
The Nuclear Posture Review: How Is the “New Triad” New?



Kurt Guthe

CSBA CENTER FOR STRATEGIC
AND BUDGETARY ASSESSMENTS

1730 Rhode Island Avenue, NW, Suite 912
Washington, DC 20036

The Nuclear Posture Review: How Is the “New Triad” New?

by

Kurt Guthe

Center for Strategic and Budgetary Assessments

2002

ABOUT THE CENTER FOR STRATEGIC AND BUDGETARY ASSESSMENTS

The Center for Strategic and Budgetary Assessments is an independent public policy research institute established to promote innovative thinking about defense planning and investment strategies for the 21st century. CSBA's analytic-based research makes clear the inextricable link between defense strategies and budgets in fostering a more effective and efficient defense, and the need to transform the US military in light of the emerging military revolution.

CSBA is directed by Dr. Andrew F. Krepinevich and funded by foundation, corporate and individual grants and contributions, and government contracts.

1730 Rhode Island Ave., NW
Suite 912
Washington, DC 20036
(202) 331-7990
<http://www.csbaonline.org>

CONTENTS

I.	INTRODUCTION	1
II.	ELEMENTS AND OBJECTIVES OF THE NEW TRIAD	3
III.	SOME IMPLICATIONS OF THE NEW TRIAD	7
	Additional Options	8
	Strategic Attack	9
	Nonnuclear Preventive Attack	9
	Nonnuclear Strategic Campaigns	10
	Nonnuclear Alternative to Nuclear Retaliation	12
	Nonnuclear-Nuclear Campaigns	13
	Defensive Options	15
	Toolbox of Capabilities	18
	Smaller Nuclear Force	20
	Reductions in the Operationally Deployed Force	20
	Different Approach to Reductions.....	22
	Limits to Further Reductions	24
	Smaller Role for Nuclear Weapons	26
	Increased Importance of Strategic Warning and Force Reconstitution	26
	Nuclear Force-in-Being and Tactical Warning	26
	Nuclear Force Reconstitution and Strategic Warning	27
	Other Mobilization Options.....	28
	Problem of Delayed Reconstitution	29
	Other Implications	29
	Key Goals	30
	Measures of Merit.....	31
	Effects-Based Targeting.....	31
	Development Paths	32
	Organizational Arrangements	32
	New Capabilities	34
	Old Concepts, New Context	36

I. INTRODUCTION

In early 2002, the Department of Defense (DoD) unveiled the results of its Nuclear Posture Review (NPR).¹ The NPR was conducted to meet a congressional requirement for a “comprehensive review” of the policy, strategy, plans, stockpile, and infrastructure for US nuclear forces.² It was the second such review. A similar undertaking was completed in 1994.³ Few significant changes resulted from that effort.⁴ The requirement for a new NPR reflected the belief that “an end-to-end review of US nuclear weapons strategy, requirements, and posture [was] overdue.”⁵

The latest NPR examined changes in the post-Cold War security environment and identified contingencies in which nuclear forces might play a part. The effort defined the relationships among nuclear forces and other military capabilities, set objectives for nuclear and related capabilities, and outlined programs to further these ends. The review determined that, in light of favorable changes in US-Russian relations, nuclear arms could be reduced.

Results of the NPR have been controversial. Most of the criticism has involved claims that the review will lead to greater reliance on nuclear weapons, an expansion in the set of states targeted by US nuclear forces, insufficient progress in reducing nuclear arsenals, and an increased likelihood of nuclear use. All of these are important issues and each will be addressed in the discussion below. Little attention has been devoted, however, to a central finding of the NPR: the need for a “New Triad” of nuclear and nonnuclear offensive capabilities, defensive means, and

¹ J.D. Crouch, Assistant Secretary of Defense for International Security Policy, special briefing on the Nuclear Posture Review, January 9, 2002, available at http://www.defenselink.mil/news/Jan2002/t01092002_t0109npr.html (transcript) and <http://www.defenselink.mil/news/Jan2002/g020109-D-6570C.html> (slides); Secretary of Defense Donald H. Rumsfeld, unclassified cover letter for Nuclear Posture Review report to Congress, January 9, 2002, available at <http://www.defenselink.mil/news/Jan2002/d20020109npr.pdf>; Office of Public Affairs, Office of the Secretary of Defense, “Pentagon Briefing: 2002 Nuclear Posture Review,” fact sheet, January 10, 2002; Douglas J. Feith, Under Secretary of Defense for Policy, John A. Gordon, Administrator of the National Nuclear Security Administration, and Adm. James O. Ellis, USN, Commander in Chief, Strategic Command, prepared statements before the Senate Armed Services Committee, February 14, 2002, available at http://www.senate.gov/~armed_services. All information regarding the content of the NPR report is drawn from these and other published government sources.

² Section 1041, National Defense Authorization Act for Fiscal Year 2001 (Public Law 106-398), October 30, 2000. During the 2000 presidential campaign, candidate George Bush similarly argued that “America should rethink the requirements for nuclear deterrence in a new security environment” and pledged that his Secretary of Defense would “conduct an assessment of our nuclear force posture and determine how best to meet our security needs.” Speech to the National Press Club, Washington, DC, May 23, 2000, available at <http://www.foreignpolicy2000.org/library/index.html>.

³ For summaries of the first NPR, see *Annual Defense Report to the President and the Congress—1995* (Washington, DC: Government Printing Office (GPO), February 1995), pp. 83-92, available at http://www.defenselink.mil/execsec/adr_intro.html; Senate Armed Services Committee, *Briefing on Results of the Nuclear Posture Review*, S. Hrg. 103-870, 103d Cong., 2d sess. (Washington, DC: GPO, 1994); and House Foreign Affairs Committee, *US Nuclear Policy*, 103d Cong., 2d sess. (Washington, DC: GPO, 1995).

⁴ See the account in Janne E. Nolan, *An Elusive Consensus: Nuclear Weapons and American Security After the Cold War* (Washington, DC: Brookings Institution, 1999), pp. 35-62.

⁵ Senate Armed Services Committee, *National Defense Authorization Act for Fiscal Year 2001*, Rpt. 106-292, 106th Cong., 2d sess. (Washington, DC: GPO, 2000), p. 347.

defense-industrial infrastructure to supplant the Cold War nuclear triad of submarine-launched ballistic missiles (SLBMs), intercontinental ballistic missiles (ICBMs), and long-range bombers. Yet this change has major implications for US defense planning and programs. After describing the nature and purpose of the New Triad in greater detail, this paper will focus on some of these implications. The purpose of the paper is not to provide a detailed critique of the New Triad, but simply to consider how this collection of capabilities, as it evolves over the coming decades, might strengthen the security of the United States, its allies, and friends.

II. ELEMENTS AND OBJECTIVES OF THE NEW TRIAD

As defined in the NPR, the New Triad has three major elements: offenses, defenses, and infrastructure. *Offenses* comprise nonnuclear and nuclear strike capabilities. Nonnuclear strike capabilities include long-range precision-guided conventional weapons and their delivery means (cruise missiles launched from submarines, for example), as well as capabilities for offensive information operations (such as electronic attacks and computer network attacks).⁶ Nuclear strike capabilities include strategic nuclear forces (SLBMs, ICBMs, and bombers), as well as shorter-range, nuclear-capable strike aircraft based on land and nuclear-armed cruise missiles launched from attack submarines.⁷

Defenses encompass active defenses, passive defenses, and defensive information operations. Active defenses intercept ballistic missiles, cruise missiles, and strike aircraft. Passive defenses protect against missile and air attack by means of concealment, hardening, redundancy, warning, dispersal, mobility, and other measures.⁸ Defensive information operations counter attacks on critical information systems.

Infrastructure is the aggregate of the labs, plants, and workforce that develop, build, maintain, and modernize the other elements of the New Triad. This includes both the nuclear weapons complex and the defense-industrial base that produces delivery platforms, weapons, sensors, communications systems, data processors, and other items needed for offensive strikes and defensive protection.

The three elements of the New Triad are tied together by *command and control, intelligence, and planning capabilities*. Command and control—including communications links among decisionmakers, command centers, and operational forces—enables the authorized, combined, and effective use of offenses and defenses. Intelligence is essential for characterizing threats,

⁶ Information operations are discussed in Joint Chiefs of Staff (JCS), *Joint Doctrine for Information Operations*, Joint Publication 3-13 (Washington, DC: JCS, October 9, 1998), available at http://www.dtic.mil/doctrine/jel/new_pubs/jp3_13.pdf. Electronic attack is “the use of electromagnetic energy, directed energy, or antiradiation weapons to attack personnel, facilities, or equipment with the intent of degrading, neutralizing, or destroying enemy combat capability.” Computer network attack involves “operations to disrupt, deny, degrade, or destroy information resident in computers and computer networks, or the computers and networks themselves.” The two types of attack are distinct. For example, “sending a code or instructions to a central processing unit that causes [a] computer to short out the power supply is [a computer network attack]. Using an electromagnetic pulse device to destroy a computer’s electronics and causing the same result is [an electronic attack].” JCS, *Department of Defense Dictionary of Military and Associated Terms*, Joint Publication 1-02 (Washington, DC: JCS, May 7, 2002), available at http://www.dtic.mil/doctrine/jel/new_pubs/jp1_02.pdf.

⁷ *Annual Defense Report to the President and the Congress—2001* (Washington, DC: GPO, January 2001), pp. 91-93, available at http://www.defenselink.mil/execsec/adr_intro.html.

⁸ Active and passive defenses are defined in JCS, *Joint Doctrine for Countering Air and Missile Threats*, Joint Publication 3-01 (Washington, DC: JCS, October 19, 1999), available at http://www.dtic.mil/doctrine/jel/new_pubs/jp3_01.pdf.

devising deterrent strategies suited to specific adversaries, discovering enemy vulnerabilities, targeting strike capabilities, and providing the warning needed to increase the readiness of offenses, defenses, and infrastructure. Peacetime planning is needed for the integrated and balanced development of the different capabilities of the New Triad and the preparation of coordinated plans for attack options, defensive operations, and infrastructure activities. Real-time, adaptive planning allows strike capabilities and defensive systems to respond to the unanticipated exigencies of actual crises and conflicts.

The strategic nuclear forces of the New Triad are divided into an *operationally deployed force* and a *responsive force*. The operationally deployed force and the responsive force will share the same force structure of SLBMs, ICBMs, and bombers. The difference between the operationally deployed force and the responsive force is a matter of warheads—missile reentry vehicles, cruise missiles, and gravity (free-fall) bombs—not force structure. The operationally deployed force consists of warheads that are on ballistic missiles, on bombers, or stored at bomber bases, and thus are available immediately or within a few days. The responsive force would be created (or “reconstituted”) by “uploading” additional warheads on ballistic missiles and bombers in response to adverse changes in the US strategic position. This process could take weeks, months, or more than a year, depending on the delivery platforms involved and the total number of warheads uploaded. Uploaded warheads would come from the nuclear stockpile. During the transition from the operationally deployed to the responsive force, the number of warheads on missiles and bombers would change while the force structure would not.

