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MILITARY TRANSFORMATION? WHICH TRANSFORMATION, AND WHAT LIES AHEAD?

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THE TERM "military transformation" should simply be understood to mean "profound change" in military affairs.[1] It need not imply rapid or across-the-board change, nor the discarding of that which continues to work well. The changes, however, should be dramatic rather than mere improvements on the margin such as modestly better aircraft, tanks, or ships. Transformation is a process with no simple end point.[2]

Military transformations are only sometimes successful; they can even be distinctly counterproductive because militaries often embrace concepts too strongly and uncritically.[3] Since mistakes are to be expected, hedging and course correction are basic ingredients in successful transformation.

This chapter discusses military transformation across the eight years of the George W. Bush administration, particularly those in which Donald Rumsfeld was secretary of defense. The chapter begins with the 1990s for context and ends with thoughts on what lies ahead. Substantial further transformation will be *essential* in the years ahead, although perhaps under a different name and with a different character from that anticipated at the turn of the century.

BACKGROUND

ORIGINS OF THE TRANSFORMATION CONCEPT

The origins of recent U.S. military transformation are decades in the past. The technologies underlying precision weapons and stealth, and the emphasis on rapidly deployable expeditionary forces, trace back to the late 1970s. The potential of new

technology was a major theme in the Iklé-Wohlstetter *Discriminate Deterrence* study of 1988.[4] The transformation-related developments between 1975 and 2008 occurred across nine different defense secretaries and five presidents.

Discussion of military transformation per se began in the mid- to late 1990s, following debate about an impending revolution in military affairs (RMA). The Department of Defense's (DoD) director of Net Assessment Andrew Marshall and his staff nurtured much of the RMA work. As of 1994, Secretary William Perry and Vice Chairman Adm. William Owens also championed RMA thinking. The idea of an RMA is that technological developments sometimes make possible a qualitative change in the nature of warfare. Examples include the advents of aircraft carriers, blitzkrieg warfare, and nuclear weapons. An RMA usually involves major changes in technology, doctrine, and organization. RMAs often render obsolete some previous forms of warfare, as when aircraft carriers supplanted battleships.[5] In the context of the early 1990s, it seemed evident to some of us that profound changes were possible because of precision fires, stealth technology, and information systems.

All of this may seem banal today, but as of 1990, airpower was treated by most officers and analysts as valuable but not decisive. Very few aircraft had precision weapons, even though laser-guided bombs had been developed during the Vietnam War. The army had not yet demonstrated the large-scale maneuver operations developed under the AirLand Battle doctrine of the 1980s, and most ground force analysis still used models of pure head-on-head attrition warfare. The new stealthy aircraft (F-117s) had not seen combat, and unmanned aerial vehicles were not yet in play (except by Israel). Computers, communications, and information displays were still primitive. The first Internet browser (Mosaic) would not appear until 1992, and military information technology would lag that of the civilian world by years.

Bullish Views as of the Early 1990s

RMA discussion was a way to pull together a picture of what was happening or should happen to give it some coherence, historical context, and drama. Many of those doing the innovating, however, seldom used the terms "RMA" or "transformation." They were intent on creative but pragmatic problem solving. So, also, analysts tended to avoid overstatement. A RAND compendium in 1994 reflected

on what was in the air for future defense planning.[6] Although avoiding the language of revolution, it explicitly challenged DoD's then-current planning approach,[7] which seemed cold-warish in its constructs and insufficiently appreciative of technological change. Drawing on research sponsored by the Office of the Secretary of Defense (OSD), the Joint Staff, air force, and army, the book recommended:

- *Capabilities-Based Planning (CBP).* DoD should move away from planning for specific threat scenarios (with, for example, specified adversaries, allies, time lines, strategies). Given inherent uncertainties, planning should focus on providing the capabilities needed for adaptiveness in real crises and conflicts.
- *Exploit Airpower's Potential.* Airpower was coming into its own by virtue of precision weapons and stealth technology, but achieving the potential would require major investments in modern precision weapons, stealth, and suppression of air defenses, and fundamental changes of attitude and doctrine.
- *Restructure the Force Units.* DoD should rethink all "major formations" (divisions, carrier battle groups, air wings, and Marine amphibious groups) with an eye on smaller building-block units exploiting modern technology.
- *Plan Expeditionary Forces.* A focus in planning should be rapid expeditionary capability and a generic campaign plan that would be distinctly joint, would exploit airpower early, would include a ground campaign, and would then have a stabilization campaign demanding large numbers of ground forces.
- *Pursue Ballistic Missile Defense (BMD).* Despite the challenges, BMDs, both global and tactical, should be pursued through research, development, and in some cases deployment.
- *Anticipate Adversary Tactics.* The United States should anticipate that its adversaries would seek to avoid direct engagements, offset U.S. strengths, and deter U.S. action. These efforts, which later came to be called *asymmetric strategies*, would include: making access difficult; avoiding road marches in favor of using infantry in cities, mountains, and forests; attacking the U.S. homeland; using influence operations to manipulate the strategic context; and adopting irregular warfare. All of this would occur in the shadow of weapons of mass destruction (WMD).
- *Operations Other than War.* The United States should be prepared for possible operations other than war, including insurgencies.

Looking back at this snapshot of early-1990s' thinking, and despite the prescient observations, some embarrassing omissions are obvious—a reminder of how think tanks get only some things right. In particular, the book had nothing to say about (1) networking, (2) netwar, (3) the potential for a *large* terrorist attack on the United States, (4) a "long war" against international Islamist extremists, or (5) what is now called *hybrid* warfare. Despite the omissions, the above list demonstrates how long the roots of much transformation have been.

THE LATTER PART OF THE DECADE: 1995–2000

Joint Vision 2010 and the First Quadrennial Defense Review

By 1996 the Joint Staff under Gen. John Shalikashvili and Adm. William Owens was urging the embrace of RMA-type ideas. Its *Joint Vision 2010* made a world-wide stir because of its ambitiousness.[8] The other principal champion was Secretary of Defense William Perry (1994–1997). By 1997 the new name "transformation" merited an entire chapter in the 1997 Quadrennial Defense Review (QDR) issued under the new defense secretary, William Cohen.[9] The chapter, however, was clearly somewhat of a "placeholder": although the administration wanted to acknowledge the new ideas, it was not yet ready to truly embrace them.

Some key elements of that first QDR (see figure 2.1) included shifting from the Cold War "strategy" to one that highlighted environment shaping, as well as ensuring the capability to fight major theater wars and laying the basis for future capability.[10] The strategy was called Shape, Respond, Prepare Now. Force sizing was still based on being able to deal with two concurrent regional conflicts, but Cohen emphasized (often to deaf ears) that this was a force-size criterion, not a strategy. The transformation activities were guided by "bumper stickers" called information superiority, dominant maneuver, precision engagement, full-dimensional protection, and focused logistics (see figure 2.2).

The National Defense Panel's Critique of the 1997 QDR

Congress had commissioned a National Defense Panel (NDP) chaired by Philip Odeen to review the QDR.[11] Although not quarreling with the QDR particularly (in part because the QDR had preemptively included the placeholder chapter on transformation), the panel report's tone was one of impatiently urging going beyond rhetoric to actually *start* the transformation. Reflecting previous studies,

FIGURE 2.1. **HIGHLIGHTS OF THE QDR 1997**

| ELEMENT	HIGHLIGHT
Defense Strategy	Shape, Respond, Prepare Now
Force-Sizing Criterion	Two Major Theater Wars
General	Information superiority Dominant maneuver Precision engagement Full-dimensional protection Focused logistics
Army	Force XXI and Army after Next
Air Force	Global engagement
Navy	From the Sea and Forward from the Sea
Marines	Operational Maneuver from the Sea, along with experiments called Hunter Warrior, Urban Warrior, and Capable Warrior
QDR Modernization Decisions	Global Command and Control System; JSTARS; F-22, F-18, and JSF; V-22

the NDP discussed the likelihood of adversaries using asymmetric strategies and embraced the need to prepare under uncertainty by hedging and planning for adaptiveness rather than merely planning on the basis of current threats.

A primary NDP message was that DoD needed new capabilities and new cultural characteristics (see figure 2.3). The recommendations may seem unexceptional today, but U.S. forces were still very similar to those from World War II. DoD's culture was slow, ponderous, disjointed, stovepiped by service and branch, and resistant to change—except for improvements of kind such as better versions of preexisting platform types. Operations had long been "coordinated" across services, but the concept of "integration" was still radical. The NDP report was influential among people who were to take office during the subsequent Bill Clinton administration.

