defense.gov/news/newsarticle.aspx?id=59082>.
 4. Department of Defense, *Quadrennial Defense Review* (Washington, DC: Department of Defense, February 2010), available at http://www.defense.gov/qdr/images/QDR_as_of_12Feb10_1000.pdf (last visited April 29, 2010) [hereinafter “QDR”].
 5. GAO, *Quadrennial Defense Review*.
 6. QDR, p. 4 (italics added).
 7. Although this essay will focus on the Air Force, “airpower” writ large includes the air arms of the other armed services. For purposes of this essay, it also includes “space power,” which is defined as “[t]he total strength of a nation’s capabilities to conduct and influence activities to, in, through, and from space to achieve its objectives.” See *Department of Defense Dictionary of Military and Associated Terms*, (Washington, DC:

- Joint Staff, April 12, 2001, as amended through October 31, 2009), available at http://www.dtic.mil/doctrine/dod_dictionary/data/s/10596.html.
8. QDR, p. 89.
 9. Department of Defense, *National Defense Strategy* (Washington, DC: 2008), available at <http://www.defense.gov/pubs/2008NationalDefenseStrategy.pdf> (last visited April 30, 2010).
 10. *Ibid.*, p. 20 (italics added).
 11. Peter L. Bernstein, *Against the Gods: The Remarkable Story of Risk* (New York: Wiley, 1996), p. 261 (quoting Robert Jeffrey).
 12. Department of Defense, *National Defense Strategy*, p. 2.
 13. Gary D. Solis, *The Law of Armed Conflict* (New York: Cambridge Univ. Press, 2010), p. 4.
 14. DoD defines “irregular warfare” as a “violent struggle among state and non-state actors for legitimacy and influence over the relevant population(s). Irregular warfare favors indirect and asymmetric approaches, though it may employ the full range of military and other capabilities, in order to erode an adversary’s power, influence, and will.” See *Department of Defense Dictionary of Military and Associated Terms*, available at http://www.dtic.mil/doctrine/dod_dictionary/data/i/19843.html.
 15. William Hawkins, “Don’t Let Insurgency Planning Drive Force Structure,” *Defense News*, October 26, 2009, p. 37.
 16. Federal Bureau of Investigation, *Crime in the United States, 2008* (U.S. Department of Justice, September 2009) Expanded Homicide Table 8, available at http://www.fbi.gov/ucr/cius2008/offenses/expanded_information/data/shrtable_08.html (last visited March 25, 2010).
 17. John Mueller and Mark G. Stewart, “Hardly Existential: Thinking Rationally about Terrorism,” *Foreign Affairs*, April 2, 2010, available at <http://www.foreignaffairs.com/articles/66186/john-mueller-and-mark-g-stewart/hardly-existential>.
 18. *Ibid.*
 19. See, e.g., John Mueller, “The Atomic Terrorist?” International Commission on Nuclear Non-proliferation and Disarmament, April 30, 2010, http://www.icnnd.org/research/Mueller_Terrorism.pdf.
 20. See QDR, and accompanying text at note 26.
 21. See, e.g., Thomas Ricks, *Fiasco*, pp. 20–22 (Penguin, 2006) (citing David Kay).
 22. Andrew J. Bacevich, “Think Again: What’s Our Definition of Victory?” *Newsweek*, December 2008, p. 38.
 23. Ilan Berman, “Stagnation Threatens U.S. Arms Superiority,” *Defense News*, January 4, 2010, p. 21.
 24. QDR, p. 6.
 25. *Ibid.*, p. v.
 26. *Ibid.*
 27. Headquarters, Department of the Army, Field Manual No. 3-24, *Counterinsurgency* (December 15, 2006) [hereinafter FM 3-24], also designated by Headquarters, Marine Corps Combat Development Command, Department of the Navy, as Marine Corps Warfighting Publication No. 3-33.5, available at <http://www.scribd.com/doc/9137276/US-Army-Field-Manual-FM-324-Counterinsurgency>.
 28. See Gian P. Gentile, “The Selective Use of History in the Development of American Counterinsurgency Doctrine,” *Army History*, Summer 2009, p. 21 (maintaining that FM 3-24 “draws narrowly on a body of writing from the French Revolutionary War school of counterinsurgency theory and practice of the early 1960s”).
 29. General McCaffrey observed: “We have already made a 100 year war-fighting leap-ahead with MQ-1 Predator, MQ-9 Reaper, and Global Hawk. Now we have loiter times in excess of 24 hours, persistent eyes-on-target, micro-kill with Hellfire and 500 lb [JDAM] bombs, synthetic aperture radar, and a host of ISR [intelligence, surveillance,

and reconnaissance] sensors and communications potential that have fundamentally changed the nature of warfare.”

See GEN Barry R. McCaffrey to Colonel Mike Meese, United States Military Academy, “After Action Report,” memorandum, October 15, 2007, p. 5, available at <http://www.mccaffreyassociates.com/pages/documents/AirForceAAR-101207.pdf>.

30. See FM 3-24, and accompanying text at note 27.
31. Steve Coll, “The General’s Dilemma,” *New Yorker*, September 8, 2008, available at http://www.newyorker.com/reporting/2008/09/08/080908fa_fact_coll?currentPage=all.
32. “Link Hard, Soft Power,” editorial, *Defense News*, September 8, 2008, p. 28.
33. Gordon Lubold, “Do US Prisons Breed Insurgents?” *Christian Science Monitor*, December 20, 2007, available at <http://www.csmonitor.com/2007/1220/p01s01-woiq.html> (citing the figure of 25,000 Iraqis detained).
34. See, e.g., Anthony H. Cordesman, “US Airpower in Iraq and Afghanistan: 2004–2007,” Center for Strategic & International Studies, December 13, 2007, available at http://www.csis.org/media/csis/pubs/071213_oif-oeef_airpower.pdf.
35. In September of 2007, *USA Today* reported that insurgent deaths already exceeded the total for all of 2006 by 25 percent. See Jim Michaels, “19,000 Insurgents Killed in Iraq since ’03,” *USA Today*, September 2007, available at http://www.usatoday.com/news/world/iraq/2007-09-26-insurgents_N.htm.
36. Michael M. Dunn, “The Pile-On Effect,” Air Force Association, July 9, 2008, available at http://www.afa.org/EdOp/edop_7-10-08.asp.
37. ABC/BBC/ARD/NHK Poll, “Security Gains Reverse Iraq’s Spiral Though Serious Problems Remain,” news release, March 17, 2008, available at <http://www.abcnews.go.com/images/PollingUnit/1060a1IraqWhereThingsStand.pdf>.
38. FM 3-24, para. 1-67.
39. See, e.g., Robert Scales, “Clausewitz and World War IV,” *The Wright Stuff*, September 4, 2008, available at <http://www.maxwell.af.mil/au/aunews/archive/0316/Articles/Clausewitz%20and%20World%20War%20IV.pdf>.
40. Department of Defense, “DoD News Briefing with Secretary Gates and Adm. Mullen from the Pentagon,” July 20, 2009 (discussing the 2006 increase in the size of the Army by 65,000 troops and the Marine Corps by 27,000 troops, and announcing an additional increase of 22,000 troops for the Army), available at <http://www.defense.gov/transcripts/transcript.aspx?transcriptid=4447>.
41. *Ibid.*
42. QDR, pp. vi and 6.
43. FM 3-24, para. 2-42.
44. Gregg Zoroya, “Repeated Deployments Weigh Heavily on U.S. Troops,” *USA Today*, January 13, 2010, p. 1, available at http://www.usatoday.com/news/military/2010-01-12-four-army-war-tours_N.htm.
45. See Craig Whitlock, “Pentagon: Troop Raises Too Generous,” *Washington Post*, May 8, 2010, at A1, available at <http://www.washingtonpost.com/wp-dyn/content/article/2010/05/07/AR2010050703054.html>.
46. Christopher Drew, “High Costs Weigh on Troop Debate for Afghan War,” *New York Times*, November 14, 2009, available at <http://www.nytimes.com/2009/11/15/us/politics/15cost.html>. For a breakdown of this figure, see Jesse Ellison, “Million-Dollar Man,” *Newsweek*, January 11, 2010, p. 12.
47. Whitlock, “Pentagon” (citing DoD officials).
48. See, e.g., Matthew Potter, “No Surprise: Personnel Costs Eating Defense Budget Which Affects Buying Hardware,” CBS Business Network, December 9, 2009, <http://industry.bnet.com/government/10004454/no-surprise-personnel-costs-eating-defense-budget-which-affects-buying-hardware/>.

49. Erik Holmes and Michael Hoffman, "Axing the Air Force," *Air Force Times*, April 20, 2009, p. 14 (discussing budget cutting regarding the F-22, the T-SAT satellite, the C-17, the CSARX rescue helicopter, and the airborne laser).
50. "USAF 2010 Almanac," *Air Force Magazine*, May 2010, p. 61, available at http://www.airforce-magazine.com/MagazineArchive/Magazine%20Documents/2010/May%202010/0510facts_figs.pdf.
51. See, e.g., QDR, p. 31.
52. Michael Donley and Norton Schwartz, "Moving beyond the F-22," *Washington Post*, April 13, 2009, available at <http://www.washingtonpost.com/wp-dyn/content/article/2009/04/12/AR2009041202268.html>.
53. Ibid.
54. David Fulghum, "Fly F-22 to Hawaii," Ares: A Defense Technology Blog, posted July 23, 2009, <http://www.aviationweek.com/aw/blogsmain/index.jsp>.
55. Ibid. See also "F-22 vs. F-35," Issue Briefs, Air Force Association, available at http://www.afa.org/ProfessionalDevelopment/IssueBriefs/F-22_v_F-35_Comparison.pdf (last accessed May 9, 2010); and Robert S. Dudney, "Air Supremacy in a Downdraft," *Air Force Magazine*, December 2009, p. 2.
56. Gordon Lubold, "US Needs More F-22 Fighters," *Christian Science Monitor*, June 19, 2009, <http://www.csmonitor.com/USA/Military/2009/0618/p02s09-usmi.html>.
57. Ibid.
58. VADM William R. Burke, "Not Business as Usual," U.S. Naval Institute *Proceedings*, May 2010, pp. 27, 28.
59. Robert Gates, "Remarks to the Heritage Foundation," (May 13, 2008), available at <http://www.defense.gov/speeches/speech.aspx?speechid=1240>.
60. Donley and Schwartz, "Moving beyond the F-22."
61. Bruce Rolfson, "Despite Problems, Air Force Plans to Stick with F-35," *Air Force Times*, April 26, 2010, p. 22.
62. Lisa Daniel, "Defense Secretary to Recommend Navy Admiral to Head F-35 Program," American Forces Press Service, Mar. 25, 2010, available at <http://www.af.mil/news/story.asp?id=123196699>.
63. David Crane, "F-35 Lightning II Joint Strike Fighter (JSF) Too Expensive?" *Defense Review*, March 15, 2010, available at <http://www.defensereview.com/scrap-the-f-35a-and-f-35c-jsf-joint-strike-fighter-variants-and-revive-the-f-22-raptor/>.
64. Ibid. The Russians plan to procure 300 aircraft while the Indians will acquire 250 of the fighters. See Maxim Pyadushkin, "T-50 Flight Tests Get Underway," *Aviation Week*, March 2010, p. 27.
65. QDR, p. 46.
66. See, e.g., Eric Hagerman, "A Field Guide to Flying Robots," *Popular Science*, March 2010, p. 36.
67. "MQ-X Development Suspended to Flesh Out Additional Capabilities," *Inside the Air Force*, April 30, 2010, p. 3.
68. Jim Garamone, "Budget Request Continues Defense Reform Agenda," American Forces Press Service, February 1, 2010 (quoting Robert F. Hale, DoD Comptroller), available at <http://www.af.mil/news/story.asp?id=123188495>.
69. See, e.g., Robert J. Elder, "Critical Need for Advanced Manned Penetrating Bomber," Air Force Association, May 14, 2010, available at <http://www.afa.org/EdOp/PDFs/LongRangeBomberNeed.pdf>.
70. General Cartwright was quoted as follow: "The question is, how many bomber squadrons do we need versus how many troops expert at stability operations," Cartwright said.
 "He did not answer his own question directly, but reiterated his belief that he doesn't see the United States moving away from the current kinds of conflicts 'any time soon.'

“Cartwright drove home his point by adding: ‘People want to buy high-end’ platforms, like bombers, ‘but the low-end is the war we’re in.’”

See John T. Bennett, “Cartwright: U.S. Likely to Remain at War for a Decade,” *Defense News*, May 13, 2010, available at <http://www.defensenews.com/story.php?i=4624431&s=LAN>.

71. Gen Norton Schwartz, “Keynote Address at the Air, Space, and Cyberspace Power in the 21st Century Conference” (Washington, DC, January 20, 2010), available at <http://www.af.mil/shared/media/document/AFD-100121-002.pdf>.
72. John Reed, “U.S. Aerial Refueling Capacity Deemed Insufficient,” *Defense News*, April 28, 2010, available at <http://www.defensenews.com/story.php?i=4603066>.
73. See, e.g., Lauro M. Colarusso, “The Deepest Cuts,” *Defense News*, January 16, 2006, p. 14.
74. John A. Tirpak, “The Adequate Air Force,” *Air Force Magazine*, March 2010, p. 8 (quoting General Norton A. Schwartz).
75. *Ibid.*
76. *Ibid.*
77. Daniel Goure, “Say Goodbye to U.S. Air Dominance—and Perhaps to Victory in the Next War,” Lexington Institute, April 23, 2010, <http://www.lexingtoninstitute.org/say-goodbye-to-us-air-dominance---and-perhaps-to-victory-in-the-next-war?a=1&c=1171>.
78. Jim Wolf, “RPT—New Chinese Fighter Jet Expected by 2018: US Intel,” *Reuters*, May 20, 2010, available at <http://www.reuters.com/article/idUSN2117451920100521?type=marketsNews>.
79. Carlos Munoz, “USAF Can Support IW, Conventional Requirements in Future Budget Cycles,” *Inside the Air Force*, May 7, 2010, p. 3.
80. *Ibid.*
81. *Ibid.*, p. 4.
82. John A. Wickham, “Why a Smaller Footprint Is Good,” *Arizona Daily Star*, November 9, 2008, available at <http://www.azstarnet.com/allheadlines/266151>.
83. Aryn Baker, “How Crime Pays for the Taliban,” *Time*, September 7, 2009 (italics added), available at <http://www.time.com/time/magazine/article/0,9171,1919154,00.html>. See also Robert A. Pape, “To Beat the Taliban, Fight from Afar,” *New York Times*, October 15, 2009 (“the more Western troops we have in Afghanistan, the more the local residents have viewed themselves under foreign occupation . . .”), available at <http://www.nytimes.com/2009/10/15/opinion/15pape.html>.
84. See also David Ignatius, “The Right Words for a War President,” *Washington Post*, December 29, 2009, p. 29 (discussing a report from a Taliban website that the group was “ready to give legal guarantee [not to interfere in the internal affairs of other countries] if the foreign forces withdraw from Afghanistan”).
85. Ben Connable and Martin C. Libicki, *How Insurgencies End* (RAND, 2010), available at http://www.rand.org/pubs/monographs/2010/RAND_MG965.pdf. A ten-year effort could cost a trillion dollars. See Peter Baker, “How Obama Came to Plan for ‘Surge’ in Afghanistan,” *New York Times*, December 6, 2009, p. 1 (discussing private budget memo the president reportedly received).
86. Julian E. Barnes, “Americans Won’t Accept a ‘Long Slog’ in Afghanistan War,” *Los Angeles Times*, July 19, 2009, available at <http://articles.latimes.com/2009/jul/19/nation/na-gates19>.
87. Connable and Libicki, *How Insurgencies End*, p. 119.
88. *Ibid.*, p. xiv.
89. See, e.g., Karen DeYoung, “U.S. Official Resigns over Afghan War,” *Washington Post*, October 7, 2009, at 1 (discussing a memo from a Foreign Service official that is reported to have concluded that “the corrupt, U.S. backed national government is rejected” by Afghans); and Michael Isikoff et al., “Contempt for Karzai,” *Newsweek*, April 19, 2010, p. 10.

90. Jackson Diehl, "Obama's Warring Team," *Washington Post*, May 14, 2010, p. A15.
91. See Gentile, "The Selective Use of History in the Development of American Counterinsurgency Doctrine," p. 22 (saying that an "enemy-centric" approach is "supported by numerous historical cases" and describing Maj Gen Charles E. Callwell as its "most noted proponent").
92. See Gordon Lubold, "U.S. Aims to Wage a Safer War," *Christian Science Monitor*, March 8, 2010, at 16 (quoting GEN Stanley R. McChrystal).
93. Office of the Press Secretary, White House, "Remarks of the President on the New Strategy for Afghanistan and Pakistan," March 27, 2009, available at http://www.whitehouse.gov/the_press_office/Remarks-by-the-President-on-a-New-Strategy-for-Afghanistan-and-Pakistan/.
94. See, e.g., Andrew Lee Butters, "The Next Afghanistan? How Yemen Has Become the Latest Haven for al-Qaeda," *Time*, October 5, 2009, p. 42.
95. Ralph Peters, "COIN Lies We Love: Dissecting the Myth That the Military Has Only a Supporting Role," *Armed Forces Journal*, April 2009, available at <http://www.afji.com/2009/04/3978447/>.
96. Ibid.
97. See, e.g., Pape, "To Beat the Taliban, Fight from Afar,"; and Andrew J. Bacevich, "Give Up on Democracy in Afghanistan," *The Atlantic*, July/August 2009, p. 57.
98. Edward Luttwak, "In Praise of Aerial Bombing," *Foreign Policy*, March/April 2010, p. 68.
99. Ibid., p. 70.
100. Ibid.
101. Ibid.
102. Department of Defense Directive (DoDD) 3000.5, "Military Support for Stability, Security, Transition, and Reconstruction (SSTR) Operations," November 28, 2005, para 4.1 ("Stability operations are a core U.S. military mission that . . . shall be given priority comparable to combat operations"), available at <http://www.dtic.mil/whs/directives/corres/pdf/300005p.pdf> (last visited April 7, 2008).
103. Andrew J. Bacevich, "The Petraeus Doctrine," *The Atlantic*, October 2008, available at <http://www.theatlantic.com/doc/200810/petraeus-doctrine>.
104. ADM Michael G. Mullen, "What I Have Learned about the Army," *Joint Force Quarterly*, 1st Qtr., 2009, p. 8, available at http://www.ndu.edu/inss/Press/jfq_pages/editions/i52/2.pdf.
105. Sixty percent oppose the war. See CNN/Opinion Research Corporation Poll, January 22–24, 2010, available at <http://www.pollingreport.com/iraq.htm>.
106. Scott Wilson and Rajiv Chandrasekaran, "Obama Makes Personal Diplomacy Part of Afghan Strategy," *Washington Post*, May 9, 2010, p. 1, available at <http://www.washingtonpost.com/wp-dyn/content/article/2010/05/08/AR2010050803384.html> (citing ABC News/*Washington Post* poll).
107. James S. Corum, *Bad Strategies: How Major Powers Fail in Counterinsurgency* (Minneapolis, MN: Zenith Press, 2008), p. 238.
108. Ibid.
109. Office of the Secretary of Defense, *Annual Report to Congress: Military Power of the People's Republic of China* (Washington, DC: 2009), p. I, available at http://www.defense.gov/pubs/pdfs/China_Military_Power_Report_2009.pdf (last visited May 10, 2010).
110. Air Force Public Affairs Communication Research Bulletin #94, Apr. 14, 2009, citing Everett Group *Defense Trends* survey, March 3–19, 2009.
111. See "Relative Size of U.S. Military Spending, 1940–2003," TruthAndPolitics.org, March 26, 2006, <http://www.truthandpolitics.org/military-relative-size.php>.
112. MacKenzie Eaglen, "How to Dismantle a Military Superpower," *Defense News*, September 14, 2009, p. 61.

113. Vago Muradian, "Schwartz: Other Services Must Be Able to Depend on Us," *Air Force Times*, April 26, 2010, p. 24.
114. Hon. Michèle Flournoy, "Remarks to the US Air Force Senior Leader Orientation Course" (speech, Air University, August 14, 2009), available at <http://www.au.af.mil/au/aunews/archive/2009/0419/Articles/USDPRemarks.htm>.
115. Mark Bowden, "The Last Ace," *The Atlantic*, March 2009, p. 58.

An Analysis of the Force Structure Implications and Costs of the Navy's Fiscal Year 2011 Shipbuilding Plan

Dr. Eric J. Labs¹

**Senior Analyst for Naval Forces and Weapons
Congressional Budget Office**

Introduction

In February 2006, the Navy presented a long-term shipbuilding plan for 2007 that called for expanding the battle force fleet from the then-current size of 285 ships to 313 ships by 2020.² A few months later, the Congressional Budget Office (CBO) issued a study analyzing that plan and estimating its potential costs. Since then, the Navy has released several updates to its 313-ship plan, the most recent being the plans for 2009 and 2011.³ (The Navy did not provide an update for 2010.) Those two plans differ sharply with respect to the Navy's requirement for battle force ships, the number and types of ships the Navy would purchase over thirty years, and the amount of money needed to implement the plans.

As it has for each of the Navy's long-term shipbuilding plans in recent years, CBO has examined the 2011 plan in detail and produced estimates of the costs of the proposed ship purchases using its own models and assumptions. CBO has also analyzed how those ship purchases would affect the Navy's inventories of various types of ships over the next three decades. The key findings are as follows:

- The service's requirement for battle force ships appears now to total at least 322—up from 313 in the Navy's three previous long-term plans. (The battle force fleet currently numbers 286 ships.)
- The 2011 plan calls for buying a total of 276 ships over the 2011–2040 period: 198 combat ships and 78 logistics and support ships.
- In comparison, the 2009 shipbuilding plan envisioned buying 40 more combat ships and 20 fewer support ships over thirty years. Under that plan, the Navy would have purchased 238 combat ships and 58 logistics and support ships between 2009 and 2038, for a total of 296.
- The Navy estimates that buying the new ships in the 2011 plan will cost an average of \$15.9 billion per year, or a total of \$476 billion over thirty years (about 33 percent less than its estimate for the 2009 plan). Those figures are solely for construction of new ships, the only type of costs reported in the Navy's shipbuilding plans. However, other activities that are typically funded from the Navy's budget accounts for ship construction—such as refueling current nuclear-powered aircraft carriers and outfitting new ships with various small pieces of equipment after

they have been built or delivered—will add about \$2 billion to the Navy’s average annual shipbuilding costs under the 2011 plan, in CBO’s estimation.

- Using its own models and assumptions, CBO estimates that the cost for new-ship construction under the 2011 plan will average \$19.0 billion per year, or a total of \$569 billion through 2040. Including the expense of refueling aircraft carriers as well as outfitting and postdelivery costs raises that average to \$20.9 billion per year, CBO estimates. (Those figures are about 25 percent lower than CBO’s estimates of analogous costs under the Navy’s 2009 plan.)
- CBO’s estimates of the costs of the 2011 shipbuilding plan are about 18 percent higher than the Navy’s estimates overall. That figure masks considerable variation over time, however: CBO’s estimates are 4 percent higher than the Navy’s for the first ten years of the plan, 13 percent higher for the following decade, and 37 percent higher for the final ten years of the plan.

Changes in Ship Requirements under the 2011 Plan

The report that the deputy secretary of defense submitted to the Congress on February 1, 2010, described the 313-ship fleet as the “baseline” for the Navy’s 2011 goals for ship construction over the next three decades. However, the report went on to describe changes to several categories of ships that would ultimately alter the total inventory goal (or requirement, in military parlance) for battle force ships:

- The number of aircraft carriers required to support the Navy’s operations was described as 10 to 11, compared with 11 in the previous plan.
- The 19 CG(X) future cruisers that the Navy had planned to build were cancelled, but the requirement for destroyers was raised from 69 to at least 88.
- The Navy’s four guided-missile submarines, which are due to reach the end of their service lives starting in 2026, would not be replaced under the current plan.
- The requirement for ballistic missile submarines appears likely to fall from 14 to 12, consistent with the recommendation in the Department of Defense’s (DoD’s) recent Nuclear Posture Review.
- The requirement for amphibious ships would increase from 31 to 33.
- The sea-basing ships of the Maritime Prepositioning Force (Future), or MPF(F)—which were intended to help the Navy support and supply onshore Marine operations entirely from the sea—were cancelled. However, the Navy plans to buy a few other ships to enhance existing maritime prepositioning squadrons.

- Current command ships, which provide command-and-control capabilities for fleet commanders, will have their service lives extended but will not be replaced when they retire in 2029.
- The planned fleet of joint high-speed vessels (JHSVs), which are intended to transport troops and equipment within a theater of operations, was expanded from 3 to 23 ships.

Those changes—some of which resulted from decisions made as part of DoD's recent Quadrennial Defense Review—would effectively increase the fleet requirement from 313 ships to at least 322 ships (see table 1).

Table 1
The Navy's Evolving Force-Structure Requirements

	Requirements for a 313-Ship Fleet in the Navy's 2009 Plan	Requirements Implied in the Navy's 2011 Plan
Aircraft Carriers	11	10-11
Submarines		
Attack	48	48
Guided missile	4	0
Ballistic missile	14	12
Large Surface Combatants		
Cruisers	19	0
Destroyers	69	88 ^a
Littoral Combat Ships	55	55
Amphibious Ships	31	33
MPF(F) Ships	12	0
Combat Logistics Ships	30	30
Support Ships		
Joint high-speed vessels	3	23
Other ^b	17	23 ^c
Total	313	322-323^a

Source: Congressional Budget Office.

Notes: MPF(F) = Maritime Prepositioning Force (Future)

a. The minimum implied requirement. If the requirement for destroyers ended up being higher than 88, the total requirement for the fleet could exceed 322 to 323 ships.

b. Includes command ships, logistics ships, salvage ships, ocean tugs, surveillance ships, and tenders.

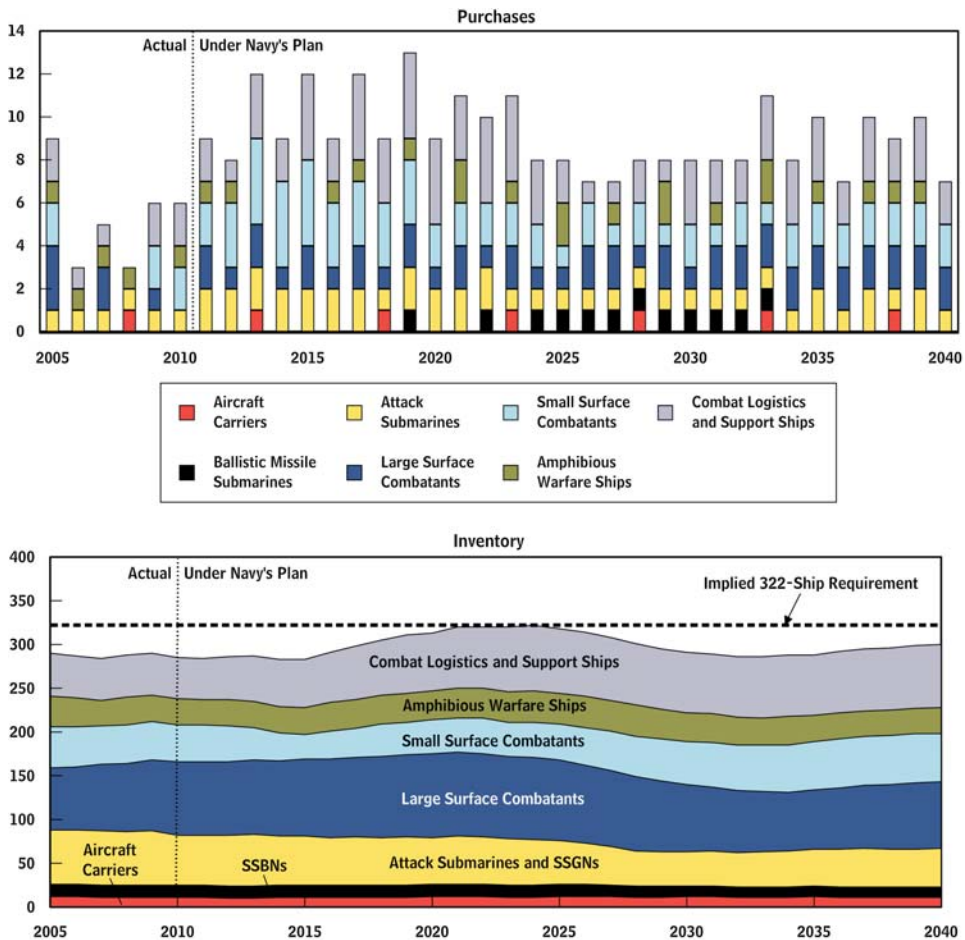
c. Includes three logistics ships and three scaled-down versions of the mobile landing platform ship to augment existing maritime prepositioning squadrons.

The 2011 shipbuilding report also stated that the Navy plans to conduct a new force-structure analysis to officially determine what the future ship requirement will be. (The previous force-structure analysis was conducted in 2005, and its results led to the 313-ship requirement.)

Ship Purchases and Inventory under the 2011 Plan

Under its latest long-term plan, the Navy would buy 9 ships in 2011 (see figure 1) and a total of 50 ships between 2011 and 2015 (the period covered by DoD’s current Future Years Defense Program, or FYDP). Thereafter, the Navy

Figure 1
Annual Ship Purchases and Inventories under the Navy’s 2011 Plan



Source: Congressional Budget Office based on data from the Department of the Navy.

Notes: The category of small surface combatants includes mine countermeasures ships. SSBNs = ballistic missile submarines; SSGNs = guided missile submarines.

would buy another 226 vessels through 2040—for a total of 276 ships over thirty years, or an average of 9.2 per year. The pace of shipbuilding would be higher than that in the near term, with the Navy purchasing an average of 10.2 ships annually between 2011 and 2020 as production of littoral combat ships increased to four per year and production of joint high-speed vessels rose to two per year.

If implemented as described above, the 2011 plan would cause the Navy to reach the 313-ship goal by 2020. However, the fleet would remain at or above that number for only seven years. After that, as older ships were retired faster than new ones entered the service, the fleet would fall to a low of 288 ships in 2032, before increasing to 301 ships by 2040. Thus, the plan would never achieve the goal of 322 or 323 ships implied in the Navy's report.⁴

Altogether, the current plan would buy 20 fewer ships over thirty years than the previous plan would have bought. In addition to the decline in total purchases, the composition of ship purchases—particularly the number of combat ships versus logistics and support vessels—has changed substantially with the latest plan.

Combat Ships

The Navy now envisions buying 198 combat ships—aircraft carriers, submarines, large and small surface combatants, and amphibious ships—between 2011 and 2040. That total represents a reduction of 40 ships, or 17 percent, from the 2009 plan.⁵ Those purchases would cause the Navy to fall short of its requirements for attack submarines, large surface combatants (cruisers and destroyers), and amphibious ships for parts of the 2011–2040 period, and those shortfalls would be greater than under the 2009 plan. For aircraft carriers, by contrast, the Navy would meet or exceed its new implied requirement of 10 to 11 carriers throughout the 2011–2040 period.