The operationally deployed force and the responsive force are intended for different contingencies. The operationally deployed force is meant to cover *immediate and unexpected contingencies*; the responsive force, *potential contingencies*. These contingencies have not been specified in public presentations of the NPR. Instead, defense officials have said that the United States must be prepared for a “wide spectrum of potential opponents, contingencies, and threatening capabilities, some of which will be surprising.”⁹ Regional powers armed with weapons of mass destruction (WMD) have been identified as likely opponents in immediate or unexpected contingencies. According to Vice President Cheney, “the [NPR] report specifically cited...Iraq, Iran, Syria, Libya, [and] North Korea.”¹⁰ Secretary of Defense Rumsfeld has said that China and its nuclear force also must be taken into account in US nuclear planning.¹¹ Conflict with Russia has been ruled out as an immediate contingency, with the caveat that this does not mean the United States “will not retain significant nuclear capabilities, or [...] ignore developments in Russia’s (or any other nation’s) nuclear arsenal.”¹² Potential contingencies are

⁹ Feith, statement before the Senate Armed Services Committee, February 14, 2002, p. 3.

¹⁰ Press conference, London, March 11, 2002 (transcript), available at <http://www.usinfo.state.gov>.

¹¹ “I think it would be a mistake to leave the impression that [...] either the SIOP [Single Integrated Operational Plan, the strategic nuclear war plan] or [the planned number of operationally deployed strategic nuclear weapons] is premised on Russia. The reality is [that] we live in the world, there is a security environment, Russia exists and has capabilities to be sure, but so does the People’s Republic of China, and they are increasing their defense budget and they are increasing their nuclear capabilities purposefully. [And] there are other countries [...].” Testimony before the Senate Foreign Relations Committee, July 17, 2002.

¹² Feith, statement before the Senate Armed Services Committee, February 14, 2002, p. 6.

“more severe dangers that could emerge over a longer period of time” as a result of “a major change in the security environment.”¹³

The broad objectives set for the New Triad are identical to the key defense policy goals laid down in the Quadrennial Defense Review (QDR), the September 2001 report that outlined the Bush Administration’s overall military strategy.¹⁴ The capabilities of the New Triad are to *assure* allies and other friendly countries of US security commitments, *dissuade* adversaries from competing militarily with the United States, *deter* coercion or attack against the United States or its allies and friends, and decisively *defeat* an enemy while defending the United States and its security partners. These aims will guide the development, deployment, and employment of the elements of the New Triad. They also will serve as criteria for measuring its progress and effectiveness.

In short, the New Triad has three elements: nonnuclear and nuclear strike capabilities, active and passive defenses, and defense-industrial infrastructure, all supported by command and control, intelligence, and planning. Nuclear strike capabilities include a strategic nuclear force structure with two states: the operationally deployed force and the responsive force. The operationally deployed force and the responsive force are intended for two categories of contingencies: immediate and unexpected contingences, and potential contingencies. And the offenses, defenses, and infrastructure of the New Triad have four objectives: assurance, dissuasion, deterrence, and defense.

Parts of the New Triad already exist. A large and diversified nuclear force has been deployed for decades. Precision-guided conventional weapons have been used in combat. Preparations have been made for offensive and defensive information operations. A limited air defense system is maintained. Passive defenses of various sorts are available. A defense infrastructure supports offensive and defensive capabilities in the field. But all of these elements require significant improvements. Moreover, little has been done to integrate existing capabilities into a coherent whole. The New Triad construct requires defense planners to look at offenses, defenses, and infrastructure as a coherent whole shaped by the goals of defense policy. The innovative aspect of the New Triad is primarily conceptual.

Homeland missile defense is one part of the New Triad that does not now exist. Significant technological hurdles must be surmounted before a missile defense system for the United States can be deployed. Such a system must have a low leakage rate against incoming missiles and their reentry vehicles, as well as an ability to defeat countermeasures (including decoys, chaff, and other penetration aids) that an enemy might adopt in response to the system. Missile defense, like any major military system, must have an affordable cost. The director of the Defense Department’s Missile Defense Agency (MDA) has cautioned that, despite progress in moving

¹³ Ibid., p. 4; Crouch, special briefing on the NPR, January 9, 2002.

¹⁴ Crouch, special briefing on the NPR, January 9, 2002; Feith, statement before the Senate Armed Services Committee, February 14, 2002, p. 4; and DoD, *Quadrennial Defense Review Report* (Washington, DC: DoD, September 30, 2001), pp. iii-iv, 11-13, available at <http://www.defenselink.mil/pubs/qdr2001.pdf>.

toward effective missile defense capabilities, “there remains a long road ahead.”¹⁵ While current plans call for a ground-based, test-bed system with five interceptors that could have some “limited emergency capability” (against North Korean missiles, for example) later in this decade, more substantial defenses are farther in the future. To increase the prospects for an effective system, MDA is pursuing a layered defense capable of intercepting ballistic missiles in each phase of flight—boost, midcourse, and terminal. A layered defense would offer multiple opportunities to engage missiles and reentry vehicles and would complicate enemy efforts to overcome the system. In addition, the MDA program is not limited to one type of defense, but includes work on kinetic and directed energy weapons that could be ground-, sea-, air-, or space-based. The diverse nature of the research and development program, combined with plans to deploy a system incrementally and incorporate improvements as new technological options become available, would give the United States flexibility in responding to future missile threats.¹⁶

That said, missile defenses are still likely to be the most uncertain part of the New Triad. Should an effective system for missile defense fail to materialize, certain advantages of the New Triad, described below, would be unrealized or diminished. Protection against accidental or unauthorized missile launches would be lost, as would the potential contributions of missile defense to discouraging aggression and encouraging reductions in US nuclear arms. Without missile defense, the New Triad would remain an essential portfolio of capabilities, but other elements would need to be further strengthened to compensate, at least partially, for its absence.

¹⁵ Lt. Gen. Ronald T. Kadish, USAF, prepared statement before the Senate Armed Services Committee, March 7, 2002, p. 3, available at http://www.senate.gov/~armed_services/statemnt/2002/March/Kadish3-7.pdf.

¹⁶ For discussions of the current missile defense program, see *ibid.*; Kadish, special briefing on missile defense, June 25, 2002 (transcript and briefing slides), available at http://www.defenselink.mil/news/Jun2002/t06252002_t0625kadish.html and <http://www.defenselink.mil/news/Jun2002/g020625-D-6570C.html>; and Deputy Secretary of Defense Paul Wolfowitz, prepared statement before the House Armed Services Committee, June 27, 2002, available at <http://armedservices.house.gov/openingstatementsandpressreleases/107thcongress/02-06-27wolfowitz.html>.

III. SOME IMPLICATIONS OF THE NEW TRIAD

The New Triad differs substantially from the nuclear triad that grew out the Cold War. The nuclear triad was born four decades ago.¹⁷ The New Triad is embryonic. The nuclear triad was directed primarily against the dangers of a nuclear attack or large-scale conventional assault by Moscow. The New Triad is designed for a wider range of opponents and contingencies. The nuclear triad included only offensive forces. Defenses were excluded on the grounds that they were infeasible or “destabilizing” (that is, likely to upset the nuclear balance by provoking an offense-defense “arms race” or providing a shield behind which a first strike could be launched). The nuclear triad lacked nonnuclear strike capabilities. Long-range precision-guided nonnuclear weapons and offensive information operations were considered insufficient to replace or complement nuclear forces in certain missions. The nuclear triad was postured against a surprise attack. Much of the strategic nuclear force was—and is—maintained on day-to-day alert, with the remainder capable of shifting to alert status in a crisis (a change called “generated alert”). With its responsive force and defense-industrial component, the New Triad is configured for buildups to dissuade or counter new security threats that develop over extended periods. The nuclear triad had as its chief aims the assurance of allies and the deterrence of aggression. Dissuasion of military competition was of lesser importance. Escalation control and conflict termination favorable to the United States and its allies were the stated objectives in the event of war.¹⁸ In contrast, the New Triad has dissuasion as a key goal, along with assurance and deterrence. If deterrence fails, the New Triad is to be used for more than escalation control and favorable conflict termination. Offensive and defensive capabilities are assigned a more ambitious objective: to “decisively defeat an enemy while defending against its attacks on the United States, our friends, and our allies.”¹⁹

These differences between the nuclear and new triads have a number of implications for the ways in which the United States prepares for, prevents, and, if necessary, prosecutes and protects against strategic warfare.²⁰ Over time, the New Triad could produce 1) additional options for dealing with the variety of adversaries, contingencies, and military problems in the unfolding security environment; 2) a smaller nuclear force with a smaller part in plans for strategic war; and 3) a greater role for strategic warning and nuclear force reconstitution. The New Triad also raises questions about how the United States will plan, organize, and arm for strategic war. These implications are discussed in the sections that follow.

¹⁷ The nuclear triad dates from 1960, the year of the first patrol by a ballistic missile submarine. The first intercontinental ballistic missile was placed on alert the previous year. Nuclear-armed bombers, of course, were first deployed in 1945.

¹⁸ See, for example, JCS, *Doctrine for Joint Nuclear Operations*, Joint Publication 3-12 (Washington, DC: JCS, December 15, 1995), pp. vi, I-2, I-5, available at http://www.dtic.mil/doctrine/jel/new_pubs/jp3_12.pdf.

¹⁹ Feith, statement before the Senate Armed Services Committee, February 14, 2002, p. 4.

²⁰ Strategic warfare involves the use of force against vital targets, usually in an enemy’s homeland, to destroy the enemy’s will or ability to wage war. Vital targets include command centers, WMD capabilities, forces essential to national control, war-supporting industries, and critical power, transportation, and information networks.

ADDITIONAL OPTIONS

Because of their potential for widespread and indiscriminate destruction, nuclear weapons long have been regarded by US leaders as weapons of last resort. Their utility generally has been defined in terms of a limited, but important, set of purposes: deterring coercion or attacks involving nuclear or other weapons of mass destruction; helping to deter major conventional aggression; preventing a catastrophic defeat of general-purpose forces; destroying priority targets resistant to nonnuclear attack; and countering the use of nuclear or other weapons of mass destruction. To date, they have been a deterrent, serving only the first two purposes.