THE HALT PROBLEM

A representative concrete aspect of mid-1990s thinking was the "halt problem," the challenge of being able to defeat an armored invasion of an allied country by

FIGURE 2.2 **ILLUSTRATIVE PENTAGON DEPICTION OF JOINT VISION 2010**
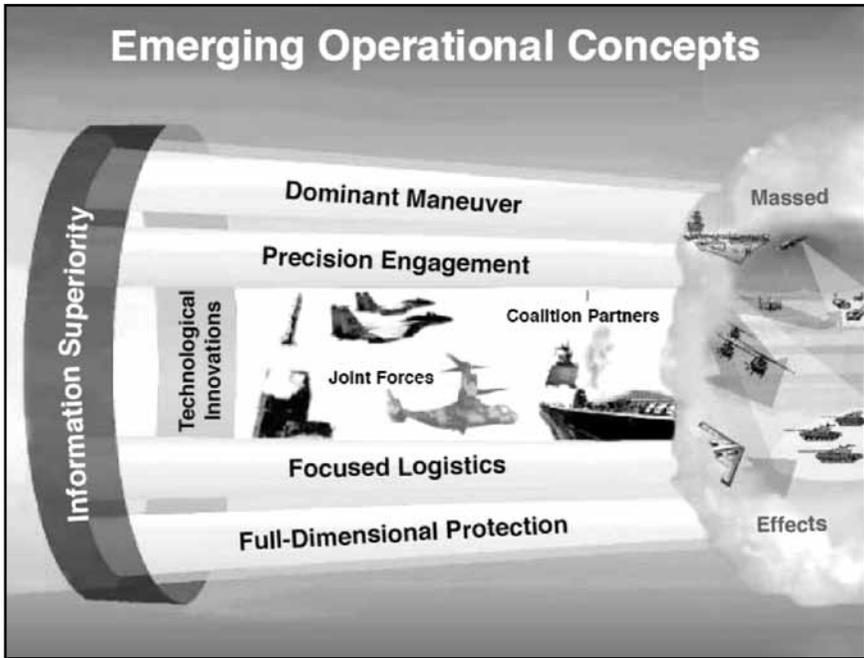
early use of U.S. air forces and other forces with long-range fires. The halt problem was paradigmatic: it set an operational problem to be solved, rather than allowing thought to be driven by technology per se. An important element was requiring an *early* halt, even in cases providing little prior warning. That posed a very difficult challenge. The problem stimulated a good deal of work related to timely access to bases, forward naval presence, joint thinking, air-defense suppression, and the like.[12] It was one of a set of *SecDef operational challenges* that some of us saw as providing focus to the often-rhetorical call for transformation.[13]

NUMEROUS IDEAS FOR WHAT CAME TO BE CALLED TRANSFORMATION
Several new developments appeared in the mid- to late 1990s. This included seminal work on network-centric operations, much of it associated with the late Vice Adm. Arthur Cebrowski,[14] and early discussion of netwars by John Arquilla and David Ronfeldt.[15]

Many other papers and reports emerged in the late 1990s, including those of Andrew Krepinevich, James Blaker, the Defense Science Board, and the Naval

Figure 2.3 **The NDP's Recommended Attributes for Military Force Capabilities**

Military Capabilities	Culture
Light	Flexible
Agile	Informed
Mobile	Proactive
Global	Innovative
Fast/Effective	Responsive
Interoperable	Integrated

Studies Board of the National Academy of Sciences[16]; as well as by RAND[17] and other organizations. A National Research Council study for the navy provided concrete recommendations for networking-oriented organization and management.[18] All of the services produced vision documents that reflected appreciation of technological developments and new challenges (although typically from a parochial service perspective).
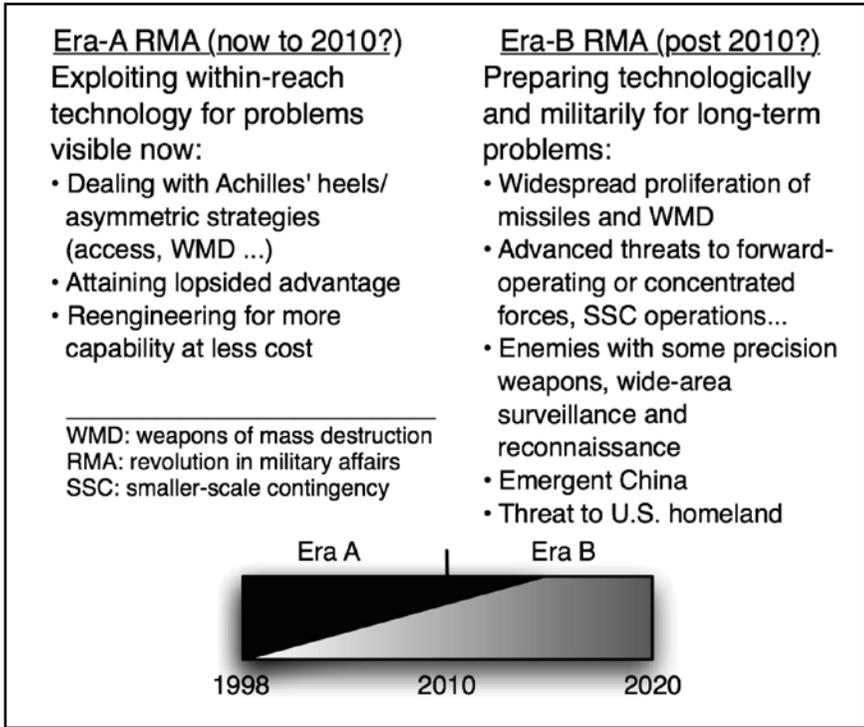
End-of-the-'90s Suggestions for the Next Administration
Toward the end of the decade, proposals about transformation were tightening up. My RAND colleagues and I asserted in an issue paper that "the single most important task for Secretary of Defense William Cohen and his successors over the next two decades is to transform U.S. military forces for adaptiveness in new strategic and operational circumstances."[19]

We went beyond such generalities and also distinguished between efforts that would be needed on different time scales (see figure 2.4, redrawn from the original). Again with the notable exception of not anticipating Islamist terrorism and the "long war," the imagery still appears correct. One reason for the two-era imagery was to reconcile the evolutionary and revolutionary variants of the debate.

Two end-of-decade projects published suggestions for the next administration's QDR. The first was led by Michèle A. Flournoy, who stressed impending dilemmas and the need to choose among spending more, cutting costs, or doing less.[20] Michael O'Hanlon wrote about modernization and transformation. Although skeptical about a broad transformation, he saw high-leverage opportunities related to information technology and command and control.[21]

Figure 2.4 **A Two-Era Image of Transformation from 1998**

Era-A RMA (now to 2010?)
Exploiting within-reach technology for problems visible now:
• Dealing with Achilles' heels/ asymmetric strategies (access, WMD ...)
• Attaining lopsided advantage
• Reengineering for more capability at less cost

WMD: weapons of mass destruction
RMA: revolution in military affairs
SSC: smaller-scale contingency

Era-B RMA (post 2010?)
Preparing technologically and militarily for long-term problems:
• Widespread proliferation of missiles and WMD
• Advanced threats to forward-operating or concentrated forces, SSC operations...
• Enemies with some precision weapons, wide-area surveillance and reconnaissance
• Emergent China
• Threat to U.S. homeland

Era A   Era B

1998   2010   2020

The second volume reported from the "preventive defense" project led by Ashton Carter and William Perry. Less about strategy options than about problems that had frequently been ignored,[22] it urged preparation for the possibility of a catastrophic terrorist attack on the homeland, although it did not predict one. It also dealt with asymmetric threats, keeping the technological edge; maintaining the quality of personnel, intelligence, the revolution in management affairs; and strengthening interagency processes.

Finally, I should mention the influential 2001 Hart-Rudman study, which was prescient in many respects, including discussion of terrorist threats and even the likelihood of a direct attack on the U.S. homeland.[23]

The work cited above, then, laid the background for the Bush administration's efforts at transformation: a background rich in technology and ideas, and concrete examples of actual progress, but one that also included skepticism, which is worth discussing before moving to the developments in the Bush administration.