Attack Submarines

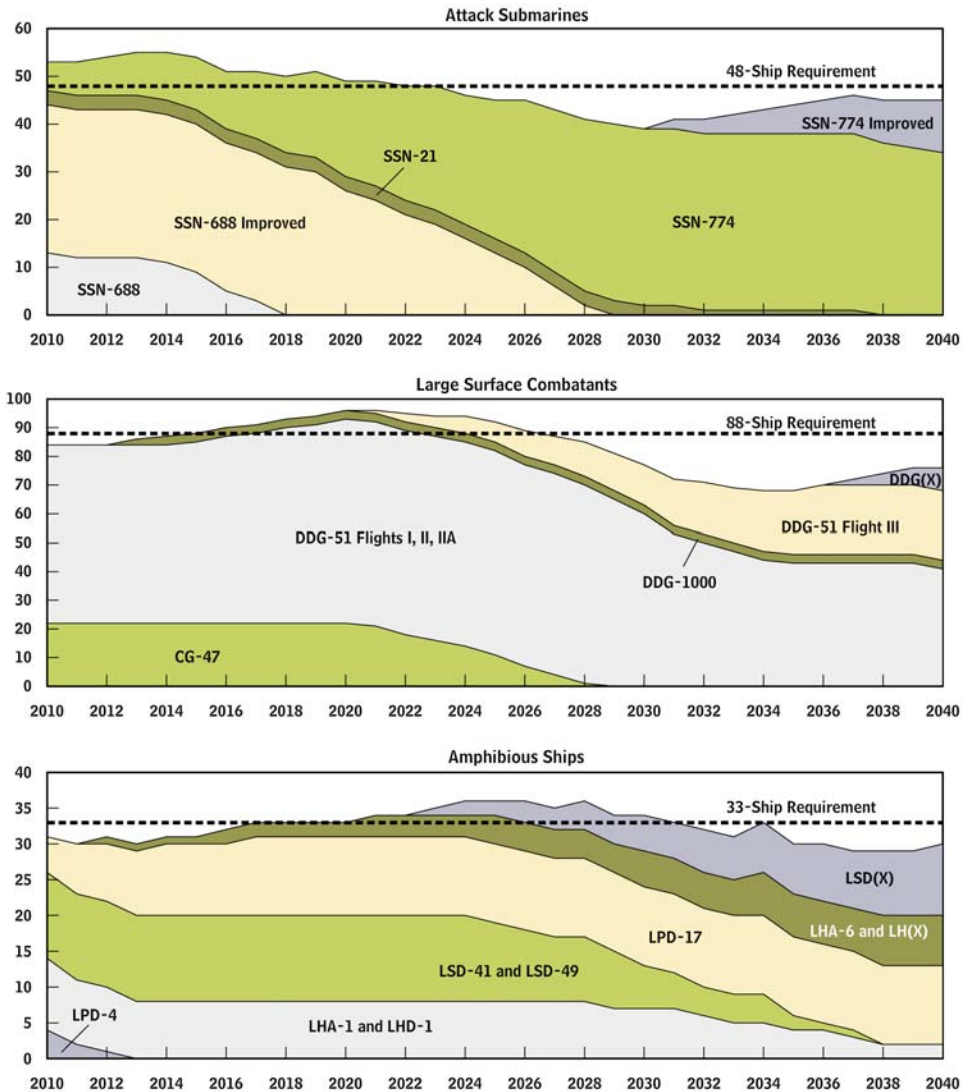
The 2011 ship plan would purchase 44 attack submarines (SSNs) through 2040, which would not be enough to keep the SSN force at or above the stated requirement of 48 after 2024 (see figure 2). The number of attack submarines would reach a low of 39 in 2030 and then increase to about 45 for the last five years of the plan. The reason for the decline is that in 2015, the Navy will begin retiring *Los Angeles*-class attack submarines (SSN-688s)—which were generally built at rates of three or four per year during the 1970s and 1980s—and will replace them with *Virginia*-class attack submarines (SSN-774s) and their successors at rates of one or two per year.

In comparison, the Navy's previous plan would have bought 9 more attack submarines (a total of 53) over thirty years. At its smallest, the SSN force under that plan would have numbered 41 submarines between 2028 and 2030. After that, the force would have grown, exceeding the 48-submarine requirement in 2034 and beyond.

Large Surface Combatants

The Navy has also decided not to develop the CG(X) future cruiser, which was supposed to replace existing cruisers that are due to be retired in the 2020s. Instead, the current shipbuilding plan calls for buying 50 destroyers, most of

Figure 2
Inventories versus Requirements for Selected Categories of Ships under the Navy’s 2011 Plan



Source: Congressional Budget Office.

Notes: SSN = attack submarine; DDG = guided-missile destroyer; CG = guided missile cruiser; LSD = dock landing ship; LHA, LHD, and LH(X) = amphibious assault ships; LPD = amphibious transport dock.

which would be based on the existing DDG-51 *Arleigh Burke*-class destroyers. Those purchases would allow the Navy’s inventory of large surface combatants to meet the implied requirement of at least 88 ships between 2015 and 2026. After that, however, the inventory of large surface combatants would fall to a low of 67 in 2034 before increasing to the mid-70s by 2040. As with the attack

submarine force, the decline in the number of large surface combatants would occur because the Navy would begin retiring *Ticonderoga*-class cruisers (CG-47s) in the early 2020s and *Arleigh Burke*-class destroyers (DDG-51s) in the late 2020s at higher rates than their replacements would be commissioned.

That plan for large surface combatants represents a major departure from the Navy's 2009 plan. The earlier proposal would have purchased 69 cruisers and destroyers over thirty years, which would have kept the service at or above its 88-ship requirement after 2015. In addition, the Navy has changed some of its assumptions about the service lives of large surface combatants. The 2009 plan assumed that all *Arleigh Burke*-class destroyers would have a service life of forty years, whereas the current plan assumes that only destroyers commissioned after 2000 will be in service that long.

Amphibious Ships

The current long-term plan calls for buying 20 amphibious ships through 2040, which would increase the amphibious force from 31 ships today to the new requirement of 33 by 2016. The force would stay at that size or greater through 2031 and then decline to 29 or 30 ships after 2034.

Under the 2009 plan, the Navy would also have purchased 20 amphibious ships over three decades, but it assumed that existing ships would stay in service longer. As a result, the 2009 plan would have kept the amphibious force at 32 or 33 ships for virtually the entire thirty-year period from 2009 to 2038.

The biggest recent change to amphibious ships is the cancellation of the planned 12-ship Maritime Prepositioning Force (Future) squadron. In its place, the Navy now plans to buy three support ships (in addition to three others bought in recent years) to augment existing maritime prepositioning squadrons (which store cargo at sea for use by Marine Corps and Navy units in various theaters). The three new ships are mobile landing platforms, which are intended to be similar to—but less capable than—the ones envisioned for the MPF(F) squadron.

Logistics and Support Ships

The Navy's 2011 plan envisions buying 78 logistics and support ships in the next three decades—20 more than in the 2009 plan, an increase of about one-third. Those purchases would include 19 new oilers (which provide fuel and other supplies to ships at sea) and 41 joint high-speed vessels (relatively small, fast ships with large cargo areas that are designed to move troops and equipment quickly within a theater of operations). According to the Navy, the JHSVs are in high demand by regional combatant commanders. They may also be useful for various other missions, such as engagement with friendly nations (through visits, training, and joint exercises) and some kinds of maritime security operations. The 2011 plan implies a new requirement for JHSVs of 23, compared with just 3 previously. Planned purchases exceed the new requirement because the JHSVs are expected to have a service life of only twenty years, so the Navy would need to begin buying replacements in 2030.

Once the initial JHSVs were built, the Navy would meet its implied requirements for most types of logistics and support ships through the end of the thirty-year period. The exception would be combat logistics ships: T-AKE dry cargo

ships, T-AO oilers, and AOE fast combat support ships. Those vessels operate with, or directly resupply, combat ships that are on deployment. The 2011 plan includes a requirement for 30 combat logistics ships, but the force would fall below that number after 2022, declining to as few as 24 ships in 2031 before increasing to 28 by 2040.

Under the 2009 plan, by comparison, the Navy would have purchased 58 support ships over thirty years, including 15 oilers and only 14 JHSV (7 initial ships and 7 replacements). Unlike with the current plan, however, the Navy would have kept its force of combat logistics ships at or above the required size of 30 continuously beginning in 2015.

Ship Costs under the 2011 Plan

In its new shipbuilding report, the Navy states that carrying out those planned purchases would cost an average of \$15.9 billion per year through 2040—33 percent less than the \$23.9 billion average that the Navy considered necessary to implement its 2009 plan (see figure 3).⁶ For estimating purposes, the Navy divided the time frame of the 2011 plan into three periods: near term (2011 to 2020), midterm (2021 to 2030), and far term (2031 to 2040). Using its own cost assumptions about Navy ships, which are explained in detail later in this study, CBO estimated the costs of the 2011 plan. Overall, CBO's estimates are about 18 percent higher than the Navy's, but the differences are smaller for the near term and much larger for the far term.

The Navy's Estimates

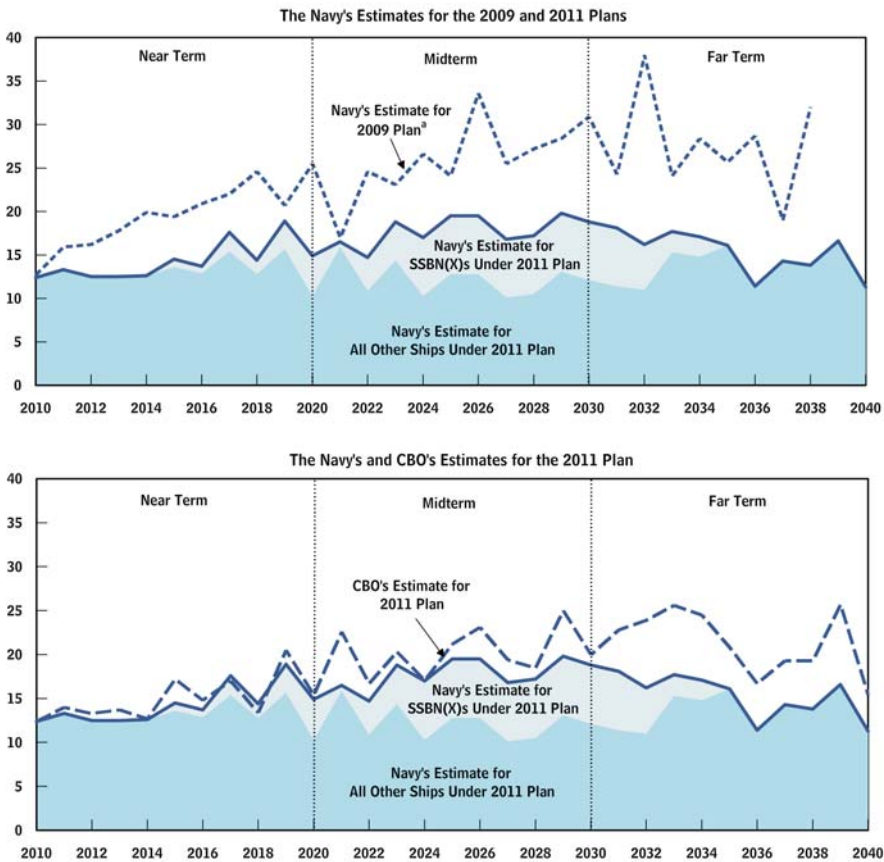
The 2011 shipbuilding report offers a frank discussion of the difficulties in estimating the types of capabilities that ships might need to have—and thus their costs—over the three estimating periods. The Navy says that in the near term, it will need an average of \$14.5 billion per year to build new ships and that “given known ship capability and quantity requirements, the cost estimates are judged to be accurate in this period.”⁷ In the midterm period, replacing the Navy's current *Ohio*-class ballistic missile submarines would drive up the average cost of new construction to \$17.9 billion per year. However, the Navy says that “the accuracy of the cost estimates diminishes for the force structure estimates in this timeframe.” In the far term, the Navy's estimated costs fall to an average of \$15.3 billion, although “the cost estimates are notional due to the uncertainty of business conditions affecting the shipbuilding industry.”

The Navy's 2009 shipbuilding plan excluded the cost of replacing the ballistic missile submarines (SSBNs). That decision was criticized by members of Congress and outside analysts. The current plan includes that cost—an estimated \$86 billion, according to the Navy—which is one of the biggest changes between the two plans. (The Navy's 2007 and 2008 shipbuilding plans included funding to replace the SSBNs, but the average cost per submarine was about half the Navy's current estimate.)⁸

As in the three previous shipbuilding plans, the Navy's latest cost estimates exclude other items that the service would need to fund from its budget accounts for ship construction:⁹

Figure 3
Estimates of Annual Spending for New-Ship Construction
under the Navy's 2009 and 2011 Plans

(billions of 2010 dollars)



Source: Congressional Budget Office based on data from the Department of the Navy.

Notes: The estimates shown here cover only construction of new ships; they exclude the costs of refueling existing nuclear-powered aircraft carriers as well as outfitting and postdelivery costs (which include the purchase of many smaller tools and pieces of equipment needed to operate a ship but not necessarily provided by the manufacturing shipyard as part of ship construction). SSBN(X)s = next-generation ballistic missile submarines.

a. Unlike the 2011 plan, the 2009 plan did not include the cost of building new ballistic missile submarines. To make the Navy's estimates for the two plans comparable, CBO added its 2009 estimate of the cost of the SSBN(X)s to the Navy's estimate for the 2009 plan.

- Refueling of nuclear-powered aircraft carriers, whose reactors are replaced midway through the ships' service lives; and
- Outfitting and postdelivery costs, which cover various activities and small items, such as tools and equipment, that a ship needs to become operational but that are not provided by the manufacturing shipyard.¹⁰ Over the past fifteen years, outfitting and postdelivery costs have equaled about 3.2 percent of the Navy's total budget for new construction and for refueling of submarines and aircraft carriers.

Including the costs of refueling carriers would increase the Navy's budget estimate for the 2011 plan to an average of \$17.2 billion a year (in 2010 dollars) over thirty years, CBO estimates.¹¹ Adding outfitting and postdelivery costs would raise that amount to \$17.8 billion per year (see table 2). Those figures are much higher than the average funding that the Navy has received in the past three decades—about \$15 billion per year for all items in its shipbuilding accounts.

CBO's Estimates

In CBO's estimation, the full cost of the 2011 shipbuilding plan would average \$21.0 billion over the 2011–2040 period—about 18 percent more than the Navy's estimate. CBO's numbers are only about 5 percent higher than the Navy's for the first ten years of the plan but nearly 37 percent higher for the last ten years of the plan. Adding up the various cost components, CBO estimates the following:

- Costs for new-ship construction alone would average \$19.0 billion per year, 20 percent greater than the Navy's figure of \$15.9 billion.
- New-ship construction plus the refueling of nuclear-powered aircraft carriers would cost an average of \$20.3 billion per year.
- Outfitting and postdelivery would add annual costs of about \$600 million, raising CBO's estimate to an average of \$20.9 billion per year through 2040 (see figure 4).

In the near term, CBO's and the Navy's cost estimates are similar because most of the ships that the Navy plans to buy are already under construction, and their costs are reasonably well-known. Looking farther ahead, CBO and the Navy made different assumptions about future ships that led to different cost estimates. In addition, as discussed below, CBO incorporated the fact that costs of labor and materials have traditionally grown much faster in the shipbuilding industry than in the economy as a whole, whereas the Navy does not appear to have accounted for the higher growth rate. That difference is much more pronounced in the last decade of the plan, after twenty years of compounded inflation, than in the early years.

Changes from the 2009 Plan

Despite its cost, the 2011 shipbuilding plan is significantly less expensive than the Navy's previous plan, which would have required average funding of \$27.8 billion a year (in 2010 dollars), CBO estimated. The reduction of \$6.9 billion

Table 2
Average Annual Shipbuilding Costs under the Navy's 2011 Plan, by Decade

	Near Term (2011–2020)	Midterm (2021–2030)	Far Term (2031–2040)	Total (2011–2040)
Navy's Estimates (Billions of 2010 dollars)				
New-Ship Construction	14.5	17.9	15.3	15.9
New-Ship Construction plus Refueling of Nuclear-Powered Aircraft Carriers ^a	15.9	19.1	16.6	17.2
New-Ship Construction, Refueling of Nuclear-Powered Aircraft Carriers, and Outfitting and Postdelivery Costs ^a	16.4	19.7	17.2	17.8
CBO's Estimates (Billions of 2010 dollars)				
New-Ship Construction	15.2	20.4	21.4	19.0
New-Ship Construction plus Refueling of Nuclear-Powered Aircraft Carriers	16.6	21.6	22.7	20.3
New-Ship Construction, Refueling of Nuclear-Powered Aircraft Carriers, and Outfitting and Postdelivery Costs	17.1	22.3	23.4	20.9
Memorandum:				
Additional Costs of Mission Packages for Littoral Combat Ships	0.3	0.3	0.2	0.3
Percentage Difference Between CBO's and the Navy's Estimates				
New-Ship Construction	5	14	40	20
New-Ship Construction plus Refueling of Nuclear-Powered Aircraft Carriers	4	13	37	18
New-Ship Construction, Refueling of Nuclear-Powered Aircraft Carriers, and Outfitting and Postdelivery Costs	4	13	37	18

Source: Congressional Budget Office based on data from the Department of the Navy.

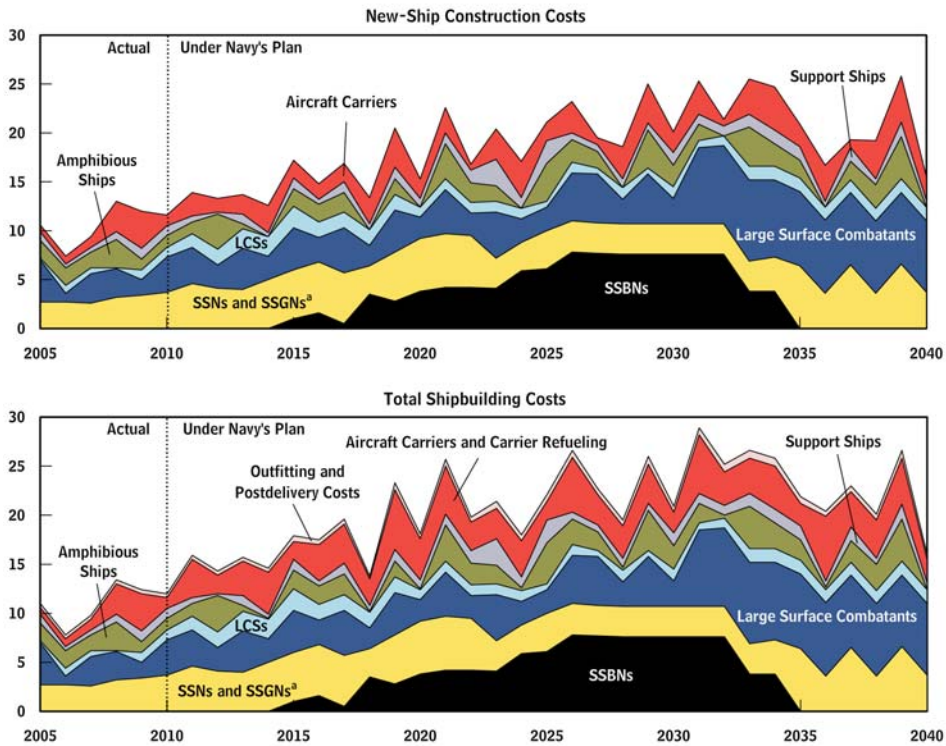
Notes: Actual costs for the Navy's shipbuilding accounts over the past thirty years averaged \$14.8 billion per year for all items. More recently, between 2005 and 2010, costs for new-ship construction averaged \$12.0 billion per year; new-ship construction and nuclear refuelings averaged \$12.5 billion; and new-ship construction, nuclear refuelings, and outfitting and postdelivery averaged \$12.9 billion per year.

Outfitting and postdelivery costs include the purchase of many smaller tools and pieces of equipment needed to operate a ship but not necessarily provided by the manufacturing shipyard as part of ship construction.

a. These numbers represent the Navy's estimate for new-ship construction plus CBO's estimates for additional costs (including an average of about \$0.2 billion per year to extend the service lives of existing air-cushion landing craft, known as LCACs, and buy new ones as well).

Figure 4
CBO’s Estimate of Annual Costs Implied by the Navy’s 2011 Plan

(billions of 2010 dollars)



Source: Congressional Budget Office.

Notes: New-ship construction costs exclude the costs of refueling existing nuclear-powered aircraft carriers as well as outfitting and postdelivery costs (which include the purchase of many smaller tools and pieces of equipment needed to operate a ship but not necessarily provided by the manufacturing shipyard as part of ship construction). Total shipbuilding costs include those amounts.

SSNs = attack submarines; SSGNs = guided missile submarines; SSBNs = ballistic missile submarines; LCSs = littoral combat ships.

a. Costs for SSGNs refer only to the 2005–2010 period.

per year—or about 25 percent—in the full cost of the current plan stems mainly from three factors:

- *Changes in the items included in CBO’s estimates*—For its estimate of the costs of the 2011 plan, CBO excluded several activities or items that were included in its estimate of the previous plan: modernization of existing cruisers and destroyers, refueling of nuclear-powered submarines, and mission modules for littoral combat ships. The Navy

pays for those things from budget accounts other than the two shipbuilding accounts, and CBO excluded them to bring its current estimate more in line with the expected contents of the shipbuilding accounts.¹² Removing those costs is responsible for about \$800 million of the difference in CBO's estimates of the average annual costs of the 2009 and 2011 plans.

- *Changes in the number and types of ships that the Navy plans to buy*—The 2011 plan envisions purchasing 20 fewer ships over thirty years than the 2009 plan did (276 instead of 296). In addition, compared with the previous plan, more of the new ships would be support ships, which cost an average of about \$400 million apiece, and fewer would be combat ships, which have an average cost of about \$3 billion each. Those changes account for about half of the remaining \$6 billion difference in the average annual costs of the two plans.
- *Effects on the per-ship cost of various classes*—Since 2009, the Navy has altered a number of assumptions about the sizes and capabilities of key shipbuilding programs. Most notably, the current plan assumes that the submarines intended to replace today's *Virginia*-class submarines will be about the same size as their predecessors, whereas the 2009 plan assumed that the replacements would be about 50 percent larger than *Virginia*-class submarines. Likewise, the Navy now assumes that the LH(X) and LSD(X)—replacements for existing amphibious assault ships and dock landing ships, respectively—will be smaller than assumed in the 2009 plan. In addition, the cancellation of the CG(X) and the planned procurement of more DDG-51s mean that the Navy would buy smaller, less expensive surface combatants under the 2011 plan than under the 2009 plan. Construction costs of DDG-51s are also more predictable, because the manufacturing shipyards have already built 62 similar ships. Together, those changes and several smaller changes in assumptions account for the other half of the remaining \$6 billion difference in average yearly costs of the two plans.

Inflation in Shipbuilding

An important part of the Navy's and CBO's estimates is the effect of increases in the price of labor and materials on the cost of building naval ships. DoD has an overall estimate of future inflation (known as an inflator) that it uses to project increases in the costs of its procurement programs. However, according to the Navy, DoD's inflator is lower than the actual inflation that occurred in the naval shipbuilding industry in the past decade. The Navy provided CBO with a shipbuilding index that reflects the growth in labor and materials costs that the industry has experienced in the past and that the Navy expects will continue for the next several years. The Navy developed its shipbuilding index using a weighted composite of annual percentage changes in the costs of labor and materials specific to shipbuilding, based on past labor data from shipyards, advance pricing agreements, vendor surveys, and projections of the cost of materials from the Bureau of Labor Statistics. From 2011 through at least 2017, that index is projected to grow at an average rate of 3.3 percent a year,

compared with 1.4 percent a year for the gross domestic product (GDP) price index, which measures the prices of final goods and services in the economy. That difference implies that annual inflation will be 1.9 percentage points higher for shipbuilding programs during that period than for the economy as a whole (see figure 5).¹³

Figure 5
Annual Rates of Shipbuilding Inflation and GDP Price Inflation

(percent)



Sources: Congressional Budget Office; Department of the Navy.

Note: GDP = gross domestic product.

The Navy incorporated that higher rate of inflation into its budget request for 2011 and into the associated FYDP. In projecting costs for the 2011 shipbuilding plan, however, the Navy did not assume that the higher inflation rate would drive the costs of future ship programs. Instead, it assumed that, in constant dollars, a ship that cost \$2.5 billion to build in 2011 would cost the same to build in 2030. The estimates in its 2009 plan, by contrast, did factor in higher shipbuilding inflation. As a result, many of the Navy’s current estimates of unit (per-ship) costs are lower than its estimates under the 2009 plan for the same ships.

In its estimates, CBO assumed that the higher inflation rate for shipbuilding would continue for the next thirty years—partly because price growth in the shipbuilding industry has exceeded general inflation for most of the past three decades and partly because CBO lacked an analytic basis for determining when and how the difference between the two growth rates would disappear. Specifically, CBO assumed that shipbuilding inflation would outpace inflation as measured by the GDP price index by 1.0 percentage point between 2011 and 2017 and by 1.5 percentage points thereafter. Thus, CBO estimated that a ship costing \$2.5 billion to build in 2011 would cost \$3.6 billion (in 2010 dollars) to build in 2030. However, shipbuilding costs cannot continue to grow faster than the costs of goods and services in the economy as a whole

indefinitely. If that were to happen, the price of ships would eventually outstrip the Navy's ability to pay for them, even in very small numbers.

Conclusion

In short, the Navy's new plan appears to increase the required size of the fleet compared with earlier plans, while reducing the number of combat ships to be purchased—and thus costs for ship construction—over the next three decades. Despite those reductions, the total costs of carrying out the 2011 plan would be much higher than the funding levels that the Navy has received in recent years. If the Navy receives the same amount of funding for ship construction in the next thirty years as it has over the past three decades—an average of about \$15 billion a year in 2010 dollars—it will not be able to afford the purchases in the 2011 plan. Already short its requirements across a number of ship categories, the Navy is likely to face even greater shortfalls as the full implications of the overall federal fiscal situation, DoD funding requirements in general, and the Navy's gaps in its shipbuilding weigh on its ability to recapitalize its fleet.

Notes

1. The opinions in this article are the author's alone and do not represent those of the Congressional Budget Office or the U.S. Congress.
2. Department of the Navy, *Report to Congress on Annual Long-Range Plan for Construction of Naval Vessels for FY 2007* (February 2006). Battle force ships comprise aircraft carriers, submarines, surface combatants, amphibious ships, and some logistics and support ships.
3. Department of the Navy, *Report to Congress on Annual Long-Range Plan for Construction of Naval Vessels for FY 2009* (February 2008), and *Report to Congress on Annual Long-Range Plan for Construction of Naval Vessels for FY 2011* (February 2010).
4. If the notional service life of ships in the fleet is thirty-five years, the Navy needs to purchase an average of 9.2 ships per year to maintain a 322-ship fleet. Over the past eighteen years, however, the Navy has acquired ships at the rate of 6.4 per year, leaving it about 57 ships short of the number needed to sustain a 322-ship fleet.
5. In characterizing the 2009 plan, CBO classified the plan's two MPF(F) aviation platforms as combat ships and the rest of the MPF(F) squadron as support ships.
6. Like most other amounts in this study, those numbers are in 2010 dollars. The Navy reported the costs of the 2009 plan in 2007 dollars and excluded funding for the next generation of ballistic missile submarines. CBO added its 2009 estimate for those submarines to the Navy's number and inflated the total to 2010 dollars.
7. The statements quoted in this paragraph come from Department of the Navy, *Report to Congress on Annual Long-Range Plan for Construction of Naval Vessels for FY 2011*, pp. 9–10.
8. See Congressional Budget Office, "Resource Implications of the Navy's Fiscal Year 2009 Shipbuilding Plan," attachment to a letter to the Honorable Gene Taylor (June 9, 2008), p. 28.
9. The Navy funds shipbuilding through two accounts: Ship Construction, Navy (commonly called the SCN account) and the National Defense Sealift Fund, which, among other things, includes funding for procurement of some types of logistics ships.
10. Outfitting costs do not include the costs of fuel, food, or ammunition.
11. That number represents the Navy's estimate for new construction plus CBO's estimate for refueling carriers. (It also includes CBO's estimate of the costs to extend the service lives of existing air-cushion landing craft—known as LCACs—which average about \$200 million per year.) In 2010, the Navy transferred funding for refueling nuclear-powered

submarines to a procurement account (Other Procurement, Navy, or OPN) that is not used to purchase ships. Thus, CBO did not include the refueling costs for submarines in its shipbuilding estimates.

12. Even so, CBO's estimate does not correspond exactly to what is included in those accounts; for example, CBO excludes the costs of service craft (such as tugboats, barges, and floating dry docks) as well as other small items that are purchased through the shipbuilding accounts. In all, the excluded items have represented less than 1 percent of the Navy's shipbuilding budget in the past few years.
13. That comparison represents a change from CBO's report on the 2009 plan (Congressional Budget Office, "Resource Implications of the Navy's Fiscal Year 2009 Shipbuilding Plan"), which compared shipbuilding inflation with inflation in DoD's procurement programs in general. Using the GDP price index as the basis for comparison is consistent with CBO's analyses in other sectors, such as health care, and reflects the true cost to the taxpayer of higher inflation in naval shipbuilding.

Programs vs. Resources: Some Options for the Navy

Ronald O'Rourke
Specialist in Naval Affairs
Congressional Research Service

The Navy, like other U.S. military services, faces a challenge in funding various program goals within a budget that is expected to experience little or no real growth. This challenge will be compounded if the change in the nation's projected budget and debt situation that has developed since the 2008 financial crisis leads to a real decline in the Department of Defense (DoD) budget.

The total number of ships in the Navy is to be bolstered over the next decade by the entry into service of substantial numbers of relatively inexpensive Littoral Combat Ships (LCSs) and Joint High Speed Vessels (JHSVs). In addition, the unit capability of Navy ships, aircraft, and other systems will increase in coming years as a result of the introduction of new platforms and technologies. If, however, the Navy's budget does not increase in real terms, the Navy faces a longer-term prospect of a decline in ship and aircraft numbers that would offset at least some of the gains realized in unit capability. The resulting fleet could have a rich collection of capabilities for performing various missions but lack the capacity (i.e., numbers) for performing those missions simultaneously in all desired geographic areas.

If Navy budget pressures are compounded by a real decline in the DoD budget, policy makers could face difficult choices to fund programs for some kinds of Navy capabilities but not others. If so, the resulting fleet could have gaps in capability as well as capacity. These developments could occur at a time when the United States faces various international security challenges, including a potentially significant challenge from a modernized Chinese military capable of acting as a maritime antiaccess force and otherwise influencing events in the western Pacific.

Although the Navy forms only a part of the U.S. military, which in turn forms only a part of the nation's overall tool kit for defending its interests and pursuing its policy goals, a Navy with insufficient ability to maintain desired levels of forward-deployed presence and engagement, to respond to contingencies and contain crises, or to conduct combat operations of certain kinds could contribute to a situation in which American policy makers might need to prioritize key U.S. interests and goals and reconsider the national strategy for defending those interests and pursuing those goals.

The Navy's Programs-vs.-Resources Situation

Shipbuilding accounts for only 35 percent or so of Department of the Navy (DON) procurement funding and only 10 percent or so of DON's entire baseline budget.¹ Even so, examining funding pressures in the Navy's shipbuilding account can be a useful means of gaining an understanding of the service's

overall programs-vs.-resources situation, for two reasons. First, the Navy balances funding demands for shipbuilding against those for other programs, so funding pressures in the shipbuilding account are likely to be mirrored by similar pressures in other accounts. Second, ships are central to the Navy: it is difficult to have a navy without them; many of the Navy's manned aircraft, unmanned vehicles, and weapons are based on them; and much of the Navy's other spending funds their basing, crewing, operation, maintenance, and modernization.

The Navy's five-year (fiscal year [FY] 2011–FY 2015) shipbuilding plan includes a total of fifty ships, or an average of ten per year. Such a rate represents an increase over the single-digit numbers of ships that have been procured for the last eighteen years (FY 1993–FY 2010) and is a little above the steady-state replacement rate for a fleet with 313 ships (the Navy's force-level goal), which is about 8.9 ships per year, assuming a weighted average ship life of thirty-five years.