By augmenting nuclear forces with nonnuclear strike capabilities, defenses, and related infrastructure, the New Triad is inherently more flexible than the nuclear triad. Compared with nuclear arms, nonnuclear strike capabilities are more usable instruments of war and have wider applications. Over 35,000 nonnuclear, precision-guided munitions have been expended in diverse US military operations conducted during the last 10 years.²¹ Offensive information operations will offer additional means for attacking the militaries, regimes, and economies of hostile powers.²² If missile defenses are deployed and effective, and other defenses are augmented, strategic offensive forces will regain the defensive complement absent since the 1960s, when the decline in continental air defenses began. Defenses can both reinforce deterrence and protect against attacks that cannot be deterred. A defense-industrial infrastructure that sustains US preeminence in advanced strike capabilities and defensive systems, and can strengthen offenses or defenses in a timely manner, may discourage foreign military challenges (competitive arms buildups, for example) that could lead to conflicts in which nonnuclear or nuclear strike capabilities come into play. The elements of the New Triad, particularly in combination, are adaptable to a broader range of adversaries, types of conflict, and military threats than the nuclear triad, which was optimized for the prolonged, high-stakes nuclear stalemate with the Soviet superpower. This flexibility is especially important in a period in which the next conflict, like recent wars, probably will be unforeseen.

²¹ *Gulf War Air Power Survey, Vol. V, Part I* (Washington, DC: GPO, 1993), pp. 553-554; Lt. Col. Richard L. Sargent, USAF, "Weapons Used in Deliberate Force," in *Deliberate Force: A Case Study in Effective Air Campaigning*, ed. Col. Robert C. Owen, USAF (Maxwell Air Force Base, AL: Air University Press, January 2000), pp. 258, 267, available at <http://www.maxwell.af.mil/au/aul/aupress/Owen/Owen.pdf>; Benjamin S. Lambeth, *NATO's Air War for Kosovo: A Strategic and Operational Assessment*, MR-1365-AF (Santa Monica, CA: RAND, 2001), p. 88, available at <http://www.rand.org/publications/MR/MR1365>; Gen. Thomas R. Franks, USA, Commander in Chief, Central Command, prepared statement before the House Armed Services Committee, February 27, 2002, available at <http://www.house.gov/hasc/openingstatementsandpressreleases/107thcongress/02-02-27franks.html>; William Arkin, "Weapons Total From Afghanistan Includes Large Amount of Cannon Fire," *Defense Daily*, March 5, 2002, p. 12; and Eric Schmitt, "Improved U.S. Accuracy Claimed in Afghan Air War," *New York Times*, April 9, 2002, p. A14.

²² See, for example, Brian Nichiporuk, "U.S. Military Opportunities: Information-Warfare Concepts of Operation," in *The Changing Role of Information in Warfare*, MR-1016-AF, ed. Zalmay M. Khalilzad and John P. White (Santa Monica, CA: RAND, 1999), pp. 179-215, available at <http://www.rand.org/publications/MR/MR1016/MR1016.chap7.pdf>; and Gregory J. Rattray, *Strategic Warfare in Cyberspace* (Cambridge, MA: MIT Press, 2001).

Strategic Attack

Nonnuclear Preventive Attack

The nonnuclear strike capabilities of the New Triad make possible strategic attack without nuclear use. This option might be employed, for example, to defang an opponent armed with weapons of mass destruction. A regime or subnational group might be deemed too aggressive, fanatical, erratic, or reckless to have such weapons. At the same time, the danger might be insufficient in magnitude or imminence to justify a disarming strike with nuclear weapons. Preventive attacks have been considered a number of times in the past, to destroy Stalinist Russia's nascent nuclear arsenal, keep Mao's China from testing a nuclear device, stop Libya from manufacturing chemical agents, and bomb a plutonium-producing reactor in North Korea.²³ At some future point, senior officials almost certainly will weigh the option again. As President Bush warned in an address at West Point,

When the spread of chemical and biological and nuclear weapons, along with ballistic missile technology—when that occurs, even weak states and small groups could attain a catastrophic power to strike great nations. Our enemies have declared this very intention, and have been caught seeking these terrible weapons. They want the capability to blackmail us, or to harm us, or to harm our friends—and we will oppose them with all our power. [...]

Deterrence [...] means nothing against shadowy terrorist networks with no nation or citizens to defend. Containment is not possible when unbalanced dictators with weapons of mass destruction can deliver those weapons on missiles or secretly provide them to terrorist allies. [...] If we wait for threats to fully materialize, we will have waited too long. [...]

We must take the battle to the enemy, disrupt his plans, and confront the worst threats before they emerge. [...]

[O]ur security will require all Americans to be forward-looking and resolute, to be ready for preemptive action when necessary to defend our liberty and our lives.²⁴

²³ For accounts of instances in which the option of preventive attack has been raised, see Marc Trachtenberg, "A 'Wasting Asset': American Strategy and the Shifting Nuclear Balance, 1949-1954," *International Security*, 13 (Winter 1988-89), pp. 5-49; William Burr and Jeffrey T. Richelson, "Whether to 'Strangle the Baby in the Cradle': The United States and the Chinese Nuclear Program," *International Security*, 25 (Winter 2000-01), pp. 54-99; Thomas C. Wiecele, *The Clandestine Building of Libya's Chemical Weapons Factory: A Study in International Collusion* (Carbondale, IL.: Southern Illinois University Press, 1992), pp. 31, 46, 115; Philip Shenon, "Perry, in Egypt, Warns Libya to Halt Chemical Weapons Plant," *New York Times*, April 4, 1996, p. A6; and Ashton B. Carter and William J. Perry, *Preventive Defense: A New Security Strategy for America* (Washington, DC: Brookings Institution, 1999), p. 128.

²⁴ Commencement Address at the United States Military Academy in West Point, New York, June 1, 2002, in *Weekly Compilation of Presidential Documents*, June 10, 2002, p. 946, available at <http://www.access.gpo.gov/nara/v38no23.html>. See also Thomas E. Ricks and Vernon Loeb, "Bush Developing Military Policy of Striking First," *Washington Post*, June 10, 2002, p. A1; and David E. Sanger, "Bush to Formalize a Defense Policy of Hitting First," *New York Times*, June 17, 2002, p. A1. For similar official statements regarding the option of preventive attack, see President George W. Bush, Address Before a Joint Session of the Congress on the State of the Union, January 29, 2002, in *Weekly Compilation of Presidential Documents*, February 4, 2002, p.

Once more officials ultimately may decide that forcible disarmament is unwarranted, but lack of suitable strike capabilities should not be among the reasons.

Nonnuclear attacks against WMD targets could be imperative in some conflicts. Consider a new war on the Korean peninsula. For such a war, the United States plans not only to defeat a North Korean attack, but to topple the communist regime.²⁵ That regime “probably has one or two nuclear bombs.”²⁶ The one or two weapons are thought to serve as an atomic Praetorian Guard that would be employed if the survival of the regime were at stake.²⁷ If US and allied forces were at the gates of Pyongyang, threats of nuclear retaliation might be inadequate to deter North Korean nuclear use because the regime would be doomed in any event. To prevent nuclear use, an offensive to end the regime might need to be coupled with attacks to eliminate the Praetorian Guard. Were the president unwilling to authorize nuclear strikes for this purpose, nonnuclear means of attack would provide an alternative.²⁸ Like the North Korean leadership, other authoritarians may see their WMD arsenals as last-ditch defenses, necessitating a similar preventive approach by the United States.²⁹

Nonnuclear Strategic Campaigns

In addition to operations to forestall acquisition or employment of WMD, nonnuclear strike capabilities could be used in broader strategic campaigns to achieve various aims. During the Cold War, “strategic” became conflated with “nuclear.” In the post-Cold War era, precision-guided conventional weapons and advanced information technologies, which together are the pivot of an ongoing revolution in military affairs (RMA), provide the wherewithal for producing

135, available at <http://www.access.gpo.gov/nara/v38no5.html>; Secretary of Defense Donald H. Rumsfeld, “21st Century Transformation,” remarks at National Defense University, January 31, 2002, available at <http://www.defenselink.mil/speeches/2002/s20020131-secdef.html>; and Secretary of State Colin L. Powell, cited in Glenn Kessler and Peter Slevin, “Preemptive Strikes Must Be Decisive, Powell Says,” *Washington Post*, June 15, 2002, p. A16.

²⁵ Gen. Thomas A. Schwartz, USA, Commander in Chief, UN Command/Combined Forces Command and Commander, US Forces Korea, prepared statement before the Senate Armed Services Committee, March 5, 2002, p. 10, available at http://www.senate.gov/~armed_services/statemnt/2002/Schwartz.pdf. Replacing North Korea’s government in the event of war would be consistent with the strategy outlined in the QDR report. If deterrence fails, “US forces must maintain the capability at the direction of the President to impose the will of the United States and its coalition partners on any adversaries, including states or non-state entities. Such a decisive defeat could include changing the regime of an adversary state or occupation of foreign territory until U.S. strategic objectives are met.” *Quadrennial Defense Review Report*, p. 13.

²⁶ John E. McLaughlin, Deputy Director of Central Intelligence, remarks to Texas A&M conference on “North Korea: Engagement or Confrontation,” April 17, 2001, transcript available at http://www.odci.gov/cia/public_affairs/speeches/archives/2001/ddci_speech_04172001.html.

²⁷ Defense Intelligence Agency (DIA), written responses to questions for the record, in Senate Select Committee on Intelligence, *Current and Projected National Security Threats to the United States and Its Interests Abroad*, 103d Cong., 2d sess. (Washington, DC: GPO, 1994), p. 94.

²⁸ In this regard it should be recalled that in 1994, Secretary of Defense William Perry said publicly that he could not “envision any circumstances in which the use of nuclear weapons would be a reasonable or prudent military action” in a Korean conflict. Interview on “Meet the Press,” April 3, 1994 (transcript), p. 8.

²⁹ Iraq’s Saddam Hussein is a case in point. See James Dao, “Pentagon’s Worry: Iraqi Chemical Arms,” *New York Times*, May 19, 2002, p. A10; and Thomas E. Ricks, “Military Bids to Postpone Iraq Invasion,” *Washington Post*, May 24, 2002, p. A1.

strategic effects through nonnuclear attacks.³⁰ Nonnuclear strategic air campaigns already have been waged to eject Iraq's army from Kuwait (Desert Storm, 1991), compel Bosnian Serb forces to end hostilities with Bosnian Muslims and Croats (Deliberate Force, 1995), stop Serb aggression in Kosovo (Allied Force, 1999), and eradicate the al Qaeda terrorist network in Afghanistan and the regime that harbored it (Enduring Freedom, 2001-present). In future conflicts as well, nonnuclear strike capabilities will offer strategic options for disarming or coercing, and thereby defeating, adversaries of the United States, its allies, or friends.