RMA and transformation discussions were controversial throughout the 1990s. Proponents were often derided because, as often occurs when major changes are beginning, visionaries were guilty of hyperbole. That seems to bother some people more than others. People divided into those who saw "revolution," those who saw dramatic change to be accomplished more nearly step-by-step than overnight, and those who scoffed about the profundity of the prospective changes. Revolutionaries would argue that modern surveillance and precision fires would solve the age-old problem of a commander not having adequate situational awareness.[24] That problem solved, very small forces with precision weapons would have extreme leverage over any traditional army. Skeptics resisted this view, for both good and bad reasons, and joint planning continued to train in and plan for large-scale maneuver warfare without considering airpower as a decisive instrument and without thinking about what could be accomplished with smaller maneuver units. At the same time, others believed that airpower was now the decisive reality and that the day of large armies was passing and should be hastened by reducing ground forces, with funds flowing to the air forces.[25] The Joint Forces Command became enthralled with what was called Rapid Decisive Operations (RDO)—a powerful concept[26]—but one that rather obviously had shortcomings against a sentient adversary. As I can attest from my own experiences, cautionaries about RDO—even by proponents of transformation who saw great value in RDO for some cases—often fell on deaf ears.[27]

The generic problem, as mentioned earlier, is that military establishments can have a tendency for uncritical and inadequately hedged attachment to an attractive concept. In the late 1990s, the U.S. military adopted a style of expressing future joint doctrine in such terms as "information dominance"—not just as something to be sought because of its enormous leverage but as something that would in fact be obtained by a "can-do spirit" and appropriate technology. Notably absent was anticipation of the so-called asymmetric strategies mentioned earlier. As for information superiority, during the Vietnam War the United States enjoyed extraordinary advantages in information *systems* but suffered from information *inferiority* in that U.S. forces lacked the information needed for its operations, whereas the enemy had more than enough information to conduct his own.

Against this background, then, let us now move to developments of the Bush administration and particularly of its first six years with Secretary Donald

Rumsfeld. The next section deals with strategy and forces; a later section deals with changes of management and process. The discussion, then, is not in simple chronological order.

Initial Concept

The administration of George W. Bush came into office bullish on transformation. Candidate Bush himself had emphasized the matter in 1999,[28] saying that U.S. forces in the next century should be "agile, lethal, rapidly deployable and require a minimum of logistical support." With more prescience, Bush referred to identifying targets by a variety of means—from a Marine patrol to a satellite—and to attacking them with an array of weapons from, for example, a submarine-launched cruise missile to mobile long-range artillery. He also emphasized ballistic missile defense, influenced by findings of Rumsfeld's commission on the subject.[29] Secretary Rumsfeld and Deputy Secretary Paul D. Wolfowitz assumed their positions, then, with transformation as a clear priority. Rumsfeld personally spent a great deal of time preparing the QDR, having frequent long meetings with senior military officers and civilians on the subject.

It was with the issuance of the 2001 QDR (hastily revised somewhat after the attack of September 11) that Rumsfeld's vision of transformation became clear.[30] The overall defense strategy, abbreviated as "Assure, Dissuade, Deter, Defend/ Defeat," was actually similar in most respects to "Shape, Respond, Prepare Now" (the previous DoD strategy of Secretary Cohen), but it had additional features such as reference to "dissuade," which related to seeing China not as an adversary but rather as the subject of inevitable long-term competition in the sense long discussed by Andrew Marshall.[31] Rumsfeld also had significant discussion of managing risks, recognizing, for example, the trade-offs between investing in current force structure and operations versus investing to reduce "future challenges risk" (page 57 of the 2001 QDR).

The QDR fully embraced the ideas of transformation but went beyond previous rhetoric. It was bursting with ideas and departures from earlier defense planning. Rumsfeld sought to express ideas more strategically than technologically, noting, "the purpose of transformation is to maintain or improve U.S. military preeminence in the face of potential disproportionate discontinuous changes in

FIGURE 2.5 **HIGHLIGHTS IN THE 2001 QDR**

TOPIC	DESCRIPTION
Strategy	Assure allies and friends; dissuade future military competition; deter threats and coercion against U.S. interests; and—if deterrence fails—decisively defeat any adversary
Force-Sizing Criterion	1-4-2-1 (defend homeland; deter hostilities in four critical areas; swiftly defeat two adversaries in near-simultaneous operations; and, as an option, be able to decisively defeat one of those two, to include forcing regime change)
Strategic Tenets (reordered by author)	Defend the United States and projecting U.S. military power Maintain favorable regional balances Strengthen alliances and partnerships ———————————————————————— Manage risks Take a capabilities-based approach to planning Develop a broad portfolio of military capabilities Transform defense
Global Posture	Increase flexibility of global basing system in critical areas worldwide, with emphasis on additional bases and stations beyond Western Europe and Northeast Asia Provide temporary access in many foreign countries for training and exercises Redistribute forces and equipment based on regional deterrence requirements Provide enough mobility to conduct expeditionary operations against adversaries with WMD and area-denial mechanisms

the strategic environment" (page 30 of the QDR). Figure 2.5 summarizes highlights of the 2001 QDR.

Although the QDR was short on specifics, it identified initiatives for each service to pursue. Cryptically, it noted that Special Operations Forces (SOF) had important roles and that they would need the ability to conduct "covert deep insertions over great distances and will need enhanced C⁴ISR [command, control,

communications, computers, intelligence, surveillance, and reconnaissance] capabilities to remain in contact with their commanders and to ensure access to real-time intelligence in a number of forms" (page 44 of the 2001 QDR). Rumsfeld was interested in SOF and their potential in a world in which traditional maneuver forces might be less often germane. This focus was still rather nascent, however, in part because "traditionalists" continued to view SOF with suspicion and skepticism and because there was often great reluctance to use them in particularly risky ways.[32]

Capabilities-Based Planning

One of the strategic tenets mentioned in figure 2.5 was a "capabilities-based approach," as discussed since the 1990s. In addition to dealing better with uncertainty as emphasized by the work cited earlier, DoD leadership wanted to impose joint thinking upon a recalcitrant organization Balkanized not only by the military services but also by organizations devoted to, for example, developing the next naval cruiser, the next manned bomber, and the next heavy artillery piece. A better approach when contemplating next-generation capabilities would be to understand clearly what capability was needed in functional terms and to then assess a number of different ways to obtain them—which might include very different platforms, weapons, and doctrine. Why *assume* the need for a next-generation penetrating bomber, for example? Why not consider alternatives such as long-range missiles, existing bombers with standoff weapons, or unmanned aircraft?

Operational Goals

Of particular importance were the QDR's six "operational goals" (see figure 2.6), since these posed crucial, nontrivial, and relatively concrete challenges for the services to focus upon. DoD subsequently commissioned projects to sharpen the definitions and identify metrics. The intent was to go well beyond slogans and to manage the transformation systematically.

Shortcomings

Despite the many ideas in the 2001 QDR, some thoughtful observers such as Michael Vickers (later to join the administration as an assistant secretary) gave it

Figure 2.6. **Operational Goals for Transformation**

Protect critical bases of operations and defeat CBRNE weapons*
Ensure information systems
Project and sustain U.S. forces in anti-access or area-denial environments
Deny enemies sanctuary by providing persistent surveillance, tracking, and rapid engagement with high-volume precision strike
Enhance capability and survivability of space systems and supporting infrastructure
Leverage information technology to develop an interoperable, joint C4ISR architecture and capability that includes a tailorable joint operational picture

*CBRNE: chemical, biological, radiological, nuclear, enhanced explosive

mixed grades, primarily because it did not go far enough in "shifting the portfolio balance." There were relatively few hard programmatic decisions such as canceling programs and decisively reallocating investments to favor the weapon systems and forces of the future.[33] Some observers were disappointed that, instead of making trades of the sort discussed in the National Defense University (NDU) report, the administration seemed to be arguing that it could do "everything" without having to make choices.[34]

As for whether programmatic decisions backed up the philosophy, DoD said that $21.1 billion had been budgeted in support of transformation, but claims in that regard were arguable. As expected, proponents of legacy systems had worked furiously to have their programs counted as contributing to transformation. Also, a number of anticipated initiatives had not yet occurred. For example, the QDR included only modest increases in funding for unmanned systems and did not signal a shift in balance between those and manned systems. There were, however, some steps taken in either 2001 or 2002. For example, the FY 2003 budget included funding to convert four Trident submarines to conventional strike platforms (SSGNs: Ship, Submersible, Guided missile, Nuclear powered) and for improved global communications in a network-centric construct, a research program concerned with defending against biological weapons, and a number of other items.

In summary, while the 2001 QDR was philosophically excellent and set important directions, transformation could not yet be said to be proceeding rapidly.

It takes time for even a strong-willed secretary of defense to change the direction of the mammoth defense program, especially given that that the FY 2002 defense budget was largely developed much earlier in 2001—before the new strategy had been formulated, much less "socialized" within DoD. Further, Congress had taken months for Rumsfeld to get most of his team appointed, confirmed, and in place.