The Navy's ability to assemble a five-year plan for fifty ships within available resources does not, however, necessarily mean that the service has solved its long-term challenge of shipbuilding affordability. The Navy was able to fund this fifty-ship plan in part because twenty-five of those ships—half the total—are relatively inexpensive LCSs and JHSVs. Since LCSs and JHSVs are to account eventually for about 25 percent of the Navy's planned 313-ship fleet, they are temporarily overrepresented in the Navy's shipbuilding plan.² Beyond FY 2015, as the LCS and JHSV programs run their courses and are procured in smaller annual quantities, and particularly as the Navy enters the period for procuring twelve replacement ballistic-missile submarines, or SSBN(X)s, the amount of funding needed for an average of ten ships per year will increase substantially. The Navy preliminarily estimates the unit procurement cost of the SSBN(X) at six to seven billion dollars in constant fiscal-year 2011 dollars—a figure equivalent to roughly half the Navy's annual budget for new ship construction. The thirty-year shipbuilding plan acknowledges the pressure the SSBN(X) program will place on the shipbuilding budget and shows reduced rates of shipbuilding during the fifteen years (FY 2019–FY 2033) when the twelve boats are to be procured.

The Navy's thirty-year (FY 2011–FY 2040) shipbuilding plan does not include enough ships to support fully all elements of the Navy's planned 313-ship fleet over the long run. The Navy projects that if all 276 ships in the plan are bought, the total number of ships in fleet will increase from 284 in FY 2011 to 320 in FY 2024, in part due to the entry into service of substantial numbers of LCSs and JHSVs; then fall below 313 in 2027, reaching a minimum of 288 in 2032 and 2033; and then increase to 301 by the end of the thirty-year period. The Navy projects that the fleet would have significant shortfalls during the latter years of the plan in two types of combat ships—attack submarines and cruisers/destroyers:

- The attack submarine shortfall, which in previous thirty-year plans was “bathtub-shaped” (i.e., the total number of attack submarines was projected to fall below the force-level goal of forty-eight boats in the 2020s and then get back up to forty-eight by the early 2030s), is now

projected to be more open-ended. That is, under the new thirty-year plan the attack submarine force is not projected to get back up to forty-eight boats by the end of the thirty-year period.

- The previous (FY 2009–FY 2038) thirty-year shipbuilding plan did not show a shortfall in cruisers and destroyers. The new (FY 2011–FY 2040) plan shows the cruiser-destroyer fleet falling below the eighty-eight-ship force-level goal for these ships to a low of sixty-seven in 2034 before increasing to the middle seventies by the end of the thirty-year period. The eighty-eight-ship goal, like other elements of the 313-ship plan, dates to 2006. Some observers believe it should be increased to some higher number to reflect increased demands for cruisers and destroyers resulting from the administration's plan, announced in September 2009, for using ballistic missile defense (BMD)–capable Aegis cruisers and destroyers for European BMD.

It is not clear whether the Navy will be able to procure all 276 ships shown in the thirty-year plan, for three reasons.

- Several Navy shipbuilding programs have experienced significant cost growth in recent years. If some of the ships in the plan turn out to be more expensive than estimated, the projected funding profile in the plan will likely be insufficient to build all the ships intended. Programs that might be considered risks for cost growth include the *Gerald R. Ford* (CVN 78) class of aircraft carriers (first ship procured in FY 2008); the Flight III *Arleigh Burke* (DDG 51)–class Aegis destroyer (first ship to be procured FY 2016); the LSD(X) amphibious ship (first ship to be procured FY 2017); and the SSBN(X) (first ship to be procured FY 2019). The Congressional Budget Office (CBO) estimates for all these ships are higher than the Navy estimates.³
- The shipbuilding funding profile shown in the plan presumes the availability of an additional two billion dollars or so per year in constant dollars in the middle years of the plan—when the Navy plans to procure the twelve SSBN(X)s. There is little in the Navy's report on the plan, however, to explain how this “hump” in shipbuilding funding will be realized, particularly in the context of a budget that experiences little or no real growth. If this hump in funding were not realized, the Navy might not be able to fund numerous ships now shown in the plan. A draft version of the thirty-year plan that was reported by the defense trade press in December 2009 showed a scenario in which the shipbuilding budget was not increased to pay for the twelve planned SSBN(X)s. In that scenario the total number of ships built over the thirty-year plan dropped to 222 and the total number of ships in the Navy to declined to 237 by the end of the thirty-year period.⁴
- As a result of the financial crisis of 2008 and subsequent developments, the nation is facing significant projected budget deficits and significant projected growth in the debt-to-GDP (gross domestic product) ratio. CBO's March 2010 estimate of the administration's FY 2011 budget

submission shows annual deficits averaging 5.2 percent of GDP from FY 2011 through 2020 and debt as a percentage of GDP increasing from 63.2 percent in FY 2010 to 90 percent in 2020.⁵ Given that the DoD budget accounts for roughly half of discretionary federal spending, if policy makers decide to take steps to reduce substantially projected deficits and growth in the debt-to-GDP ratio, the DoD budget could be reduced in real terms. This could cause a reduction in the Navy's budget, which could lead to shipbuilding budgets that are smaller than what would remain in the thirty-year plan without the above-discussed two-billion-dollar-per-year hump.

If the Navy is not able to afford all 276 ships in the thirty-year shipbuilding plan, the total number of ships in the fleet would, other things held equal, be less than that shown in the thirty-year plan. A fleet below three hundred ships, perhaps closer to 250 ships, is a possibility. The Navy might also experience shortfalls in some aircraft types, such as strike fighters (where a shortfall is already projected).

Potential Implications of a Smaller Fleet

Although tomorrow's ships will in many cases have more individual capability than today's, a fleet of fewer than three hundred ships, and perhaps closer to 250, could be hard-pressed to meet regional combatant commander requests for forward-deployed Navy ships. If limits on resources lead not only to reduced ship and aircraft numbers but also to smaller investments in capabilities, the Navy's margin of superiority in certain high-end combat scenarios could be reduced, which could increase operational risks in conflict situations.

The implications of a Navy that is substantially below its force-level goals and perhaps lacking certain desired mission capabilities could be particularly significant in the Pacific. U.S. Navy capabilities in that region could affect the likelihood or possible outcome of a potential U.S.-Chinese military conflict in the Pacific over Taiwan or some other issue. Some observers consider such a conflict to be very unlikely, in part because of significant U.S.-Chinese economic linkages and the tremendous damage that such a conflict could cause on both sides. In the absence of such a conflict, the U.S.-Chinese military balance in the Pacific could influence day-to-day choices made by other Pacific countries, including choices on whether to align their policies more closely with China or the United States. In this sense, decisions on U.S. Navy programs for countering improved Chinese maritime military forces could influence the political evolution of the Pacific, which in turn could affect the ability of the United States to pursue goals relating to various policy issues, both in the Pacific and elsewhere.

Options for Addressing This Situation

Options for dealing with the prospect described above include but are not limited to the following. The options are not mutually exclusive, are in some cases overlapping, and are presented in no particular order. Each option poses either feasibility challenges or potential downsides.

- Increase DoD's budget in real terms.
- Increase the Navy's share of DoD's budget.
- Find more Navy cost-saving efficiencies.
- Exploit joint Navy–Air Force combat effectiveness, particularly in the Pacific, through the Air-Sea Battle concept.
- Reduce the cost of Navy shipbuilding programs.
- Shift to a more highly distributed fleet architecture.
- Extend the service lives of in-service ships and aircraft.
- Increase the use of forward homeporting, multiple crewing, and long-duration deployments with crew rotation.
- Increase the use of unmanned vehicles to augment or substitute for manned ships and aircraft.
- Reduce levels of forward deployments in some regions while maintaining them in others.
- Transfer Navy responsibilities to other U.S. military forces or federal agencies.
- Transfer “low end” Navy missions to allied and partner navies and coast guards, concentrating available Navy resources on programs for “high end” combat capabilities for countering improved Chinese maritime military forces.
- Encourage allies and partners to do more in terms of fielding naval and other forces for countering Chinese forces.

Each of these is discussed very briefly below.

Increase DoD's Budget in Real Terms

The change in projected budget deficits and the projected debt-to-GDP ratio that has developed since the 2008 financial crisis make this option difficult to implement. To the contrary, as mentioned earlier, given DoD's share of discretionary federal spending, if policy makers take steps to reduce substantially projected budget deficits and the projected increase in the debt-to-GDP ratio, DoD's budget might be reduced rather than increased in real terms.

Increase the Navy's Share of DoD's Budget

Supporters of naval forces could seek to open a debate about the value of sea-based forces relative to land-based forces in defending the nation's interests in coming years, with the aim of shifting a greater share of DoD's budget to the former. Supporters of such a shift could argue that American access to overseas land bases in coming years could be limited or uncertain; that those bases are fixed in location and thus highly vulnerable to attack by theater-range ballistic missiles and other forces; and that U.S. forces based on foreign soil could face host-nation limits on how they are used. Supporters could argue that a large percentage of the world's population and economic activity is located in littoral

areas; that sea-based forces can project power into and otherwise influence events in littoral areas while operating in international waters without permission from other countries; that sea-based forces can use the sea as a medium of maneuver to avoid detection, targeting, or attack; and that sea-based forces can easily move closer to shore or back over the horizon, as needed, to achieve desired political effects. They could also argue that China's military modernization effort will make the Pacific a key U.S. military operating area in coming years and that the geography of the Pacific makes it a primarily maritime and aerospace theater.

As compelling as these arguments might appear to supporters of naval forces, attempts to shift a greater share of DoD's budget to naval forces could face strong headwinds. Current U.S. military operations in Iraq and Afghanistan tend to focus attention on the value and needs of the ground forces rather than of the Navy. The Navy's emphasis in recent years on its contributions in Iraq and Afghanistan might actually reinforce this dynamic. While operations in Iraq appear to be winding down, those in Afghanistan may continue for several more years, extending the focus on ground forces for some time. Even when operations in Afghanistan wind down, advocates of land-based forces could argue that weak or instable governments in other countries of interest to the United States make it possible, if not likely, that the United States will engage in similar operations in the future. Navy leaders in recent years have been stressing the fleet's value in engagement, partner capacity building, and humanitarian assistance and disaster response (HADR) operations. Emphasizing these operations helps demonstrate the Navy's day-to-day relevance but does little to make a case for shifting to it a greater share of DoD's budget, because such operations do not appear to require investment in expensive, high-end combat capabilities. A stronger case for such investments might be made by placing more stress on the need to counter improved Chinese military forces in coming years, but the executive branch appears averse to putting China nearer the center of the public discussion of American defense plans and programs.

Last, it can be noted that even gaining a larger share of DoD's budget might not result in a substantial increase in funding for Navy programs if the DoD's budget is at the same time reduced.

Find More Navy Cost-Saving Efficiencies

The Navy in recent years has implemented a number of cost-saving efficiency measures. Among other things, it has closed and realigned bases, reformed its approach to maintenance, implemented energy-saving initiatives ashore and on ships, and reduced its end strength. The Navy continues to look for additional cost-saving efficiencies and will likely find some, but it is not clear that such initiatives by themselves will be sufficient to resolve the service's programs-vs.-resources situation fully. Future reductions in end strength may be difficult to achieve, given the reductions the Navy has already made, and savings from past end-strength reductions have been offset by increases in per capita personnel costs.

Exploit Joint Navy–Air Force Combat Effectiveness through Air-Sea Battle

DoD's final report on the 2010 Quadrennial Defense Review states, in its section on deterring and defeating aggression in antiaccess environments, that

the Air Force and Navy together are developing a new joint air-sea battle concept for defeating adversaries across the range of military operations, including adversaries equipped with sophisticated antiaccess and area denial capabilities. The concept will address how air and naval forces will integrate capabilities across all operational domains—air, sea, land, space, and cyberspace—to counter growing challenges to U.S. freedom of action. As it matures, the concept will also help guide the development of future capabilities needed for effective power projection operations.⁶

In theory, joint efficiencies created through closer integration of Navy and Air Force operations under the Air-Sea Battle concept could reduce requirements for certain Navy and Air Forces assets. It is not clear, however, how much effect Air-Sea Battle will have in this regard. It can also be noted that development of the concept could conceivably *increase* requirements for certain Navy and Air Force assets by uncovering gaps in joint capabilities.

Reduce Cost of Navy Shipbuilding Programs

The Navy in recent years has reduced the cost of its shipbuilding programs by, among other things, incorporating significant numbers of LCSs and JHSVs in the 313-ship plan, canceling the planned CG(X) cruiser in favor of the Flight-III DDG 51 destroyer, and reducing numbers and capabilities of new maritime-prepositioning ships. The Navy is also seeking to reduce shipbuilding costs through changes in acquisition strategy and ship design.⁷ Some observers might advocate further reducing costs by changing the Navy's planned shipbuilding mix to include a larger number of less expensive (but less capable) ships.⁸

Shift to a More Highly Distributed Fleet Architecture

Some observers in recent years have advocated shifting to a more highly distributed fleet architecture featuring a reduced reliance on carriers and other large ships and an increased reliance on smaller ships, arguing that such an architecture could generate comparable aggregate fleet capability at lower cost and be more effective at confounding Chinese maritime antiaccess capabilities.⁹ Skeptics, including supporters of the currently planned fleet architecture, question both of these arguments.

Extend Service Lives of In-Service Ships and Aircraft

One option for mitigating the force-structure effects of reduced ship and aircraft procurement rates would be to extend the lives of in-service ships and aircraft. Potential candidates would include cruisers, destroyers, and attack submarines. The thirty-year plan contemplates operating the twenty-two *Ticonderoga* (CG 47)–class Aegis cruisers and twenty-eight Flight I/II *Arleigh Burke*–class Aegis destroyers to age thirty-five and the growing number of Flight-IIA DDG 51s to age forty. A potential goal for a service-life-extension program for these ships would be to increase all their operating lives to forty-five years. The thirty-year

plan contemplates operating the final twenty-three submarines of the *Los Angeles* (SSN 688) class (i.e., the Improved *Los Angeles*-class boats) and the three *Seawolf* (SSN 21)-class boats to age thirty-three. A potential service-life-extension goal for these ships would be to increase that figure by ten or more years, which would require nuclear refuelings.

The feasibility and costs of such service-life extensions would need to be examined. Feasibility could be a particular issue for the attack submarines, given limits on pressure-hull life. The limited growth margins of the existing cruisers and destroyers could also pose challenges. Ships identified for service-life extension would likely need enhanced maintenance in coming years to ensure that they are in good enough condition at the end of their normal service lives to have them extended, which would increase maintenance costs.

Increase Use of Forward Homeporting, Multiple Crewing, and “Sea Swap”

Another option for mitigating the effects of reduced ship force structure would be to make greater use of forward homeporting, multiple crewing, and long-duration deployments with crew rotation (an initiative known as “Sea Swap”). More forward homeporting could involve shifting additional attack submarines to Hawaii and Guam; forward-homeporting BMD-capable Aegis ships in Europe (to reduce the number of such ships needed for sustaining BMD operations in that region); moving additional surface ships to such existing homeporting locations as Hawaii, Guam, Japan, and Bahrain; and perhaps establishing new forward-homeporting locations in such places as Singapore, Australia, or India. Surface ships would be candidates for both multiple crewing and Sea Swap, attack submarines for multiple crewing.

Additional forward homeporting, multiple crewing, and Sea Swap could help a fleet with fewer ships maintain desired levels of day-to-day forward deployments but might do little to mitigate shortfalls in required numbers of ships for wartime operations. Forward homeporting in foreign countries carries a possibility of host-nation limits on how the ships are used and a risk of sudden eviction following shifts in host-nation policy, particularly those that might result from changes in government. Multiple crewing and Sea Swap would likely increase ship operation and support costs and more quickly consume ship service lives, which could eventually make it more difficult to maintain force levels.

Increase Use of Unmanned Vehicles

The Navy is currently developing and deploying a variety of air, surface, and underwater unmanned vehicles (UVs). In theory, UVs might reduce required numbers of ships and manned aircraft by substituting for those platforms in certain missions or by extending their capabilities. UVs, however, are more suitable for some missions than others; have their own development, procurement, operation, and support costs (including for remote human operators); and pose their own development risks, particularly in the case of UVs intended for autonomous operations.

Reduce Levels of Forward Deployments in Some Regions

Another option would be to reduce levels of naval forward deployments in some regions while maintaining desired levels in others. One approach would be to maintain naval deployments in the Pacific, so as to counter improved Chinese maritime military forces, while reducing forward deployments elsewhere. The administration's new plan for European BMD operations would make it more difficult at the margin to implement that particular possibility, since it will require increasing the number of Aegis ships deployed to European waters. More generally, reducing naval forward deployments to some regions could reduce the deterrence of potential aggressors and the reassurance of allies, Navy engagement and partner capacity-building operations, and ability to respond quickly to contingencies in those regions. It could also encourage perceptions, both in those regions and elsewhere, of the United States as a declining power, which could make it more difficult to achieve U.S. policy goals of various kinds.¹⁰

Transfer Navy Responsibilities to Other U.S. Forces and Agencies

In theory, there are several possibilities for transferring Navy responsibilities to other U.S. military services or federal agencies.¹¹ Implementing these options might reduce Navy funding requirements but might not necessarily improve the service's programs-vs.-resources challenge if the funding for meeting these responsibilities were shifted out of the Navy's budget along with the responsibilities themselves. Skeptics might argue that these responsibilities currently reside with the Navy because they are most cost-effectively performed by the Navy and that transferring them consequently could increase government costs or result in these tasks being carried out less fully.

Another option that has been mentioned would be to reduce or eliminate the amphibious-assault mission, on the grounds that it is unlikely to be needed in the future. Opponents would argue that it is difficult to predict the kinds of operations the United States might need to conduct in the future, that amphibious ships are valuable for engagement and partner capacity building, and that these ships and associated ship-to-shore transfer capabilities are especially useful for humanitarian assistance and disaster relief operations, which are not only of humanitarian value but also generate significant political benefits for the United States.

Transfer Low-End Navy Missions to Allies and Partners

Another option would be to transfer such missions as engagement, partner capacity building, and maritime security (including antipiracy operations)—to allies and partners, on the grounds that allied and partner navies and coast guards are capable of performing them. Under this option, the Navy would concentrate its resources more heavily on "high end" combat capabilities, such as those required for countering improved Chinese maritime forces. Whether allied or partner navies would be willing to take on new or expanded responsibilities for low-end operations is uncertain. Also, transferring them to other

navies and coast guards might free up only a relatively modest amount of Navy funding and would reduce the political and interoperability benefits the United States currently receives from performing low-end missions.

Encourage Allies and Partners to Do More to Counter Improved Chinese Forces

One more option would be to encourage allies and partners to do more in terms of fielding naval and other forces for countering improved Chinese maritime military forces. Countries that might be candidates include Japan, South Korea, Australia, and India. Even without American encouragement, Chinese military modernization might persuade one or more of these countries to modernize or expand their military forces; Australia and India might be viewed as already taking steps in this direction. It is not clear whether American encouragement would result in countries' taking more steps along these lines than they otherwise might, particularly since these other countries must contend with their own constraints on what they can spend on their military forces. This option could pose risks for the United States, because the interests and policy goals of allies and partners do not always coincide with U.S. interests and goals, and because a change in the government of an ally or partner could lead to a change in its security policy.

Notes

This article was originally prepared for and delivered to the workshop "Economics and Security: Resourcing National Priorities," sponsored by the Naval War College's William B. Ruger Chair of National Security Economics and held at the College on 19–21 May 2010. Subsequently, in slightly different form, it was published in *Naval War College Review* 64, no. 4 (Autumn 2010), available online at www.usnwc.edu/press. The views expressed here are those of the author and do not necessarily reflect the views of the Congressional Research Service, the Library of Congress, or Congress.

1. DON's FY 2011 baseline budget request of \$160.6 billion includes \$46.6 billion for procurement, of which \$16.1 billion is for shipbuilding. Rear Admiral Joseph P. Mulloy, Deputy Assistant Secretary of the Navy for Budget, "Department of the Navy FY 2011 Presidents Budget," briefing, 1 February 2010, p. 5.
2. The Navy plans to achieve and maintain a force level of fifty-five LCSs and about twenty-three JHSVs.
3. Congressional Budget Office, *An Analysis of the Navys Fiscal Year 2011 Shipbuilding Plan* (Washington, DC: May 2010), p. 14, table 3.
4. *Inside the Navy*, 7 December 2009, tables. See also Christopher J. Castelli, "Navy Confronts \$80 Billion Cost of New Ballistic Missile Submarines (Updated)," *Inside the Pentagon*, 3 December 2009.
5. Congressional Budget Office, *An Analysis of the President's Budgetary Proposal for Fiscal Year 2011* (Washington, DC: April 2010), table 1-1 ("Comparison of Projected Revenues, Outlays, and Deficits in CBO's March 2010 Baseline and CBO's Estimate of the President's Budget"), available at <http://www.cbo.gov>.
6. U.S. Defense Dept., *Quadrennial Defense Review Report* (Washington, DC: February 2010), pp. 3233.
7. These measures include the following, among other things: exerting more discipline in establishing performance requirements for new ships; resisting subsequent growth in those requirements; working toward more stability in shipbuilding plans; making use of competition where possible in the awarding of contracts for building ships; using fixed-price-type shipbuilding contracts; making greater use of common hulls, systems, and

components and seeking greater cross-yard and cross-firm efficiencies in shipbuilding, so as to regain lost economies of scale in shipbuilding; increasing the use of modularity in ship design and construction; increasing the use of open-architecture combat systems; incorporating improved design-for-productibility features and making better use of production engineering in developing new ship designs; developing technologies for reducing the size, weight, and cost of shipboard systems; incorporating technologies for reducing crew size; and developing improved construction processes and methods, such as those developed by the National Shipbuilding Research Program (NSRP). Some observers might advocate additional measures, such as consolidating Navy shipbuilding into a smaller number of shipyards (which would be strongly resisted by supporters of the yards that would lose their Navy shipbuilding business and perhaps face possible downsizing or even closure) or building U.S. Navy ships in foreign shipyards or acquiring foreign-built ships for Navy use (which would require a change in federal law and be strongly resisted by supporters of American shipyards).

8. Possibilities that some observers might advocate could include building conventionally powered aircraft carriers instead of nuclear-powered carriers (which would reduce their mobility and combat sustainability and perhaps achieve only a small savings in total life-cycle costs), building smaller aircraft carriers (which would embark smaller and less capable air wings), and supplementing the Navy's nuclear-powered attack submarines with conventionally powered boats (whose mobility limitations might make them unsuitable for performing typical U.S. Navy submarine missions).
9. For an example of a study outlining a more highly distributed naval force architecture, see Stuart E. Johnson and Arthur K. Cebrowski, *Alternative Fleet Architecture Design*, Defense & Technology Paper 19 (Washington, DC: Center for Technology and National Security, National Defense Univ., August 2005). See also Wayne P. Hughes, Jr., *The New Navy Fighting Machine: A Study of the Connections between Contemporary Policy, Strategy, Sea Power, Naval Operations, and the Composition of the United States Fleet* (Monterey, CA: Naval Postgraduate School, August 2009).
10. For further discussion of options for reducing levels of forward deployments in some regions, see Daniel Whiteneck et al., *The Navy at a Tipping Point: Maritime Dominance at Stake?* (Alexandria, VA: CNA, March 2010).
11. These might include, among other things, the following: shifting a greater share of the strategic nuclear deterrence mission to Air Force intercontinental ballistic missiles and bombers; transferring Navy tactical aircraft missions, including strike and airborne electronic warfare, from carrier-based aircraft to the Air Force; transferring intelligence and surveillance responsibilities from attack submarines or other Navy platforms to non-Navy intelligence and surveillance assets; transferring special operations forces (SOF) missions from the Navy SEALs to Army and Air Force SOF; transferring engagement and partner capacity-building responsibilities to the Air Force and Army; transferring Navy homeland-security responsibilities, and potential Navy responsibilities for Arctic surface and air operations, to the Coast Guard; and transferring Navy responsibilities for HADR operations to the Air Force, Army, Coast Guard, and civilian U.S. agencies, such as the Federal Emergency Management Agency or the State Department.

Panel VI: Air and Maritime Forces

Summary of Discussion

Dr. Thomas R. Fedyszyn
Professor of National Security Affairs
Naval War College

The Ruger Chair Workshop's Panel on Air and Maritime Forces was charged with demonstrating how the national strategic guidance, discussed in earlier panels, translated into programs for the air and sea services.

The first presentation, by Major General Charles Dunlap, USAF, contended that the national strategic guidance found in the Quadrennial Defense Review was predominantly counterterrorism. He urged that threats be put in context, since a counterterrorist strategy is aimed only at less important, nonexistential threats. Further, the evolving counterinsurgency strategy we are implementing in Afghanistan has not conclusively proven that it can successfully pacify threats nor win "hearts and minds." In this environment, the importance of airpower invariably shrinks and the platforms supporting airpower are allowed to age without replacement. The average age of an F-15 is twenty-five years; the B-52's average age is forty-eight years. While many experts see unmanned vehicles as the ultimate solution, he warned against reliance on them partly because their support system (GPS) is unreliable in wartime and because world opinion is decidedly against unmanned vehicles (note: similar to mine warfare). Part of the problem is the U.S. Air Force inability to sell its message to defense intelligentsia, along with the last two administrations' obsession with nonexistential threats. There should be more concern with China, which should not be underestimated as a genuine peer competitor, and one that could threaten our existence.

Dr. Eric Labs characterized naval force planning as one marked by short-term optimism and long-term pessimism. He noted the recent upswing in the number of ships being authorized by Congress, now averaging approximately 10 ships a year. However, an increasingly higher percentage of these ships will be inexpensive warships and support ships. He commended the Navy for becoming more realistic in its cost estimates to build ships. Several years ago, the Navy grossly underestimated the cost of its shipbuilding plan, and while the 2011 budget is still conservative in this regard, it is probably off by a smaller percentage. However, financial and budgetary pressures will inevitably slow the Navy's shipbuilding plans. To some extent, it already has. The Navy requirement is expected to grow from 313 to 323 ships with the next Force Structure Assessment, due out later this year. However, the projected makeup of this force shows 40 fewer major combatants, with an increase in smaller support ships. Further, inflation in shipbuilding will almost certainly outstrip national inflation, reducing the return on the shipbuilding budget. The deficiencies that the Navy will experience in all categories of ships will be more marked as the

world's growing navies continue to modernize, forcing the United States to choose how to defend overseas vital interests.

The second naval forces presentation, by Ronald O'Rourke, accepted the analysis and conclusions of Dr. Labs's paper. He emphasized that one-half of the Navy's five-year shipbuilding plan will consist of joint high-speed vessels (JHSVs) and littoral combat ships (LCSs). These ships provide a very real capability in low-intensity and engagement operations, but would be relatively useless in a major naval engagement with China. He forecasted that the Navy is not likely to make even three hundred ships in the future and that the most significant requirement shortfalls will be in major combatants and attack submarines. Further, during those years in which the Navy is required to build ballistic missile submarines (SSBNs), the remainder of the shipbuilding plan will be grossly inadequate. Given this pessimistic prospect, O'Rourke offered a series of options that the Navy (or the Department of Defense [DoD]) could consider. Each had a downside and was either somewhat unrealistic or suboptimal. They are:

- Increase DoD's budget in real terms.
- Increase the Navy's share of DoD's budget.
- Find more Navy cost-saving efficiencies.
- Exploit joint Navy–Air Force combat effectiveness, particularly in the Pacific, through the Air-Sea Battle Concept.
- Reduce the cost of Navy shipbuilding programs.
- Shift to a more highly distributed fleet architecture.
- Extend the service lives of in-service ships and aircraft.
- Increase the use of forward homeporting, multiple crewing, and long-duration deployments with crew rotation.
- Increase the use of unmanned vehicles to augment or substitute for manned ships and aircraft.
- Reduce the level of forward deployments in some regions, while maintaining it in others.
- Transfer Navy responsibilities to U.S. military forces or federal agencies.
- Transfer “low end” Navy missions to allied and partner navies and coast guards, concentrating Navy resources on programs for “high end” combat capabilities for countering improved Chinese maritime military forces.
- Encourage allies and partners to do more in terms of fielding naval and other forces for countering Chinese forces.

The discussion period was initiated by a question concerning the relationship between the Navy's maritime strategy and its shipbuilding plan. While several respondents saw no direct relationship between the strategy and the Navy shipbuilding plan to date, the most recent budget does put a strong emphasis

on increasing the number of JHSVs from three to twenty-five. These ships will be engaged in engagement and training exercises with partners and allies. They are inexpensive and can be produced in large numbers. The Navy's original plan for 313 ships was created before the maritime strategy and has not yet been superseded, although the new force structure assessment is due out later this year or in 2011. Should the strategy make a difference in Navy shipbuilding, its emphasis on engagement and partner capacity will not lay a strong rhetorical groundwork for making a claim for a larger Navy share of the defense budget. On the positive side, the strategy is viewed with great admiration by other services because it offers an excellent statement of the rationale for the future Navy. Other services do not have an equivalent document.

A central dilemma of force planning is what a participant labeled the "likelihood fallacy"—building forces around the most likely current threat. This is precisely what is happening with today's al Qaeda threat. The danger is that the pendulum can swing too far and you lose the ability to plan against other threats. Today's example would be China and the necessity to develop a high-tech capacity to address the growth of the Chinese military. The threat against which you build will rarely cause the greatest problem, because you spent money in order to deter this threat and it becomes relatively benign. This was the Cold War scenario against the Soviet Union and our NATO buildup in the 1970s and '80s. With today's focus on counterinsurgencies, we must be very careful in force planning not to disregard even greater threats, much as Great Britain did in 1914, focusing only on its empire while Germany threatened it at home. Several discussants then made the following points. The failure to prepare against China will not only affect our ability to wage major war, but it also affects the perceptions in the region. Japan, specifically, is very interested in the American response to Chinese military growth. The outcome of this rivalry will influence Tokyo's actions in the near term. Australia has already made its judgment about American military spending in a recent white paper. Thus, Chinese military growth is today's problem, not one to be put off for twenty or thirty years. The entire Pacific basin is watching and its political evolution will be shaped by the result. In effect, we could be on the brink of conducting a political science experiment: we can determine the effect of letting our forces decline in a region and see whether former allies either "balance" or "bandwagon" with the rising power. We must determine how we will use the fleet in the future, particularly in light of the possibility that there will be a dramatic shrinkage in its size. The Center for Naval Analyses "Tipping Point" report is one of the best studies of this topic. One possibility is removing the fleet from the Arabian Gulf and moving it all to the western Pacific. Another possibility is to better develop the Air-Sea Battle Concept and rely more heavily on the Air Force.

A participant suggested that the concentration of the fleet in the western Pacific has been made more difficult by the administration's announced plans for European ballistic missile defense (BMD) operations. A number of AEGIS ships must therefore be assigned to this theater. This requirement could be minimized by homeporting ships in or around the Persian Gulf and Europe. This would have a very powerful influence on foreign political and military leaders, since it is a strong sign of commitment. Even this, however, will not convince

these leaders that the U.S. Navy can be everywhere. This is the sign of a declining power and this is of concern. The Pacific emphasis would send the right signal to a region very sensitive to the level of American naval presence. Nations, particularly Singapore, really keep tabs on who shows up with what, when, and how often. The recently announced Air-Sea Battle Concept was reviewed by Andy Krepinevich's group (Center for Strategic and Budgetary Assessments), but it is more important how the military services respond. There is an opportunity to impact the budget and possibly for discovering new operational concepts, or resurrecting old ones. Another participant considered the Pacific option unwise because of the continued need to keep a naval presence in the Indian Ocean. This, too, would have an impact on our relationship with China. While we may eventually determine that we cannot defeat Chinese power projection out to 300 miles beyond its shores, we must be able to do so beyond 1,000 miles. We must also maintain the capacity to strangle Chinese trade and oil imports coming from the Middle East.