Though not employed in a nonnuclear strategic campaign, the nuclear forces of the New Triad nonetheless could play a key role in deterring WMD use by the enemy. Sustained nonnuclear attacks against opposing conventional forces, WMD capabilities, and command-and-control links would place the enemy at an increasing military disadvantage. Attacks on leadership and defense-related economic targets would add to the costs of aggression. To stop the attacks, the enemy could sue for terms or attempt a military counter. If a response in kind were unavailable, WMD use might be threatened as an asymmetric response to inflict substantial losses on the United States. A counter-threat of nuclear retaliation then could be essential in preventing the enemy from escalating out of an impending defeat rather than accepting a settlement consistent with US strategic objectives. (Nuclear retaliation is the only WMD option for responding to WMD use because the United States has forsworn chemical and biological weapons.) As noted above, however, even the threat of nuclear retaliation might not suffice to deter WMD use by a regime already faced with its demise. In that case, the prospects for escalation would depend on the effectiveness of US strike capabilities in destroying enemy weapons of mass destruction. In other cases, the US operationally deployed nuclear force would confront enemy leaders with the danger that any resort to weapons of mass destruction would carry catastrophic costs. The nuclear weapons of the mid-20th-century revolution in military affairs, then, are a double-edged

³⁰ Several years ago, in analyzing the prospects for the latest RMA, Andrew Marshall, the Defense Department's Director of Net Assessment, said

There are two major ideas about how warfare may change that now seem very plausible. The first is that long-range precision strike weapons coupled to very effective sensors and command and control systems will come to dominate much of warfare. Rather than closing with an opponent, the major operational mode will be destroying him at a distance. Thus far, this idea has been elaborated most in connection with a large continental air-land theater, but it seems plausible that long-range precision strike operations may also play a very prominent role in power projection, war at sea, and space.

The second idea is the emergence of what might be called information warfare. The information dimension or aspect of warfare may become increasingly central to the outcome of battles and campaigns. Therefore, protecting the effective and continuous operation of one's own information systems and being able to degrade, destroy or disrupt the functioning of the opponent's, will become a major focus of the operational art. Much as over the last 60-70 years one wished to obtain air superiority in order to better conduct all other military operations, in the future obtaining early superiority in the information area may become central to doing well in warfare.

Prepared statement, in Senate Armed Services Committee, *Department of Defense Authorization for Appropriations for Fiscal Year 1996 and the Future Years Defense Program, Part 5*, 104th Cong., 1st sess. (Washington, DC: GPO, 1996), p. 258.

sword for the nonnuclear strike capabilities of today's revolution. In the hands of opponents of the United States, nuclear weapons, along with chemical and biological weapons, have counterrevolutionary potential to undercut nonnuclear strategic attacks. US nuclear weapons, in contrast, can support nonnuclear attacks by deterring WMD use.

Nonnuclear Alternative to Nuclear Retaliation

The nonnuclear strike capabilities of the New Triad would provide alternatives to nuclear retaliation if deterrence failed and chemical or biological weapons were used against US forward-deployed forces, security partners of the United States, or the United States itself. (Even in response to certain types of limited nuclear use, nonnuclear retaliation would not be an inconceivable alternative.) In the wake of a chemical or biological attack, the president might decide against a nuclear response if the attack and its effects were relatively small, targets suitable for nuclear weapons were lacking, large enemy civilian casualties were likely, vital interests were not at stake, severe aftershocks from breaking the long tradition of nonuse were expected, or the crisis were seen as an opportunity to demonstrate, as a deterrent to future aggression, the superiority of nonnuclear strike capabilities over weapons of mass destruction. The president instead might adopt the strategy developed during the Gulf War: hint at nuclear retaliation to deter, hit with nonnuclear attacks to defeat. In the run-up to Desert Storm, the Secretary of State threatened that the United States would go beyond the liberation of Kuwait to the "elimination of the Iraqi regime" if chemical or biological weapons were used.³¹ The Secretary of Defense made a veiled threat of nuclear retaliation, declaring that Saddam Hussein "needs to be made aware that the President will have available the full spectrum of capabilities. And were [he] foolish enough to use weapons of mass destruction, the US response would be absolutely overwhelming and it would be devastating."³² Yet President George H.W. Bush privately ruled out a nuclear response.³³ Retaliatory plans called for nonnuclear strikes of increased scope and intensity against the regime and economic base.³⁴ In the end, the plans were not executed. Evidence from Iraqi sources indicates Saddam was deterred from using his chemical and biological weapons because of the nuclear threat posed by the United States.³⁵

³¹ James A. Baker (with Thomas M. DeFrank), *The Politics of Diplomacy: Revolution, War and Peace, 1989-1992* (New York: G.P. Putnam's Sons, 1995), p. 359.

³² Dick Cheney, remarks in Cairo following a meeting with Egyptian President Hosni Mubarak, December 23, 1990, in *Public Statements of Richard B. Cheney, Secretary of Defense, 1990, Vol. IV* (Washington, DC: Historical Office, Office of the Secretary of Defense, 1990), p. 2547.

³³ George Bush and Brent Scowcroft, *A World Transformed* (New York: Alfred A. Knopf, 1998), p. 463; and *The Politics of Diplomacy*, p. 359.

³⁴ National Security Directive 54, "Responding to Iraqi Aggression in the Gulf," January 15, 1991 (Top Secret; declassified June 5, 1997), p. 3, available at <http://bushlibrary.tamu.edu/research/nsd/index.html>; Brent Scowcroft, former National Security Advisor to President George H.W. Bush, interview on "Meet the Press," August 27, 1995 (transcript), pp. 9-10; Robert Gates, former Deputy National Security Advisor to President George H.W. Bush, interview for "Frontline: The Gulf War," January 10 and 11, 1996 (transcript); and Colin Powell, former Chairman of the JCS, interview for "Frontline: The Gulf War," January 9 and 10, 1996 (transcript). Both the Gates and Powell interviews are available at <http://www.pbs.org/wgbh/pages/frontline/gulf/oral/decision.html>.

³⁵ Remarks by Tariq Aziz, Iraqi Deputy Foreign Minister, recounted by Rolf Ekeus, Executive Chairman of the UN Special Commission on Iraq, in Senate Governmental Affairs Committee, *Global Proliferation of Weapons of Mass Destruction, Part II*, S. Hrg. 104-422, 104th Cong., 2d sess. (Washington, DC: GPO, 1996), p. 92; and Wafic al

If necessary, of course, nuclear strikes could be ordered in response to chemical or biological use. Contrary to the claims of some, enlisting the nuclear forces to deter or retaliate for chemical or biological attacks would not represent a departure from previous US policy. In January 1993, at the end of the earlier Bush Administration, the annual Defense Department report argued that, “A strong U.S. nuclear force provides a secure retaliatory capability that serves to deter the use of weapons of mass destruction.”³⁶ Eight years later, at the end of the Clinton administration, the Defense report for 2001 reaffirmed that “the United States must maintain survivable strategic forces of sufficient size and diversity—as well as ... theater nuclear weapons ...—to deter potentially hostile foreign leaders with access to weapons of mass destruction.”³⁷ In mid-2000, then-Under Secretary of Defense for Policy Walter Slocombe testified to a congressional committee that,

we have made clear that any use of weapons of mass destruction against the United States or our forces or our allies would meet with a prompt and overwhelming response, from which no weapon in the American military arsenal would be excluded. I think that is a powerful deterrent. I think as someone who was not in the government at the time, that conveying that message to Saddam Hussein had a powerful effect on him during the Gulf War.³⁸

Using nuclear weapons to counter chemical or biological use is one aspect of the New Triad that is not new.

Nonnuclear-Nuclear Campaigns

A combination of nonnuclear and nuclear strike capabilities might be required in some future strategic campaign. Planning for a mixed offensive would depart from the practice of the past half century. Recent strategic air campaigns, as well as those in the Korean and Vietnam wars, obviously were exclusively nonnuclear. The Single Integrated Operational Plan, the venerable war plan for strategic attacks by intercontinental-range ballistic missiles and bombers, has been exclusively nuclear. War plans early in the Cold War, however, included a combined nuclear-nonuclear air offensive against the Soviet Union. Shortages in atomic capabilities meant the relatively limited number of atomic-armed bombers would hit tens of Soviet cities (key governmental and industrial centers), while most bombers would serve as decoys, saturate air defenses, and send thousands of tons of high explosives against other targets.³⁹ With the New Triad, plans for nonnuclear-nuclear campaigns may return. But now nuclear forces are the mature component of the mix, while nonnuclear strike capabilities, particularly those for long-range strategic attack, must be developed further.

Samarrai, former head of Iraqi military intelligence, interview for “Frontline: The Gulf War,” January 10 and 11, 1996 (transcript), available at <http://www.pbs.org/wgbh/pages/frontline/gulf/oral/iraqis.html>.

³⁶ *Annual Defense Report to the President and the Congress—1993* (Washington, DC: GPO, January 1993), p. 67.

³⁷ *Annual Defense Report to the President and the Congress—2001*, p. 89.

³⁸ Senate Armed Services Committee, *U.S. Strategic Nuclear Force Requirements*, S. Hrg. 106-738, 106th Cong., 2d sess. (Washington, DC: GPO, 2000), p. 25.

³⁹ Steven T. Ross, *American War Plans, 1945-1950* (London: Frank Cass, 1996).

Nonnuclear and nuclear strikes could be combined in a number of ways. For example, nonnuclear operations in the initial phase of a conflict could weaken enemy military capabilities before any escalation to nuclear use. Air defenses could be suppressed through offensive information operations or strikes with precision-guided conventional weapons. Communications links between command-and-control centers and military forces, including WMD-armed units, could be disrupted. WMD storage sites could be hit before weapons were mated with missiles or aircraft. Entrances to tunnels could be struck to prevent mobile missile launchers inside from moving to firing positions. Areas near mobile missile bases, presurveyed launch points, hide sites, and dispersal routes could be seeded with air-delivered scatterable mines. Waters around bases for missile submarines likewise could be planted with minefields. And runways at airfields for WMD-capable strike aircraft could be cut and closed. Attacks of this sort would impede timely military actions by the enemy, increase the vulnerability of key targets to nuclear strikes, and shift the military balance to improve the intrawar coercive leverage of the United States.