The Case of Ballistic Missile Defense as Illustrating an Attitude

As somewhat of an aside, it is useful to mention treatment of BMD to illustrate how Rumsfeld "thought differently." A fierce debate ensued between Rumsfeld and Congress and between proponents and opponents of BMD generally. One issue related to the degree and stringency of operational testing that should be required before deployment occurred. This was significant because successful BMD is very difficult to achieve, and it has long been possible to identify countermeasures that would defeat primitive versions of BMD. Most people reasoned that because of the difficulties, methodical testing was essential. Rumsfeld, however, was particularly influenced by the consequences of continuing to have *no* BMD. The Commission to Assess the Ballistic Missile Threat to the United States had concluded in a report to the Senate on (*Congressional Record*, page S9522) July 31, 1998, that a rogue state such as Iraq, North Korea, or Iran might be able to deploy ballistic missiles within five years of a decision to do so. This could severely undercut U.S. ability to deter or respond to aggression: the United States itself might be deterred. Another consideration was that the United States had been studying BMD for decades, with nothing to show. Would the Joint Surveillance Target Attack Radar System (JSTARS) and Predator ever have been fielded if they had been required to go through all the hurdles associated with routine acquisition? Was it not time to use the "let's build something" tack?[35]

Although BMD remains controversial,[36] it is unlikely that the United States would have an operational BMD system today (even one of limited capability) but for Rumsfeld's approach. That is, it would be "naked" to threats of missile attack. There has also been value in the lessons associated with actual fielding and operations. In any case, the BMD program illustrated aspects of Rumsfeld's determination, impatience, and—some would say—pragmatism about making things happen.[37]

PROBLEMS AND LEARNING

As noted previously, something like transformation does not occur easily or smoothly. Mistakes occur along the way. Sometimes these can simply be recognized and ameliorated; sometimes they are more fundamental. Two of the former type bear mentioning.

Flawed Implementation of CBP

Rumsfeld's adoption of CBP was a central feature of the 2001 QDR. Regrettably, its implementation was troubled.

The QDR did not actually define CBP, but rather said:

> This capabilities-based model focuses more on how an adversary might fight rather than specifically whom the adversary might be or where a war might occur. It recognizes that it is not enough to plan for large conventional wars in distant theaters. Instead, the United States must identify the capabilities required to deter and defeat adversaries who will rely on surprise, deception, and asymmetric warfare to achieve their objectives (Rumsfeld, *QDR 2001*, see pages iv and page 13).

This was quite reasonable, but there were odd and counterproductive interpretations in the follow-up:

Men from Mars? Lower-level guidance in some offices was to the effect that all discussion should be expressed in generic capability terms without reference to the name of the potential adversary in question or even examples. It was if leadership wanted to have capabilities for everything, even alien invasions. The issue of uncertainty was being overdone, to say the least.

Identification of Shortfalls but Not Billpayers. Many DoD organizations would happily focus on the easy problem of finding "capability gaps"—i.e., challenges for which current capabilities were deemed insufficient—but would avoid the organizationally painful task of identifying trade-offs and bill payers for new initiatives.

Organization. DoD reorganized so as, ostensibly, to enable capabilities-based planning, but the result was exceedingly bureaucratic and ponderous. For example, nearly two dozen overlapping groups were formed by the Joint Staff to

address various "capability areas." The activities of these groups were sometimes so devoted to abstract discussion of capabilities as to put off talking about the concrete and highly consequential issues and actions. Another profound problem was the separation of requirement setting from the assessment of technological feasibility, program development, and economic choice.[38]

By the end of the Bush administration, CBP had a bad reputation in some quarters because of the abstractions, the process problems, and what seemed to critics like a "blank check approach." Some even went so far as to suggest a return to the earlier threat-based planning—conveniently ignoring the bankruptcy of that approach as a method of planning under uncertainty.

The sometimes-flawed implementation pained those of us who had proposed and championed CBP for some years. My own definition saw CBP as a modern version of classic good analysis:

> Capabilities-based planning (CBP) is planning, under uncertainty, to provide capabilities suitable for a wide range of modern-day challenges and circumstances while working within an economic framework that necessitates choice.[39]

The "wide range of challenges" included named familiar actors such as al-Qaeda, North Korea, Saddam Hussein–era Iraq, or China and the use of concrete scenarios, but these scenarios were drastically different from many standard planning cases. The last part of the definition is crucial, and recent DoD projects by RAND have described how to frame strategic choices under uncertainty and economic constraint using modern portfolio analysis methods and the concept of analytically crafted "spanning sets" of scenarios informed by exploratory analysis.[40]

The Army's Future Combat System (FCS)

A second example of missteps involved the army's FCS. Chief of Staff Gen. Eric Shinseki mandated an initial direction that flew in the face of realistic technology assessments and uncertainty. Army thinking postulated a super-capable 20-ton vehicle that was not yet feasible, a huge future rotary-wing aircraft that would likely be extremely vulnerable, and the asserted rapid deployment of mechanized forces that was just not in the cards (a division in five days; five divisions in thirty

days). The original conception also decreed a homogeneous "objective force" consisting of ten identical divisions.[41] That such a flawed concept was approved for development is still seen by many inside the defense community as a failure of civilian leadership—essentially a fiasco.

Fortunately, DoD learns. The next chief of staff, Gen. Peter Schoomaker, made substantial changes.[42] They included increased emphasis on modularity, spiral evolution with near- and mid-term results, and deemphasizing the homogeneous division-based Objective Force concept in favor of a brigade-based "Future Force" concept. Significant changes were also made in management approach. It should also be noted that not everything went badly: for example, one of Shinseki's most important decisions resulted in the Stryker vehicle, a core element of the new brigade combat teams.[43] Although the FCS program was high on the "chop" list of many DoD critics attempting to advise then President-elect Barack Obama in late 2008, it is likely that a great deal of work ongoing under the FCS program will prove to have been quite valuable even though the program itself was terminated by Secretary Robert Gates rather early in the new Obama administration.

The department's leaders have been keen to avoid future errors such as the go-ahead for the original FCS concept. This has been reflected in calls for a revitalization of DoD's competence in systems engineering[44] and management changes associated with the Concept Development Process discussed later.

Shift of Concepts after Afghanistan?

Operation Enduring Freedom (the invasion of Afghanistan to rout al-Qaeda and the Taliban) began in October 2001 and lasted six months. It was an unprecedented operation in numerous ways, such as the first-of-its-kind tactic of having SOF provide real-time targeting data to U.S. long-range bombers with precision weapons. A familiar picture in the news media was of SOF operating from horseback, something that would not have been imagined by many individuals only a few months earlier (see figure 2.7).[45]

If this imagery was exciting even to laymen, the backdrop was profound to defense planners. A big increment of "jointness" had suddenly arrived owing to the innovation of individuals on the ground, experimentation at Joint Forces Command the previous year, and the marvels of networking technology. The power of small units and networking had been demonstrated.

Figure 2.7 **SOF Operations from Horseback in Afghanistan**

Significantly, it had taken the personal intervention of Secretary Rumsfeld to "unleash" the SOF. Until he weighed in heavily, there had been great reluctance to do so.[46] The United States had been relying instead on bombing, which had not only proven ineffectual but had caused serious problems due to collateral damage. Soon after Rumsfeld approved the SOF approach (with eleven "A teams"), decisive victory emerged.

Unfortunately, enthusiasm for the "Afghan model" had undue influence on the planning for the operation to topple Saddam Hussein in 2003 (Operation Iraqi Freedom). Although the success of the combat phase demonstrated convincingly how much could be done with speed, maneuver, competence, and technology, U.S. civilian and military leaders were entirely unprepared for the difficulties of stabilization operations—despite warnings by well-respected retired officers and research teams.[47]

MID-COURSE CORRECTIONS

Unified Command Plan

Starting in 2001 and continuing throughout his tenure, Rumsfeld made changes in the Unified Command Plan. One concept was to introduce competition among combatant commanders by assigning global as well as regional responsibilities. Most notably, as specified in the 2004 Unified Command Plan, he put the Special Operations Command (SOCOM) in overall charge of the global war on terrorism (GWOT), while having it receive advice (sometimes contradictory) from the regional commands. Execution would still be accomplished by regional commands, but the crosscutting view would be that of SOCOM, which was now a "supported" rather than "supporting" command in this respect.

Global Posture Review

Rumsfeld had also begun a Global Posture Review (GPR) as of 2001, one that continued over a period of years, had great significance, and was controversial across the board. It can be argued that this was one of his primary accomplishments, although it received relatively little mainstream attention. The review led to changes in overseas posture in South Korea, Germany, and elsewhere. The emphasis was to increase flexibility and agility for the modern world while reducing unnecessary "footprints" in foreign countries. The redeploying and reposturing continues to this day, and its ultimate form and extent remain unclear.[48]

The 2005 Quadrennial Review

Much had changed by the time of the 2005 QDR (issued in 2006).[49] The nation was at war, the homeland was recognized as vulnerable, the nature of the global war on terrorism was such that national security depended on a much greater degree of coordination across instruments of power, and the department's leaders were troubled by the tendency to focus on modestly improving capabilities that were already good (for traditional warfare) rather than on dealing with issues related to nontraditional warfare (as in Iraq and Afghanistan), disruptive threats (for example, one that would undercut the effectiveness of stealth aircraft), and catastrophic attacks (for example, WMD use against the continental United States [CONUS]).