A questioner noted that most discussions of maritime forces in the Pentagon centered on ships. However, the budget for shipbuilding this year is roughly \$15 billion, while the Navy's aircraft procurement budget is \$18 billion, and this includes very few Joint Strike Fighters. The questioner felt that these two accounts were stove-piped and that there was a need to consider these appropriations together. A respondent replied that a Congressional Budget Office study conducted in 2006 considered aircraft and ship construction together and noted the trade-offs required as one grew at the expense of the other. A principal observation was that the loss of ships required fewer aircraft, since there were fewer places to base the planes. Very few Navy planes are land based. One area of disparity in the two accounts is that research and development (R&D) costs for naval aviation are considerably higher than R&D for ships.

A participant returned to the final paper presented and noted that virtually each of the options noted in the paper was already being implemented by the Navy. The Navy has introduced lower-cost ships and many of them have roughly half the manpower requirements of their predecessors. The Navy's ships are networked very well, but the drawback then becomes the difficulty of massing the forces rapidly. In terms of extending the ships' lives, it is built into the shipbuilding plan. However, success demands paying up front in terms of pipe thickness and quality materials. Without them, extending the lives of ships becomes prohibitively expensive. Rotational crewing is built into the LCS concept, but people remain a huge cost driver. Unmanned vehicles are being widely tested and used throughout the Navy, but they have limited usefulness. They are not multimission like a ship. In terms of focused deployments, the Navy deploys only to two places: the Far East and the Middle East. All other deployments are at the margin. The Navy has never worked more closely with the Coast Guard than today, but because the Coast Guard is more financially strapped than the Navy, it has no capacity to absorb additional maritime functions. Passing responsibilities to partners requires that they be aligned with our values and intentions as well as possess the capability to do the mission. In sum, the Navy is already making a good-faith effort to explore all the options in the third paper. One point that the paper makes must be continually emphasized:

only 10 percent of the Department of the Navy budget goes to shipbuilding. As the world's greatest maritime nation utterly dependent on global trade, this translates to roughly 3 percent of the entire defense budget. Further, the defense budget for our nation at war is only 4 percent of the nation's gross domestic product. Another participant agreed that the Navy had gone about as far as it could in many of these options. Many cost savings initiatives were hampered by the relentless cost growth for personnel occurring at the same time.

A questioner asked for clarification as to the appropriate Air Force "elevator speech" to tell the Air Force story, since it was currently failing in this effort. A participant replied that what a dominant air force does is inflict helplessness on the minds of the adversary. No other service, other than perhaps the submarine force, can do so and this is precisely what all our enemies fear most. They don't mind dying for their cause as long as they can kill some of us. Having a missile land in their laps during dinner is the ultimate threat. Currently, the Air Force is required to mouth platitudes about supporting the joint team in airspace, space, and cyberspace. This is mere political correctness and should be secondary to inflicting fear and helplessness in the hearts of our enemies.

There was agreement that air dominance need not be gained at the expense of the other services. Force structure should not be predicated on the quantity of the opposition force, but rather on missions assigned to our forces. Failing to have sufficient levels of strength in any service can lead to a kind of fratricide. We must be honest with the American people about the risks of not having the right Army, Navy, or Air Force. We can afford all these forces. Forward presence is also very important. There is a huge difference between moving assets into a region and having them there throughout. The former is very provocative and is likely to exacerbate the problem, while delivering less usable military power. The presence of an aircraft carrier in theater is more profound than having a squadron of airplanes. The gigantic ship generates power well understood in national security circles and by all our adversaries.

A participant commented on the secretary of defense's recent speeches and articles on the size of the U.S. Navy. Making cross-cultural comparisons of ships and aggregate tonnage is a highly problematic notion. It tends to suggest that navies exist only to fight other navies. In our case, we would need a navy even if no other nation had one, because of the missions it is assigned and because of our geographical location. We have significant overseas interests and we are separated from them by vast oceans. Another participant seconded this idea. An observer noted that this was an expansion of Colin Gray's assertion that the United States had to be both a sea power and an air power in order to be a land power anywhere except North America. We have come to take supremacy in the air and at sea for granted over the years. Another participant compared the psychological damage being done to our Army by IEDs in the Middle East to the effects of strategic bombing. The sum total of all IEDs in the Middle East over the last decade was the equivalent of the first three weeks of Operation Enduring Freedom. Humans simply can't endure this devastating pressure, because it inflicts helplessness. Inflicting helplessness is a tool we must continue to possess and it cannot be taken for granted. Land forces grow up with the assumption that airborne sensors, space systems, and transshipped oil will always

be available to them. This is patently false, unless we keep all services dominant in their spheres.

A questioner wondered how the Navy might better position itself to gain a larger share of the Pentagon's budget, particularly when the maritime strategy makes no argument about the growth of Chinese power. A respondent agreed that the Navy is not well positioned to argue for a larger budget based on the current strategy. In recent years it has tried to demonstrate its relevance by emphasizing its contributions in Iraq and Afghanistan. That simply underscored the importance of ground warriors. The Navy is also focused on engagement, partnership building, and humanitarian assistance and disaster relief. While important, this does little to lay claim to more resources, because these missions do not require high-performance platforms. The Navy needs to put China at the center of the public debate in order to effect this shift. A questioner wondered whether this was likely and a respondent offered that both the former, Bush administration and the current one were averse to this proposal, for slightly different reasons.

The final question related to the leadership and intellectual crisis in the Air Force. Today, the Air Force does not appear to be making a strong case while the Army and Marine Corps are faced with a backbreaking OPTEMPO and very high casualty rates. A participant commented that the Air Force has no capability to see itself as others see it. The Air Force should not see itself in competition with the ground services in terms of casualties. Simply because it does not "bleed" should not argue against bolstering airpower. The Air Force's job should be to make the other guy bleed and to ensure that our guys don't. That is, to be straight with the American people, the Air Force does not need to be physically fit, but it must be supersmart. The Air Force is about very high technology. It was created during the First World War to overcome the onslaughts of trench warfare. It can overcome adversaries the way no one else can. Servicemen in the Air Force have many options—they need not prove themselves by getting their BDUs dirtier than their Army and Marine counterparts. They need to inflict damage on their enemies in ways that Afghans fear the most. A great quotation from Afghanistan is that the Taliban hope that Allah sends them more American soldiers to kill. However, the bombs from above can't be countered. This is the kind of advocacy today's Air Force needs to make. The case does not get made because the numbers talk for themselves. That is not the way national security policy is made.

Panel VII

Strategic Nuclear, Space, and Cyber Forces



Amy F. Woolf

Specialist in Nuclear Weapons Policy, Congressional Research Service

Marcia S. Smith

President, Space and Technology Policy Group

Dr. Michael C. Libicki

Senior Management Scientist, RAND Corporation

Moderator:

Colonel Dana E. Struckman

U.S. Air Force, National Security Decision Making Department, Naval War College

Investing in Nuclear Weapons

Amy F. Woolf¹
Specialist in Nuclear Weapons Policy
Congressional Research Service

Introduction

In a speech in Prague, in the Czech Republic, on April 5, 2009, President Obama said, “I state clearly and with conviction America’s commitment to seek the peace and security of a world without nuclear weapons.”² President Obama recognized that this “goal will not be reached quickly—perhaps not in my lifetime.” But he pledged to take concrete steps to put the United States on a trajectory toward this objective. This statement and the concrete steps he identified at the time define the agenda his administration has pursued to address the nuclear dangers facing the United States and the international community in the twenty-first century.

The Obama administration has added context to the programs and proposals that it has placed on the U.S. nuclear agenda with its view of the threats the United States faces in the current international security environment. The administration stated clearly, at the front of its Nuclear Posture Review (NPR), that “the most immediate and extreme threat today is nuclear terrorism.”³ It went on to state that “today’s other pressing threat is nuclear proliferation.” The NPR also, however, noted that “the United States must continue to address the more familiar challenge of ensuring strategic stability with existing nuclear powers—most notably Russia and China.”

Hence, the administration’s agenda for nuclear weapons policies and programs seeks to achieve three goals, as Vice President Biden noted in a speech at the National Defense University in January 2010. He said that “by acting on a number of fronts, we can ensure our security, strengthen the global nonproliferation regime, and keep vulnerable nuclear material out of terrorist hands.”⁴

The Obama administration has identified two distinct tracks for U.S. nuclear weapons policies and programs. On one track, the administration has pledged to pursue bilateral and multilateral arms control mechanisms that might address the threats posed by nuclear weapons, nuclear proliferation, and nuclear terrorism. In response, the United States and Russia have negotiated a new Strategic Arms Reduction Treaty (New START) to reduce the size of their nuclear arsenals; they signed this on April 8, 2010. The president has also said that the United States and Russia would pursue further cuts in their nuclear arsenals in a subsequent agreement. Moreover, he pledged that his administration would immediately and aggressively pursue U.S. ratification of the Comprehensive Test Ban Treaty, although this effort is likely to wait until after the Senate votes on the ratification of the New START. Finally, he pledged to “seek a new treaty that verifiably ends the production of fissile materials intended for use in state nuclear weapons.”⁵

These arms control measures are designed to reduce and contain the numbers of nuclear weapons and the stockpiles of nuclear materials around the world. But the administration has indicated that they are also designed to support the nonproliferation agenda by demonstrating to the international community, and, particularly, the parties to the Nuclear Nonproliferation Treaty (NPT), that the United States and Russia are serious about meeting their obligations under the NPT. The administration and many in the arms control community argue that the United States will then be better positioned to win the cooperation of other nations when seeking to increase pressure on Iran and North Korea, or other potential nuclear weapons states.

The second track contains the U.S. programs and policies that will affect the size, shape, and role of the U.S. nuclear arsenal. They are the steps that the United States will take to maintain and sustain its nuclear deterrent, both to address emerging threats and to maintain strategic stability with existing nuclear states. For, although the president stated that the United States would “put an end to Cold War thinking” by reducing the “role of nuclear weapons in our national security strategy,” he added that, “as long as these weapons exist, the United States will maintain a safe, secure and effective arsenal to deter any adversary, and guarantee that defense to our allies.”⁶

This paper reviews the programs that the Obama administration plans to fund so that the United States can maintain a safe, secure, and effective nuclear arsenal. These are identified in both the NPR and the fiscal year (FY) 2011 budget proposal for the Department of Defense (DoD) and the Department of Energy. They are also outlined in a report that the administration submitted to Congress on May 13, 2010, when it submitted the New START for the Senate’s advice and consent to ratification. This plan indicates that the United States may invest \$180 billion over 10 years on the nuclear weapons delivery systems, warheads, and infrastructure. They demonstrate that the United States is prepared to invest a significant amount of money in its nuclear weapons programs, even as it seeks to reduce the dangers of nuclear proliferation and nuclear terrorism and as it takes steps on the path to a world free of nuclear weapons.

But these programs also raise questions about the relationship between U.S. nuclear weapons programs and U.S. nuclear nonproliferation policy. During the Bush administration, many analysts in the United States and around the world argued that the administration’s plans to develop new types of nuclear weapons, invest in the nuclear infrastructure, and expand the range of circumstances where the United States might consider responding with nuclear weapons would undermine U.S. nonproliferation policies. As a result, this paper concludes by addressing the question of how the Obama administration’s planned investments in nuclear weapons might support, rather than undermine, U.S. nuclear nonproliferation policies.

Maintaining and Modernizing the U.S. Nuclear Arsenal

Since the early 1960s, the United States has maintained a “triad” of strategic nuclear delivery vehicles. These include land-based intercontinental ballistic missiles (ICBMs), submarine-launched ballistic missiles (SLBMs), and heavy bombers equipped to carry nuclear weapons. There are approximately 880

operational ICBMs, SLBMs, and heavy bombers in the U.S. strategic nuclear force. According to a recent State Department fact sheet, the United States deploys around 1,968 nuclear warheads on these systems.⁷ The United States has agreed, under the New START, to reduce its strategic nuclear force to no more than 1,550 warheads on 700 deployed ICBMs, SLBMs, and heavy bombers, within a total of 800 deployed and nondeployed ICBM launchers, SLBM launchers, and heavy bombers.

The Obama administration has indicated, in a report submitted to Congress along with the New START, that, over the next decade, “the United States will invest well over \$100 billion in nuclear delivery systems to sustain existing capabilities and modernize some strategic systems.” It will also invest \$80 billion over the next ten years “to sustain and modernize the nuclear weapons complex.”⁸ These plans and programs are described in more detail below.

Intercontinental Ballistic Missiles

Today, the United States has 450 Minuteman III ICBMs deployed at Air Force bases in North Dakota, Montana, and Wyoming. Each of these missiles can carry up to three warheads, but most are currently deployed with one or two warheads. The United States will eliminate at least thirty of these missiles and their launchers and deploy all the remaining missiles with a single warhead as it reduces its forces to comply with the New START. This reduction will not, however, lead to a reduction in the number of ICBM bases.

The Air Force has pursued several programs that are designed to improve the accuracy and reliability of the Minuteman fleet and to extend the missiles’ service lives. According to some estimates, this effort could eventually cost \$6–\$7 billion.⁹ These include

- The Propulsion Replacement Program (PRP), which replaced the solid rocket fuel in the Minuteman motors to extend the lives of the rocket motors. A consortium led by Northrop Grumman poured the new fuel into the first and second stages and remanufactured the third stages of the missiles.
- The Guidance Replacement Program, which has extended the service life of the Minuteman missiles’ guidance set, and improved the maintainability and reliability of guidance sets. It replaced aging parts with more modern and reliable technologies, while maintaining the accuracy of the missiles.
- The Propulsion System Rocket Engine (PSRE) program, which is designed to rebuild and replace Minuteman postboost propulsion system components that were produced in the 1970s. The Air Force has been replacing, rather than repairing, this system because original replacement parts, materials, and components are no longer available.
- The Safety Enhanced Reentry Vehicle Program, which the Air Force is using to deploy MK21/W-87 reentry vehicles removed from Peacekeeper ICBMs on the Minuteman missiles, replacing the older MK12/W62 and MK12A/W78 reentry vehicles.

- The Solid Rocket Motor Warm Line Program, which is intended to help sustain the U.S. solid rocket motor industrial base by providing funding to maintain a low rate of production of motors each year.

The first four of these programs were designed to ensure that the Minuteman III missiles could remain in the U.S. nuclear arsenal through 2020. They are each nearing completion. The fifth, however, which is funded at a rate of around \$40 million per year, is only in its second year. The Air Force budget documents do not indicate how long the program will continue, although Congress remains concerned with the current state of the U.S. solid rocket motor industrial base.

The Air Force began to explore its options for a new missile to replace the Minuteman III in 2002, with the intent to begin deploying a new missile in 2018. However, in June 2006, Air Force Space Command had decided to recommend “an evolutionary approach to the replacement of the Minuteman III capability,” which would continue to modernize the components of the existing missiles rather than begin from scratch to develop and produce new missiles. This approach was expected to be less costly than designing and producing a new ICBM. At the same time, Congress has directed the Air Force to plan to maintain the Minuteman fleet for ten more years, through 2030. The Air Force has been examining the investments that might be needed to achieve this goal, and it expects that the missile should be viable throughout that time. At the same time, the Air Force has begun to consider what a follow-on system to the Minuteman III might look like for the time frame after 2030.

Ballistic Missile Submarines and SLBMs

The United States currently has fourteen *Ohio*-class ballistic missile submarines. Seven of these are deployed at the Navy base at Bangor, Washington; five are at the base at Kings Bay in Georgia. Two are in overhaul. Each of these submarines can carry twenty-four Trident II (D-5) ballistic missiles. Each Trident missile can be equipped to carry up to eight warheads, but in recent years they have been deployed with far fewer. Today, they probably carry, on average, four warheads each.

The United States will retain all fourteen Trident submarines as it implements the New START. It will, however, reduce, from twenty-four to twenty, the number of missiles carried by each submarine. It will remove the gas generators from the empty launch tubes so that they no longer count under the treaty limits. It will probably continue to deploy four to five warheads on each remaining deployed missile.

The Navy is pursuing a life extension program for the Trident II missiles, so that they will remain capable and reliable throughout the life of the *Ohio*-class submarines. The Navy requested nearly \$700 million to support this program in FY 2007, \$457.7 million in FY 2008, \$487.4 million in FY 2009 and \$524.5 in FY 2010. According to the Navy, this funding will sustain efforts to redesign the guidance system and missile electronics to extend the life of the missiles. The Navy expects the refurbished missiles to be deployed on *Ohio*-class submarines in 2013.

When announcing the results of the NPR, Secretary of Defense Gates indicated that the United States planned to keep fourteen *Ohio*-class submarines in its fleet for at least the next five years. He indicated that this number could drop to twelve in the latter half of the decade. He did not identify the factors that would affect this decision. It is interesting to note, however, that the last two submarines would be ready for their refueling overhauls at that time, and the combination of budget pressures and arms control reductions may convince the Navy to forgo that effort.

The Navy initially planned to keep *Ohio*-class submarines in service for thirty years, but later extended that time period to forty-two years. This assumes that each submarine would have two twenty-year operating cycles separated by a two-year refueling overhaul. The *Ohio*-class submarines will begin to retire from the fleet in 2027. With this in mind, the Navy has initiated studies into options for a replacement submarine, known as the SSBN(X). The Navy would have to begin construction of this new submarine by 2019 so that it could begin to enter the fleet in 2029.

The Navy is currently conducting development and design work on the new submarine. The current plans call for a fleet of twelve submarines, with perhaps sixteen to twenty launch tubes on each submarine. The program received \$497.4 million in research and development funding in the Navy's FY 2010 budget, and the Navy's proposed FY 2011 budget requests an additional \$672.3 million in research and development funding for the program. Navy plans call for procuring the first SSBN(X) in FY 2019, with advance procurement funding for the boat beginning in FY 2015. The Navy has estimated that each submarine in this program could cost \$6 billion to \$7 billion in FY 2010 dollars; some have estimated that the total cost could reach \$80 billion.¹⁰

Heavy Bombers

The Air Force currently has eighteen B-2 bombers based at Whiteman Air Force Base in Missouri. The B-2 bomber can carry both B-61 and B-83 nuclear bombs, but is not equipped to carry cruise missiles. It can also carry conventional weapons, and has participated in U.S. military campaigns from Bosnia to Iraq. It is designed as a "low observable" aircraft, and was intended to improve the U.S. ability to penetrate Soviet air defenses.

The Air Force maintains seventy-six B-52H aircraft at two bases, Barksdale, Louisiana, and Minot, North Dakota. The B-52 bomber, which first entered service in 1961, is equipped to carry nuclear or conventional air-launched cruise missiles and nuclear-armed advanced cruise missiles. Each bomber can be equipped to carry up to twenty cruise missiles. The B-52 bombers can also deliver a wide range of conventional arms, and have been participating in the ongoing military campaigns in Iraq and Afghanistan.

The Department of Defense plans to retire all the advanced cruise missiles (ACMs), although some could be converted to carry conventional warheads, and to reduce the older, air-launched cruise missile (ALCM) fleet to 528 cruise missiles. Moreover, because the ALCMs are aging, the Air Force has begun to examine options to replace them. It plans to begin an assessment of alternatives (AOA) in August or September FY 2010 for a future "long-range stand-off vehicle." This study will inform decisions in FY 2012 about whether and how to

replace the current ALCMs. In addition, the FY 2011 DoD budget contains \$3.63 billion for the Air Force “to complete ongoing technical studies on a new cruise missile.” The budget also indicates that research and development funding could increase sharply in the 2013–2015 time frame, after the completion of the AOA. Air Force officials estimate that a new ALCM could eventually cost \$1.3 billion.¹¹

Some analysts have suggested that the United States remove the heavy bombers from the nuclear mission, and retain them in a conventional-only role. They note that the need to maintain nuclear certification takes time and resources away from the conventional mission, and that the United States can maintain a credible nuclear deterrent without nuclear-capable bombers. However, the Obama administration decided, in the 2010 NPR, that the United States would retain bombers in the nuclear triad. It highlighted the fact that each leg of the triad contributes to strategic stability.

The NPR did note, however, that the United States may convert some of the B-52 bombers to conventional-only missions as it reduces its forces to comply with the limits in the New START. The administration has indicated that the United States will retain only sixty nuclear-equipped bombers under the New START. This total is likely to include sixteen B-2 bombers and forty-four B-52 bombers. The remaining bombers will be converted to test assets or to perform conventional-only missions.

At the same time, the Air Force has begun to plan for the development of a new strategic bomber. It initially planned to introduce the new bomber into the fleet around 2018. However, in April 2009, Secretary of Defense Robert Gates indicated that the Air Force should not begin to develop a new bomber until DoD had “a better understanding of the need, the requirement and the technology.”¹² The Air Force is currently reviewing options for fielding a survivable, long-range surveillance and strike aircraft as part of a “comprehensive, phased plan to modernize the bomber force.”¹³ Although the study is just beginning, the DoD budget request for 2011 includes \$200 million for the new bomber, and DoD documents indicate that expenditures on the bomber could total \$1.74 billion through 2015. Secretary Gates has indicated that he expects the Air Force to field the next-generation bomber in the late 2020s.¹⁴

Nuclear Weapons Stockpile

According to a recent DoD release, the United States had 5,113 warheads in its nuclear weapons stockpile as of September 30, 2009.¹⁵ This stockpile includes both active and inactive warheads. Active warheads are those that are either mated with deployed delivery vehicles or maintained in an operational, ready-for-use configuration. The active stockpile also includes warheads that can be added to the deployed force in a short amount of time and logistics spares for deployed warheads. Inactive warheads are stored at depots and are not in operational status; they have had their tritium bottles removed. This number does not include several thousand more warheads that have been retired and are awaiting dismantlement.

The United States has not conducted an explosive test of a nuclear warhead since 1992. It signed the Comprehensive Test Ban Treaty (CTBT) in 1996, but, in 1999, the Senate voted against giving its consent to the ratification

of the treaty. Nevertheless, the United States continues to observe a moratorium on nuclear testing. The Bush administration did not support the ratification of the CTBT, but, in spite of pressure from some analysts who claimed the United States needed to conduct tests to monitor existing warheads and develop new types of warheads, it did not break the moratorium. The Obama administration supports the ratification of the CTBT and has pledged to seek Senate advice and consent to ratification at the earliest possible date.

The United States also has not added a new type of nuclear warhead to its stockpile since 1988. Since the mid-1990s, it has used the Science-Based Stockpile Stewardship Program to monitor the warheads in the stockpile and to enhance U.S. understanding of the issues that might come up as the warheads age. It has also pursued life extension programs (LEPs) to replace aging parts and components on existing warheads. The Bush administration designed and sought to develop a new “reliable replacement warhead (RRW)” to replace aging warheads in the U.S. stockpile. After several years of study and development, the program proved to be very controversial and Congress refused to fund the new warheads.

The Obama administration has said that it does not intend to develop any new warheads for the U.S. stockpile. According to the NPR, the administration will, instead, fully fund “the ongoing LEP for the W-76 submarine-based warhead and the LEP study and follow-on activities for the B-61 bomb.” It will also initiate a study of LEP options for the W-78 ICBM warhead. The administration has further indicated that these life extension programs “will use only nuclear components based on previously tested designs, and will not support new military missions or provide for new military capabilities.” Moreover, “[t]he United States will study options for ensuring the safety, security, and reliability of nuclear warheads on a case-by-case basis. . . . The full range of LEP approaches will be considered: refurbishment of existing warheads, reuse of nuclear components from different warheads, and replacement of nuclear components.” However, “the United States will give strong preference to options for refurbishment or reuse. Replacement of nuclear components would be undertaken only if critical Stockpile Management Program goals could not otherwise be met, and if specifically authorized by the President and approved by Congress.”¹⁶

Nuclear Weapons Complex

The National Nuclear Security Administration (NNSA), which is a part of the Department of Energy, manages eight sites, including three national laboratories, across the nation in what is known as the nuclear weapons complex. Many of the facilities in this complex date from the early years of the nuclear age, and most experts agree that some of these facilities have been neglected and underfunded since the end of the Cold War. The Bush administration sought to reconfigure and rebuild the complex, to create what it referred to as a “responsive infrastructure” that would be able to maintain and replace U.S. nuclear weapons in a timely manner. But plans to reconfigure the complex were integrated with plans to build new warheads, and Congress refused to fund most of the administration’s requests.

As a result, as Vice President Biden noted in a recent article, “our laboratories and facilities have been underfunded and undervalued. The consequences

of this neglect—like the growing shortage of skilled nuclear scientists and engineers and the aging of critical facilities—have largely escaped public notice.”¹⁷

The Obama administration has sought to address this problem by increasing sharply funding for NNSA. The FY 2011 budget includes \$7 billion for NNSA to maintain the nuclear stockpile and modernize the nuclear infrastructure. That is an increase of \$624 million, or 13 percent, over the FY 2010 appropriation. The administration also plans to add more than \$5 billion to the NNSA budget over the next five years.¹⁸ It plans to spend between \$7 billion and \$9 billion each year, for a total of \$80 billion, on the nuclear weapons complex over ten years.¹⁹ Some of this funding will support the LEPs described above. The administration is also pressing forward on two new projects—construction of a uranium building at the Y12 weapons plant in Tennessee and a replacement for Los Alamos’s Chemistry and Metallurgy Research building complex in New Mexico. The Tennessee uranium building may cost between \$1.4 billion and \$3.5 billion, while the Los Alamos plutonium building may cost as much as \$4 billion.

In addition to replacing aging buildings, the Obama administration’s budget for NNSA is designed to support and strengthen the science, technology, and engineering programs at the nation’s nuclear weapons laboratories. These are the Los Alamos and Sandia laboratories in New Mexico and the Lawrence Livermore Laboratory in northern California. The budgets for the labs declined sharply in the past five years. Moreover, many of the older scientists who designed, developed, and tested the weapons in the current stockpile are retiring. The added funding for the labs will help them “attract, develop and retain the outstanding scientists, engineers, designers and technicians we will need to maintain our nuclear arsenal, whatever its size, for as long as the nation’s security requires it.”²⁰

Investing in Nuclear Weapons

The Obama administration has made a significant investment, through both its rhetoric and its budget request, in the U.S. nuclear arsenal and nuclear weapons infrastructure. This investment comes at a time when many are questioning the durability of U.S. nuclear weapons and their ability to continue to serve the nation’s national security interests. Others, however, question whether these investments are consistent with the president’s pledge to “seek the peace and security of a world without nuclear weapons.” They ask whether the United States should invest such sums at the time when it has pledged to reduce the role of nuclear weapons in U.S. national security and when it is actively working to convince other nations to roll back or forgo their own nuclear weapons programs. Moreover, these increases in funding for nuclear weapons programs come at a time when concerns about the U.S. economy, in general, and the budget deficit, in particular, seem to be arguing for more restraint in spending in the defense budget.

Some have argued that the administration’s funding increases for nuclear weapons delivery vehicles, warhead life extension programs, and the nuclear weapons infrastructure are part of a calculated, tactical campaign to win support for the president’s arms control and nonproliferation agenda. Congress

requested a plan for this funding in the FY 2010 Defense Authorization Act and indicated that the administration's support for these programs would be a key factor in the Senate's support for the New START.²¹ Moreover, most experts agree that the administration's commitment to funding for U.S. nuclear warheads and the weapons complex will be a key factor in the Senate when it considers the ratification of the CTBT.

Others, however, argue that these funding increases are consistent with the president's commitment to a world free of nuclear weapons, not just because they may win support for his arms control agenda, but also because he stated explicitly that, "as long as these weapons exist, the United States will maintain a safe, secure and effective arsenal." They view them as practical steps that the United States must take as it moves toward the vision of the world free of nuclear weapons. As Vice President Biden noted, "[g]uaranteeing our stockpile, coupled with broader research and development efforts, allows us to pursue deep nuclear reductions without compromising our security."²²

During its eight years in office, the Bush administration failed to convince Congress to fund the programs that it sought to maintain and sustain the U.S. nuclear arsenal and nuclear weapons infrastructure. This was in spite of the fact that the administration argued that nuclear weapons would play a continuing role in U.S. national security policy for the foreseeable future. The Obama administration, in contrast, may succeed in winning support for its funding requests and nuclear weapons programs, in spite of its support for the long-term goal of eliminating nuclear weapons. It may win the support of those who actively support enhanced efforts and increased funding to maintain and sustain the nuclear arsenal. It may also win the support of many who support the arms control agenda but recognize that a safe and secure U.S. arsenal can be consistent with U.S. nonproliferation goals if the United States is reducing the numbers and restraining the roles for those weapons.

Notes

1. The views expressed in this paper are those of the author, and do not reflect on either the Library of Congress or the Congressional Research Service.
2. Barack Obama, remarks (Hradcany Square, Prague, Czech Republic, April 5, 2009), available at http://www.whitehouse.gov/the_press_office/Remarks-By-President-Barack-Obama-In-Prague-As-Delivered/.
3. U.S. Department of Defense, *Nuclear Posture Review Report* (Washington, DC: April 6, 2010), p. 3, available at <http://www.defense.gov/npr/docs/2010%20Nuclear%20Posture%20Review%20Report.pdf>.
4. Joe Biden, "The President's Nuclear Vision," *Wall Street Journal*, January 29, 2010.
5. Obama, remarks.
6. *Ibid.*
7. U.S. Department of State, Bureau of Public Affairs, *The Nuclear Non-Proliferation Treaty: Promoting Disarmament* (Washington, DC: April 27, 2010), available at <http://www.state.gov/documents/organization/141497.pdf>.
8. "The New START Treaty—Maintaining a Strong Nuclear Deterrent," <http://www.whitehouse.gov/sites/default/files/New%20START%20section%201251%20fact%20sheet.pdf>.
9. Robert S. Norris and Hans M. Kristensen, "U.S. Nuclear Forces, 2006," *Bulletin of the Atomic Scientists* 62, no. 1 (January/February 2006).

10. Christopher J. Castelli, "Navy Confronts \$80 Billion Cost of New Ballistic Missile Submarines," *Inside Defense*, November 3, 2009.
11. Elaine M. Grossman, "Pentagon Eyes More Than \$800 Million for New Nuclear Cruise Missile," *Global Security Newswire*, March 9, 2010.
12. Defense Secretary Robert Gates and Marine Corps General James Cartwright, Vice Chairman of the Joint Chiefs of Staff, briefing (Washington, DC, April 6, 2009), available at http://insidedefense.com/secure/data_extra/html13/dplus2009_0893_3.htm.
13. U.S. Department of Defense, *Quadrennial Defense Review Report* (Washington, DC: February 2010), p. 33, available at http://www.defense.gov/qdr/images/QDR_as_of_12Feb10_1000.pdf.
14. Andrea Shalal-Esa, "Gates Sees New U.S. Bomber Fielded in 2020s," *Reuters*, February 2, 2010.
15. U.S. Department of Defense, "Increasing Transparency in the U.S. Nuclear Weapons Stockpile" (fact sheet, May 3, 2010), http://www.defense.gov/npr/docs/10-05-03_Fact_Sheet_US_Nuclear_Transparency_FINAL_w_Date.pdf.
16. U.S. Department of Defense, *Quadrennial Defense Review Report*, p. 39.
17. Biden, "The President's Nuclear Vision."
18. Joe Biden, "The Path to Nuclear Security: Implementing the President's Prague Agenda" (remarks, National Defense University, Washington, DC, February 18, 2010), available at <http://www.whitehouse.gov/the-press-office/remarks-vice-president-biden-national-defense-university>.
19. "The New START Treaty—Maintaining a Strong Nuclear Deterrent."
20. George P. Shultz, William J. Perry, Henry A. Kissinger, and Sam Nunn, "How to Protect Our Nuclear Deterrent," *Wall Street Journal*, January 20, 2010.
21. Public Law 111-84, *U.S. Statutes at Large* 123 (2009), sec. 1251, available at http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=111_cong_public_laws&docid=f:publ084.111.pdf.
22. Biden, "The Path to Nuclear Security."

Economics and Security: Resourcing National Priorities —the U.S. Space Program

Marcia S. Smith

President, Space and Technology Policy Group

From the stimulating images of the universe produced by the Hubble Space Telescope to the lovable rovers on the surface of Mars to astronauts aboard the International Space Station (ISS), the space activities conducted by the civilian National Aeronautics and Space Administration (NASA) are known throughout the world.