In strategic campaigns that were predominantly nonnuclear, nuclear weapons could be reserved for selected, priority targets able to survive other forms of attack. Nuclear attacks might be necessary against deeply buried facilities, for example. Command posts, WMD-related complexes, and other critical facilities can be located hundreds of feet underground. Nonnuclear weapons, information operations, or special operations forces might be capable of disrupting the functions of these facilities. Precision strikes on access points, air vents, power lines, and communications links could be used to isolate the facilities. High-power microwave weapons, using external antenna arrays and power and communications lines as conduits, could damage electronic equipment inside the facilities. But nuclear weapons would be required if physical destruction of the facilities were necessary.⁴⁰

In a predominantly nuclear attack, nonnuclear strike forces could be assigned targets in or near urban areas to reduce civilian losses without granting sanctuary to enemy war-making or war-sustaining capabilities. Minimizing harm to noncombatants is a moral and legal obligation.⁴¹ Were only nuclear weapons available, “a strategically important installation might not be targeted in a specific attack option” because of this constraint.⁴² With precision-guided conventional weapons, the United States could strike targets in urban areas while significantly limiting civilian damage, as was demonstrated by the strikes on Baghdad (in Desert Storm) and Belgrade (in Allied Force).⁴³ In some conflicts, holding down civilian losses also would have a

⁴⁰ See *Report to Congress on the Defeat of Hard and Deeply Buried Targets*, submitted by the Secretary of Defense in conjunction with the Secretary of Energy (Washington, DC: DoD and Department of Energy, July 2001), available at <http://www.fas.org/mininuke.pdf>; and Lt. Col. Eric M Stepp, USAF, *Deeply Buried Facilities: Implications for Military Operations*, Occasional Paper No. 14, Air War College Center for Strategy and Technology (Maxwell Air Force Base, AL: Air University, May 2000), available at <https://research.maxwell.af.mil>.

⁴¹ James Turner Johnson, *Can Modern War Be Just?* (New Haven, CT: Yale University Press, 1984); and “International Law and Legal Considerations in Targeting,” Appendix A in JCS, *Joint Doctrine for Targeting*, Joint Publication 3-60 (Washington, DC: JCS, January 17, 2002), available at http://www.dtic.mil/doctrine/jel/new_pubs/jp3_60.pdf.

⁴² Defense Department officials, cited in General Accounting Office (GAO), *Strategic Weapons: Nuclear Weapons Targeting Process*, GAO/NSIAD-91-319FS (Washington, DC: GAO, September 1991), p. 15.

⁴³ See, for example, the eyewitness accounts of Milton Viorst, “Report from Baghdad,” *The New Yorker*, June 24, 1991, p. 58, and Blaine Harden, “The Milosevic Generation,” *New York Times Magazine*, August 29, 1999, p. 34.

strategic rationale: restraint would give the enemy some incentive to reciprocate and mutual forbearance would help prevent the conflict from escalating to still greater destruction. Even the partial substitution of nonnuclear for nuclear strike capabilities could spare an enormous number of lives.

Some argue that greater US reliance on long-range precision-guided conventional weapons will increase the proliferation of weapons of mass destruction. They claim that adversaries unable to match US nonnuclear strike capabilities will acquire weapons of mass destruction as an asymmetric counter. This reasoning ignores the facts. The first major demonstration of the operational effectiveness of US precision-guided weapons was the Gulf War of 1991. Foreign militaries were greatly impressed by the key contribution of precision weapons to the US victory. Those hostile to the United States recognized the need for strategies, tactics, and capabilities to offset the US advantage. Weapons of mass destruction have been seen as one response.⁴⁴ But every potential adversary of the United States had, or was pursuing, nuclear, biological, or chemical weapons well before 1991.⁴⁵ While adversaries may see weapons of mass destruction as counters to US precision-guided weapons, US nonnuclear strike capabilities have not been the cause of proliferation, which results from political, military, and technological factors that vary with each country. Abandoning this advantage would not reverse proliferation, but would seriously impair the ability of the United States to defend itself and others. Were certain allies and friends to lose confidence in US defense commitments, those countries might seek security in nuclear weapons of their own, increasing nuclear proliferation. The long-range precision-guided weapons of the New Triad offer options for deterring or otherwise preventing WMD use, thus contributing to US efforts to deal with the existing problem of proliferation.

Defensive Options

Like nonnuclear strike capabilities, the active and passive defenses of the New Triad would make available options to counter threats for which nuclear use would be unjustified or inadequate. Passive defenses—warning systems, emergency shelters, decontamination preparations, and medical countermeasures—could protect military personnel or civilians against WMD attacks that strike capabilities were unable to prevent. Depending on their effectiveness, these defenses also could have some dissuasive and deterrent effect by demonstrating that the United States stood ready to withstand WMD use. Defensive information operations—activities that include controlling access, detecting intrusions, and restoring capabilities with regard to information networks—could guard critical military and economic infrastructures against cyberattacks. This would frustrate another of the asymmetric responses to the precision-strike advantage, and broader military superiority, enjoyed by the United States.⁴⁶

⁴⁴ See Patrick J. Garrity, *Why the Gulf War Still Matters: Foreign Perspectives on the War and the Future of International Security*, LA-12592 (Los Alamos, NM: Center for National Security Studies, Los Alamos National Laboratory, July 1993).

⁴⁵ See Joseph Cirincione (with Jon B. Wolfsthal and Miriam Rajkumar), *Deadly Arsenals: Tracking Weapons of Mass Destruction* (Washington, DC: Carnegie Endowment for International Peace, 2002).

⁴⁶ “[N]o country in the world rivals the US in its reliance, dependence, and dominance of information systems. The great advantage we derive from this also presents us with unique vulnerabilities. Computer-based information

Missile defense, if effective, could provide options of equal or greater significance. Defense against accidental or unauthorized launch of WMD-armed missiles is an example. The United States currently has no defense against this danger. An accidental launch cannot be deterred and an unauthorized launch would be difficult, if not impossible, to preempt. Any US action most likely would occur after the fact. The response might be limited to recovery efforts, although military strikes, especially with nonnuclear weapons, might be carried out against any remaining missiles under the control of a hostile subnational group. While the intelligence community judges the accidental or unauthorized launch of Russian or Chinese strategic missiles to be “highly unlikely,” this judgment comes with the caveat “as long as current security procedures and systems are in place.”⁴⁷ Security breakdowns under future political instability in either country could increase the likelihood of a missile launch. Moreover, the safeguards on first-generation ICBMs that might be deployed by North Korea, Iran, or Iraq could be insufficient to preclude an accidental or unauthorized launch.⁴⁸ If a nuclear warhead did strike a major city as a result of an accidental or unauthorized launch, the loss of life and property would be many times greater than that sustained on September 11th. The low probability of an accidental or unauthorized launch must be weighed against the high level of destruction it could cause.

Missile defense also could be useful in opposing missile-backed blackmail. The long-range ballistic missiles deployed or pursued by today’s adversaries are much smaller in number and generally less capable than those fielded by the Soviet Union. They are weapons of terror intended more for coercive purposes than military missions. Their use will be threatened to weaken US security commitments and deter US military actions in support of embattled allies or friends.⁴⁹ Without missile defense, the United States could be at a significant disadvantage in a war of nerves with a missile-armed opponent practiced in the political use of terror. US retaliatory capabilities alone might not assure a public frightened by enemy threats to strike a handful of American cities. Saving a faraway ally might not seem worth the price and the public might pressure the government to keep out, or pull out, of a regional conflict. If defenses could be made effective against smaller missile forces, “rocket rattling” could be countered with “shield shaking,” as well as threats of retaliation. The United States could declare that, because of its advanced defenses, it was not intimidated by a third-rate missile power. The presence of a defense also could strengthen the resolve of the public to resist coercion.

operations could provide our adversaries with an asymmetric response to US military superiority by giving them the potential to degrade or circumvent our advantage in conventional military power.” Lawrence K. Gershwin, National Intelligence Officer for Science and Technology, in Joint Economic Committee, *Wired World: Cyber Security and the US Economy*, S. Hrg. 107-201, 107th Cong., 1st sess. (Washington, DC: GPO, 2001), pp. 5-6, available at <http://www.house.gov/jec/hearings/6-21-01.pdf>.

⁴⁷ Robert D. Walpole, National Intelligence Officer for Strategic and Nuclear Programs, “North Korea’s Taepo Dong Launch and Some Implications on the Ballistic Missile Threat to the United States,” speech to the Center for Strategic and International Studies, December 8, 1998, available at http://www.odci.gov/cia/public_affairs/speeches/archives/1998/walpole_speech_120898.html.

⁴⁸ On the prospects for North Korean, Iranian, or Iraqi ICBMs, see National Intelligence Council (NIC), *Foreign Missile Developments and the Ballistic Missile Threat Through 2015* (Washington, DC: NIC, December 2001), available at http://www.odci.gov/nic/pubs/other_products/Unclassifiedballisticmissilefinal.htm.

⁴⁹ On the uses of smaller ballistic missile forces, see NIC, *Foreign Missile Developments and the Ballistic Missile Threat to the United States Through 2015* (Washington, DC: NIC, September 1999), available at <http://www.odci.gov/cia/publications/nic/nie99msl.html#rtoc4>.

Along this same line, missile defense could backstop the strike options afforded by the New Triad. Enemy missiles that survived a preventive attack or broader strategic offensive campaign could be intercepted by defenses. A defensive system could be particularly important in stopping missiles fired from mobile launchers. The fundamental difficulties in attacking mobile missile launchers were evident in the World War II air offensive against German V-weapons and the Gulf War hunt for Iraqi Scuds nearly 50 years later.⁵⁰ Mobile missiles remain vexing targets, although their vulnerability to attack is likely to increase with the emergence of new combinations of sensors, data-processing systems, munitions, and delivery platforms.⁵¹ Missile defenses could complement improvements in strike capabilities against mobile missiles. By reducing the prospective damage from enemy attacks, defenses in general would reduce the risks associated with strike options. Reducing risks would better balance the costs of military action with US security interests in a given conflict. Strike options with costs commensurate with interests are likely to be more acceptable to decisionmakers, more credible to adversaries, and more reassuring to allies.

Some assert that US deployment of a missile defense system could prompt China to build up its relatively small force of long-range, nuclear-armed ballistic missiles. How China in fact would react is uncertain. Potential Chinese responses could include improved penetration aids for ICBMs, deployment of additional ICBMs, and multiple-warhead payloads for ICBMs.⁵² If the response were limited to penetration aids, missile defense would not have triggered a missile buildup. The effectiveness of penetration aids obviously would depend on the effectiveness of the missile defense, not only at a single point in time, but over an extended period in which improvements in offensive countermeasures competed with advances in missile defense. In this competition, the advantage would not necessarily lie with the offense, particularly in the face of a layered defense. For example, penetration aids would be ineffective against a boost-phase defense segment, because the missile could be destroyed before they were released, as well as against a terminal-phase defense segment, because they would burn up during reentry.

If more Chinese ICBMs were deployed, the missiles would be in addition to a buildup that already is under way, despite the absence of any missile defense for the United States. The size of the increment cannot be forecast with great confidence, but China's ICBM force is expected to "remain considerably smaller and less capable than the strategic missile forces of Russia and the United States."⁵³ Large increases in the number of ICBMs would be subject to economic constraints—which Chinese officials recognize—and could divert resources from other military

⁵⁰ See, *The Army Air Forces in World War II, Vol. III*, ed. Wesley Frank Craven and James Lea Cate (Chicago, IL: University of Chicago, 1951; new imprint by the Office of Air Force History, 1983), pp. 84-106, 525-546; and *Gulf War Air Power Survey, Vol. II, Part II* (Washington, DC: GPO, 1993), pp. 330-340.