To implement the new strategy, the QDR highlighted four distinct areas: (1) defeating extremism and the terrorism that it spawns, (2) in-depth defense of the homeland, (3) shaping the actions of states at crossroad points, and (4) dissuading or preventing hostile states and non-state actors from gaining WMD.
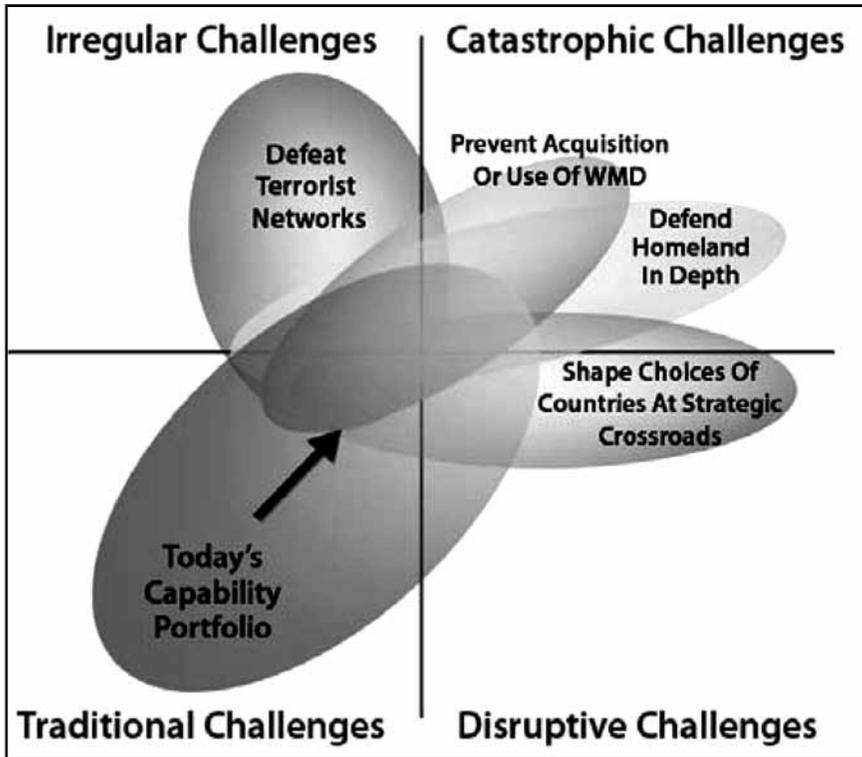
Rebalancing "the Portfolio"

In contrast to the QDR of 2001, the 2005 QDR laid the strategic basis for making substantial changes in force structure, force posture, acquisition programs, and priorities. Much of this was the result of the ongoing conflicts in Afghanistan and Iraq, which the QDR regarded as indicative in many respects of future needs.[50] Rumsfeld had doubled the size of SOCOM's budget over that of FY 2000. In February 2007, the department, now under Secretary Gates, proposed in its FY 08 program to increase active-duty army and Marine forces by 92,000.[51,52] Rumsfeld had resisted such increases earlier.

An important theme in the effort to rebalance the portfolio was discussed with a chart (see figure 2.8) that described the challenges facing DoD as falling into four quadrants: traditional challenges (bottom left), such as major regional conflicts; irregular challenges, such as defeating terrorist networks and conducting counterinsurgency operations (top left); catastrophic challenges, such as attacks with WMD on the homeland (top right); and disruptive challenges (bottom right), such as a rival nation being able to undercut foundation elements of U.S. military strategy (for example, the ability to penetrate air defenses or the ability to move aircraft carriers close enough to targets as to be useful).[53] The shift of portfolio balance was to increase investment in capabilities for all but the traditional challenges, even if it meant "accepting more risk" with respect to those traditional challenges. Reference to "accepting more risk" is sometimes more politically acceptable than apt: translated, it may correspond to having fewer traditional combat units such as carrier battle groups, divisions, or wings. Whether such cuts would actually reduce capability is arguable because of changes in the security environment and increases in per unit capability.

The QDR included a depiction (re-expressed here as figure 2.9) of what the administration believed it was accomplishing.[54] It remains a useful summary of thinking, although only some of the developments were associated with the Bush

FIGURE 2.8 **REBALANCING THE PORTFOLIO OF CAPABILITIES**

Irregular Challenges | **Catastrophic Challenges**

Defeat Terrorist Networks

Prevent Acquisition Or Use Of WMD

Defend Homeland In Depth

Shape Choices Of Countries At Strategic Crossroads

Today's Capability Portfolio

Traditional Challenges | **Disruptive Challenges**

administration narrowly and some of the developments (such as the first) related more to a war that had gone badly than to progress in defense planning.

TRANSFORMATION OF DOCTRINE STIMULATED BY IRAQ

One of the most profound transformations of the decade occurred not because of prior planning by Rumsfeld or his predecessors but because of what a failing war was showing to be necessary: fundamental rethinking about organization and doctrine for operations in a highly troubled post-combat phase. Neither U.S. military forces nor the secretary of defense was prepared to adapt effectively to the insurgency that emerged. Once again, however, the U.S. military learns. By 2007 the new doctrine associated with U.S. Army Gen. David Petraeus and Marine Gen. James Mattis—albeit, one rediscovering classic counterinsurgency principles— was being implemented.[55] The now-famous "surge" of 2007 proved successful at

Figure 2.9. **Accomplishments (Perspective of 2006 QDR)**

Old View (20th century)	New View (21st century)
Peacetime tempo	Wartime sense of urgency
Reasonable predictability	Era of surprise and uncertainty
Single-focused threats	Multiple, complex challenges
War against nations	Conducting war in countries we are not at war with (safe havens)
One-size-fits-all deterrence	Tailored deterrence for rogue powers, terrorist networks, and peer competitors
Responding after a crisis starts (reactive)	Preventive actions, so problems do not become crises (proactive)
Crisis response	Shaping the future
Threat-based planning	Capabilities-based planning
Focus on kinetics	Focus on effects
20th-century processes	21st-century integrated approaches
Static defense and garrison forces	Mobile, expeditionary operations
Under-resourced, standby forces	Fully equipped and fully manned combat-ready units
Battle-ready forces (peace)	Battle-hardened forces (war)
Large institutional forces (tail)	More powerful operational capabilities (teeth)
Major conventional combat operations	Multiple, irregular, asymmetric operations
Separate military service concepts	Joint and combined operations
Forces that need to deconflict	Integrated, interdependent forces
Exposed forward forces	Reaching back to the continental United States for support
Emphasis on ships, guns, tanks, and planes	Focus on information, knowledge, and timely, actionable intelligence
Massing forces	Massing effects
Set-piece maneuver and mass	Agility and precision
Single-service acquisition systems	Joint portfolio management

Figure 2.9. (continued)

Old View (20th century)	New View (21st century)
Broad-based industrial mobilization	Targeted commercial solutions
Service and agency intelligence	Joint information operations centers
Vertical structures and processes (stovepipes)	More transparent, horizontal integration (matrix)
Moving user to data	Moving data to user
Fragmented homeland assistance	Integrated homeland security
Static alliances	Dynamic partnerships
Predetermined force packages	Tailored, flexible forces
United States performing tasks	Building partner capacities
Static post-operation analysis	Dynamic diagnostics and real-time lessons learned
Focusing on inputs (effort)	Tracking outputs (results)
Department of Defense solutions	Interagency approaches

least as much because of the altered concept of operations (and crucial domestic developments in Iraq) as because of the relatively small increase in ground forces. These changes largely occurred because President Bush chose to put his last-ditch bets on a new strategy and new leadership. Robert Gates became secretary of defense and General Petraeus was assigned the lead role in Iraq itself.[56]

By the end of the Bush administration, and after numerous studies and debates,[57] Secretary Gates was calling for a rethinking of the national security system that would improve the nation's capacity for effectively orchestrating political, military, and economic approaches across cabinet departments. The administration had undergone a transformation of attitude.[58] Deputy Secretary Gordon England signed out a directive in December 2008 elevating the priority of planning and programming for *irregular war*, accepting a proposal on the subject from Michael Vickers, the assistant secretary of defense for special operations, and for low-intensity conflict. The emphasis was to be on developing the capacity of partner countries and the associated use of SOF rather than planning extensive operations with regular U.S. ground force operations.[59]

Breaking with the chronological flow of the earlier sections, the next section

deals briefly with managerial issues during the periods in which Rumsfeld and Gates were defense secretaries under George W. Bush.

CHANGES OF MANAGEMENT AND PROCESS, 2001–2008

Deviating from the relatively chronological discussion above, let me now comment briefly on changes of management and process during the Bush administration.