By contrast, the U.S. national security space program, significantly larger than NASA's in terms of dollars spent, is hardly known to the public at all. While civilian use of the Global Positioning System (GPS) is ubiquitous around the globe, for example, the fact that it was developed and is owned and operated by the Department of Defense (DoD) primarily for military purposes seems to have escaped notice. Known as a "positioning, navigation and timing" system, GPS is only the tip of the iceberg of the space systems and associated launch vehicles and ground infrastructure available to the U.S. defense and intelligence communities for reconnaissance, weather, communications, early warning, and other functions.

Space Program Basics

In the wake of the launch of Sputnik 1 by the Soviet Union on October 4, 1957, Congress and the Eisenhower administration crafted the 1958 National Aeronautics and Space Act (NASA Act) that created NASA to conduct U.S. civil space activities and put DoD in charge of military space programs. One goal was to demonstrate to the world that the United States was interested in peaceful uses of outer space, while recognizing that it has important military applications as well.

This bifurcated structure remains today, and other agencies have become important components of the U.S. government space program over the decades. In particular, the National Oceanic and Atmospheric Administration (NOAA, part of the Department of Commerce) operates the nation's civil weather satellites. Interagency cooperation among the U.S. space agencies is common, if not always successful. Until quite recently, for example, DoD and NOAA (with NASA participating in a technology development capacity) were jointly building a "converged" weather satellite system to serve both military and civil purposes to replace the separate systems each has operated for decades. The Obama administration is proposing that this, called the National Polar-orbiting Operational Environmental Satellite System (NPOESS), be terminated and DoD and NOAA return to having separate systems. The decision comes after a decade and a half of cost overruns and schedule delays attributed

largely to the inability of DoD and NOAA to work together effectively, because of differing objectives.

Although the civil and national security space programs are separate in terms of mission and management, they share launch vehicles, technologies, and, importantly, an industrial base. Aerospace workers have skills equally applicable to both sectors. Military satellites are close cousins to their civilian counterparts. The mirror for the Hubble Space Telescope that enables us to look deep into the universe, for example, has its heritage in reconnaissance satellites that image features on the earth's surface. The space shuttle program was designed to serve both military and civil requirements, and though policy changes resulting from the 1986 *Challenger* tragedy significantly reduced DoD's utilization of the shuttle, it has been used for a number of classified military missions in addition to those for NASA. NASA's X-37 Orbital Space Plane program, designed to take crews to and from the International Space Station, found new life as a military space program after NASA cancelled it. Redesignated X-37B, it was recently launched by DoD to test classified capabilities.

In addition to the government space program and the contractor workforce that supports it, "commercial" space companies are making gains after decades of trying. There is no consensus definition of the term "commercial" when applied to space activities, but whether one insists that such companies be financially viable without government subsidies, that they have customers other than the government itself, or only that they put some of their own capital at risk, there are enough entrepreneurial and established companies in the commercial space business today to make the case that space no longer is a government monopoly. The intelligence community, for example, relies on two commercial remote-sensing companies, GeoEye and DigitalGlobe, for imagery with a resolution of 0.5 meters.¹ That imagery augments what is produced by the intelligence community's own "exquisite" satellites, which reportedly has much better resolution but attendant restrictions on who can see it. The guaranteed buys promised by the National Geospatial-Intelligence Agency (NGA) enable the companies to raise capital to build the satellites. One value of the commercial imagery is that it can be openly shared. Another is that sometimes 0.5-meter resolution imagery is sufficient, taking some of the tasking burden off of the exquisite systems.

Reliance on the commercial sector is not limited to the intelligence community. A substantial portion of unclassified military communications is routed through commercial communications satellites. On the civilian side, even the nation's human spaceflight program may be "outsourced" if Congress approves President Obama's new plan for NASA. It would end NASA's ability to send people into low earth orbit (LEO) and instead subsidize the emergence of a "commercial crew" business to fill that requirement. NASA already subsidizes a "commercial cargo" business to take cargo to the ISS in LEO. The national security space sector may well take advantage of these commercial capabilities, if successful, although the Obama plan is very controversial and not assured of congressional approval.

“Partnering” with the commercial sector, as well as international allies, has become a common refrain for both national security and civil space programs as both struggle to obtain the resources they feel they need to meet their goals.

U.S. Space Policy

The most recent overarching national space policy was issued by President George W. Bush in 2006. Four earlier policies on specific topics had been issued during the Bush administration—commercial remote-sensing satellites (2003); human spaceflight (2004); positioning, navigation, and timing satellites (2004); and space transportation (2005)²—but the 2006 National Space Policy sets the broad framework. It has been criticized for its nationalistic tone, and shortly after taking office President Obama ordered a complete review of U.S. space policy. That review is ongoing.³

At the same time, DoD was conducting the Quadrennial Defense Review (QDR) and a Space Posture Review (SPR) at the direction of Congress, along with a Nuclear Posture Review and a Ballistic Missile Posture Review. The QDR barely touched on space, and the Space Posture Review has been delayed until the review of U.S. space policy is completed. An interim SPR was provided to Congress in March, but it was “for official use only” and not made public. However, members of the House Armed Services Committee’s (HASC’s) Subcommittee on Strategic Forces reacted to it at an April 21, 2010, hearing, and were clearly unimpressed.⁴

Thus, the Obama administration’s space policy is not yet clear and declarative U.S. space policy continues to be that which is expressed in the Bush administration documents. However, the fiscal year (FY) 2011 budget request for NASA proposed a total paradigm shift in U.S. human spaceflight policy, and it seems clear from official statements by administration officials that changes are in the wind for national security space as well. Deputy Secretary of Defense for Space Policy Robert Butler says that it is “not a go-it-alone strategy” anymore.⁵

Though it has been almost two decades since the end of the Cold War, some argue that national security space policy has not adapted to the current environment. A repeatedly expressed theme today is that space is “congested, competitive, and contested,”⁶ requiring new policies and strategies. In particular, there is a need for the many users of space—commercial and government—to work together for better space situational awareness (SSA) to avoid catastrophes like the 2009 Iridium 33–Cosmos 2251 collision, which created more than 1,500 pieces of space debris in a heavily populated orbital arc.⁷ SSA has become a rallying cry by everyone from the vice chairman of the Joint Chiefs of Staff to commercial satellite operators.

The concept of focusing on affecting how countries and companies behave rather than relying on “space control” measures seems to be taking hold. One suggestion, for example, is that instead of viewing space as the high ground that needs to be militarily defended, the United States should look at space as a “global commons” subject to mutually agreeable rules of the road.⁸ SSA is the first step in dissuading belligerent action in space according to DoD’s Butler, who calls for “thinking more broadly as we build out in this process of

deterrence with like-minded countries” through SSA and data sharing, as well as looking at rules of the road.⁹

Another critical policy issue for the space sector is export controls, specifically, the International Traffic in Arms Regulations (ITAR). Many studies over the past decade have concluded that ITAR restrictions on exporting satellites hurt the U.S. space industrial base more than they protect sensitive American technologies. The Obama administration and Secretary of Defense Gates in particular are calling for export control reform.

Resources: Funding

The national security and civil space programs are inextricably linked in many ways, so the resources for one cannot be discussed in isolation from the other’s.

NASA and NOAA Space Funding

NASA’s budget is easy to find and track. NASA has a budget website with documentation for the FY 2011 request and several prior years.¹⁰ For FY 2010, NASA received \$18.7 billion and the FY 2011 request is \$19 billion.

NASA is a discrete element of the U.S. federal budget, subject to intense debate in Congress and among the interested public. This year in particular it has been in the news because of President Obama’s controversial decision to cancel his predecessor’s program, Constellation, to send astronauts back to the moon by 2020 and then to Mars, and replace it with human trips to asteroids by 2025 and a Mars landing at an unspecified time in the future (the president said that he expects to be alive to see it). NASA’s development of the new Ares I and Ares V launch vehicles will be terminated under the Obama plan, and NASA instead will focus on developing “game changing” rocket engine technologies and subsidizing the commercial sector to build new rockets and spacecraft to take crews and cargo to the space station instead of NASA. Opponents of the plan portray this as abandonment of the U.S. human spaceflight program and American leadership in space, though it actually is accompanied by a projected \$6 billion increase in NASA’s budget over five years compared with what the Obama administration proposed the previous year. NASA’s FY 2011 budget request of \$19 billion would rise to about \$21 billion by FY 2014.¹¹

NOAA’s budget also is easily accessible on NOAA’s website.¹² Satellites are only a small part of NOAA’s portfolio. Its satellite budget is typically about \$1 billion a year to pay primarily for acquisition and operation of Polar Orbiting Environmental Satellites (POES) and Geostationary Operational Environmental Satellites (GOES). NOAA’s FY 2011 request¹³ of \$2.2 billion for satellites is an anomaly because an additional \$679 million is requested to cover costs associated with reformulating the NPOESS program, renamed the Joint Polar Satellite System (JPSS) in NOAA’s budget request, as discussed elsewhere in this paper.

National Security Space Funding

By contrast with NASA’s and NOAA’s, funding for the national security space program is very difficult to ascertain. A significant portion of the funding is classified, and that which is not permeates the DoD budget rather than being consolidated into a single account. Estimates of funding for national security space

range from \$22 billion to \$44 billion. Since the magnitude of the difference in those figures is significant, an explanation of the difficulty in quantifying national security space spending is in order.

The lion's share of funding is for development and procurement of new space systems and purchase of space launch services to put them into orbit in the Air Force accounts (mostly Research and Development, and Procurement). But all the services purchase user equipment like GPS terminals, for example, and the Navy has its own space system development programs such as the Mobile User Object System (MUOS) mobile communications satellite program. The defensewide accounts also contain a smattering of space-related funding. To calculate DoD's investment in space programs, one must look at every program element and make a judgment as to whether or not it is a "space" activity.

The DoD Comptroller's Office does this, but rarely releases the numbers publicly. The only authoritative public source for national security space spending is the annual Aeronautics and Space Report of the President (the "president's space report"), but it is currently two years behind schedule. The most recent published version is for FY 2007.¹⁴ The report has an appendix with tables showing funding for all space activities in all U.S. government agencies since FY 1959, the year NASA opened its doors. The column labeled "DOD" has been characterized in the past¹⁵ as representing all spending on national security space, whether for DoD itself or the intelligence community. However, that may have changed in recent years. Also, some decisions on what is or is not a space-related expenditure are subjective and totals for previous years shown in the president's space report have been revised after the fact. The most recent version of the president's space report states that FY 2007 space funding for DoD was \$22 billion. Figures for FY 2008 and FY 2009 have not yet been published.

The other public source for national security space spending is a series of reports published by the Space Foundation, a space advocacy organization headquartered in Colorado Springs, Colorado. Since 2006, the Space Foundation has published an annual *Space Report*¹⁶ that sets a value for the "space economy"—global space revenues and government spending. Its 2010 report, for example, calculates the global space economy at \$262 billion. It breaks down U.S. government space spending by sector and instead of showing a single figure for DoD space activities like the president's space report, it has an amount for DoD plus separate figures for the National Reconnaissance Office (NRO) and NGA. NRO designs, develops, builds, and operates the nation's spy satellites. NGA funds space-related activities such as subsidizing GeoEye and DigitalGlobe, which, as mentioned above, are commercial companies that produce electro-optical imagery that can be publicly shared.

Specifically, *The Space Report 2010* shows \$43.53 billion as funding on U.S. national security space programs in FY 2009, 68 percent of U.S. government space spending: DoD (\$26.53 billion), NGA (\$2 billion), and NRO (\$15 billion).¹⁷ The \$26.53 billion for DoD is in line with what has been typically reported in the president's space report in previous years. If the Space Foundation is correct and there was \$17 billion more spent on national security space in FY 2009 that would not show up in the president's space report, it calls into

question the accuracy of the data in the president's space report over the years. It may be prudent, therefore, to consider the number published in the president's space report as a lower limit.

Conversely, it may be a misunderstanding on the part of the Space Foundation. In the 2009 and prior versions of *The Space Report*, the authors separately listed space funding in the Missile Defense Agency's (MDA's) budget as well (a substantial figure—\$8.9 billion in the 2009 report). MDA is omitted in the 2010 report because the Space Foundation concluded that whatever funding MDA spends on space is, in fact, included in the DoD number in the president's space report.¹⁸ The NRO and NGA figures are based on “estimates from GlobalSecurity.org,”¹⁹ a website that says its goal is to present the facts so readers can form their own opinions, but concedes that “it most likely contains some mistakes and/or potential misinterpretations.”²⁰ It has a “space budget” section, but the figures cited in *The Space Report 2009* and *The Space Report 2010* as coming from that website are not evident there.

The point is that from the public record, determining how much the nation invests in national security space programs is fraught with uncertainty. It clearly would be much easier if the national security space community would simply make public the total amount it spends on space. Until that day arrives, the best that one can do is use the spread of estimates in the public domain.

Getting Bang for the Buck: The Need for Improved Acquisition Strategies

Whatever the exact number for how much the country is investing in national security space, an important question is whether the nation is getting its money's worth. Repeated cost growth and schedule delays have plagued both civil and national security space programs, as bookshelves full of Government Accountability Office (GAO) reports attest. Nunn-McCurdy breaches²¹ for national security space programs are not uncommon.

That cost growth prevents new systems from being initiated, not only because more funding is needed to pay for the overruns, squeezing out new programs, but also because the officials in the administration and Congress who must approve the funding have grown weary of endless overruns and skeptical of DoD cost estimates. Congress refused to approve development of a Space Based Radar program (later the Space Radar program) in the FY 2004–2006 time period in part because it did not believe DoD's cost estimates. Last year's cancellation of the Transformational Satellite (TSAT) program to build a new generation of protected communication satellites by Secretary of Defense Gates—with little complaint from Congress—suggests that DoD also became wary of its own cost estimates and whether the system was affordable.

Retired Lockheed Martin executive A. Thomas Young, an aerospace industry icon often called upon to chair reviews of space programs that go awry, blames acquisition failures for wasting a good deal of national security space resources in the past decade. He attributes the problem to the 1990s acquisition reforms adopted by DoD called Total System Performance Responsibility (TSPR). He calls the results “devastating,” adding that the nation is getting “half of the program content, for twice the money, six years late.”

They took system responsibility for national security space programs and they ceded it to industry and they did it contractually . . . through [TSPR] and in essence told their program managers—you stand back, get out of the way, sit in the back of the room, don't ask questions, we're turning this over to industry. They went further than that. The government had an enormous systems engineering capability. We terminated it and we went about a collection of the most important national security space programs that this country has. The results were devastating.

The adverse impacts are with us today. . . . Good project managers left because if they can't influence what they're doing, they don't want to do their job. . . . Systems engineering capability was eliminated . . . and the projects were a disaster. . . . This was not isolated, it was systemic. Boeing—FIA—\$10 billion—cancelled.^[22] SBIRS^[23]—a program with Lockheed Martin, there's a quote "if you want to know how not to manage a space program this is it." NPOESS is one. . . . Not one of them except Wideband Gapfiller has been launched. . . .^[24]

In essence if you take an average of those programs, today, we're getting half of the program content, for twice the money, six years late. . . . I could go on with NASA. The Aerospace Corporation documented . . . that there were \$11.2 billion of total mission failures in this time period.²⁵

TSPR was the acquisition reform of the 1990s. One can only hope that the more recent reforms in last year's Weapons Systems Acquisition Reform Act (P.L. 111-23) and the companion bill (H.R. 5013) now working its way through Congress have better results. According to the House Armed Services Committee (HASC), the current bill would reform the "remaining eighty percent of the defense acquisition system not addressed" by P.L. 111-23.²⁶

Stretching the Dollar through Partnerships

Recognizing there are tough financial times ahead, DoD is focusing on increased partnerships with other agencies, academia, the commercial sector, and the international community to execute new programs. At the Center for Strategic and International Studies (CSIS) Global Security Forum on May 13, 2010, General James E. Cartwright, USMC, vice chairman of the Joint Chiefs of Staff, spoke about a new appreciation of the value of partnerships:

Reality is that we don't fight alone, we don't deter alone, we don't assure alone. Everything is done in partnership. Everything is in coalitions. And if we don't do our strategy thinking about up and out instead of down and inward we will miss the point of the way we do business. . . . We [think we] have to have the only capability, we have to fill every rung on the ladder with the best capability in the world. We can't afford it nor can we do it. There are other very capable nations out there very willing to partner up. We've got to make sure that our strategy is inclusive. . . . You cannot afford to do everything yourself. We are not an island.

The QDR really hit hard on those points, building the partnership capacities, starting to understand how we're going to leverage the combined capabilities not only of our allies, but of our industry and of our academic resources. These are two areas that we have not tapped well, particularly commerce.²⁷

Partnering presents opportunities both to save costs and to forge agreements on governance and regulation of space activities. As General Cartwright

and others have pointed out, the growing number of countries and companies operating in space makes it a very different environment than existed during the Cold War. As already discussed, improved SSA is needed so that satellite operators know enough about the locations of active and defunct satellites and space debris to avoid collisions that produce clouds of debris—which then produce more collisions and more debris—that hamper operations for everyone.

In 2009, the accidental collision of an operating U.S. Iridium commercial communications satellite and a defunct Russian satellite raised the issue to an even higher level.²⁸ DoD maintains a catalog of all objects in space that it tracks (about 19,000 currently), only portions of which are made public, leading to sharp criticism by other users of the space environment. U.S. Strategic Command's Joint Space Operations Center (JSPOC) performs "conjunction analyses" to see if space objects are on a collision course. At the time of the Iridium-Cosmos collision, resource constraints limited those analyses to human spaceflight missions, critical U.S. government satellites, and as many other satellites of interest as possible.²⁹ In the wake of the collision, additional resources were made available so "instead of doing slightly less than 100 conjunction analyses a day, they're doing over 800 a day."³⁰ Still, much work needs to be done in terms of building partnerships with the other government and commercial satellite operators to ensure that the space environment remains usable.

Generally, the national security space partnerships with the commercial sector have met with mixed success. Many view the NGA subsidies to GeoEye and DigitalGlobe as successful "space commercialization," though it is questionable how commercial it is since the companies would very likely fail without the subsidy. Still, it is widely viewed as a success. Another government-industry arrangement, which did not work out as well as hoped, is the evolved expendable launch vehicle (EELV) program. DoD began the program in the 1990s with the expectation that launch vehicle technology and the satellite launch market had matured sufficiently that a partnership could be created to upgrade the existing fleet of expendable launch vehicles (ELVs—rockets that are not reusable like the space shuttle) with the companies that manufacture and market them: Boeing for the Delta rocket and Lockheed Martin for Atlas. A robust twenty-first-century commercial communications satellite market was forecast at the time and DoD also expected to benefit from fixed-price launch services at affordable prices because the costs would be amortized over a large number of launches. The market did not develop as expected, however, and both companies threatened to exit the launch vehicle business if DoD did not agree to pay more. DoD had no choice but to acquiesce to the higher costs, though it extracted its own concessions, forcing the two companies to create the United Launch Alliance (ULA), a joint venture owned fifty-fifty by the two companies. The companies took the Delta and Atlas off the commercial market so the government is the only customer for those launch vehicles and thus is paying all their costs. Quite a different scenario from what was planned.

DoD and NASA have worked together with varying levels of success over the past five decades. The interagency program that is garnering most attention today, however, is a joint DOD-NOAA-NASA program to design, build, launch, and operate a converged weather satellite program servicing both

military and civil purposes. Historically, DoD has operated the Defense Meteorological Satellite Program (DMSP) for weather observations from polar orbit, while NOAA has its POES series for the civil sector. In 1994, the Clinton administration concluded that a single system for both sectors could save costs and NPOESS was born. It is—or was—primarily a DOD-NOAA program, with NASA involved only as a developer of new technologies. After a decade and a half of schedule delays and cost overruns resulting in Nunn-McCurdy breaches, the Obama administration decided in January 2010 that the only solution was a divorce. If Congress agrees, the two agencies will return to separate space systems, though they will share ground operations.

Nonetheless, DoD leaders are touting partnerships with the commercial sector, as well as other countries, as a solution to their resource problems, as exemplified by General Cartwright's statement. Time will tell how successful those future partnerships become.

Resources: Workforce and Industrial Base

Varying numbers exist for how many people are employed in the aerospace workforce, if for no other reason than that the term “aerospace” refers to a broad range of skills. Marion Blakey, president of Aerospace Industries Association, said in 2009 that she represents 650,000 aerospace workers, including “the over 140,000 who make the satellites, space sensors, spacecraft, launch vehicles and the ground support systems” used by DoD, NRO, “and other civil, military and intelligence space efforts.”³¹ *The Space Report 2010* asserts that “[n]early 263,000 Americans worked in the space industry in 2008, the most recent year for which employment data is available.”³²

Whatever the precise figure, there is concern about the long-term health of the space industrial base. At a House Armed Services Committee hearing in April 2010, General Robert Kehler, commander of Air Force Space Command, was asked “what keeps [him] up at night.” He replied:

[I]f we want to continue to have a world class Air Force and a world class space and cyberspace capability we have to have world class people. This is an all volunteer force and we are in competition for people. That's particularly true . . . in the space professional ranks where we compete with civilian industry. . . . We want to build a world class team of battle-ready professionals and that keeps me awake at night, . . . are we doing the right things to do that, are we stimulating the right educational incentives, etc., etc.

The second thing that keeps me awake is the industrial base. We have concerns about the long term viability of our industrial base. It is a far different industrial base today than it has been in the past. There are many reports . . . and they all report that there is more fragility . . . in the industrial base today than there has been in the past, which makes the industrial base more sensitive to changes than they have been in the past. . . . I ask myself all the time—are we positioning ourselves correctly to make sure that our successors will be able to look back and say they've given us the right people . . . and they have left us the appropriate industrial base to do the job that we need to get done.³³

The question of whether the future portends a smaller defense industrial base was discussed at the CSIS Global Security Forum. Differing views were

aired about the overall defense industrial base, but there was agreement that the space industrial base was of particular concern. Pierre Chao, a CSIS senior associate, said there is cause to worry:

[The space industrial base is] extremely capital-intensive. . . . By policy, we've decided to go to a monopoly with ULA. And so the underlying supplier base has had a tougher and tougher time.

And this is one . . . where the export-control rules have really hosed up the industry. . . . And it has created the unintended consequence of forcing overseas countries to develop their own industry when they would have been happy to buy from us.

Our guys can't export, so now you've become entirely dependent and hot-housed on the national security side. And there isn't [sic] enough . . . programs and work to do that. So the larger companies, I think, are okay, but when you get down into the second and third tier, this is where you're beginning to see the single points of failure, the shrinking of the industrial base. . . .

And where you could always . . . rely on a little bit of relief on the commercial, you know, [the] NASA side, now that's also sort of getting cut back. So now I'm getting whacked at in all kinds of multiple areas.³⁴

Denis Bovin of Stone Key Partners added that the “single point of failure issue is very real. . . . [T]he space segment has consolidated down to essentially a null set: What's there is all that's there. If any one of those guys decides to exit or go private or to lever up, the amount of support that we'll have in space will deteriorate very quickly. . . . I don't see where the growth comes. And if we start to cut back as NASA has done and other people have done, people are going to continue to withdraw capital from it. So I think it is a very vulnerable area.”³⁵

As Mr. Chao noted, one factor affecting the U.S. space industrial base is the negative effect of export control rules—specifically, ITAR—on its global competitiveness. Many studies have shown that U.S. satellite-manufacturing companies have lost market share to European companies that advertise “ITAR-free” satellites that can be launched, for example, on comparatively inexpensive Chinese launch vehicles, making them attractive to satellite operators. The United States has not permitted satellites with U.S. components to be exported to China since the late 1990s, because of concerns that China was obtaining militarily useful information by launching them. Interest in ITAR reform has grown steadily over the past decade. Secretary of Defense Gates is a vocal champion of export control reform today along with other Obama administration officials. Opinions differ on the likelihood of Congress's taking action on export controls this year, but there is little debate about the effect of ITAR on the space industrial base. The debate is over the relative importance of the health of the space industrial base versus the possibility that China or another possible adversary might gain knowledge that could be used against the United States.

The link between the civil and national security industrial bases is highlighted today by debate over President Obama's decision to terminate NASA's Constellation program and its Ares I rocket. Ares I would use solid rocket motors similar to those used for the space shuttle program. DoD also needs these

rocket motors. With the shuttle program soon coming to an end, if Ares I is cancelled NASA will have no need for the motors and DoD will have to pay 100 percent of the costs of maintaining that capability. Opponents of President Obama's plan to cancel Ares I often cite the adverse impacts on the solid rocket motor industrial base as a reason to reject the plan. Presidential science adviser John Holdren and NASA administrator General Charlie Bolden, USMC (Ret.), have been repeatedly asked in House and Senate hearings if they consulted with DoD before deciding to cancel Ares I, and although both indicated that discussions were held, DoD officials say otherwise. Secretary of Defense Gates responded to a question at a February 3, 2010, House Armed Services Committee hearing as to whether he had been consulted by the White House, NASA, or Office of Management and Budget by saying, "[N]ot that I recall. . . . [T]he department may have been, but I was not."³⁶ Gary Payton, deputy under secretary of the Air Force for space, flatly said, "No, sir," when he was asked if the Air Force had been consulted in advance at a Senate Armed Services Committee hearing on March 10.³⁷ Whether this should be a deciding factor in the fate of the Constellation program and the degree of impact on Air Force space programs are open to debate, but it illustrates the need for coordination between agencies if maintaining a robust aerospace industrial base is important to the nation.

Conclusion

In terms of resources, the civil and national security space programs are closely tied. Both are undergoing changes at this time and close coordination would be beneficial to ensuring that the nation at least knows what resources are needed to implement whatever policies and programs are adopted. Whether those resources will be made available is a matter of priority setting across the government along with determining where commercial services can substitute for or augment government assets if they can be shown to save money.

Whatever level of funding is provided, both sectors need to avoid the cost overruns and schedule delays that have characterized government space programs in the past.

Notes

1. In the space community, whether these companies are "commercial" or not is controversial since they depend on the NGA subsidies for their existence, but that debate is outside the scope of this article.
2. For links to these policies, visit SpacePolicyOnline.com at http://www.spacepolicyonline.com/pages/index.php?option=com_content&view=article&id=60&Itemid=29 and click on "U.S. Civil Space Policy."
3. President Obama released his new National Space Policy on June 28, 2010.
4. House Armed Services Committee (HASC) Strategic Forces Subcommittee hearing on the FY2011 National Defense Authorization Budget Request for national security space activities, April 21, 2010. A webcast of the hearing is available on the HASC website: http://www.armedservices.house.gov/hearing_information.shtml.
5. Robert Butler, in response to questions at the April 21 HASC hearing. His comments begin at minute 17:53.

6. The “contested, competitive, congested” theme was unveiled in October 2009 in a U.S. statement to the UN First Committee and subsequently reiterated by other Obama administration officials (see Marcia Smith, “U.S. Seeks Transparency and Confidence Building Measures for Space,” *SpacePolicyOnline.com*, January 3, 2010, http://www.spacepolicyonline.com/pages/index.php?option=com_content&view=article&id=628:us-seeks-transparency-and-confidence-building-measures-for-space&catid=75:news&Itemid=68). According to the dialogue at the April 21 HASC hearing, it is a major component of the interim Space Posture Review.
7. NASA Johnson Space Center, *Orbital Debris Quarterly News* 13, no. 3 (July 2009), p. 2, <http://orbitaldebris.jsc.nasa.gov/newsletter/pdfs/ODQNV13i3.pdf>. The number of pieces of debris refers to those that are 10 centimeters in diameter or more, and is a constantly changing value as some debris reenters and other debris is created by more collisions within the debris cloud.
8. See, for example, Eric Sterner, “Beyond the Stalemate in the Space Commons,” in *Contested Commons: The Future of American Power in a Multipolar World*, (Washington, DC: Center for a New American Security, January 2010), pp. 107–127.
9. Butler, April 21, 2010, HASC hearing, beginning at minute 38:25.
10. <http://www.nasa.gov/budget>.
11. About \$500–\$700 million of NASA’s budget is for aeronautics research.
12. http://www.corporateservices.noaa.gov/~nbo/11bluebook_highlights.html.
13. Satellites at NOAA are part of the National Environmental Satellite and Data Information Service (NESDIS). A one-page summary of the FY 2011 NESDIS budget request is available at http://www.corporateservices.noaa.gov/~nbo/FY11_Budget_Highlights/NESDIS_FY2011_Budget_Highlights.pdf.
14. By law, NASA is required to submit the Aeronautics and Space Report of the President to Congress every year. In practice, it often is one or more years behind schedule. The current version, for example, covers FY 2007. It and previous versions are available on the website of the NASA history office: <http://history.nasa.gov/presrep.htm>.
15. This author was a space policy specialist at the Congressional Research Service (CRS) for thirty-one years and tasked with attempting to track national security space spending. It was not uncommon to see numbers printed in the tables in the Aeronautics and Space Report of the President for DoD revised in later years, sometimes significantly. At the time, Office of Management and Budget (OMB) personnel stated that the number shown for DoD was for all national security space programs, classified and unclassified. The authors of the Space Foundation report told this author that their OMB sources say that the DoD number does not include spending by the National Reconnaissance Office (NRO) or the National Geospatial-Intelligence Agency (NGA).
16. Space Foundation, *The Space Report 2010* (Colorado Springs, CO, 2010). Available at <http://www.thespacereport.org/>. The full report, showing the details of what is included in its calculation of U.S. government space spending, is available for purchase.
17. *Ibid.*, p. 40.
18. E-mail conversation with Space Foundation representative, May 2010.
19. The Space Foundation tables showing U.S. government space spending and the sources for the figures are on pages 40 and 51 of *The Space Report 2010*. Curiously, the source of the 2009 DoD space spending figure is listed as the Aeronautics and Space Report of the President, but no such report has been published for 2009. The most recent version of the president’s space report is 2007, as verified by the NASA history office (which produces the report) via e-mails May 14–15, 2010.
20. “Mission,” *GlobalSecurity.org*, <http://www.globalsecurity.org/org/overview/mission.htm>.
21. A provision of law championed by former senator Sam Nunn and former representative Dave McCurdy requires DoD to inform Congress if a program is going to exceed its baseline cost by more than 15 percent. If the program will exceed its baseline cost by 25 percent or more, the program must be restructured and the secretary of defense must certify to Congress that it is necessary for national security. NASA programs also have

- experienced significant overruns and Congress added a Nunn-McCurdy-like provision to the 2005 NASA Authorization Act (P.L. 109-155).
22. FIA is the Future Imagery Architecture, a program wherein Boeing was supposed to build a new set of electro-optical reconnaissance satellites. As Mr. Young noted, it was cancelled after an expenditure of about \$10 billion.
 23. SBIRS is the space-based infrared system of new early warning satellites. The program is behind schedule and over cost.
 24. Wideband Gapfiller is a DoD communications satellite program.
 25. Mr. Young's comments were made at a March 24, 2010, hearing before the House Science and Technology Committee's Subcommittee on Space and Aeronautics on President Obama's plan to rely on the commercial sector to design, develop, build, and operate the next U.S. human spaceflight system instead of on NASA. Mr. Young opposes the idea at least in part because of what happened with TSPR. A webcast of the hearing is available on the committee's website: http://science.house.gov/publications/hearings/_markups_details.aspx?NewsID=2776. His comments begin at minute 56:01.
 26. House Armed Services Committee, "Skelton, McKeon, Andrews, Conaway Introduce Bill to Overhaul DoD Acquisition," press release, April 14, 2010, available at http://armedservices.house.gov/apps/list/press/armedsvc_dem/SkeltonPR0414101.shtml.
 27. Gen James Cartwright, comments at Center for Strategic and International Studies (CSIS) Global Security Forum (May 13, 2010), beginning at minute 15:10. Audiocast available at <http://csis.org/program/global-security-forum>.
 28. An even larger space debris event occurred two years earlier. A Chinese test of an antisatellite (ASAT) weapon against one of China's own satellites in 2007 created more than 2,600 pieces, "nearly half of all known and tracked satellite breakup debris currently in Earth orbit," according to NASA's January 2008 *Orbital Debris Quarterly News*. It resulted in condemnation from many of the governments and commercial companies that have satellites in orbit.
 29. Jeff Foust, "A New Eye in the Sky to Keep an Eye on the Sky," *The Space Review*, May 10, 2010, <http://www.thespacereview.com/article/1622/1>, quoting MajGen Susan Helms, director of plans and policy, U.S. Strategic Command.
 30. Gen Kevin Chilton, Commander, U.S. Strategic Command, speech to 2009 Strategic Space Symposium (November 3, 2009), available at http://www.stratcom.mil/speeches/26/2009_Strategic_Space_Symposium_Commanders_Perspective.
 31. Marion Blakey, testimony before the House Armed Services Committee, Strategic Forces Subcommittee, *Space System Acquisition and the Industrial Base*, 111th Cong., 1st sess., April 30, 2009, available at http://armedservices.house.gov/pdfs/SF043009/Blakey_Testimony043009.pdf.
 32. Space Foundation, *The Space Report 2010*, p. 88.
 33. April 21, 2010, HASC hearing. The general's comments begin at minute 24:50.
 34. Pierre Chao, comments at CSIS Global Security Forum ("Are We Headed toward a Smaller Defense Industrial Base?" Panel, May 13, 2010). Audiocast available on the CSIS website: <http://csis.org/node/24996/multimedia>. These comments begin at minute 47:32.
 35. Denis Bovin, comments at CSIS Global Security Forum ("Are We Headed toward a Smaller Defense Industrial Base?" Panel, May 13, 2010).
 36. Secretary of Defense Robert Gates, response to a question from Rep. Rob Bishop, House Armed Services Committee hearing on FY 2011 National Defense Authorization Budget Request from the Department of Defense, February 3, 2010. The exchange is at the beginning of Part II of the webcast, available at http://armedservices.house.gov/hearing_information.shtml.
 37. Senate Armed Services Committee hearing on military space programs in review of the Defense Authorization Request for FY 2011 and the Future Years Defense Program. The webcast is available at http://armed-services.senate.gov/e_witnesslist.cfm?id=4460. The conversation begins at minute 65:28.