⁵¹ See the discussion in Christopher J. Bowie, *Destroying Mobile Targets in an Anti-Access Environment* (Arlington, VA.: Northrop Grumman Analysis Center, December 2001), available at http://www.capitol.northgrum.com/files/mobile_ground_targets.pdf; and Myron Hura et al., *Enhancing Dynamic Command and Control of Air Operations Against Time Critical Targets*, MR-1496-AF (Santa Monica, CA: RAND, 2002), pp. 13-18, available at <http://www.rand.org/publications/MR/MR1496>.

⁵² DoD, *Annual Report on the Military Power of the People's Republic of China* (Washington, DC: DoD, 2002), pp. 27-28, available at <http://www.defenselink.mil/news/Jul2002/d20020712china.pdf>.

⁵³ *Foreign Missile Developments and the Ballistic Missile Threat Through 2015* (December 2001).

efforts directed against the United States or its allies and friends in Asia.⁵⁴ Whether additional missiles would be a successful counter would depend, again, on the effectiveness of the US missile defense system. It is possible that a highly effective system actually could discourage a missile buildup. Even if a missile defense did lead to a larger Chinese ICBM force, the United States still could reap a net advantage if the system offered protection against smaller, perhaps more dangerous, threats.

If China chose to arms its ICBMs with multiple warheads, the change most likely would be made with silo-based, rather than mobile, missiles. According to the intelligence community, “Chinese pursuit of a multiple [reentry vehicle] capability for its mobile ICBMs and SLBMs would encounter significant technical hurdles and would be costly.”⁵⁵ While China could equip silo-based ICBMs with multiple warheads in “a few years,” mobile missiles with multiple independently targetable reentry vehicles are not expected to be deployed until well after 2015.⁵⁶ Silo-based ICBMs, however, would be more vulnerable than mobile missiles to the strike capabilities of the New Triad.⁵⁷ Consequently, China might gain little by fitting fixed ICBMs with multiple warheads. And, like penetration aids, multiple-warhead missiles would offer no advantage against a boost-phase defense segment.

The Chinese response to US missile defense, then, is a complex matter. The simple action-reaction model that underpins claims that an “arms race” would ensue is likely to have poor predictive power.⁵⁸ Furthermore, it is by no means certain that Chinese offensive counters would nullify a US defense system.

Toolbox of Capabilities

The military applications cited above are intended simply to illustrate the range of options that would be possible with the offensive forces, both nuclear and nonnuclear, and defensive capabilities of the New Triad. Other options are conceivable. Indeed, the New Triad construct by its very nature is likely to encourage defense planners to develop innovative solutions to problems at the strategic, operational, and tactical levels of war, many of which could involve the

⁵⁴ “China has stated that it will not enter an arms race with the United States. Having seen the demise of the Soviet Union, Chinese leaders do not want to sacrifice China’s economic modernization in a costly arms race with the United States. Matching the United States missile for missile or developing a Chinese NMD [national missile defense] system would require diverting billions of US dollars and many of China’s brightest minds away from economic modernization. This reallocation of resources would only delay China’s emergence as a world power and ultimately hinder China’s overall military modernization.” East Asia Nonproliferation Program, Center for Nonproliferation Studies, “China’s Opposition to US Missile Defense Programs,” fact sheet, n.d., available at <http://cns.miis.edu/cns/projects/eamp/index.htm>.

⁵⁵ *Foreign Missile Developments and the Ballistic Missile Threat Through 2015* (December 2001).

⁵⁶ *Ibid.*; and Robert D. Walpole, prepared statement before the Senate Governmental Affairs Committee, February 9, 2000, available at http://www.odci.gov/cia/public_affairs/speeches/archives/2000/nio_speech_020900.html.

⁵⁷ *Ibid.*

⁵⁸ See Keith B. Payne, “Action Reaction Metaphysics and Negligence,” *Washington Quarterly*, 24 (Autumn 2001), pp. 109-121.

substitution of nonnuclear strike capabilities or defensive means for nuclear weapons.⁵⁹ With its multiple elements, the New Triad evokes not the “law of the instrument,” but what might be called the “law of the toolbox.” The law of the instrument says, “Give a small boy a hammer, and he will find that everything he encounters needs pounding.”⁶⁰ The law of the toolbox suggests that if a skilled adult is given a diverse set of tools, he will use them separately or in combination to accomplish the task at hand in an effective and efficient manner. (As then-General Colin Powell remarked during a televised briefing early in Desert Storm, “I just want everybody to know that we have a toolbox that’s full of lots of tools, and I brought them all to the party.”)⁶¹ With the improved tools of the New Triad, the armed forces would be better equipped to dismantle—consistent with policy guidance—the military machines that threaten the United States, its allies, and friends. Perhaps even more important, such capabilities could have both dissuasive and deterrent effects on adversaries contemplating aggressive actions. This toolbox approach to some extent already is reflected in the recent JCS publication, *Joint Doctrine for Targeting*, which instructs commanders and their targeting staffs to consider multiple strike capabilities—aircraft, missiles, computer network attack, electronic warfare, and special operations forces—in planning attacks against time-sensitive targets.⁶²

Additional military options supported by the New Triad are likely to be highly valued by those who occupy the presidency. Although the post-World War II presidents have been distinguished by their differences, all have sought alternatives to large-scale nuclear use in response to major aggression. Harry Truman is remembered as the president who ordered the atomic bombing of Japan. It is forgotten that three years later he ordered an alternative strategic war plan in which only conventional weapons would be used against targets in the Soviet Union. (Truman believed that the atomic bomb might be “outlawed” and that, in any event, the American public would oppose use of atomic arms for “aggressive purposes.”)⁶³ Presidents in general have wanted not only nonnuclear alternatives, but an increasing range of nuclear options, including options small in scale and scope. They have sought capabilities and options for a range of contingencies, so as

⁵⁹ With regard to the three levels of war, “The highest level is the *strategic* level. Activities at the strategic level focus directly on policy objectives.[...]Strategy involves establishing goals, assigning forces, providing assets, and imposing conditions on the use of force in theaters of war.[...]The lowest level is the *tactical* level. Tactics refers to concepts and methods used to accomplish a particular mission in either combat or other military operations. [...]Tactics can be thought of as the art and science of winning engagements and battles.[...]The *operational* level of war links the strategic and tactical levels. As strategy deals with winning wars and tactics with winning battles and engagements, the operational level of war is the art and science of winning campaigns.” US Marine Corps, *Warfighting*, MCDP 1 (Washington, DC: US Marine Corps, 1997), pp. 28-32 (emphasis in original), available at <https://www.doctrine.usmc.mil/mcdp/view/mcdpub1.pdf>.

⁶⁰ Abraham Kaplan, *The Conduct of Inquiry: Methodology for Behavioral Science* (San Francisco, CA: Chandler Publishing Co., 1964), p. 28.

⁶¹ DoD News Briefing, January 23, 1991 (transcript by the Office of the Assistant Secretary of Defense for Public Affairs), p. 6.

⁶² *Joint Doctrine for Targeting*, pp. B-7—B-11.

⁶³ The JCS started but never completed work on the plan. See William D. Leahy diary, entries for May 5, 6, and 12, 1948, Manuscript Division, Library of Congress; Steven L. Rearden, *History of the Office of the Secretary of Defense, Vol I: The Formative Years, 1947-1950* (Washington, DC: GPO, 1984), pp. 434-436; David Alan Rosenberg, “Toward Armageddon: The Foundations of United States Nuclear Strategy, 1945-1961” (Ph.D. dissertation, University of Chicago, 1984), pp. 109-110; and Frank Graham Klotz, “The U.S. President and the Control of Strategic Nuclear Weapons” (Ph.D. dissertation, Oxford University, 1980), pp. 157-161.

to deter foes, assure friends, control escalation, and limit unintended damage.⁶⁴ The possibilities opened up by the nonnuclear capabilities intended for the New Triad are the logical extension of this continuing search for more, and more refined, options. Not surprisingly, the Defense Department has said that, as a result of the NPR, the Bush Administration “is fashioning a more diverse set of options for deterring the threat of WMD [by] pursuing missile defenses, advanced conventional forces, and improved intelligence capabilities.”⁶⁵ If more alternatives can be made available, the New Triad should diminish the role of nuclear weapons in US strategy and decrease the likelihood they will be used in war.

SMALLER NUCLEAR FORCE

Reductions in the Operationally Deployed Force

In line with the results of the NPR, the strategic nuclear force of the New Triad will be smaller than the present force. Under current plans, 4 Trident ballistic missile submarines (SSBNs), 50 Peacekeeper ICBMs, and 18 B-52H bombers will be retired during the next few years. These reductions will leave a force structure of 14 Trident SSBNs (each capable of carrying 24 D-5 SLBMs), 500 silo-based Minuteman III ICBMs, 76 B-52H bombers with cruise missiles or gravity bombs, and 21 B-2 bombers with gravity bombs.⁶⁶ Over the next 10 years, the number of operationally deployed warheads for this force structure is projected to decline from approximately 6,000 today to a level of 1,700 to 2,200.⁶⁷ This large cut has been attributed to the new relationship with Russia, which permits that former adversary to be “excluded from [the] calculation of [US] nuclear requirements for immediate contingencies.”⁶⁸ The decision of the Russian government to make comparable reductions in its own strategic nuclear forces also reflects the new relationship, as well as stringent military budgets.⁶⁹

⁶⁴ See Desmond Ball, “The Development of the SIOP, 1960-1983,” in *Strategic Nuclear Targeting*, ed. Desmond Ball and Jeffrey Richelson (Ithaca, NY: Cornell University Press, 1986), pp. 62-70; Terry Terriff, *The Nixon Administration and the Making of U.S. Nuclear Strategy* (Ithaca, NY: Cornell University Press, 1995); Walter Slocombe, “The Countervailing Strategy,” *International Security*, 5 (Spring 1981), pp. 18-27; *Annual Defense Report to the Congress for Fiscal Year 1987* (Washington, DC: GPO, February 5, 1986), pp. 74-75; R. Jeffrey Smith, “U.S. Trims List of Targets in Soviet Union,” *Washington Post*, July 21, 1991, p. A1; *Strategic Weapons: Nuclear Weapons Targeting Process*, pp. 11-13; Deputy Secretary of Defense John M. Deutch, in *Briefing on Results of the Nuclear Posture Review*, p. 13; and R. Jeffrey Smith, “Clinton Directive Changes Strategy on Nuclear Arms,” *Washington Post*, December 7, 1997, p. A1.