PPBS Becomes PPBES

Rumsfeld correctly recognized that one of the most important elements of transformation would be organizational and managerial. Although the Planning, Programming, and Budgeting System (PPBS) introduced by Robert McNamara had served for forty years, the Pentagon was having severe problems, and many of them were process related. Drawing upon outside studies from the business world,[60] Rumsfeld established what became the Business Management Modernization Program (BMMP), which produced a Business Enterprise Architecture (BEA) and suggested many changes in governance and other aspects of DoD management. He also altered and renamed the PPBS as the Planning, Programming, Budgeting, and Execution System (PPBES), following suggestions by outside advisers.[61] The stated intent included improving discipline (ensuring that decisions were faithfully reflected in programs across services and agencies); reducing unnecessary process; better integrating strategy, requirements, resourcing, and acquisition; increasing influence on programs of the combatant commands (COCOMs); modernizing, as with integrated databases; and, more generally, improving agility. Some observers had remarked that the PPBS had been premised on a linear, rational process that undervalued uncertainty and adaptation. Interestingly, however, Undersecretaries Kenneth Krieg and David Chu both regarded the changes as mechanisms for achieving the original goals of PPBS rather than as something philosophically foreign.[62]

The Office of Force Transformation

One of Rumsfeld's acts in the autumn of 2001 was to create the Office of Force Transformation and to appoint Vice Admiral Cebrowski, USN (Ret.) to direct it. Cebrowski was a "revolutionary" who was asked to work closely for the secretary himself. The office laid out transformation guidance,[63] and the services were

directed to develop their own transformation road maps. Transformation had clearly become part of the agenda for action, not merely a term to be used in speeches. The services responded with innovation and energy.[64] After Cebrowski's death, the office was disbanded; it was deemed to have served its stimulation function.[65]

The "Aldridge Study"

Rumsfeld commissioned the Joint Defense Capabilities Study (the "Aldridge study") in March 2003. Figure 2.10 shows what the study's authors highlighted most strongly: *joint* needs, *joint* capability assessments, and front-end guidance (historically difficult to obtain for many reasons, including leadership tendencies to defer highly controversial decisions as long as possible). Figure 2.11 was the simplified depiction of the revised process.[66] What may seem to be naive separation of strategy from resourcing becomes more understandable if it recognized that the authors had in mind successive versions of this process over the years, with lessons learned from studies and assessments in one year becoming input for decisions on strategy in subsequent years (see "feedback" line). The primary challenge would be within the module referred to as "enhanced planning." This was to draw from the SecDef strategic planning guidance and think of capabilities as something that should be "born joint" wherever possible—with collaboration among all relevant users and providers, broad examination of alternatives and trades, and expression of "capabilities" in terms meaningful across DoD rather than, say, just to a particular platform-related community. Combatant commanders would be engaged throughout the process (another long-term challenge since those commanders have "day jobs" focused primarily on here-and-now operations).

Management in the Last Two Years of the Bush Administration

In the last two years of the Bush administration, Secretary Gates led DoD Deputy Secretary England had replaced Wolfowitz in February 2006 and maintained management continuity while Gates was largely preoccupied with the conflicts in Iraq and Afghanistan. Relatively little has been published about England's activities, but they were reflected in the Strategic Management Plan (SMP)[67] and internal directives. One initiative, the Concept Development Process, is intended to greatly improve aspects of the capability development

FIGURE 2.10. **JDCS (JOINT DEFENSE CAPABILITIES STUDY)**

PROBLEM	SOLUTIONS IN A CAPABILITIES-BASED PROCESS
Services dominate the current requirements process	Joint needs are to dominate the process
Service planning does not consider the full range of solutions available for meeting joint war-fighting needs	Planning major joint capabilities should be accomplished at the department, rather than the component, level.
Resourcing depends on senior leadership's actions at the end of the process, rather than the beginning	Senior leaders should provide guidance and decisions at the front end of the process

system with more careful early analysis informing initial decisions and with relatively fewer sources of delay and friction between the initial decision and the next milestone. This work was begun under Kenneth Krieg, undersecretary of defense for acquisition and logistics; it continued under his successor, John Young.[68] Many of the associated initiatives involve using *capability portfolios* to cut across traditional stovepipe and to permit DoD leaders to better balance strategic risks and make capability trade-offs. Numerous suggestions of a related nature had been made for years,[69] and proponents, such as Ryan Henry (principal deputy undersecretary), believed that the approach could be one of the most important of the administration. Others were more skeptical, including the Government Accountability Office (GAO), which had reviewed best industry practices[70] and doubted the effectiveness of a system in which the portfolio managers would not control resources. It was unclear as this chapter was written what the fate of the initiative would be in the Obama administration, but the basic idea of such crosscutting integration will surely endure.

It is too early to judge the long-term success of the changes, in part because there have been errors along the way. In particular, as part of the earlier reforms, the Joint Staff instituted a process called the Joint Capabilities Integration Development System (JCIDS), which has been widely and vociferously criticized as extremely inefficient and ineffective. As of mid-decade, it was in many respects the antithesis of what Rumsfeld had intended.[71] The problems have been recognized and adaptations introduced, but it will take time to assess results.

FIGURE 2.11 **SIMPLIFIED VIEW OF THE REVISED PROCESS**
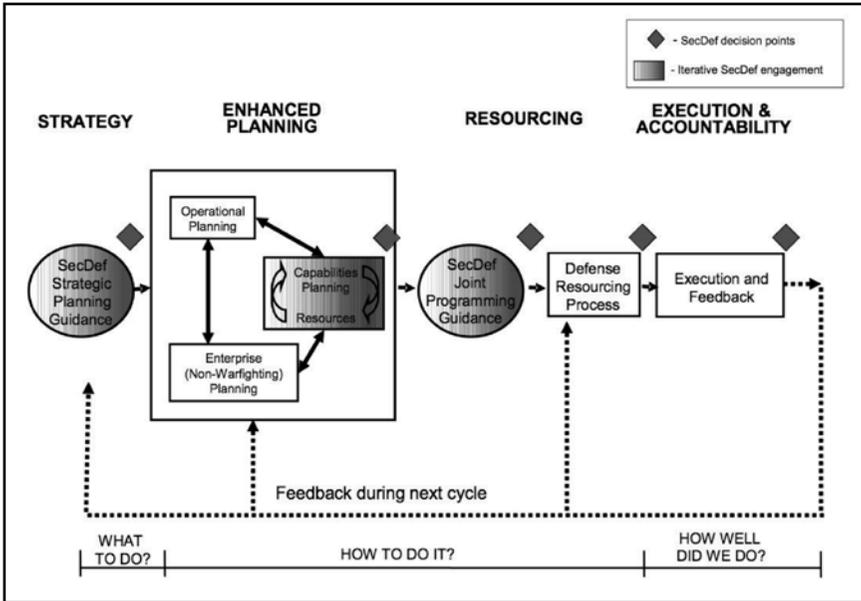
WHAT HAS BEEN ACCOMPLISHED?

Each author will have his own summary of what was and was not accomplished during the Bush administration of 2001–2008. Figure 2.12 is my own depiction. On balance, it suggests a great deal more accomplishment than is currently acknowledged, primarily because of the strong emotions that currently exist about the Iraq War and Donald Rumsfeld. A balanced account on the war-related issues has not yet been written and will be an interesting challenge for future historians. As for transformation, however, a great deal has been accomplished.

The nature of the war in Iraq has had a dampening effect on transformation because it has demanded so much high-level attention and because it has convinced many people that transformation's emphasis on smaller, lighter forces was misplaced (an error, in my view). Congress has authorized increasing the size of the active ground forces by some 92,000 people. A 2006 Congressional Research Service (CRS) study provides a good review of the conflicting attitudes.[72]

In considering prospects for defense planning late in 2008, the financial crisis that besets the world weighs heavily. Further, the unprecedented boom in defense spending over the last eight years seems most unlikely to continue much longer

Figure 2.12. **A Reminder of New Developments and Accomplishments (Many, Transformation-Related)**

Item	Comment
Strategy	
Dissuade, deter, defend/defeat	Less different than seems; U.S. unilateralism early in decade was aberration
Deployed ballistic missile defense	Filled vacuum, but future is debatable
Strategic redeployment away from Europe toward Middle East (and Pacific?)	Current wars have focused forces heavily on Middle East
Forces and Force Posture	
Reserves are now extensively used along with active forces for combat operations	Serious questions about sustainability and consequences for homeland defense
Navy has repostured for rapid surges	In-port battle groups can now deploy faster
Army and air force have repostured for expeditionary operations	Marines have long been so postured
Challenges "Solved"	
Adversary large-scale armored invasions have been rendered obsolete	Depends on forward presence, warning, access, and suppression of air defenses
Other QDR 2001 operational challenges?	None "solved," but major progress has been made on some
System Capabilities	
Precision navigation and precision fires	Introduced in 1990s; now ubiquitous
Unmanned aerial vehicles (UAVs) and armed UAVs	From handfuls to hundreds; more coming
Stealth technology is built into modern U.S. aircraft: B-2, F-22, F-35	Provides "overmatch" except against adversaries with large numbers of platforms
Network-centric capabilities	Evolving rapidly