Wringing Deterrence from Cyberwar Capabilities

Dr. Michael C. Libicki¹
Senior Management Scientist
RAND Corporation

No serious policy maker doubts what would happen if a nuclear-armed power dropped its big weapon on a city, even though no city has been hit by a nuclear bomb in sixty-five years. The physics are clear and they work pretty much anywhere. The same cannot be said for cyber capabilities. No one knows exactly or even approximately what would happen if one state (or comparable nonstate entity) carried out a full-fledged cyber attack on another—despite the plethora of hostile activity in cyberspace that shows no signs of abating.

Three reasons explain why. First, systems are vulnerable only to the extent that they have unknown errors that can be exploited—the extent of which is inherently unknown (by the defenders) almost by definition. Second, the impact of any cyber attack is usually proportional to the time required to recover the attacked system, something neither defender nor attacker has a good idea about. Third, national cyberwar capabilities are a closely guarded secret. None of these facts are apt to change. The first two follow from how the systems work. As for the third, if a state revealed exactly which vulnerabilities it targeted, they would cease to be vulnerabilities sooner or later.

This would seem to present a dilemma to states developing cyberwar capabilities (as differentiated from similar capabilities used for espionage, which is how such states *do* use them today). Having spent so much time and trouble developing them, they have nothing to show for their efforts until and unless they go to war. Being invisible, cyber capabilities cannot be easily used for deterrence, much less compellance (aka intimidation). As such, they differ from many, perhaps most, other tools of war, whose possessors can, at least, rationalize their efforts by telling themselves that their arts keep the peace by keeping enemies at bay.²

That they cannot easily be used for deterrence, however, does not mean they cannot be used at all. What this paper explores are some ways that cyber capabilities can be so used, the circumstances under which some deterrence effect can be achieved, the obstacles to realizing such achievement, and some realistic limits on our expectations.

Looking Large or Making Others Look Small?

For most forms of military power, demonstrating capabilities is designed to show how powerful one is. But cyber attacks have as much, or more, to do with the target's vulnerabilities as with the attacker's ability to exploit these vulnerabilities. This echoes into strategic decision making. Is the point of demonstrating cyber capabilities to look powerful or to make the other side look powerless (or, more precisely, feckless in its inattention to systems security)?

It is certainly more efficient to put the emphasis on one's power. Caution would be induced in all actual or potential opponents; the exercise does not have to be repeated for each one. Looking large also serves to deflect potential attacks away from you toward others. Those who would build up perceptions of their power do not have to shy away from the problem of attribution (except insofar as to leave enough ambiguity in cases where one prefers not forcing the target to respond). Finally, there's glory in it (or at least it reflects well on other sources of national power).

But concentrating on exposing another state's weaknesses has its virtues. It serves as a more general deterrent to action by a given state, akin to the exposure felt by those who live in glass houses. It also deflects the reaction that displays of power often engender, by turning the focus toward others. After all, if a state is vulnerable in cyberspace to one attacker it may be vulnerable to at least a few others, as well. This mark would not be erased if the target state counterattacked.

For the United States, the question comes down to whether it is better to demonstrate that it can hold its own or do better itself against everyone, or that anyone might be able to do as much against some specific country. In a globalized economy, a severe cyber attack against foreign institutions may hurt the United States directly (if our economy relies on information services from such institutions) or indirectly (if our economy relies on other goods and services). Cyberwar contravenes trust relationships and confounds the rule of law. A posture that inhibits cyberwar on (almost) every other state, rather than the United States alone, is also entirely consistent with the U.S. policy of framing of today's security situation as the world consensus against a few rogue states.

Does Simply Showing Up Say Enough?

The most obvious way of demonstrating that you can hack into someone else's system is to actually do it and leave a calling card: e.g., "Kilroy was here." In all likelihood, the target will try to cancel the penetration, and, as it were, white-wash the calling card. If you then prove to the other side that your presence can be repeated, or, better yet, cannot be easily eradicated, the target may be forced to believe that your ability to pop into his system at will is an indisputable fact that forces the target to recalculate its correlation of forces against you.

This sounds simple, but, as with everything else in cyberspace, it is anything but. We can start with the first question: will the calling card be read and its existence transmitted to the leadership? If left for someone to stumble over randomly, the answer may be no—indeed the more penetrable a system is, the less one can say about the acuity of its administrators, and the less likely anything left behind to be found would, in fact, be found. Yet making this card more obvious is not difficult. The card can mail itself, so to speak, to the system's administrators in the hopes that they will tell the leadership. If the system at issue is connected to the rest of world—a big if for sensitive systems—it can mail itself directly to the target's leadership (most of the world's leadership has some sort of e-mail access to their offices, if not to their own desks). The latter *should* work—unless the leadership gets it into their heads that the purpose of the "trick" is to persuade the leadership to expend more resources on information

security and therefore conclude that the “trick” is a setup by its own cyberwar proponents.

If all else fails, one can announce its presence (“look here and you’ll find a card”), either publicly or discreetly. Even this approach has risks. It is hard to drop such a hint without conceding one’s participation in such activity in the first place—and hence its legitimacy as a tool of statecraft. Acknowledgment is something no country has publicly done—the broader the hint the greater the risk. Furthermore, any hint that has to be checked out somehow requires the recipient to be willing and able to discern the calling card before those systems administrators who might be embarrassed for having been penetrated can find and burn the card themselves (revealing a secret from such a system eliminates the problem of *post hoc* erasure but introduces the question of whether the information came from penetration or from other sources or was simply made to look that way). Such investigative diligence is not impossible, but it does take some forethought on the part of those being victimized by this trick. One should not underestimate the ability of others not to hear the bad news or, if they hear it, to put on a good show of not having heard it. Cyberwar is a realm in which deception is the stock-in-trade.

The next difficulty is proving that the ability to penetrate a system at will has nontrivial consequences; as noted, if the trick cannot be persistent or the infection can be cleaned up there is some chance that the target will believe that next time this will be impossible. The victim may tolerate the attacker’s ability to stay resident on the system precisely because it finds the penetration—at the level being demonstrated—to be if not tolerable then less intolerable than the cost of hitting a systemic reset button. If so, the *maximum* demonstration effect of the penetration cannot be greater than the hassle of cleaning up the system. Furthermore, the impact of the penetration has everything to do with the sensitivity of the system being penetrated, which requires one to understand which systems are both hard and critical to the target (notably, critical to the target’s ability to wield power). If the target’s power base relies on what are essentially dark systems—not only isolated from the globe, but whose existence is a mystery—then penetration will leave that much less impression on the target.

A penetration is only partial evidence that one can carry out computer-network espionage: “partial” because the ability to exfiltrate data past border data guards without tripping anomaly detection software also has to be shown. Contrary to many popular assertions, the ability to read data does not imply the ability to break a system or to alter its data—just as the ability to watch a video on a laptop does not imply the ability to edit said video while on the laptop. More broadly, users and network administrators have different privileges and only the latter have the ability to alter certain files or make the networks misbehave in certain ways. This does not exclude the possibility that the target leadership will not be sophisticated enough to know the difference. The fear of penetration has somatic roots and thus may be projected psychologically. If the penetration—a violation, as it were—comes as a shock, the fear of further implications may induce fear on the part of the leadership—regardless of how *technically* unfounded such implications are. Again, in few areas of national power is there a greater gulf between what leaders understand about systems

and what is actually so. From another perspective, a country as equipped as the United States is with precision weaponry and sensor-to-weapon communications links can prove to itself that everything that can be seen can be destroyed—yet evidence that it can use tactical intelligence alone for coercive power (“we know where you live”) is far less impressive than technology would argue should be the case.

To a more sophisticated leadership (or one willing to trust its sophisticated advisers) the fact of penetration—even penetration into sensitive systems—is no proof of the ability to manipulate. So, manipulation, itself, may have to be done—and presumably done at sufficient level to imply that comparably important systems are at risk from attack. Doing as much presents three problems relative to leaving a Kilroy message: it is harder to pull off; it is easier to detect at the time of attack and thereby reverse before its effects can be demonstrated; and it is distinctly, if not decidedly, more hostile. Espionage is not a *casus belli* and nations even do it to those they consider friends. Sabotage, however, *can be* a more legitimate pretext for the use of force and nations almost never do it to those they consider friends. In practice, it is hardly clear to what extent a demonstration sabotage, so to speak, would be considered tantamount to sabotage with serious consequences that deserve a response. If nothing else, the embarrassment factor from being a victim of practice sabotage may not be that much less than if the sabotage had serious consequences. Alternatively, the victim may refuse to believe it has been a victim, forcing the attacker to carry out sufficient sabotage to make the point and thereby make the embarrassment public, but also increasing the risk and consequences of doing so.

A Kilroy approach has its merits but certainty is not one of them.

Inducing Fear, Uncertainty, and Doubt

After he left IBM to found his own eponymous company, Gene Amdahl coined the term FUD, to refer to the “fear, uncertainty, and doubt that IBM sales people instill in the minds of potential customers who might be considering Amdahl products.” Nuclear arms fostered fear, but there was not a great deal of doubt or uncertainty in their applications. Cyber capabilities may be the opposite—in-capable of inducing real fear directly, but putatively capable of raising the specters of doubt and uncertainty, especially in the minds of those who might wonder if their militaries would work when needed. Hence, fear, if they have to use force of dubious reliability (against an untouched opponent). The target state need not believe that it will lose a war it otherwise would have won were it not for such implanted logic bombs; *pace* Mearsheimer, it suffices if the potential attacker believes that its odds of winning quickly are not good enough.

The basis of an uncertainty-and-doubt strategy is the perception that the United States (used here as a familiar exemplar) has hacked into the systems of a target country and has implanted code into its communications systems and perhaps even its weapons systems. This code lies dormant until precisely such time as the target state wishes to use its military. At that point the code is unleashed: communications cease to work reliably, messages sent across the network may or may not be authentic, the ability to keep secrets or even operational details (what unit is where) cannot be guaranteed, and, at worst,

the various weapons relied on for war may not even work. Perhaps the United States has queered the systems of both sides, in which case both sides would be embarrassed before third parties (which may include potential adversaries looking for signs of weakness) by their mutual inability to carry out military operations. Worse, the United States may have picked sides, in which case the correlation of forces on the battlefield will be far worse than the target state had counted on. If the target state believes that (1) it has been so hacked, (2) it has no alternative but to go with the systems and equipment it has, (3) its estimates of war's outcomes are decidedly worse as a result, and (4) it has a choice on whether to go to war, then one may conclude that its desire to go to war would be reduced as a result of a U.S. FUD strategy.

Note that the United States need not necessarily hack into the target state's systems in order to achieve that effect—it suffices that the target state *believe* as much. Indeed, the target state need not believe that the United States was actually the source of its FUD—it could as easily be another country (e.g., the UK, France, or Israel)—but it is likely to suspect the United States as the most willing and capable country (a few nations on good terms with the United States but suspicious of its friends, such as Israel, may cast their blame elsewhere).

The most obvious way for the United States to induce that effect is to actually carry out such a hack, but that still leaves several problems, many enumerated above. Specifically, cyber attacks, particularly against hard targets, require knowledge of vulnerabilities, which are in limited supply. An attack that gives rise to a fix may convince the target that it has recovered its invulnerability and may have to be backed up with a more-difficult-to-pull-off attack to reestablish the perception of vulnerability, which in turn may induce a fix, and so on. However, an attack that is merely hinted at leaves nothing specific to find and hence nothing specific to fix (general fixes such as selective disconnection or anti-malware guards may be employed, but there will be no specific attack that suggests which of these general fixes merits employment). After all, it takes twice as long to find something as it does to find nothing—and that is only true if one believes that sweeping a space and finding nothing proves that nothing is there. Since finding the code does not calm the system—after all, the attack code was latent—it is impossible to rest assured that such code has been found even after a great deal of effort has been put into the quest, particularly because it is never clear exactly what would distinguish such code from any other code. Arthur C. Clarke's tenet—"any sufficiently advanced technology is indistinguishable from magic"—applies nicely here in much the same way that foreigners are apt to be convinced that our intelligence agencies are omniscient. Our own cyber warriors need never single out the target of their magic, simply hint broadly enough that they do, in fact, possess enough of the stuff. For all anyone knows, foreigners actually believe as much, and any testable hint in that direction could blow the fairy dust from their eyes.

Although the best reason to hint at rather than demonstrate such a weakness is that one cannot get caught at it, this hardly means that one will not be blamed for it. Military targets tend to be the harder targets of cyberspace. Countries certain their militaries have been attacked may be less inclined to blame their neighbors, whom they may not credit with enough sophistication to pull

off such an attack, and more apt to blame a large country, such as the United States. The clearer the *perceived* demonstration, the more the country responsible will be perceived as overtly hostile. This factor may obviate the use of demonstrations or even a hint of their use that was contemplated to inhibit conflict among two states that the United States does not feel—or wish to appear—hostile to. India and Pakistan constitute an example; U.S. policy is to be friendly to both but any war between them would clearly contravene U.S. interests, especially if such a war turned nuclear. Even Colombia-Venezuela may be an example. Even if the United States is not the best of friends with the latter, open hostility gives further credence to its leadership's argument that whatever woes it is experiencing have less to do with incompetence on its part and more to do with subversion from the *yanquis*.

The vulnerability of third world nations to such magic is enhanced to the extent that they have to purchase (or steal) their military systems. As a general rule, countries that make their own equipment, or who are technologically as sophisticated as those they purchase from, tend to be adept operators of their own equipment. Unsophisticated nations are less efficient. Thus an F-16 in the hands of an American pilot is likely to be far more effective than in the hands of a typical third-world pilot; more to the point, an F-16 that is maintained by the United States is apt to be in better shape than a similar plane that has to be maintained by the operator's organic staff (a similar, but arguably lesser, disparity may exist for less sophisticated equipment such as AK-47s because of the superior manpower and training base here). Nevertheless, the difference is one of degree. With information systems, the difference may be one of sign: what would be a system of positive value in U.S. hands is one of *negative* value in the hands of a hostile state. If so, cyberwar is the reason why. Nations that purchase sophisticated information technology need to know not only how to use and maintain it, but how to defend it. The failure to defend such systems may mean that such systems, under pressure, leak information, drop out unexpectedly, or provide misleading data to warfighters and other decision makers—with consequences that may be worse than never having had such systems at all (particularly if they have replaced less sophisticated systems). A great cyber warrior is likely to be orders of magnitude more efficacious than a merely good one, in ways that do not characterize the difference between a great hardware repairman and a merely good hardware repairman. The inability of third world countries to generate great cyber warriors may be attributed to poorer educational facilities and a less-well-educated recruitment base, but their lack of access to source code or at least their not having built any of the source code (and having few residents who have ever built operational source code) has to be considered a major factor in making their military systems far more vulnerable to cyber attack than comparable systems of sophisticated states.

How would such an attack affect the other side's behavior—the primary point to such an attack? The desired effect has already been limned—states take the potential for failure and embarrassment into account because they cannot count on their militaries. Whether they *actually* react that way depends on several parameters. One such parameter is the extent to which they believe they have a choice about using their militaries in the first place—nearly all

defenders and a surprising percentage of attackers believe that they have been put into a position where they have no choice but to wage war because the alternative to fighting is worse (often, it is fighting from a less advantageous position—as the Japanese believed in 1941 or the Germans in 1914). Of course, for them, deterrence, in general, has already failed. Another parameter depends on the extent to which their military power depends on the credible performance of their high-technology systems (many high-technology systems such as electronic warfare—not to mention cyber warfare—acquire their value from the assumption that their opponents are comparably armed). A closely linked third is the degree to which they believe their systems are sufficiently exposed to the outside world so as to be really vulnerable. Bear in mind that an outside entity that wishes to queer military equipment after but not before a triggering event (e.g., its use in war) has to not only infiltrate such systems in peacetime, but be able to do so within a relatively short time window in wartime (in other words, the use of patient methods that count on some fleeting opportunity to enter may simply not work or not work reliably enough if such methods have to be used in a narrow time window). Much equipment, especially if mobile, is disconnected from networks when in use, if not by necessity then because of operational security. An alternative to requiring real-time access to trigger an implant is to make the implant intelligent enough to forbid certain types of uses without necessarily being triggered to do so: apart from ensuring that such an implant has access to enough information from the queered system to do so (mandating code of nontrivial size), distinguishing training from the real thing is quite difficult (although access to GPS may indicate that a system is in the wrong country); figuring out that a communications system is being used for war rather than an exercise is particularly difficult (sometimes even humans are fooled). Such devices may fail on their own; if such a mechanism is suspected, the target military may try to game suspect systems in an effort to induce errors characteristic of such an implant. Last is the simple proposition that the other state may simply not believe the magic, not during peacetime and certainly not when the war drums sound. Going to war requires surmounting a great many fears; third-party magic may simply be another one.

This discussion would not be complete without considering some of the *other* effects of making third parties believe that we have a ready-to-go gremlin in their systems. Some of them are simply prudent—e.g., tightening up on security, reducing their systems' exposure to the outside world, building in a greater redundancy for both communications and data. They may come to pay more attention to operations security; any belief that the vector into their systems is a spy will induce them to practice more personnel security. If at some point the United States has to fight *together with* such countries all that would be appreciated.

Target states may react at a broader level. If the root problem is networking (or at least networking beyond the bounds of intuitive understanding) the basic solution is less networking or at least a more deliberate advance into networking. To the extent that one believes that a network-centric military is a more efficient military, inducing wariness in others keeps the United States ahead. Correspondingly, however, if networking is oversold in terms of its efficacy and

efficiency, if the risks are understated, or if networking is only appropriate for states that have reached a certain level of technological maturity (or face similarly mature opponents), then the general retreat from charging up the network-centric hill may redound favorably to them. Similarly, they may persist with network-centricity but reduce their links to the rest of the world; a self-denial-of-service policy may reduce their militaries' ability to learn from others (and perhaps even themselves) but how much it reduces their learning is hard to say in advance: many militaries are so self-contained that they are apt to suffer from not-invented-here syndrome even in the absence of cyberwar.

Many of the reactions, however, may be harmful to the United States. For instance, previous innocent liaison that may have suggested the contours of their information systems may become more difficult. Target states may conclude that their dependence on foreign sources for networks and military supplies poses a particular danger to them. This could spur them to build more indigenous production capability, or, alternatively, pressure their suppliers to hand over source code when they deliver their systems. The same suspicions may color their agendas toward civilian gear, such as routers, used in their networks: indigenization, more transparent source code, and better training (at cyber defense). If they convince themselves that adherence to the Windows/Intel standard is the root of the U.S. ability to hack their systems, they may lean toward more open operating systems, or, worse, make common cause with other countries (e.g., China) who are striving to build a foundational layer believed not to be controlled by U.S. companies.

States' suspicions may also color their attitudes toward the United States in general, particularly if U.S. policy is to reinforce such suspicions with the well-dropped hint or two—which may be a good argument for discretion and indirection, if nothing else. Finally, such suspicions may encourage leaders of such states to blame the United States (or a similar bogeyman) for *everything* that goes wrong in their militaries; the tendency to assume that all disasters are the result of sabotage did not start with the invention of cyberspace (similarly, Egypt managed to convince itself that its air forces could not have been destroyed in June 1967 by Israelis; the Americans had to be at fault). If such excuses are believed to the point where the public excuses the mistakes of military leaders, the latter may be insulated from the effects of their own mistakes and maintain their influence and power longer than they should. Alternatively, to the extent that such leaders themselves come to believe their excuses they will have deprived themselves of useful opportunities to learn from their own failures.

Making It Seem as Though the Attacks Themselves Created Counterattacks

Another useful form of intimidation, but one specific to the threat of cyber attack, is to convince others that their attacks will bring retaliation upon their heads whether or not the target makes any decision to do so. As Tom Schelling has argued, this threat makes deterrence stronger by eliminating the possibility that the target state will “chicken out.”

The difficulty is engineering such a capability without its biting the target first. Any automatic retaliation capability, for instance, has to know where to send its reprisals. An adroit hacker should have no problem arranging its attack through a chain of servers, any or all of which may be struck back by the hack-back mechanism. If these servers were chosen for their sensitivity (e.g., servers owned by a major media outlet), the result—an attack on innocent servers carried out by a hypersensitive mechanism—may be undesirable.

A variant hack-back designed against computer-network espionage is to create tempting but malformed documents (e.g., corrupted “.pdf” files) that put malware on machines that open them up for reading (the value of the malware is vitiated if such documents are opened on isolated systems). The trick is to keep such documents from being opened up on your own system—but if the consequences are relatively benign (the malware phones home or puts the machine under your control), the risks are manageable.

Insofar as deterrence requires making the other person *think* that attacks on you will rebound on him, it may be possible to achieve the status of a hack-back device without actually having one—but that would require that man-in-the-loop retaliation have the automated consistency of a hack-back device. Were that possible *and demonstrated* it would be next to redundant. A human reaction with those characteristics, notably its having been carried out in the face of potential counterretaliation, is tantamount to (and has the advantage of appearing more forgiving than) an automatic system.

The last notion is making the return cyber attack appear as if it was the logical rather than the designed or deliberate result of the original cyber attack. If a cyber attack against one country’s electrical system led to a similar outage in the attacker’s electrical system, the attacker may conclude that everyone’s systems are so interlinked that no one part can be disturbed without disturbing the other. In practice, such a trick works (if at all) only until the retaliatory attack is analyzed and characterized. Its applicability is, anyway, narrow: the plausibility that a Russian attack on Ukraine’s power distribution system bounced back is higher than the plausibility that a similar attack on Australia’s did.

One problem with this or any other automatic hack-back notions is that they do not contribute to deterrence until they are activated. In *Dr. Strangelove* it was obvious that Russia’s doomsday machine was pointless until it was announced. But announcing a hack-back capability in sufficient detail often suffices to enable clever attackers to defeat or, worse, misdirect its force.

Attacking a Hapless Friend of the State That Needs to Be Impressed

One method of demonstrating cyber capabilities is to attack a state that clearly deserves it and use its fate as a lesson for others. Such a state should be one that relies on some infrastructure and is not very good at protecting it. It helps if the target state is generally not a very sympathetic one and has no good capability for responding without escalating matters more than it is prepared to handle.

Overall, however, there are more than enough reasons to recommend against trying this. The effect requires some attribution, at least implicit, on the attacking state’s part—otherwise the only thing being demonstrated is that

some poor schlep of a state builds infrastructures it cannot defend from anyone. But any attribution, even implied, paints the attacker as aggressive, and as a bully (for picking on a weaker state); it also legitimizes cyberwarfare. Other states may be impressed by the attacker's chutzpah but not necessarily its acumen. It is too easy for them to argue that they are hardly as vulnerable. If the attack is permitted by a weakness that others shared, they may take the results of the attack more seriously—but only as long as it takes to fix their similar vulnerabilities.

If All Else Fails, Try Direct Intimidation

The last method of intimidating other states, for the purpose of either coercion or deterrence, is to attack them directly. This proves that the attacker is willing and able to carry out cyber attacks, at least the first time.

The first issue in this strategy is whether the attacker wants to gain the credit for such an attack. If the point is deterrence, or at least the demonstration that the target state has assets at risk through cyber attacks, then attribution is unnecessary. It could be counterproductive in that it gives the target state an opportunity to demonstrate its power to counterdeter. Self-attribution also shifts the focus from the target state's vulnerabilities to the attacking state's aggression. The only reason to value attribution in such circumstances is to persuade the target state to direct its own cyber attack capabilities to some other state; yet, unlike criminals, states rarely carry out attacks by reasoning that one victim is just as appropriate a target as another.

If the point of the cyber attack is to coerce, then the attribution question is tricky. Normally, it is difficult to tell another "do what I want" without stating who "I" is. Difficult is not impossible though. If a country (e.g., an Islamic state) can ally its interests with those within the larger community (e.g., the *umma*), particularly a community with powerful nonstate actors, then some correlation can be made between the timing and nature of the attack and the behavior of the target without necessarily indicting the state itself. A state could plead that it has friends that it cannot control. So-called patriot hackers may all be citizens of accused states without such a state being particularly hypocritical—as long as it makes a halfway-credible attempt to bring them under control. Alternatively, the state can identify its interests with those of some broader community and take satisfaction in cyber attacks that punish behavior that contravenes the community's interests without necessarily having to admit support, much less protection, or even sponsorship of such attacks. Its coercive potential may be limited to those values held by the community—normally just a fraction of its overall interests (e.g., good for taking action against a common enemy but not so good at asserting particular interests, such as water rights). But that may be enough.

But the more clearly "I" is identified the easier the target's attribution problem and the greater the cost and risk entailed in carrying out the attack. The first requirement is ascertaining whether there is any gain from coercion at all—in other words, are there *ever* circumstances where the behavior of the target state evolves in the attacker's direction? This consideration transcends cyberspace. Assume that attacks that yield less pain than some pain-trigger are too weak to

coerce the target state and that attacks that yield more pain than some response-trigger force the target state to hit back or at least turn the target state into an enemy, thereby yielding a less cooperative policy (it may yield on some specific points but grow far less cooperative overall—a loss for the attacker). If the pain-trigger is less than the response-trigger then there is a Goldilocks zone in between, where the target conforms appropriately. But if the pain-trigger lies after the response-trigger, no attack, however calibrated, will change the target's policy in the desired direction. This, of course, is a problem with any sort of coercion. The United States dramatically demonstrated at least twice that it reacts badly to attack: both after Pearl Harbor and after the 9/11 hijackings. Although the first was probably not an act of coercion (since Japan believed it was going to have to fight the United States sooner or later, it was probably closer to preemption), and the second may not have been coercive in the usual sense (indeed, it may have been carried out specifically to goad the United States into intervention),³ the lesson is not straightforward. Nevertheless, these are lessons for any nation that would coerce the United States.

The attacker could carry out *sub-rosa* attacks (which are more or less unique to cyberspace), by going after systems the failure or corruption of which may be costly to government ends but whose effects are not obvious to the public. By doing so, it gambles that the positions of policy makers' pain-trigger and the response-trigger are different from the public's. Policy makers feel the pain; unforced by public opinion, they may be freer to yield to coercion, especially if yielding is also invisible to the public (e.g., by not pursuing options that they could have reasonably rejected on other grounds absent coercion).

Direct intimidation may work particularly well if the attack could demonstrably have done more damage than it actually did. All attempts at coercion evoke a balance of anger (for having been hit) and fear (of the next hit). If the initial attack is mild, the anger component may be assuaged by the fact that while the insult is clear, the injury is not; the fear component, however, is just as great with a pulled punch as with a fully formed punch—as long as the target understands that the punch was, in fact, pulled (in the ambiguities of cyberspace the clarity of that message may easily be lost).

The dilemma in direct intimidation is in how far to take credit for it. Assume that an attack that induces retaliation yields more pain than gain. Yet if an attacker hides its attacks too successfully it gets no direct coercive gain. At first blush, there appears to be no sweet spot. If it manipulates its attack so that the target is X percent certain who the attacker is, then it would seem that the attacker gets X percent of the value of coercion but faces an equal X percent likelihood of retaliation—still a net loss (multiplied by X). Yet, if one assumes that the target assesses the cost of retaliating against the wrong state to be higher than the cost of *not* retaliating against the right one against a target that fears hitting the wrong state, there may well be a sweet spot. Consider an attack that the target state believes had a fifty-fifty chance of coming from the actual attacker. It knows that the expected value of noncompliance (to whatever the attacking state might have wanted) is half the cost of a subsequent attack. But it only has a fifty-fifty chance that it will get retaliation right. Since it fears blundering more than it fears being seen as a wimp, it does not retaliate. The attacker

enjoys net coercive value. Exactly what that sweet spot is, however, is almost impossible for the attacker to determine since it has to gauge the target state's blunder-wimp trade-off. But within a fairly wide band, it knows that as the target state's certainty ebbs, the odds of retaliation fall faster than the loss in confidence (this assumes that a 50 percent confidence level is a true 50 percent and not a 50 percent likelihood that the target state is certain and a 50 percent likelihood that the state is clueless). Thus its best strategy is a cyber attack whose ambiguity leaves a little something to chance. The target state may do its best to hide the exact nature of its blunder-wimp trade-off to better throw off the attacker's calculations, but given the nature of crises coupled with the natural ambiguities of cyberspace, it does not have to try too hard.

What Is the Point of Intimidation, Anyway?

What can be said about the unique benefits of an overall cyberintimidation posture, particularly for a nation with other methods of appearing powerful? We can summarize as follows.

First, cyberwar capabilities, unlike conventional military capabilities, might inhibit the use of conventional military force, although this is not really intimidation as such.

Second, if a nation's means of deterring a cyber attack rest primarily upon the ability to hit back in kind, then establishing deterrence, prior to any retaliation, requires some belief by potential attackers that the would-be target state has the requisite capability. If violence is off the table, then whatever conventional military capability the deterring state has does not count. Whether it is wise to brandish such a capability and thereby allow others to *infer* that the purpose of such a demonstration is to permit violence to be abjured is another issue.

Third, the purpose of such intimidation may be to "persuade" other countries to take actions that are specific to cyberspace: e.g., severing the links between other governments and their "private" hacking organs. If so, the use of cyber-based intimidation at least has a consistency, perhaps even a poetic justice, to it. (The irony of having the United States lecturing socialist countries on the evil of privatizing state functions should not go unremarked.)

Fourth, such an intimidation strategy may signal that cyber aggression is a tenable way for states to express dissatisfaction with one another without crossing the firebreak that would lead to serious violence. Put another way, boys will be boys, but by keeping aggression linked to the military equivalent of pillow fights no one can get seriously hurt. Such a strategy may be too clever by half in that it assumes that everyone knows what the rules are and can be counted on to keep to them. The assumption that a firebreak that separates the virtual and the physical is more likely to keep the peace than one that separates the hostile from the civilized is unproven, to say the least.