⁶⁵ “Statement on Nuclear Posture Review,” DoD News Release, No. 113-02, March 9, 2002, available at http://www.defenselink.mil/news/Mar2002/b03092002_bt113-02.html.

⁶⁶ Ellis statement before the Senate Armed Services Committee, February 14, 2002, “Basic Terminology of the Nuclear Posture Review”; and *U.S. Air Force Long-Range Strike Aircraft White Paper* (Washington, DC: Department of the Air Force, November 2001), pp. 2, 20, A-1, available at <http://www.af.mil/lib/bmap01.pdf>. Two SSBNs will be in overhaul at any given time and therefore not part of the operationally deployed force. The bomber figures include training, test, backup, and attrition reserve aircraft. Bombers are dual-capable; that is, they have both nuclear and conventional roles.

⁶⁷ Cheney, press conference, March 11, 2000.

⁶⁸ Feith, statement before the Senate Armed Services Committee, February 14, 2002, p. 6.

⁶⁹ On Russian plans to reduce strategic arms, see Address by Russian President Vladimir, Russian TV broadcast, December 13, 2001 (transcript) (FBIS Document ID CEP20011213000300); PutinVadim Markushin, “Changing Relations between US and Russia: From the Potential of Deterrence to the Potential of Trust,” *Krasnaya Zvezda*,

Most US warheads removed from operational status will be “downloaded” from delivery platforms that are kept in service rather than retired. The warheads will remain in the nuclear stockpile pending future decisions. A sizable number will be retained for the responsive force; the specific number has yet to be determined by the Defense Department.⁷⁰ In addition to warheads for the responsive force, the nuclear stockpile will continue to include logistics spares for operationally deployed warheads, replacements for warheads destroyed in routine evaluative tests, and replacements for warheads with reliability or safety problems.⁷¹ Some number of warheads removed from operational status eventually will be retired and dismantled.⁷²

The planned cut in operationally deployed warheads has been criticized as illusory because warheads that are downloaded and stored now can be taken out of storage and uploaded on missiles and bombers later.⁷³ In response, it can be argued that a policy of reduction and retention is a sensible way to manage the size of the strategic nuclear force. Removing warheads from deployed or retired delivery platforms and keeping those warheads in storage is not inconsistent with past arms control practice. The second Strategic Arms Reduction Treaty (START II), for example, did not require the elimination of warheads. Many who supported START II now fault the planned cut, even though it will bring the number of deployed warheads below not only the START II level (3,000 to 3,500), but also the level proposed for START III (2,000 to 2,500). Maintaining warheads for a responsive force can be seen as prudent in light of the significant uncertainties about the adversaries, nuclear forces, and conflicts the United States

November 16, 2001 (FBIS Document ID CEO20011116000373); Sergei Ivanov, Russian Minister of Defense, quoted in “Russian Minister Expects Agreement on Radical Strategic Arms Cuts,” *Agentstvo Voyennykh Novostey*, December 18, 2001 (FBIS Document ID CEP20011218000093); and Gen. Antaloy Kvashin, Chief of the Russian General Staff, quoted in “Kvashin Calls for Balance with US on Offensive, Defensive Arms,” *Interfax*, January 19, 2002 (FBIS Document ID CEP20020119000012). On the economic motivation behind Russian reductions, see NIC, *Annual Report to Congress on the Safety and Security of Russian Nuclear Facilities and Military Forces* (Washington, DC: NIC, February 2002), available at http://www.odci.gov/nic/pubs/other_products/icarusiansecurity.htm.

⁷⁰ Crouch, special briefing on the NPR, January 9, 2002; and Feith, statement before the Senate Armed Services Committee, February 14, 2002, p. 9.

⁷¹ Ellis, statement before the Senate Armed Services Committee, February 14, 2002, “Basic Terminology of the Nuclear Posture Review.”

⁷² Crouch, special briefing on the NPR, January 9, 2002; and Secretary of Defense Rumsfeld, testimony before the Senate Appropriations Committee, May 21, 2002 (transcript), available at <http://www.defenselink.mil/speeches/2002/s20020521-secdef.html>.

⁷³ See, for example, Tom Z. Collina, “Bush Misses Historic Opportunity on Nuclear Cuts,” *Union of Concerned Scientists* news release, January 10, 2002, available at <http://www.ucsusa.org/releases/01-10-02.html>; Joseph Cirincione and Jon B. Wolfsthal, “Nuclear Review Retains Old Posture,” *Carnegie Non-Proliferation Project*, January 17, 2002, available at <http://www.ceip.org/files/nonprolif/templates/article.asp?NewsID=2080>; Daryl G. Kimball, “New Strategic Experiment,” *Arms Control Today*, 32 (January-February 2002), p. 2, available at http://www.armscontrol.org/act/2002_01-02/default.asp; Ivo H. Daalder and James M. Lindsay (Senior Fellows, Brookings Institution), “Stuck in the Cold War,” *Financial Times*, January 14, 2002, p. 11; Charles Pena, “Warhead Reduction or Accounting Gimmick?” *Cato Daily Dispatch*, January 10, 2002, available at <http://www.cato.org/dispatch/01-10-02d.html>; “Nuclear Shell Game” (editorial), *Boston Globe*, January 14, 2002, p. 10; “Neutralizing Nukes” (editorial), *Christian Science Monitor*, January 16, 2002, p. 20; “Disarmament’s Glacial Pace” (editorial), *Los Angeles Times*, January 26, 2002, p. B18; Department of State, Office of Research, “U.S. Nuclear Policy: ‘Sleight of Hand’ Doesn’t Escape Foreign Notice,” report on foreign media reaction, January 18, 2002, available at <http://www.usinfo.state.gov/admin/005/www/h2j81.html>; and Bradley Graham, “Senate Democrats Fault Bush Nuclear Plan,” *Washington Post*, February 15, 2002, p. A4.

will face in the coming decades.⁷⁴ Preparations for a responsive force also are not without precedent. In the 1994 NPR, Clinton Administration defense officials established the requirement for a “hedge”—stored warheads that could be uploaded on bombers and missiles—in the event Russia reverted to an authoritarian regime with aggressive intent.⁷⁵ The hedge reportedly totaled 2,500 to 3,000 warheads.⁷⁶ Given the maximum upload capability of the future strategic nuclear force structure, the size of the responsive force probably will not exceed 2,400 to 2,900 warheads.⁷⁷ Indeed, “the analysis that helped determine the size of the operationally deployed force and the decision to pursue non-nuclear capabilities of the New Triad suggests that [the] responsive capability will not be as large as the ‘hedge’ force maintained by the [Clinton] Administration.”⁷⁸

Some assert that if the United States retains warheads for a responsive force, Russia will follow suit and those warheads will be vulnerable to theft by third parties.⁷⁹ But Russia already keeps thousands of warheads in a deficient storage system. Many are tactical warheads and thus unaffected by reductions in strategic forces.⁸⁰ The security of Russian nuclear warheads will be a problem regardless of whether downloaded strategic warheads are dismantled. Improvements in the Russian storage system, not dismantlement of downloaded warheads, is likely to yield greater reduction in the risk of theft. The United States has been helping Russia in this regard through the Cooperative Threat Reduction program.⁸¹

Different Approach to Reductions

The reduction to 1,700 to 2,200 warheads differs in important respects from previous efforts to decrease strategic nuclear arms. The reduction was determined unilaterally on the basis of US security requirements. The strategic arms control process of the past 30 years involved a series of

⁷⁴ See Vice Adm. Thomas R. Wilson, USN, Director of the Defense Intelligence Agency, “Global Threats and Challenges,” prepared statement before the Senate Armed Services Committee, March 19, 2002, available at http://www.senate.gov/~armed_services/statemnt/2002/March/Wilson.pdf.

⁷⁵ *Annual Defense Report to the President and the Congress—1995*, pp. 85-86; and Deutch and Adm. William A. Owens, USN, Vice Chairman of the JCS, in *Briefing on Results of the Nuclear Posture Review*, pp. 12, 14-15, 26, 57-58.

⁷⁶ Walter Pincus, “U.S. Plan to Renovate Warheads Stirs Opposition,” *Washington Post*, March 26, 2000, p. A2.

⁷⁷ The ballistic missiles and bombers that the United States now plans on retaining in 2012, after scheduled reductions in the strategic nuclear force structure, would be capable of carrying a total of approximately 4,600 warheads. If the operationally deployed force had 2,200 warheads, 2,400 additional warheads could be uploaded to constitute the responsive force. If the operationally deployed force had 1,700 warheads, 2,900 warheads could be uploaded. See Secretary of State Colin L. Powell, testimony before the Senate Foreign Relations Committee, July 9, 2002 (FDCH transcript); and Secretary of Defense Rumsfeld, testimony before the Senate Foreign Relations Committee, July 17, 2002.

⁷⁸ Feith, statement before the Senate Armed Services Committee, February 14, 2002, p. 9.

⁷⁹ See, for example, Sen. Carl Levin, opening statement for hearing on the results of the 2001 Nuclear Posture Review, February 14, 2002, available at <http://levin.senate.gov/floor/021402cs1.htm>.

⁸⁰ *Annual Report to Congress on the Safety and Security of Russian Nuclear Facilities and Military Forces*.

⁸¹ J.D. Crouch, Assistant Secretary of Defense for International Security Policy, “Cooperative Threat Reduction Program,” prepared statement before the Senate Armed Services Committee, March 6, 2002, available at http://www.senate.gov/~armed_services/statemnt/2002/March/crouch306.pdf.

protracted negotiations to balance US forces against Soviet/Russian forces. The results were set down in lengthy, intricate treaties. In the current case, Russia will reciprocate the cut planned by the United States. The parallel reductions of the two countries are registered in a treaty only three pages long.⁸² The verification regime of the 1991 START I Treaty “will provide the foundation for providing confidence, transparency, and predictability in further strategic offensive reductions, along with other supplementary measures, including transparency measures, to be agreed.”⁸³

This path to arms reduction seems better attuned than Cold War-style treaties to the security challenges of the 21st century. If Russia no longer is the focus of nuclear force planning for immediate contingencies, then the size and composition of the operationally deployed force no longer should be tightly tied to the attributes of the Russian strategic nuclear force. Over the next few decades, the United States likely will need to adapt its strategic nuclear forces, along with the other capabilities of the New Triad, to multiple adversaries operating within a dynamic political-military context. In such circumstances, elaborate bilateral treaties of extended duration likely will outlive their usefulness and preclude this needed flexibility. In contrast, reductions that are reached unilaterally, reciprocated by the other side, and, if necessary, recorded in simple agreements, can produce real cuts in nuclear arms without unduly restricting future US options. The reductions now planned by the United States and Russia are in some ways similar to the Presidential Nuclear Initiatives (PNIs) taken a decade ago. Then, too, international political changes led to unilateral changes in US nuclear forces. At the time of the Soviet collapse, President George H.W. Bush decided to eliminate ground-launched theater nuclear weapons, remove tactical nuclear weapons from surface ships and submarines, take bombers and Minuteman II ICBMs off alert, and cancel or cut back several nuclear weapons programs.⁸⁴ Parallel actions were announced first by Soviet President Gorbachev and subsequently by Russian President Yeltsin.⁸⁵ The PNIs, unlike the currently planned reductions, were not formalized in an agreement.