FIGURE 2.12. **(CONTINUED)**

Doctrine and Operations	
Jointness is core reality	Service parochialism is truly reduced
Adaptive planning is now part of operations	Demonstrated in Iraq's combat phase
Special Operations Forces have become crucial in joint, irregular warfare	Related changes in regular ground force units are now under discussion
Counterinsurgency doctrine has been rediscovered and implemented	Occurred largely in 2007–2008, representing major change of strategy
Balance between airpower and ground force power is now well understood	Air dominance is routinely exploited, perhaps depended upon excessively
Acquisition: Modernization and Recapitalization	
Remarkable new systems such as Global Hawk, Reaper, Stryker	All of these have been heavily used in Iraq and Afghanistan
Cancellation or retirement of Crusader, Comanche, DD-21, Navy Area Missile Defense, Peacekeeper	Demonstrates that at least some choices were indeed made, with most being quite painful
Procurement rates of F-22, Joint Strike Fighter (JSF), and other platforms have tumbled as unit prices have soared	Unsustainable and a symptom of chronic problems
New processes for acquisition and business management	Acquisition system is still broken

given historical trends, public disaffection with the war in Iraq, and the priorities of President Barack Obama. The need for fiscal stimulus may delay cutbacks for a year or three, but they are surely coming. The Congressional Budget Office's (CBO) March 2008 data and projections of defense spending are shown in figure 2.13, with the dashed curves including projected supplementals related to the special costs of operations in Afghanistan and Iraq. The level of spending has exceeded those of the Cold War's peak and the peak during the Vietnam War. Based on history, it would hardly be surprising if spending levels were to drop by up to 25 percent in the relatively near future. Some, including the chairman of the Joint Chiefs of Staff, have called for a leveling off at 4 percent of GDP, or about $560
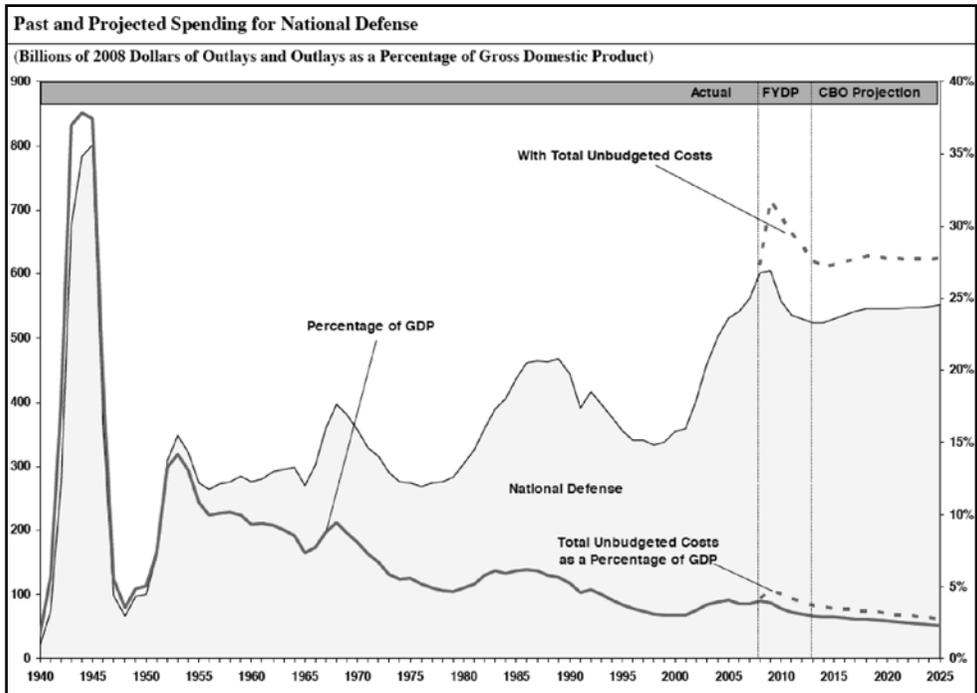
billion in 2008 dollars. Others argue that this is too high a figure (0.5 percent higher than the current level of spending without the special supplementals) and quarrel with the concept of pegging DoD's budget to U.S. GDP.[73]

In contemplating the changes that will be necessary, it should be noted that the cost of the big-ticket procurement items continues to rise at a faster pace than costs more generally—so much so that DoD's rate of procurement has plummeted. The path simply cannot be sustained.[74]

WHAT LIES AHEAD FOR TRANSFORMATION?

Current conventional wisdom sees transformation as an obsolete phrase associated with Donald Rumsfeld. In fact, a great deal of transformation lies ahead— or, at least, *should* lie ahead if America is to avoid serious problems in future years. In my view, decisions in 2009–2010 will be of the once-in-several-decades variety:

FIGURE 2.13 **The Budget Picture**

Past and Projected Spending for National Defense

(Billions of 2008 Dollars of Outlays and Outlays as a Percentage of Gross Domestic Product)

very important and consequential, many of them not obvious, and many with transformational implications.[75] Without elaboration, let me end by highlighting a few of the issues before the nation:

What should be the "portfolio balance" between counterterrorism/counterinsurgency activities and activities concerned with mid- and long-term balance-of-power and competitive strategy?

What types of power projection will be feasible and necessary with adversaries having inexpensive but more accurate and lethal weapon systems and surveillance?

What should be the nature of the services' building-block units (how small, how configured?) in a networked world and dangerous environment? Should there be specialization of units for irregular warfare?

What should be the size and character of total force structure (active and reserve) as a function of the conflict types for which the United States chooses to prepare?

What should be the future of "strategic" forces, including "conventional prompt global strike," probably in a world with more nuclear powers?

What should budget levels and responsibilities be for security-related missions of DoD and the Department of State?

This terse list of questions may seem straightforward, but the issues raised are profound. Some had been taken up in the new administration's work on its first QDR as of when this chapter was completed, but other questions will continue to be in play for some years.

**Chapter 2: Military Transformation? Which Transformation,
and What Lies Ahead?**

1. This chapter is an adaptation of a RAND paper forthcoming. I benefited from suggestions by colleagues Andrew Hoehn and Stuart Johnson.

2. See Andrew W. Marshall, "Revolutions in Military Affairs: Statement for the Subcommittee on Acquisition & Technology, Senate Armed Services Committee," May 5, 1995; Arthur K. Cebrowski, "What Is Transformation?" at www.cdi.org/mrp/tt-14oct02.pdf; Paul K. Davis et al., *Transforming the Force* (Santa Monica, CA: RAND, 1998); and Richard Hundley, *Past Revolutions, Future Transformations: What Can the History of Revolutions in Military Affairs Tell Us About Transforming the U.S. Military?* (Santa Monica, CA: RAND, 1999).

3. Paul K. Davis, "Integrating Transformation Programs," in *Transforming America's Military*, Hans Binnendijk, ed. (Washington, DC: Center for National Security Policy, National Defense University Press, 2002).

4. Fred C. Iklé and Albert Wohlstetter, *Discriminate Deterrence: Report of the Commission on Long-Term Strategy* (Washington, DC: Department of Defense, 1988).

5. Hundley, *Past Revolutions.*

6. Paul K. Davis, ed., *New Challenges in Defense Planning: Rethinking How Much Is Enough* (Santa Monica, CA: RAND, 1994).

7. Les Aspin, *Report of the Bottom-Up Review* (Washington, DC: Department of Defense, 1993).

8. Joint Chiefs of Staff, *Joint Vision 2010* (Washington, DC: Department of Defense, 1996).

9. William Cohen, *Report of the Quadrennial Defense Review* (Washington, DC: Department of Defense, 1997).

10. Discussions of environment shaping date back to Paul K. Davis, *National Security Planning in an Era of Uncertainty,* Paper P-7605 (Santa Monica, CA: RAND, 1989), reflected in Dick Cheney, *Defense Strategy for the 1980s: The Regional Defense Strategy* (Washington, DC: Department of Defense, 1993).

11. National Defense Panel, "Transforming Defense: National Security in the 21st Century," 1997, at http://www.dtic.mil/ndp/.

12. Paul K. Davis et al., *Measuring Interdiction Capabilities in the Presence of Anti-Access Strategies: Exploratory Analysis to Inform Adaptive Strategies for the Persian Gulf* (Santa Monica, CA: RAND, 2002).