Now we ask, are the short-term gains from this sort of intimidation, even if latent, worth the long-term discomfort from accelerating the evolution of a particular class of weaponry, as it were? In the nuclear race between the United States and the Soviet Union circa 1960, Khrushchev boasted that his country could turn out missiles "like sausages." The United States reacted by

accelerating its own missile program. By the time it caught the Soviet Union sneaking missiles into Cuba (actually a year earlier), the United States knew that it had a decided strategic edge (similar perceptions, indeed, helped induce the shipment of missiles in the first place). The Soviet reaction was to accelerate their own programs in order to achieve parity by the time of SALT negotiations (1972). Had neither side flaunted its capabilities it is conceivable that negotiations might have generated parity and its political consequences (detente) at roughly the same time but at much lower levels (that current negotiators are still trying to climb down from). The missile race is hardly unique, as the pre-WWI Anglo-German shipbuilding rivalry demonstrates.

Nevertheless, a cyber arms race is not the most likely course of events. In great contrast to most military weapons, the damage from a cyber attack tends to reflect the characteristics of the target (i.e., its vulnerability) more than the characteristics of the weapon. Even were this not so, either side's cyber weapons' capabilities are a matter of serious dispute—an observation that undergirds this whole essay (of course, the sort of numbers that *do* inform the balance of missiles or dreadnoughts are irrelevant).

The subtler influences may matter more. To brandish a capability is to legitimize it. In other words, it is to claim that states are right to build such a capability, right to make preparations to use it offensively, and right to harvest the political gains that intimidation—or at least the induction of uncertainty and doubt—may offer. The current U.S. posture on cyber weapons stands midway between our posture on nuclear weapons (useful for very special occasions) and chemical/biological weapons (sinful even to contemplate)—perhaps described as a form of coyness. Other nations (e.g., China) do not even go that far in terms of admitting their capabilities and why they might use them; yet their blanket denials (“of course not, that’s criminal”) are not necessarily seen as credible. This only partly reflects the great range of opinions on whether they are weapons of mass destruction (highly unlikely but not provably impossible) or even weapons of mass disruption (no existing proof yet); Estonia suggests that they can only be weapons of mass annoyance. On a day-to-day basis, cyber attacks are treated as criminal matters, which effectively delegitimizes them. It is less clear whether such delegitimization is associated with the act *per se* or its use by private parties. The United States would prefer that other nations treat cyber crimes with greater seriousness and avoid the temptation to privatize the application of military force in cyberspace: e.g., linkages between the Russian government and the Russian Business Network, or between China and its freelance or “patriotic” hackers. Ironically, moves to legitimize such weapons may make it easier for other countries to take ownership, and hence responsibility for their usage by their people (howsoever squishy that concept is becoming).

Notes

1. The views expressed in this paper are those of the author and do not necessarily reflect the views of the RAND Corporation or its sponsors.
2. For further discussions and background to this paper see Martin Libicki, *Cyberdeterrence and Cyberwar*, MG-877-AF (Santa Monica, CA: RAND, 2009), available at http://www.rand.org/pubs/monographs/2009/RAND_MG877.pdf, particularly chapters 2 (“A

- Conceptual Framework”), 4 (“Why the Purpose of the Original Cyberattack Matters”), 5 (“A Strategy of Response”), and 6 (“Strategic Cyberwar”).
3. For further treatment see Martin Libicki, Peter Chalk, and Melanie Sisson, *Exploring Terrorist Targeting Preferences*, MG-483-DHS (Santa Monica, CA: RAND, 2007) available at http://www.rand.org/pubs/monographs/2007/RAND_MG483.pdf.

Panel VII: Strategic Nuclear, Space, and Cyber Forces

Summary of Discussion

**Colonel Dana E. Struckman
U.S. Air Force
National Security Decision Making Department
Naval War College**

The Ruger Workshop's Panel on Strategic Nuclear, Space, and Cyber Forces included information on the current state of systems critical to both the military and civilian sectors. The panel included very insightful and topical presentations by Ms. Amy F. Woolf of the Congressional Research Service, Ms. Marcia S. Smith of the Space and Technology Policy Group, LLC, and Dr. Martin C. Libicki of the RAND Corporation. Amy Woolf provided an informative presentation on the current state of U.S. nuclear forces. Specifically, she explained how the New Strategic Arms Reduction Treaty (New START) and President Obama's pledge to take concrete steps to put the nation on a path to zero nuclear weapons will affect the deployed nuclear force, as well as the nuclear weapons complex. Marcia Smith suggested that many civil and national security space programs are closely tied, particularly in terms of resources, and that few people really understand the bifurcated and confused structure that attempts to control current operations and future developments in space. Additionally, she mentioned that space activities today seem to revolve around the theme that space is congested, competitive, and contested and that the Obama administration's space policy is not yet clear. Ms. Smith mentioned that new policies and strategies for space are needed to confront the current environment, and, in particular, avoid catastrophic problems such as satellite collisions. Finally, Dr. Martin Libicki offered a very interesting look into the complexities of cyber capabilities and the difficulties in determining what would happen if one state, or comparable nonstate entity, launched an all-out cyber attack on another. Since these capabilities are not readily visible, he offered ways in which they could be utilized in a deterrent role or perhaps to compel an adversary, although this is an incredibly difficult task. Dr. Libicki suggested, however, that does not mean they cannot be used at all, and in some circumstances cyber capabilities perhaps can be used to achieve a measure of deterrence.

The moderator opened the panel discussion by reminding the attendees that the issues discussed on this panel have far-reaching effects on both the civilian and military sectors of our society.

The first discussion topic and question asked a participant's assessment of whether the Department of Defense (DoD) was doing too much or perhaps not enough in the area of cyber war. A respondent stated that this is a very hard question and limited the answer to cyber defense. The United States spends an

enormous amount of money on cyber defense, but is still struggling to determine what information we are trying to defend and the importance of that information. From a technical standpoint, the respondent stated, the United States is probably doing a fairly respectable job but more effort is needed with regard to the interface between commercial hardware and software and its clients. Moreover, any cyber capabilities possessed by state or nonstate actors are cloaked in secrecy, so determining what to defend against is incredibly challenging. The respondent further added that perhaps a method the United States should adopt would be to ensure we can defend ourselves against agencies like the National Security Agency since this would probably most closely mimic the capabilities of other states, specifically China and Russia, and how they could potentially affect our networks. Another participant suggested that this is a new area of warfare and little is known about it due in large part to its level of classification, specifically related to the defense of information systems. The participant asked whether the DoD could utilize any of the commercial systems currently in use for defense of DoD networks. The respondent answered that the government is now, and has been, on very close terms with software and antivirus vendors who have a broad participation in network defense. An important issue raised in this question was whether the DoD should defend things that are not part of the DoD. The answer to this question is probably no since the DoD simply does not bring that much to the table and that would raise a lot of issues, specifically in the realm of privacy. The respondent added that currently we really have to depend on the infrastructure of others and the individuals that defend themselves.

The next line of questioning focused on areas in which the United States may be underinvesting and the fact that there are a number of areas in the DoD where infrastructure and personnel experience—namely, in the area of nuclear weapons development—are being lost. A participant suggested that experience in nuclear weapon design is lacking in the United States today and asked, given our moratorium on testing, how confident we are in our weapon if we have never actually tested a weapon that we designed. A respondent stated that from the scientific perspective, the lifespans and reliability of our nuclear weapons are actually pretty high and should remain so for the next forty to fifty years. In essence, the life extension programs in place have been effective thus far in ensuring a high degree of confidence in our nuclear weapons. However, if the United States were forced to manufacture new parts that have not been produced in decades, this would be incredibly challenging, but not necessarily impossible. The respondent mentioned that the Nuclear Posture Review (NPR) does have a bias against the manufacture of a new nuclear weapon, but it does not completely rule out the option of manufacturing a new nuclear weapon. Rather, the NPR states that this option will only be allowed if there is absolutely no other choice and the president is in agreement. The respondent was then asked about the problems with the human capital in the nuclear weapons complex. A very difficult problem facing the nuclear complex right now, specifically with regard to nuclear weapons development, is replacing aging nuclear weapons engineers with younger engineers who are interested in this type of science. It is a challenge for the nuclear laboratories to attract talented engineers with

interesting and relevant projects. At the same time, an aging infrastructure supporting nuclear weapons development is receiving a much-needed increase in funding to update buildings that date back to the early 1950s. The combination of interesting projects to work on plus new facilities to work in will hopefully translate into the recruitment of young, talented nuclear engineers. A participant also mentioned that the Obama administration is receiving criticism from some circles for increasing spending on modernizing the nuclear weapons complex while at the same time calling for further cuts in deployed nuclear weapon systems. Ironically, this seems to be the strategy adopted by the Obama administration. The administration hopes that by increasing funding on modernizing the nuclear complex it will appease some members of Congress who will then support swift ratification of the New START.

The discussion then shifted to the relationship between the Obama administration and NASA. Specifically, a participant asked whether Congress will support the administration's proposed budget cuts to the manned space program. The respondent answered that the Obama plan for NASA is really a paradigm shift of what NASA should do. This was evidenced by the Obama administration's decision to cancel the Constellation program. Supported by the Bush administration, the Constellation program was an ambitious manned space effort to send astronauts back to the moon by 2020 and Mars by 2025. The Obama administration decided to focus on the development of rocket engine technologies and subsidizing the commercial sector to build new rockets and spacecraft to transport crews and cargo to the space station instead of NASA. To this end, the Obama administration approved a six-billion-dollar increase for NASA over the next five years to move this effort forward. However, many members of Congress remain skeptical that these commercial efforts will result in a viable, cost-effective manned space capability. The larger issue facing the Obama administration is what many in Congress perceive as a monumental shift in NASA's purpose. The respondent added that when the president's budget was released on February 1, both Democrat and Republican members of Congress claimed they were unaware of the Obama administration's decision to cancel the Constellation program. Programs involving NASA are usually quite costly and, in general, enjoy bipartisan support. Moreover, Congress had passed two laws in 2005 and 2008 basically endorsing the Constellation program and the Bush administration's future plans for NASA. Currently, Congress has supported the six-billion-dollar increase to NASA as proposed by the current administration; however, language inserted by Congress in the appropriations bill stipulated that no money will be spent to cancel Constellation or begin a new program until approved by Congress. The respondent explained that this places NASA in an untenable position—spending money on a program that, in all likelihood, will be cancelled, while not spending money on the development of new programs. Another participant asked whether the issues surrounding the future of NASA are a result of the perceived friction that occurred during the transition between the Bush and Obama administrations. A respondent answered that some of the friction can indeed be attributed to some private conversations that unfortunately made their way into media reports. However, this served to highlight some of the Obama administration's focus as

reported by the president's science advisory board. In essence, the current administration claims areas such as earth sciences and aeronautics research have been underfunded during the Bush administration and some very difficult choices need to be made with regard to NASA's future. The question remains: do we give up the investment in earth sciences and aeronautics to continue on with the plan, and substantial cost, to return to the moon by 2020?

The next comment raised the issue about partnering with the commercial sector, not just limited to space transportation but in both national security and civil space programs. A participant asked for further explanation of some of the major issues and challenges with these partnerships, specifically noting some interagency failures in the past. The respondent answered that this is primarily a problem with the government relying on partnerships as a solution to resource constraints. Generally, these partnerships have met with mixed success. However, many partnerships that have been touted as successes may have relied on government subsidies. This does not mean that partnerships should not be explored; on the contrary, partnerships between the government and commercial sectors should be and must be evaluated. The respondent emphasized that if your long-term strategy is going to rely on partnerships with the commercial sector and international partners, then you need to look at how those have not worked out in the past so you can learn those lessons and develop successful relationships in the future.

Concluding Remarks

Dr. Richmond M. Lloyd
William B. Ruger Chair of National Security
Economics
Naval War College



During this workshop we have explored economic and security choices for the future with an emphasis on resourcing national priorities. Our nation faces significant challenges due to the global financial crisis and the resulting deep recession. We also are a nation that has been at war for over eight years. We began the workshop by assessing the global economic and security environments, trends, critical uncertainties, and plausible futures. Economic and security challenges and choices are intertwined. We then focused on the economic problems of the United States with an emphasis on the federal budget, and the structural problems leading to unsustainable deficits and increasing levels of debt. Here we discussed national priorities and the difficult political choices we face in aligning policies, programs, and resources. We then turned to national security strategy, defense strategy, and the Quadrennial Defense Review. Here we assessed how well the Quadrennial Defense Review provides strategic direction for the Department of Defense, sets defense priorities, and guides defense budgets. We then discussed issues concerning the defense budget and risks, highlighting the significant dynamics at play within the defense budget leading to potential mismatches and risks. During our last day we explored the strategy and force planning challenges facing the Department of Defense. Here, you provided your perspectives on future directions for land and special operations forces; air and maritime forces; and strategic nuclear, space, and cyber forces.

Our intent was to bring together professionals from different parts of society, government, and academia to explore our nation's challenges in an integrated and top-down fashion. Rather than starting with defense issues alone, we wanted to explore them within the larger context of the global economic and security challenges we face. We wanted to consider the broad range of choices we must make concerning how to resource our national priorities within the entire federal budget. The efforts you made in researching and preparing your papers before the workshop were instrumental to the success of this workshop. You brought fresh perspectives, ideas, and concrete proposals concerning our economic and security choices. Of great value throughout this workshop has been the strategic dialogue among professionals from different disciplines. We will capture that dialogue in our monograph of the workshop proceedings.

For our panelists, thank you for the extensive work you did in preparing and presenting your papers. For all, we appreciate your candor and the vigor

with which you engaged in a most productive strategic dialogue. In sum, due to your collective efforts you have created a valuable product that will inform policy makers on much-needed U.S. economic and security choices.

We will now turn to producing a monograph of all the papers and summaries of our discussions. We expect the monograph to be available online in early fall. (Our website is <http://www.usnwc.edu/Departments---Colleges/National-Security-Decision-Making/Ruger-Economic-Papers.aspx>).

We will print several thousand copies of the monograph, which will be available in October 2010. (Send requests for printed copies to the William B. Ruger Chair of National Security Economics at ruger@usnwc.edu.) We plan to widely distribute the monograph throughout the policy and national security communities and the general public.

We will keep you informed of future workshops and conferences that will be of professional interest to you and will benefit from your participation.

Again, thank you for your extensive efforts and participation.

Participant Biographies

Mr. David T. Beatson

David T. Beatson is currently the Chief Technology Officer and Vice President of Corporate Development for Acorn Energy, Inc. Acorn Energy is a publicly traded holding company for maturing technology companies in the energy sector. His responsibilities include strategic planning, new business development, acquisitions, and product planning/development.

Previously, Mr. Beatson founded and served as President of Confero Solutions, Inc. Confero Solutions was a developer and manufacturer of specialized highly engineered sensing and automation solutions for the semiconductor, life sciences, and machine tool industries.

Mr. Beatson served as the Chief Technology Officer of Kulicke & Soffa Industries, Inc. In this capacity, he directed research and development throughout the corporation, managed the intellectual property portfolio, and led worldwide technical staffing. Prior to this, he held several technical management positions of increasing responsibility at Kulicke & Soffa including Director of New Business Development.

Mr. Beatson has served as Director of Engineering for SMX Corporation (now Faro Technologies, Inc.) and has held various technical and project leadership positions at DX Imaging, Boeing, and General Electric.

He holds a Masters in Business Management from Pennsylvania State University. He also holds a Master of Science Degree and Bachelor of Science Degree in Mechanical Engineering from Drexel University.

He currently holds 26 patents and has several patents pending.

Dr. David T. Burbach

Dr. David T. Burbach is an Associate Professor of National Security Affairs at the Naval War College, where he teaches courses on force planning, national strategy, and regional security. Dr. Burbach received a B.A. in Government from Pomona College, and earned a Ph.D. in Political Science from the Massachusetts Institute of Technology in 2004. Before coming to Newport, Dr. Burbach spent two years on the faculty of the U.S. Army's School of Advanced Military Studies in Leavenworth, KS. He has also served as a defense policy analyst for the RAND Corporation and as a technology consultant to private-sector firms. Dr. Burbach has written on the politics of American national security policy, particularly on the relationship between presidential decision making and public opinion. His other areas of expertise include nuclear strategy and arms control, European regional security, and energy and environmental policy.

Vice Admiral William R. Burke, U.S. Navy

Vice Admiral Burke, a native of Hornell, NY, graduated from the United States Naval Academy in 1978 with a Bachelor of Science in Systems Engineering. In 1985, he completed a Master's in Business Administration at Marymount

University. In 1999, he earned a Master of Science in National Security Strategy at the National War College in Washington, DC. He is a graduate of the MIT Seminar 21 Program in International Politics.

His first tour of duty was aboard USS *Lafayette* (SSBN 616) as a division officer. Subsequent assignments at sea included USS *Key West* (SSN 722) as the commissioning weapons officer, USS *Omaha* (SSN 692) as navigator, and USS *Cavalla* (SSN 684) as executive officer. While on board *Cavalla*, he received the Admiral Chick Clarey Award for the 1992 Outstanding Navy Officer Afloat from the Honolulu Council of the Navy League.

Burke served as commanding officer, USS *Toledo* (SSN 769) from September 1995 to June 1998. During his tour, *Toledo* completed a Mediterranean deployment with the *George Washington* Battle Group and earned the 1998 Battle Efficiency “E” Award.

He commanded Submarine Squadron 2 from July 2001 to July 2003.

Burke’s shore assignments included a tour in the Attack Submarine Division of the staff of the chief of naval operations (CNO) and he served on Capitol Hill as assistant deputy for House Liaison in the Navy Office of Legislative Affairs. He served on the Joint Staff as chief of Training, Doctrine and Assessment Division and assistant deputy director for Combating Terrorism (J34). He returned to the CNO staff in August 2003, serving in the Assessments Division (N81/N00X) followed by a tour as the executive assistant to the vice chief of naval operations from June 2004 to July 2005.

Promoted to rear admiral in September 2005 he served as Commander, Logistics Group Western Pacific/Commander, Task Force 73/Commander Navy Region Singapore from September 2005 to September 2007. Returning to the CNO staff he served as director, Assessment Division (N81/N00X) from September 2007 to August 2008 and the director, Quadrennial Defense Review (QDR) from August 2008 to April 2010.

In April 2010 he was promoted to vice admiral and reported for duty as deputy chief of naval operations for Fleet Readiness and Logistics (N4).

Burke wears the Defense Superior Service Medal, Legion of Merit (three awards), Meritorious Service Medals (three awards), the Navy Commendation Medal (four awards), and the Navy Achievement Medal (two awards).

Dr. Mathew J. Burrows

Dr. Mathew J. Burrows was appointed Counselor to the National Intelligence Council (NIC) in July 2007, and Director of the Analysis and Production Staff (APS) in January 2010. In 2003–2007, as Director of APS, he was responsible for managing a staff of senior analysts and production technicians who guide and shepherd all NIC products—not just Estimates—from inception to dissemination. He was the principal drafter for the NIC publication *Global Trends 2025: A Transformed World*. This publication has received widespread recognition and praise in the international media and among academics and think tanks. In addition, in September 2005, he was asked to set up and direct the NIC’s new Long Range Analysis Unit.

Dr. Burrows joined the CIA in 1986, where he served as analyst for the Directorate of Intelligence (DI), covering Western Europe, including the

development of European institutions such as the European Union. In 1998–1999 he was the first holder of the Intelligence Community Fellowship, and served at the Council on Foreign Relations in New York. Other previous positions include assignments as special assistant to the U.S. UN Ambassador Richard Holbrooke, 1999–2001, and Deputy National Security Advisor to U.S. Treasury Secretary Paul O’Neill in 2001–2002. He is a member of the DI’s Senior Analyst Service.

Dr. Burrows graduated from Wesleyan University in 1976 and in 1983, received a PhD in European History from Cambridge University, England.

Ambassador John A. Cloud

Ambassador John A. Cloud is currently the State Department Senior Advisor at the Naval War College. He is also a member of the faculty of the College’s National Security Decision Making Department. Ambassador Cloud served as U.S. Ambassador to the Republic of Lithuania from August 2006 to July 2009. He previously served as the Deputy Chief of Mission at the United States Embassy in Berlin. Ambassador Cloud also served as Chargé d’Affaires ad interim at Embassy Berlin from February 28, 2005 to September 2, 2005.

Mr. Cloud served as Special Assistant to the President and Senior Director for International Economic Affairs on the National Security Council staff from 2001 to 2003.

Mr. Cloud was Deputy Chief of Mission at the U.S. Mission to the European Union from 1999 to 2001. From 1996 to 1999, Mr. Cloud served as the Deputy Chief of Mission at the American Embassy in Warsaw, Poland.

From 1991 to 1995, Mr. Cloud was the Economic Counselor at the American Embassy in Bonn, Germany. He served at the State Department from 1988 to 1991 and had earlier assignments in Mexico City and Warsaw.

Mr. Cloud has received the State Department’s Superior Honor Award three times.

Mr. Cloud received his B.A. from the University of Connecticut in 1975, and a Masters in International Affairs from George Washington University in 1977. Mr. Cloud is married and has two children.

Mr. Carl Conetta

Since 1991, Mr. Conetta has been co-director of the Project on Defense Alternatives (PDA) at the Commonwealth Institute. He also is editor of the PDA internet library pages on the Chinese military, U.S. military transformation, and terrorism. While at PDA, Mr. Conetta has been the author of more than fifty reports on threat assessment, military operations, defense strategy, transformation, and budgeting.

Outside the Institute, Mr. Conetta has contributed to twelve edited volumes as well as publishing in *World Policy Journal*, *Security Dialogue*, *Defense News*, *National Defense*, the *Journal of Humanitarian Operations*, and the *Bulletin of the Atomic Scientists*, among others. His commentary has appeared in numerous newspapers including the *Washington Post*, *Boston Globe*, and *Christian Science Monitor*. And he has been a commentator on ABC-TV, Al Jazeera, BBC, CBS-TV, CNN, Fox Television News, the History Channel,

Canadian television (CBC), the BBC World Service, Voice of America, National Public Radio, and the ABC and CBS radio networks, among others.

Mr. Conetta has made presentations before the House Armed Services Committee and at the U.S. Departments of Defense and State, the National Defense University, the U.S. Army War College, the Joint Forces Staff College, various congressional research agencies, the White House Office of Management and the Budget, and UN Institute for Disarmament Research, among others. In 2001, he was a plenary speaker for the Annual U.S. Defense Department Cost Analysis Symposium.

Mr. Conetta has served as a consulting analyst for the Council on Foreign Relations, U.S. House Armed Services Committee, South African Ministry of Defense, and for the American Academy of Arts and Sciences. Before joining PDA, he was for six years a fellow at the Institute for Defense and Disarmament Studies (IDDS) and served as editor of the IDDS journal, *Defense and Disarmament News*, and associate editor of the *Arms Control Reporter*. He holds degrees from Boston University (BA) and from the University of Connecticut (MA), where he taught in the Economy and Society program (1979–1981).

Dr. Patrick M. Cronin

Dr. Patrick M. Cronin is Senior Advisor and Senior Director of the Asia-Pacific Security Program at the Center for a New American Security (CNAS). Previously, he was the Director of the Institute for National Strategic Studies (INSS) at National Defense University and has had a twenty-five-year career inside government and academic research centers, spanning defense affairs, foreign policy, and development assistance.

Dr. Cronin served more than two years at the London-based International Institute for Strategic Studies (IISS), and prior to that he was Director of Research and Senior Vice President at the Center for Strategic and International Studies (CSIS) in Washington, DC.

In 2001, he was confirmed by the Senate to the third-ranking position at the U.S. Agency for International Development. While serving as Assistant Administrator for Policy and Program Coordination, Dr. Cronin led agency, inter-agency, and international policy deliberations, as well as the interagency task force that helped design the Millennium Challenge Corporation. From 1998 until 2001, Dr. Cronin served as Director of Research at the U.S. Institute of Peace.

Dr. Cronin spent seven years during his first stint at the National Defense University, arriving at INSS in 1990 as a Senior Research Professor. He was the founding Executive Editor of *Joint Force Quarterly*, and subsequently became both Deputy Director and Director of Research at the Institute. He received the Army's Meritorious Civilian Service Award upon his departure from NDU in 1997. He has also been a senior analyst at the Center for Naval Analyses, a U.S. Naval Reserve Intelligence officer, and an analyst with the Congressional Research Service and SRI International.

Dr. Cronin has taught at Georgetown University's Security Studies Program, The Johns Hopkins University's Paul H. Nitze School of Advanced

International Studies (SAIS), and the University of Virginia's Woodrow Wilson Department of Government.

He read International Relations at St Antony's College, University of Oxford, where he received both his M.Phil. and D.Phil. degrees, and graduated with high honors from the University of Florida. His recent publications include *Global Strategic Assessment, 2009: America's Security Role in a Changing World* (NDU Press, 2009); *Civilian Surge: Key to Complex Operations* (co-editor with Hans Binnendijk, NDU Press, 2009); *The Impenetrable Fog of War: Reflections on Modern Warfare and Strategic Surprise* (Praeger, 2008); *The Evolution of Strategic Thought: Adelphi Paper Classics* (Routledge, 2008); and *Double Trouble: Iran and North Korea as Challenges to International Security* (Praeger, 2007).

Mr. Seth Cropsey

Seth Cropsey began his career in government as an assistant to the Secretary of Defense in 1981. Responsible for the Secretary's contribution to the Department's annual report, he also drafted major policy statements on the nuclear freeze, defense economics, and U.S. global strategic aims.

Based on his work in the Office of Secretary of Defense, he was invited to become policy director for the Voice of America, where he led broadcasting efforts to explain U.S. policy on the basing of medium-range ballistic missiles in Europe to international audiences.

Cropsey returned to the Pentagon as deputy under secretary of the Navy for policy in 1984 where he was responsible for advising the Secretary on maritime strategy, strategic education, defense reorganization, and special operations capabilities. He served under four Secretaries of the Navy before accepting a position as principal assistant Secretary of Defense for Special Operations and Low-Intensity Conflict (SOLIC) that included initial service as acting assistant Secretary.

Cropsey represented the office in interagency fora including at the White House and during crises. He formulated the SecDef's policy positions on special operations, and was responsible for initiating SOLIC's efforts to produce informed, expert analysis of future regional challenges that were likely to face the special operations community as well as objective evaluations of special operations effectiveness.

His work in the government continued as the first department chairman and distinguished professor at the George W. Marshall European Center for Security Studies in Garmisch-Partenkirchen, Germany, where he lectured on national security planning, post-Cold War US/NATO strategy, and the mechanisms that characterize strategic planning in democratic states. During his tenure at the Marshall Center, Cropsey authored a chapter on alliance strategy during the War of Spanish Succession, lectured extensively in Central Europe on strategic education, and worked together with the governments of several new NATO members to develop their own national security planning processes.

Following his service as director of international broadcasting, where he helped increase resources, broadcasting, and focus on audiences in key Middle

Eastern states, Cropsey returned to writing, analyzing, and speaking on U.S. strategy. As senior advisor for maritime strategy for the Center for Naval Analyses, he participated in and drafted a study on the global strategic landscape in the third decade of the twenty-first century. As a Senior Fellow at the Hudson Institute, he authored a chapter on European military futures for the Europe 2025 project undertaken for the Office of Net Assessment. Cropsey continues to write for publication on foreign policy, national security, and U.S. defense planning.

Dr. Peter Dombrowski

Dr. Peter Dombrowski is a professor of strategy at the Naval War College where he serves as the chair of the Strategic Research Department. Previous positions include director of the Naval War College Press, editor of the *Naval War College Review*, co-editor of *International Studies Quarterly*, Associate Professor of Political Science at Iowa State University, and defense analyst at ANSER, Inc. He has also been affiliated with research institutions including the East-West Center, The Brookings Institution, the Friedrich Ebert Foundation, and the Watson Institute for International Studies at Brown University, among others.

Dr. Dombrowski is the author of over forty articles, monographs, book chapters, and government reports. In June 2009, Stanford University Press published his volume, edited with John Duffield, *Balance Sheet: The Iraq War and U.S. National Security*. His last book, co-authored with Eugene Gholz, is *Buying Military Transformation: Technological Innovation and the Defense Industry* (Columbia University Press, 2006). In 2005 he edited two volumes, *Guns and Butter: the Political Economy of the New International Security Environment* (Lynne Reinner, 2005) and *Naval Power in the Twenty-first Century: A Naval War College Review Reader* (Naval War College Press, 2005). Earlier books include *Policy Responses to the Globalization of American Banking* (University of Pittsburgh Press, 1996) and with Andrew Ross and Eugene Gholz, *Military Transformation and the Defense Industry After Next: The Defense Industrial Implications of Network-Centric Warfare* (Naval War College Press, 2002).

Awards include a Chancellor's Scholarship for Prospective Leaders from the Alexander von Humboldt Foundation in 1994 and the Navy Meritorious Civilian Service Medal in 2007 for his role in the development of *A Cooperative Strategy for 21st Century Seapower*. He received his B.A. from Williams College and an M.A. and Ph.D. from the University of Maryland.

Major General Charles J. Dunlap, Jr., USAF

Major General Charles J. Dunlap, Jr., USAF, was commissioned through the ROTC program at St. Joseph's University, PA, in May 1972, and was admitted to the Bar of the Supreme Court of the Commonwealth of Pennsylvania in 1975. He is also a distinguished graduate of the National War College (1992).

The general has served in the United Kingdom and Korea and deployed for various operations in the Middle East and Africa, including short stints in support of Operations *Enduring Freedom* and *Iraqi Freedom*. General Dunlap has

led military delegations to Uruguay, the Czech Republic, South Africa, Colombia, and Iraq. Prior to assuming his last position as Deputy Judge Advocate General, he served as the Staff Judge Advocate at Headquarters Air Combat Command.

General Dunlap is recognized throughout the defense and public policy communities as one of the most prolific, provocative, and sought-after writers and speakers in government today. Totalling more than 120 publications, General Dunlap's writings address a wide range of issues including the law, airpower, counterinsurgency, cyberpower, civil-military relations, and leadership. His military and academic credentials also cause him to be in demand as a speaker at a variety of conferences and at numerous institutions of higher learning, to include Harvard, Yale, Duke, and Stanford, as well as National Defense University and the Air, Army, and Navy War Colleges.

General Dunlap's is on terminal leave from the Air Force with a formal retirement date of 1 June 2010. He has accepted a position as a Visiting Professor at Duke University Law School, and will also serve as the Associate Director of its Center on Law, Ethics, and National Security.

Mr. Michael Ettlenger

Michael Ettlenger is the Vice President for Economic Policy at the Center for American Progress. Prior to joining the Center he spent six years at the Economic Policy Institute directing the Economic Analysis and Research Network. Previously he was tax policy director for Citizens for Tax Justice and the Institute on Taxation and Economic Policy for eleven years. He has also served on the staff of the New York State Assembly.

At the Institute on Taxation and Economic Policy, Ettlenger was the principal developer of the ITEP Microsimulation Tax Model. This model uniquely permits detailed revenue and distributional analysis of federal and state personal income tax, consumption, and property taxes. Also at ITEP and Citizens for Tax Justice, Ettlenger authored many reports on tax and economic issues, frequently testified, was widely published, and was often called upon by the media.

At the Economic Policy Institute, Ettlenger focused on regional economic development and state-level economic policy. His work included analysis of state minimum wage laws, the role of government in economic growth, public attitudes toward economic policy, and the relative efficacy of alternative state economic policies.

Ettlenger has served on several nonprofit boards, advisory commissions, and study groups.

Ettlenger holds degrees from Cornell University and American University.

Dr. Thomas R. Fedyszyn

Dr. Thomas R. Fedyszyn has been a member of the Naval War College faculty since 2000 and was recently selected as the Chair of the Eurasia Studies Group. He received a Ph.D. from the Johns Hopkins University in Political Science while on active duty. His thirty-one-year naval career included military assignments as the U.S. Naval Attaché to Russia and two tours at NATO

Headquarters in Brussels. A former surface warrior, he commanded the USS *Normandy* (CG 60) and USS *William V. Pratt* (DDG 44). He was a principal contributor to both the Lehman-era Maritime Strategy and NATO's Strategic Concept (1991) following the Cold War. He has participated in a number of initiatives aimed at improving defense planning and military education in eight nations over the past years. His current initiatives are in Georgia and Azerbaijan. His most recent article, "Saving NATO: Renunciation of the Article V Territorial Security Guarantee," will appear in the Summer issue of *Orbis*.

Dr. Ronald Findlay

Ronald Findlay was born in Rangoon, Burma, and educated at St. John's Diocesan Boys High School and Rangoon University (BA, 1954), where he was a Tutor in Economics from 1954 to 1957 before going to MIT on a Ford Foundation Fellowship (Ph.D., 1960). After returning to Burma he was a Lecturer and then Research Professor of Economics in Rangoon University. He came to the U.S. in 1969 to teach at Columbia University, where he is the Ragnar Nurkse Professor of Economics. He is the author of *Trade and Specialization* (Penguin, 1970); *International Trade and Development Theory* (Columbia University Press, 1973); *Trade, Development and Political Economy: Selected Essays of Ronald Findlay* (Edward Elgar, 1993); *Factor Proportions, Trade and Growth* (MIT Press, 1995), based on the Ohlin Lectures delivered in Stockholm in 1991; and most recently (with Kevin H. O'Rourke) of *Power and Plenty: Trade, War and the World Economy in the Second Millennium* (Princeton University Press, 2007).

Captain Leo G. Goff, U.S. Navy

Captain Goff was commissioned in 1981 after graduating from the United States Naval Academy. He has served on five submarines and two submarine tenders over the course of his career, including having command of the USS *City of Corpus Christi* (SSN 705) and major command of the USS *Frank Cable* (AS 40). He deployed on strategic and extended SSN missions to the North Atlantic during the Cold War and to the Pacific and SOUTHCOM in support of GWOT. As Commanding Officer of USS *Frank Cable* (AS 40), homeported in Guam, he conducted theater security cooperation operations throughout the Pacific AOR and repairs and full service logistics to submarines, surface ships, and aircraft carriers deployed to the Seventh and Fifth Fleets.

Ashore he was a crisis-action officer for United States Atlantic Command (USACOM), program analyst and Executive Assistant to the director of the Office of Program Appraisal for the Secretary of the Navy, Deputy Executive Assistant to the Chief of Naval Operations (CNO), Special Assistant to the Vice CNO, and a fellow on the CNO's Strategic Studies Group. He is currently serving as the Director of the CNO's Executive Panel, a federal committee providing peer advice to the CNO.

Captain Goff holds a Ph.D. in organizational behavior with a concentration in leadership; a Master's degree in Public Administration; and a Master's Degree in Executive Business Administration. He attended Maxwell School for Strategic Studies at Syracuse; completed MIT's Seminar XXI on foreign politics,

international relations, and national interests; and completed Joint Military Professional Education through the National Defense University.

Captain Goff is married to LCDR Christy Tomlins (Ret.) and they live in Washington, DC.

Dr. T. X. Hammes

In his thirty years in the Marine Corps, T. X. Hammes served at all levels in the operating forces to include command of a rifle company, weapons company, intelligence battalion, infantry battalion, and the Chemical Biological Incident Response Force. He participated in stabilization operations in Somalia and Iraq as well as training insurgents in various places.

Hammes has attended The Basic School, U.S. Army Infantry Officers Advanced Course, Marine Corps Command and Staff College, and the Canadian National Defence College. He has a Masters in Historical Research and a Doctorate in Modern History from Oxford University. He is currently a Senior Research Fellow at the Institute for National Strategic Studies, National Defense University.

He is the author of *The Sling and the Stone: On War in the 21st Century*, chapters in ten books, and over ninety articles and opinion pieces in the *Washington Post*, *New York Times*, *Jane's Defence Weekly*, and professional journals. He has lectured widely at U.S. and international staff and war colleges. He has appeared on CNN, ABC, News Hour, PBS Frontline, BBC, All Things Considered, and numerous other media outlets.

Mr. Todd Harrison

As a Senior Fellow at the Center for Strategic and Budgetary Assessments (CSBA), Mr. Harrison directs the budget program and works to educate and inform policy makers, senior leaders, and the general public about the defense budget. He produces an annual analysis of the president's defense budget request that highlights budgetary issues and changes in priorities. Since joining CSBA in April 2009, he has authored papers on the impact of the wars in Iraq and Afghanistan on the U.S. military, funding for classified programs, and estimating the cost of the surge in Afghanistan, among other topics.

Mr. Harrison graduated from the Massachusetts Institute of Technology with both a Bachelor of Science and Master of Science in Aeronautics and Astronautics. He began his career as a strategy consult at Diamond Cluster International, a small management consulting firm, where he specialized in creating data environments for mobile phone companies that enabled them to experiment with new marketing strategies and monitor the resulting changes in customer calling patterns in real time. He also created a profitability analysis tool that used real-time calling data to more accurately forecast revenues and profits for mobile operators.

After leaving Diamond Cluster International in 2001, Mr. Harrison returned to his aerospace roots and became a Product Manager at Aero Astro Incorporated, a small business specializing in building micro satellites. He managed Aero Astro's line of micro satellite products, including satellite buses, satellite radios, and a suite of on-board sensors. He also worked as program manager for

an Air Force Research Lab project to develop a low-cost, high-accuracy star tracker to enhance pointing and positioning for small satellites.

Mr. Harrison joined Booz Allen in 2003 as a member of the defense team. He supported a variety of DoD clients providing independent assessments of defense programs. He created the National Security SATCOM Systems Synchronization Roadmap for OSD, a semi-annual assessment of the alignment of schedules and funding for satellite communications programs. He also conducted systems engineering and program management assessments for DoD clients, such as the Army's Tank and Automotive Research Development and Engineering Center (TARDEC), where he used employee interviews and program reviews to identify the root causes of program failures.

Mr. Harrison served as a logistics and transportation officer in the U.S. Air Force Reserves from 1998 to 2003.

Dr. Colin F. Jackson

Professor Colin F. Jackson holds degrees from the University of Pennsylvania's Wharton School (M.B.A., Finance), Johns Hopkins School of Advanced International Studies (M.A., International Economics and Strategic Studies), Princeton University's Woodrow Wilson School (B.A., Public and International Affairs), and MIT (Ph.D., Political Science (Security Studies)). Professor Jackson's current research includes work on counterinsurgency, state building, economics, public and private sector risk management, organizational learning, and intelligence operations. Prior to entering academia, Professor Jackson worked for several years in the corporate sector in financial trading, telecommunications, transportation markets, and power development. He served four years on active duty with the United States Army in Germany as an armor and cavalry officer. Professor Jackson continues to serve as a military intelligence officer in the U.S. Army Reserve.

Dr. Frederick W. Kagan

Dr. Frederick W. Kagan is a resident scholar in defense and security policy studies and director of the Critical Threats Project at American Enterprise Institute. In 2006–2008, he authored four influential reports entitled *Choosing Victory*, recommending and then monitoring the U.S. military surge in Iraq. In 2009, he served as an adviser to General Stanley A. McChrystal and his most recent reports, based on multiple trips to Afghanistan, focus on force requirements and analyses of how various stakeholders in Afghanistan and Pakistan would respond to different U.S. policy scenarios. His most recent book is *Ground Truth: The Future of U.S. Land Power* (with Thomas Donnelly, AEI Press, 2008). Previously an associate professor of military history at the U.S. Military Academy at West Point, he is also the author of *Finding the Target: The Transformation of American Military Policy* (2006) and *The End of the Old Order: Napoleon and Europe, 1801–1805* (2006) and coauthor of *While America Sleeps: Self-Delusion, Military Weakness, and the Threat to Peace Today* (2000). A contributing editor at *The Weekly Standard*, Mr. Kagan has also written numerous articles on defense and foreign policy issues for *Foreign Affairs*,

the *Wall Street Journal*, the *Washington Post*, the *Los Angeles Times*, *Policy Review*, *Commentary*, *Parameters*, and other periodicals.

Dr. Eric J. Labs

Dr. Eric J. Labs was born and raised in Pennsylvania. In 1988 he graduated from Tufts University, *summa cum laude*. In 1994, he earned a doctorate in political science from the Massachusetts Institute of Technology. He has worked for the Institute for Foreign Policy Analysis in Cambridge, Massachusetts, and, from 1994 to 1995, as a Visiting Scholar at the Center for International Security Studies at the University of Maryland. From 1995 to the present, Dr. Labs has worked for the Congressional Budget Office in Washington, DC. Currently he is Senior Analyst for Naval Forces and Weapons, specializing in procurement, budgeting, and sizing of the forces for the Department of the Navy. Dr. Labs has testified before Congress and published numerous studies under the auspices of the Congressional Budget Office as well as a number of articles and papers in academic journals and conferences, including the U.S. Naval Institute's *Proceedings*, *Sea Power* magazine, and the *Naval War College Review*. His most recent Navy-related CBO studies are *Options for Combining the Navy's and Coast Guard's Small Combatant Programs* (June 2009) and *The Life-Cycle Costs of Selected Navy Ships* (April 28, 2010). An analysis of the costs and force structure implications of the Navy's fiscal year 2011 shipbuilding plan will be published at the end of May 2010. He has given presentations to a variety of industry, government, and academic audiences. He was awarded CBO's highest honor, the Director's Award for Exceptional Achievement, in 2001, 2003, and 2007. He is currently working on a study of the Navy's future surface combatants.

Dr. Christopher J. Lamb

Dr. Christopher J. Lamb currently serves as the Director of the Center for Strategic Research in the Institute for National Strategic Studies (INSS) at National Defense University. He conducts research on national security strategy, organizational reform, and defense strategy, requirements, plans, and programs. In 2008 Dr. Lamb was assigned to lead the Project for National Security Reform (PNSR) study of the national security system, which resulted in the 2008 report to Congress "Forging a New Shield." Prior to joining INSS Dr. Lamb served as the Deputy Assistant Secretary of Defense for Resources and Plans where he had oversight of requirements, acquisition, and resource allocation matters for the Under Secretary of Defense (Policy). Prior to that Dr. Lamb served as Director of Policy Planning in the Office of the Assistant Secretary of Defense for Special Operations and Low-Intensity Conflict; as Deputy Director for Military Development on the State Department's Interagency Task Force for Military Stabilization in the Balkans; and as Director for Requirements and Plans in the Office of Secretary of Defense. From 1985 to 1992 Dr. Lamb was a Foreign Service Officer, serving in Haiti and Ivory Coast. He received his doctorate in International Relations from Georgetown University in 1986. Dr. Lamb has received the Chairman, Joint Chiefs of Staff Joint Distinguished Civilian Service Award, a Presidential Rank Award for Meritorious Senior Executive Service,

the Superior Honor award from the Department of State, and Meritorious Civilian Service awards from the Department of Defense.

Dr. Martin C. Libicki

Dr. Martin C. Libicki (Ph.D., U.C. Berkeley, 1978) has been a senior management scientist at RAND since 1998, focusing on the impacts of information technology on domestic and national security. This work is documented in commercially published books, including *Conquest in Cyberspace: National Security and Information Warfare* and *Information Technology Standards: Quest for the Common Byte*, as well as in numerous monographs, notably *Cyberdeterrence and Cyberwar*, *The Costs and Benefits of Moving to the ICD-10 Code Sets*, *How Terrorist Groups End* (with Seth Jones), and *Who Runs What in the Global Information Grid*. He was also the editor of the RAND textbook *New Challenges New Tools for Defense Decisionmaking*. His most recent assignments were on the subjects of multifactor authentication, organizing the Air Force for cyberwar, exploiting cell phones in counterinsurgency, developing a post-9/11 information technology strategy for the U.S. Department of Justice, using biometrics for identity management, assessing DARPA's Terrorist Information Awareness program, conducting information security analysis for the FBI, and evaluating In-Q-Tel. Prior employment includes twelve years at the National Defense University, three years on the Navy Staff as program sponsor for industrial preparedness, and three years as a policy analyst for the Government Accountability Office's Energy and Minerals Division. He has also received a master's degree in city planning from U.C. Berkeley (1974).

Dr. Richmond M. Lloyd

Dr. Richmond M. Lloyd is a Professor of National Security Affairs at the Naval War College and holds the William B. Ruger Chair of National Security Economics. Previously, he served as course director for the Security, Strategy, and Forces course and as director of the U.S. Naval War College's Latin American Studies Group, which coordinates all college activities in Latin America. His research and teaching interests include strategy and force planning, national security and economics, defense and international economics, and logistics. He is the editor of the William B. Ruger Chair of National Security Economics Papers and coeditor of nine textbooks for the Naval War College on strategy and force planning. He lectures on contemporary national defense topics at various sites throughout the United States and South America. He chaired the Naval War College's self-study efforts that led to Congressional authorization for the college to award a M.A. degree in National Security and Strategic Studies and to the accreditation of this degree. He received a Ph.D. in business administration and a B.S. in mechanical engineering from the University of Rochester, and an M.B.A. from the University of Chicago.

Dr. Thomas G. Mahnken

Dr. Thomas G. Mahnken, Jerome E. Levy Chair of Economic Geography and National Security, is a Professor of Strategy at the U.S. Naval War College and

a Visiting Scholar at the Philip Merrill Center for Strategic Studies at The Johns Hopkins University's Paul H. Nitze School of Advanced International Studies (SAIS). Dr. Mahnken served as the Deputy Assistant Secretary of Defense for Policy Planning from 2006 to 2009. In that capacity, he was responsible for the department's major strategic planning functions, including the preparation of guidance for war plans and the development of the defense planning scenarios.

Prior to joining the Defense Department, he served as a Professor of Strategy at the U.S. Naval War College. From 2004 to 2006 he was a Visiting Fellow at the Merrill Center at SAIS. During the 2003–2004 academic year he served as the Acting Director of the SAIS Strategic Studies Program.

Dr. Mahnken has held positions in both the government and the private sector. He served on the staff of the Commission on the Intelligence Capabilities of the United States Regarding Weapons of Mass Destruction. He served in the Defense Department's Office of Net Assessment, where he conducted research into the emerging revolution in military affairs. He also served as a member of the Gulf War Air Power Survey, commissioned by the Secretary of the Air Force to examine the performance of U.S. forces during the war with Iraq.

Dr. Mahnken is the author of *Technology and the American Way of War since 1945* (Columbia University Press, 2008), *Uncovering Ways of War: U.S. Intelligence and Foreign Military Innovation, 1918–1941* (Cornell University Press, 2002), and (with James R. FitzSimonds) of *The Limits of Transformation: Officer Attitudes toward the Revolution in Military Affairs* (Naval War College Press, 2003). He is editor (with Thomas A. Keaney) of *U.S. Military Operations In Iraq: Planning, Combat, and Occupation* (Routledge, 2007), (with Joseph A. Maiolo) of *Strategic Studies: A Reader* (Routledge, 2007), (with Emily O. Goldman) of *The Information Revolution in Military Affairs in Asia* (Palgrave Macmillan, 2004), and (with Richard K. Betts) of *Paradoxes of Strategic Intelligence: Essays in Honor of Michael I. Handel* (Frank Cass, 2003).

Dr. Mahnken earned his master's degree and doctorate in international affairs from SAIS and was a National Security Fellow at the John M. Olin Institute for Strategic Studies at Harvard University. He was a *summa cum laude* graduate of the University of Southern California with bachelor's degrees in history and international relations (with highest honors) and a certificate in defense and strategic studies.

In 2009, Dr. Mahnken received the Secretary of Defense Medal for Outstanding Public Service.

Rear Admiral Michael McDevitt, U.S. Navy (Ret.)

Rear Admiral Michael McDevitt, U.S. Navy (Ret.) is a Center for Naval Analyses Vice President and Director of *CNA Strategic Studies*. CNA is a not-for-profit federally funded research center in Washington, DC. *Strategic Studies* conducts research and analyses that focus on strategy, political-military issues and regional security studies. In addition to his responsibilities leading the *CNA Strategic Studies* he has been an active participant in conferences and workshops regarding security issues related to maritime security and U.S. security policy and has had a number of papers published in edited volumes on these

subjects. His personal expertise is East Asia, and his most recent research focus has been the maritime dimension of China's national strategy.

During his navy career Rear Admiral McDevitt held four at-sea commands; including an aircraft carrier battle group. He received a Bachelor of Arts degree in U.S. History from the University of Southern California and a Master Degree in American Diplomatic History from Georgetown University. He was a Chief of Naval Operations Strategic Studies Group Fellow at the Naval War College and is a graduate of the National War College in Washington, DC.

Mr. Ronald O'Rourke

Mr. O'Rourke is a Phi Beta Kappa graduate of the Johns Hopkins University, from which he received his B.A. in international studies, and a valedictorian graduate of the University's Paul Nitze School of Advanced International Studies, where he received his M.A. in the same field.

Since 1984, Mr. O'Rourke has worked as a naval analyst for the Congressional Research Service of the Library of Congress. He has written numerous reports for Congress on various issues relating to the Navy. He regularly briefs Members of Congress and Congressional staffers, and has testified before Congressional committees on several occasions.

In 1996, Mr. O'Rourke received a Distinguished Service Award from the Library of Congress for his service to Congress on naval issues.

Mr. O'Rourke is the author of several journal articles on naval issues, and is a past winner of the U.S. Naval Institute's Arleigh Burke essay contest. He has given presentations on Navy-related issues to a variety of audiences in government, industry and academia.

Dr. Mackubin Thomas Owens

Dr. Owens is Associate Dean of Academics for Electives and Directed Research and Professor of National Security Affairs at the U.S. Naval War College in Newport, Rhode Island. He is also a senior fellow of the Foreign Policy Research Institute (FPRI) in Philadelphia and editor of FPRI's quarterly journal *Orbis*. He specializes in strategy and the planning of U.S. strategy and forces, especially naval and power projection forces; the political economy of national security; national security organization; strategic geography; and American civil-military relations.

He publishes widely on national security affairs and energy issues. His book, *US Civil-Military Relations After 9/11: Renegotiating the Civil-Military Bargain*, will be published later this year.

Before joining the faculty of the War College, Dr. Owens served as National Security Adviser to Senator Bob Kasten, Republican of Wisconsin, and Director of Legislative Affairs for the Nuclear Weapons Programs of the Department of Energy during the Reagan administration. Dr. Owens is also a Marine Corps veteran of Vietnam, where as an infantry platoon commander in 1968–1969, he was wounded twice and awarded the Silver Star medal. He retired from the Marine Corps Reserve as a Colonel in 1994.

Dr. Owens earned his Ph.D. in Politics from the University of Dallas, a Master of Arts in Economics from Oklahoma University, and his BA from the

University of California at Santa Barbara. From 1990 to 1997, Dr. Owens was Editor-in-Chief of the quarterly defense journal *Strategic Review* and Adjunct Professor of International Relations at Boston University. He has also taught at the University of Rhode Island, the University of Dallas, Catholic University, Ashland University of Ohio, and the Marine Corps' School of Advanced Warfighting (SAW). He has been a program officer for the Smith Richardson Foundation, a Senior Visiting Fellow at the Center for Naval Analyses and a consultant to the Los Alamos National Laboratory; Plans Division, Headquarters Marine Corps; and J-5 Strategy, the Joint Staff.

Rear Admiral Frank C. Pandolfe, U.S. Navy

Rear Admiral Pandolfe graduated with distinction from the U.S. Naval Academy in 1980. He earned a Ph.D. in International Relations from the Fletcher School of Law and Diplomacy at Tufts University in 1987.

At sea, Rear Admiral Pandolfe served in destroyers, cruisers, and aircraft carriers. He commanded USS *Mitscher* (DDG 57) from 1999 to 2001, earning three Battle Efficiency Awards for operational excellence and three Golden Anchor awards for superior retention. He commanded Destroyer Squadron 18 from 2003 to 2004, operating as Sea Combat commander for *Enterprise* Carrier Strike Group in the Arabian Gulf. From 2007 to 2009, he led *Theodore Roosevelt* Carrier Strike Group on a seven-month combat deployment to the Northern Arabian Sea in support of Operation *Enduring Freedom*.

Ashore, he has served on the Navy staff as executive assistant to the Chief of Naval Operations, the Joint Staff as Deputy Director for Strategy and Policy, and the White House staff as military aide and advisor to the Vice President of the United States.

Rear Admiral Pandolfe assumed duties as Director, Surface Warfare Division, OPNAV N86 in July 2009.

Dr. Diane Lim Rogers

Dr. Diane Lim Rogers is Chief Economist of the Concord Coalition and writes the blog EconomistMom.com—noted as one of the top economics blogs by the *Wall Street Journal* in 2009. At Concord she writes policy briefs, gives speeches, and provides general expertise on the economic effects of federal budget and tax policy—an issue she has worked on in Washington, DC for nearly two decades.

Prior to joining Concord in the spring of 2008, Dr. Rogers was Chief Economist for the House Budget Committee (2007–2008), where she served Chairman John Spratt and other Democratic members of the Committee. In 2006 she was Research Director of the Budgeting for National Priorities project at the Brookings Institution. While at Brookings she published several opinion pieces emphasizing the importance of fiscal responsibility and a paper on “Reducing the Deficit through Better Tax Policy,” and she also participated in the Concord Coalition’s “Fiscal Wake-Up Tour.”

From 2004 to 2006 Dr. Rogers served as Chief Economist for the House Ways and Means Committee Democrats, and prior to that was a Principal Economist covering tax and budget policies for the Joint Economic Committee

Democrats. She was a Senior Economist on the staff of the Council of Economic Advisers during the last year of the Clinton Administration and first 100 days of the Bush Administration, and in President Clinton's final Economic Report (2001) drafted the sections extolling the merits of fiscal discipline. Dr. Rogers has also worked at the Urban Institute and the Congressional Budget Office, and was Assistant Professor of Economics at Penn State University.

Throughout her career, Dr. Rogers's research has focused on the behavioral, distributional, and macroeconomic effects of U.S. fiscal policies. She continues to teach as an Adjunct Professor for the School of Public Policy and Public Administration at George Washington University.

Dr. Rogers received her B.A. in Economics from the University of Michigan in 1983, her M.A. from Brown University in 1984, and her Ph.D. from the University of Virginia in 1991. But more notably, she is the proud mother of four—three daughters and a son.

Dr. Kori Schake

Dr. Kori Schake is a research fellow at the Hoover Institution and an associate professor of international security studies at the United States Military Academy.

During the 2008 presidential election, she was senior policy adviser to the McCain-Palin campaign, responsible for policy development and outreach in the areas of foreign and defense policy.

From 2007 to 2008 she was the deputy director for policy planning in the state department. In addition to staff management, she worked on resourcing and organizational effectiveness issues, including a study of what it would take to “transform” the state department so as to enable integrated political, economic, and military strategies.

During President Bush's first term, she was the director for Defense Strategy and Requirements on the National Security Council. She was responsible for interagency coordination for long-term defense planning and coalition maintenance issues. Projects Schake contributed to include the 2002 National Security Strategy; conceptualizing and budgeting for continued transformation of defense practices; the most significant realignment of U.S. military forces and bases around the world since 1950; creating NATO's Allied Command Transformation and the NATO Response Force; and recruiting and retaining coalition partners for operations in Afghanistan and Iraq.

She has held the Distinguished Chair of International Security Studies at West Point, and also served in the faculties of the Johns Hopkins School of Advanced International Studies, the University of Maryland's School of Public Affairs, and the National Defense University. She is on the boards of the journal *Orbis* and the Centre for European Reform and blogs for Foreign Policy's Shadow Government.

Her publications include *Managing American Hegemony: Essays on Power in a Time of Dominance* (2009), “Choices for the Quadrennial Defense Review” (2009), “Dealing with a Nuclear Iran” (2007), “Jurassic Pork” (New York Times, 2006), “How America Should Lead” (with Klaus Becher, 2002), *The Berlin Wall Crisis: Perspectives on Cold War Alliances* (with John Gearson,

2002), and “Building a European Defense Capability” (with Charles Grant and Amaya Bloch-Laine, 1999).

From 1990 to 1996, she worked in Pentagon staff jobs, first in the Joint Staff’s Strategy and Policy Directorate (J-5) and then in the Office of the Secretary of Defense.

Mr. Andrew Shearer

Mr. Andrew Shearer is Director of Studies and a Senior Research Fellow at the Lowy Institute for International Policy in Sydney. He is a frequent commentator on foreign policy and strategic issues in the Australian media and has had opinion pieces published in a range of international publications including the *Wall Street Journal*, *The Weekly Standard*, *The Spectator*, *Pragati—the Indian National Interest Review* and the *Jakarta Globe*.

Andrew has extensive international experience in the Australian Government, most recently as senior foreign policy adviser to former Prime Minister John Howard. Previously he occupied a senior position in the Australian Embassy in Washington, DC and was strategic policy adviser to former Defence Minister Robert Hill. He occupied various positions in the Department of Foreign Affairs and Trade, the Department of the Prime Minister and Cabinet, and the Office of National Assessments.

Andrew has honors degrees in Arts and Law from the University of Melbourne. He was awarded a UK Foreign and Commonwealth Office Chevening Scholarship and has an MPhil degree in international relations from the University of Cambridge.

Ms. Marcia S. Smith

Ms. Marcia S. Smith is President of the Space and Technology Policy Group, LLC in Arlington, VA, which specializes in policy analysis of civil, military and commercial space programs, and other technology areas. She is also the founder and editor of the website SpacePolicyOnline.com.

From March 2006 to March 2009, Ms. Smith was Director of the Space Studies Board (SSB) at the National Research Council (NRC), and from January 2007 to March 2009 additionally was Director of the NRC’s Aeronautics and Space Engineering Board (ASEB). The NRC is the operating arm of The National Academies, comprised of the NRC, the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine. The National Academies is a nonprofit organization that provides advice to the nation on science, engineering and medicine.

Previously, Ms. Smith was a senior-level specialist in aerospace and telecommunications policy at the Congressional Research Service (CRS), Library of Congress, Washington, DC. CRS provides objective, nonpartisan research and analysis exclusively for the Members and committees of the U.S. Congress. Ms. Smith specialized in U.S. and foreign military and civilian space activities, as well as telecommunications issues (including the Internet). She worked at CRS from 1975 to 2006, except for a one year leave of absence from 1985 to 1986 while she served as Executive Director of the U.S. National Commission on Space. The Commission, created by Congress and its members appointed

by the President, developed long-term (50 year) goals for the civilian space program under the chairmanship of (the late) former NASA Administrator Thomas Paine. The Commission published its results in the report *Pioneering the Space Frontier* (Bantam Books). Before joining CRS, she worked in the Washington Office of the American Institute of Aeronautics and Astronautics (then headquartered in New York). A graduate of Syracuse University, Ms. Smith is the author or co-author of more than 220 reports and articles on space, nuclear energy, and telecommunications and Internet issues.

Colonel Dana E. Struckman, U.S. Air Force

Colonel Dana E. Struckman, U.S. Air Force, joined the National Security Decision Making faculty upon his graduation from the Naval War College in June of 2006 and teaches the Contemporary Staff Environment and Policy Making Process courses. He was commissioned in 1987 through the Air Force ROTC program. A career missile and space officer, Col Struckman has extensive operational missile experience, certified combat ready in both the Peacekeeper and Minuteman III weapon systems. Additionally, he has served in a variety of staff assignments at headquarters Air Force Space Command, Peterson Air Force Base, Colorado, and as a Program Element Monitor, Office of the Secretary of the Air Force for Acquisition, Pentagon, Washington, DC. Col Struckman also served as a military advisor on space and missile issues to the Assistant Secretary of State, Bureau of Intelligence and Research, Washington, DC as well as an on-site U.S. Government Verification Officer for NATO missile destruction compliance in Eastern Europe. Most recently, Col Struckman served as a squadron commander in the 91st Space Wing, Minot Air Force Base, North Dakota. He holds a Bachelor's degree in Biology from the University of Nebraska, a Master's degree in Human Resource Management from Lesley University, Cambridge, Massachusetts, and a Master's degree in National Security and Strategic Studies from the United States Naval War College.

Professor Sean C. Sullivan

Sean C. Sullivan is an Associate Professor at the Naval War College. He studies defense planning and the Department of Defense formal resource allocation processes. He has published several articles, case studies, and references on defense resource allocation.

In 2009, Professor Sullivan was selected for the Department of the Navy Scholar in Residence Program and served in the Office of the Assistant Secretary of the Navy (Financial Management and Comptroller). During this residency, he conducted research on defense planning and capabilities-based planning as well as worked in the Deputy Secretary of the Navy's Policy Directorate on a variety of issues relating to the 2010 Quadrennial Defense Review, Program Objective Memorandum FY 2010, and Program Review FY 2009.

A retired naval officer, Sean Sullivan served in the United States Navy for over twenty years in a variety of surface combatants and afloat staffs.

Professor Sullivan attended the Naval War College, graduating in March 1999 with a Master of Arts Degree in National Security and Strategic Studies and holds a B.A. in Political Science from the University of Rochester.

Rear Admiral James P. Wisecup, U.S. Navy

Rear Admiral James “Phil” Wisecup became the 52nd president of the U.S. Naval War College on Nov. 6, 2008. He most recently served as commander, Carrier Strike Group 7 (*Ronald Reagan* Strike Group), returning from deployment in October 2008.

A 1977 graduate of the U.S. Naval Academy, Wisecup earned his master’s degree in international relations from the University of Southern California, graduated from the Naval War College in 1998, and also earned a degree from the University of Strasbourg, France, as an Olmsted Scholar, in 1982.

At sea, he served as executive officer of USS *Valley Forge* (CG 50) during Operation *Desert Storm*. As commanding officer, USS *Callaghan* (DDG 994), he was awarded the Vice Admiral James Stockdale Award for Inspirational Leadership. He served as commander, Destroyer Squadron 21 during Operation *Enduring Freedom* after 9/11.

Ashore, Wisecup was assigned to NATO Headquarters in Brussels, Belgium, served as force planner and ship scheduler for Commander, U.S. Naval Surface Forces, Pacific; and served as action officer for Navy Headquarters Plans/Policy Staff. He served as a fellow on the Chief of Naval Operations Strategic Studies Group; director, White House Situation Room and commander, U.S. Naval Forces Korea.

Rear Admiral Wisecup’s awards include the Defense Superior Service Medal, Legion of Merit, Bronze Star, and various unit, service and campaign awards.

Ms. Amy F. Woolf

Ms. Amy F. Woolf is a Specialist in Nuclear Weapons Policy in the Foreign Affairs, Defense, and Trade Division of the Congressional Research Service at the Library of Congress. She joined CRS in April 1988, and provides Congress with information, analysis, and support on issues related to U.S. and Russian nuclear forces and arms control. She has authored many studies and participated in numerous seminars on these issues, addressing such topics as U.S. nuclear weapons strategy and doctrine, U.S. and Russian nuclear force structures, strategic arms control and the U.S-Russian arms control agenda, ballistic missile defense policy, and issues related to nuclear weapons and threat reduction in Russia and the other states of the former Soviet Union. Ms. Woolf has spoken at numerous conferences and workshops, discussing issues such as Congressional views on arms control and ballistic missile defenses, cooperative threat reduction with Russia, and U.S. nuclear weapons policy.

Before joining CRS, Ms. Woolf was a member of the Research Staff at the Institute for Defense Analyses (IDA) in Alexandria, Virginia. She also spent a year at the Department of Defense, working on the 1994 Nuclear Posture Review.

Ms. Woolf received a Masters in Public Policy from the Kennedy School of Government at Harvard University in 1983 and a BA in Political Science from Stanford University in 1981.



U.S. NAVAL WAR COLLEGE
— *Est. 1884* —
NEWPORT, RHODE ISLAND

<http://www.usnwc.edu>