13. Davis et al., *Transforming the Force.*

14. Arthur K. Cebrowski and John Garstka, "Network-Centric Warfare: Its Origins and Future," *Naval Institute Proceedings* (1998): 28–35; and David S. Alberts et al., *Network Centric Warfare: Developing and Leveraging Information Technology* (Washington, DC: Department of Defense, 1999).

15. John Arquilla and David Ronfeldt, "Cyberwar Is Coming," *Comparative Strategy* 12, no. 2 (1993): 141–65; and John Arquilla, *In Athena's Camp: Preparing for Conflict in the Information Age* (Santa Monica, CA: RAND, 1997).

16. James R. Blaker, *A Vanguard Force: Accelerating the American Revolution in Military Affairs* (Washington, DC: Progressive Policy Institute, 1997); Andrew Krepinevich, *Emerging Threats, Revolution and Military Transformation* (Washington, DC: Center for Strategic and Budgetary Assessments [CSBA], 1999); Andrew Krepinevich, "Why No Transformation?" *National Interest*, February 1999; Defense Science Board, *Tactics and Technologies for 21st Century Military Superiority* (Washington, DC: Office of the Undersecretary of Defense for Acquisition, Technology, and Logistics, 1996); Defense Science Board, *Joint Operations Superiority in the 21st Century: Integrating Capabilities Underwriting Joint Vision 2010 and Beyond* (Washington, DC: Office of the Undersecretary of Defense for Acquisition, Technology, and Logistics, 1998); and Naval Studies Board of the National Research Council, *Technology for the United States Navy and Marine Corps: 2000–2035* (Washington, DC: National Academy Press, 1997).

17. Paul K. Davis et al., *Adaptiveness in National Defense: The Basis of a New Framework,* Issue Paper IP-155 (Santa Monica, CA: RAND, 1996); Davis et al., *Transforming the Force*; and Eugene Gritton et al., *Ground Forces for a Rapidly Employable Joint Task Force* (Santa Monica, CA: RAND, 2000).

18. National Research Council, *Network Centric Naval Forces* (Washington, DC: National Academy Press, 2000).

19. Davis et al., *Transforming the Force.*

20. Michèle A. Flournoy, ed., *QDR 2001: Strategy-Driven Choices for America's Security* (Washington, DC: National Defense University Press, 2001).

21. Michael O'Hanlon, "Modernizing and Transforming U.S. Forces: Alternative Paths to the Force of Tomorrow," in Flournoy, *QDR 2001.*

22. Ashton B. Carter and John P. White, eds., *Keeping the Edge: Managing Defense for the Future* (Cambridge, MA: MIT Press, 2001).

23. United States Commission on National Security/21st Century, *Road Map for National Security: Imperative for Change*, 2001, at http://www.milnet.com/hart-rudman/index.html.

24. Bill A. Owens and Edward Offley, *Lifting the Fog of War* (New York: Farrar Straus Giroux, 2000).

25. David A. Ochmanek et al., *To Find and Not to Yield: How Advances in Information and Firepower Can Transform Theater Warfare* (Santa Monica, CA: RAND, 1998).

26. Harlan K. Ullman and James P. Wade, *Shock and Awe: Achieving Rapid Dominance* (Washington, DC: National Defense University Press, 1996); and J9 Joint Futures Lab, *A Concept for Rapid Decisive Operations*, White Paper Version 2.0 (Suffolk, VA: United States Joint Forces Command, Joint Futures Lab, 2001).

27. See discussion of the famous critique of Lt. Gen. Paul van Riper, USMC (Ret.), during the Millennium Challenge 2002 exercise in Malcolm Gladwell, *Blink: The Power of Thinking Without Thinking* (Boston: Little, Brown, 2005).

28. George W. Bush, "A Period of Consequences" (the "Citadel Speech"), at http://www.citadel.edu/pao/addresses/pres_bush.html.

29. Donald H. Rumsfeld, *Executive Summary of the Report of the Commission to Assess the Ballistic Missile Threat to the United States* (Washington, DC: Department of Defense, 1998), at http://www.fas.org/irp/threat/bm-threat.htm.

30. Donald Rumsfeld, *Report of the Quadrennial Defense Review* (Washington, DC: Department of Defense, 2001).

31. See *Prevailing in a Well-Armed World: Devising Competitive Strategies Against Weapons Proliferation* (Carlisle, PA: Strategic Studies Institute, 2000), including a preface by Andrew Marshall and chapter 1 on competitive strategies by David Andre.

32. John Arquilla, *Worst Enemy: The Reluctant Transformation of the American Military* (Chicago: Ivan R. Dee, 2008).

33. Michael G. Vickers, *The 2001 Quadrennial Defense Review, the FY Defense Budget Request and the Way Ahead for Transformation: Meeting the Rumsfeld Test* (Washington, DC: CSBA, 2002).

34. See Flournoy, *QDR 2001*; and Cindy Williams, *Holding the Line: U.S. Defense Alternatives for the 21st Century* (Cambridge, MA: MIT Press, 2001).

35. David Firestone, "Pentagon Seeking to Deploy Missiles Before Full Testing,"

New York Times, February 27, 2003, at www.nytimes.com/2003/02/27/us/pentagon-seeking-to-deploy-missiles-before-full-testing.html.

36. Stephen J. Cimbala, *Shield of Dreams: Missile Defense and U.S.-Russian Nuclear Strategy* (Annapolis, MD: U.S. Naval Institute Press, 2008).

37. The attitude was reflected in instructions to Missile Defense Agency director Lt. Gen. Ronald Kadish (USAF) and his successor, Lt. Gen. Henry Obering (USAF). The agency proceeded with research and development (R&D) to establish what block of capabilities could be deployed at a given time, offering that up as an option for the DoD to go with or forgo, and continuing with R&D toward a next block. This "evolutionary acquisition" was in contrast to a requirements-based approach, which was consistently leading to deploying nothing. See, e.g., Gen. Ronald T. Kadish, "Testimony to Congress on the Fiscal 2005 Budget, Spring 2004" (2004), at http://www.mda.mil/mdaLink/html/statements.html.

38. See Paul K. Davis et al., *Portfolio-Analysis Methods for Assessing Capability Options* (Santa Monica, CA, RAND, 2009), chapter 2.

39. Paul K. Davis, *Analytic Architecture for Capabilities-Based Planning, Mission-System Analysis, and Transformation*, vol. MR-1513-OSD (Santa Monica, CA: RAND, 2002). See also Michael Fitzsimmons, "Whither Capabilities-Based Planning," *Joint Forces Quarterly* 44, no. 1 (2007).

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41. Peter A. Wilson et al., "An Alternative Future Force: Building a Better Army," *Parameters*, Winter 2003, 19–39.

42. Andrew Feickert, *The Army's Future Combat System (FCS): Background and Issues for Congress*, Report RL32888 (Washington, DC: Congressional Research Service, 2005).

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44. Michael W. Wynne and Mark D. Schaeffer, "Revitalization of Systems Engineering in DoD: Implications to Product Cost Control," *Defense AT&L Magazine*, March–April 2005, 14–17.

45. Downloaded from a Defense Department website: http://www.defenselink.mil/dodcmsshare/newsstoryPhoto/2002-01/hrs_200201051c_hr.jpg.

46. Arquilla, *Worst Enemy*, 87.

47. See Michael R. Gordon and Gen. Bernard Trainor, *Cobra II: The Inside Story of the Invasion and Occupation of Iraq* (New York: Pantheon, 2006); Thomas E.

Ricks, *Fiasco: The American Military Adventure in Iraq* (New York: Penguin, 2006); Tony Zinni and Tony Koltz, *The Battle for Peace: A Frontline Vision of America's Power and Purpose* (Basingstoke, UK: Palgrave Macmillan, 2007); and Nora Bensahel, *After Saddam: Prewar Planning and the Occupation of Iraq* (Santa Monica, CA: RAND, 2008). The historical force levels for stabilization had been described in a study later published in James Dobbins et al., *America's Role in Nation-Building: From Germany to Iraq* (Santa Monica, CA: RAND, 2003).

48. See, e.g., Michael O'Hanlon, *Unfinished Business: U.S. Overseas Military Presence in the 21st Century* (Washington, DC: Center for a New American Security, 2008); and testimony by Rumsfeld and others on the Global Posture Review to the Committee on Armed Services, U.S. Senate, September 23, 2004.

49. Michael Vickers characterized the changes well before the QDR emerged in Michael G. Vickers, "What the QDR Should Say," *Armed Forces Journal*, February 2006.

50. See Ryan Henry, "Defense Transformation and the 2005 Quadrennial Defense Review," *Parameters*, Winter 2005, 5–15.

51. See news release at www.defenselink.mil/comptroller/defbudget/fy2008/ 2008_Budget_Rollout_Release.pdf.

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