Besides the impetus from the new relationship with Russia, the New Triad itself could act as an engine for nuclear arms reduction. To the extent nonnuclear strike capabilities substitute for

⁸² Treaty Between the United States of America and the Russian Federation on Strategic Offensive Reductions, May 24, 2002, in *Weekly Compilation of Presidential Documents*, May 27, 2002, pp. 893-894, available at <http://www.access.gpo.gov/nara/v38no21.html>; and Message to the Senate Transmitting the Treaty Between the United States of America and the Russian Federation on Strategic Offensive Reductions, June 20, 2002, in *Weekly Compilation of Presidential Documents*, June 24, 2002, pp. 1060-1061, available at <http://www.access.gpo.gov/nara/v38no25.html>.

⁸³ Joint Declaration by President George W. Bush and President Vladimir V. Putin on the New Strategic Relationship between the United States of America and the Russian Federation, May 24, 2002, in *Weekly Compilation of Presidential Documents*, May 27, 2002, p. 897, available at <http://www.access.gpo.gov/nara/v38no21.html>.

⁸⁴ Address to the Nation on Reducing United States and Soviet Nuclear Weapons, September 27, 1991, available at <http://bushlibrary.tamu.edu/papers/1991/91092704.html>; and Address Before a Joint Session of the Congress on the State of the Union, January 28, 1992, available at <http://bushlibrary.tamu.edu/papers/1992/92012801.html>.

⁸⁵ Mikhail Gorbachev, Address to the Nation on Disarmament, October 5, 1991, in *FBIS-SOV-91-194*, October 7, 1991, pp. 1-3; and Boris Yeltsin, Statement on Disarmament, January 29, 1992, in *FBIS-SOV-92-019*, January 29, 1992, pp. 1-3.

nuclear forces, the required number of nuclear weapons would be lower. Active defenses that can intercept enemy missiles and aircraft in flight would reduce the number of nuclear weapons needed to destroy those forces on the ground. A revitalized nuclear infrastructure that can produce new nuclear warheads—a capability the United States now lacks—would permit, all things being equal, a smaller stockpile for the responsive force and other purposes.⁸⁶ The stockpile for the responsive force then will be a way station before warheads are dismantled. (Note that a revitalized infrastructure also will have a greater capacity to dismantle warheads.)⁸⁷ Better intelligence about the function, location, vulnerabilities, and condition of key targets could allow damage requirements for those targets to be met with fewer nuclear weapons or with nonnuclear strike capabilities. Improvements in command and control and strike planning likewise could result in more effective targeting and a diminished need for nuclear weapons. In short, development of military alternatives and more efficient application of force, not horse trades at the negotiating table, would be the means for bringing about a smaller nuclear force. Investments in components of the New Triad thus could be down payments on future nuclear reductions.

Limits to Further Reductions

There will be limits, however, to reductions in the size of the strategic nuclear force. Nonnuclear strike capabilities and strategic defenses, even if they meet their performance objectives, can only partially substitute for nuclear weapons. In addition, survivability against enemy attack and flexibility to strike a range of targets are requirements that dictate a nuclear force of a certain size. Perhaps most important, the United States is unlikely to field a strategic nuclear force smaller than that of any other state. A commanding nuclear position—superiority in general, at least parity with Russia—could be critical in dissuading adversaries from engaging in threatening military activities, while assuring friendly countries, Congress, and the public that the United States can counter even the most severe security threats. The strategic nuclear force called for by the NPR, while far smaller than that of today, nonetheless will present a formidable entry barrier to opponents who seek advantage by competing in the nuclear realm, a course that might look less arduous than building armed forces comparable in other respects to those of the United States. (According to the Defense Intelligence Agency, “even large regional forces will be hard pressed to match our dominant maneuver, power projection, and precision attack capabilities, and no state will field integrated satellite-to-soldier military ‘system of systems’ capabilities on par with the US.”)⁸⁸ Nuclear superiority also is a mark of US preeminence and supports US leadership within alliances and in international affairs more broadly. Alliance arrangements and

⁸⁶ According to John Gordon of the National Nuclear Security Administration, “We do not today have the ability to construct or build a new warhead, if you will, from scratch, in that, primarily, we do not have a production facility up and running to produce a plutonium pit [the core of fissile material in a nuclear weapon].” Testimony before the Senate Armed Services Committee, February 14, 2002. See also John S. Foster, Jr., Chairman of the Panel to Assess the Reliability, Safety, and Security of the United States Nuclear Stockpile, prepared statement before the House Armed Services Committee, March 21, 2002, available at <http://www.house.gov/hasc/openingstatementsandpressreleases/107thcongress/02-03-21foster.html>; and Feith, statement before the Senate Armed Services Committee, February 14, 2002, p. 9.

⁸⁷ Gordon, testimony before the Senate Armed Services Committee, February 14, 2002.

⁸⁸ “Global Threats and Challenges,” p. 18.

international order would be disrupted if the United States were but one of many comparable nuclear powers. Considerations like these have led Congress in the past to mandate that the US strategic nuclear force not become smaller than the Soviet/Russian force.⁸⁹ They apparently also resulted in the NPR-related requirement for a “[s]econd-to-none nuclear capability [that] assures allies and [the] public.”⁹⁰

Opinion surveys indicate the public in fact expects a nuclear force that is second to none.⁹¹ A series of nationwide polls conducted by the University of New Mexico over a period of several years shows solid majorities believe that the United States should remain a military superpower and that nuclear weapons are important to US international status and influence. Seventy percent of respondents also think the United States should maintain more nuclear weapons than China, which is estimated to have the third-largest nuclear arsenal.⁹²

These polls in general, it is worth noting, offer evidence that the public is likely to support the smaller nuclear force and more diversified capabilities of the New Triad. Well over half believe nuclear weapons should be retained to deter nuclear use and large conventional conflicts. Answers to the question, “If mutual reductions in the number of US and Russian [strategic] nuclear weapons can be verified, to approximately what level would you be willing to reduce the number of US nuclear weapons?” produce a median range of 1,500 to 2,000 weapons. Sixty percent support additional spending for “[m]aintaining the ability to develop and improve US nuclear weapons in the future.” While precision-guided, nonnuclear weapons are seen as having limited potential to replace nuclear weapons for the purposes of deterrence, a majority (60 percent) prefers nonnuclear retaliation for a chemical or biological attack against US forces, and a plurality (46 percent) favors a nonnuclear response to even a nuclear attack. (Roughly 10 percent support a third option, diplomacy.) Approximately 70 percent agree that “[i]n some cases, the US would be justified in using force to prevent other countries from acquiring nuclear weapons.” (The figure increases to 75 percent when the countries are specified as Iraq or Iran and the preventive attack can be carried out with nonnuclear weapons.) And 70 percent favor building a national missile defense system, although opinion is more divided as to whether the money would be better spent on other programs, whether nuclear retaliation alone provides

⁸⁹ See the joint congressional resolution of approval for the first Strategic Arms Limitation Treaty (SALT I) (Public Law 92-448), September 30, 1972; and the Senate resolution of ratification for START II, *Congressional Record—Senate*, January 26, 1996, p. S462.

⁹⁰ Crouch, special briefing on the NPR, January 9, 2002 (slide titled “QDR: Defense Policy Goals”).

⁹¹ See Kerry G. Herron, Hank C. Jenkins-Smith, and Scott D. Hughes, *Mass and Elite Views on Nuclear Security: US National Security Surveys, 1993-1999, Vol. I* (Albuquerque, NM: University of New Mexico Institute for Public Policy, June 2000), pp. viii-x, 15-17, 26-35, 42-63, 73-75, 168-171, 173, 176, 179-185, 187, available at http://www.unm.edu/~instpp/e_hold/1999_VOL1.pdf; and Kerry G. Herron and Hank C. Jenkins-Smith, *Evolving Perceptions of Security: US National Security Surveys, 1993-1995* (Albuquerque, NM: University of New Mexico Institute for Public Policy, March 1996), pp. 83-85, 224, 226, available at http://www.unm.edu/~instpp/e_hold/1995_SecPerceptions.pdf.

⁹² The surveys did not ask the public how many nuclear weapons the United States should maintain vis-à-vis Russia, presumably because those who designed the polls took U.S.-Russian parity as a given. On the relative size of the Chinese nuclear arsenal, see Hans M. Kristensen and Joshua M. Handler, “Tables of Nuclear Forces,” Appendix 6A in Stockholm International Peace Research Institute, *SIPRI Yearbook 2001: Armaments, Disarmament and International Security* (New York: Oxford University Press, 2001), pp. 457-486, available at <http://projects.sipri.se/nuclear/06A.pdf>.

adequate protection against missile attacks, and whether such a system would cause an “arms race” with Russia and China. Public opinion polls should not determine defense policy—and there is no evidence that polls influenced the NPR—but public support for the broad contours of US preparations for deterring or waging strategic war would help sustain the New Triad over the long run.

Smaller Role for Nuclear Weapons

With additional military options and a smaller nuclear force, the New Triad over time should reduce further the role nuclear weapons play in US strategy. Claims that the NPR considered contingencies in which US strategic nuclear forces might counter aggression by any of several countries, and thereby expanded the ambit of nuclear weapons, overlook publicly available evidence that US nuclear planning for some time has covered multiple adversaries.⁹³ It should be recalled that in a September 1994 press conference on the first NPR, then-Deputy Secretary of Defense John Deutch explained that, “[t]he way we arrived at requirements for U.S. nuclear force structure [...] was to assess the capabilities of the former Soviet Union—the targets that are there—and we looked at the kind of targeting and kinds of attack plans we might have, *and also prepared to deal with hostile governments not only in Russia, but in other countries.*”⁹⁴

INCREASED IMPORTANCE OF STRATEGIC WARNING AND FORCE RECONSTITUTION

Nuclear Force-in-Being and Tactical Warning

The Cold War nuclear triad approached the ideal of the force-in-being: large, powerful, ready. War readiness was maintained at a high level in peacetime. During the last half of the East-West confrontation, 30 percent of bombers were on ground alert, 65 percent of SSBNs were on patrol, and nearly all ICBMs were ready for launch.⁹⁵ More bombers and SSBNs could be generated to alert status in response to strategic warning (warning prior to the initiation of hostilities). Bombers and ICBMs of the alert force depended on tactical warning (warning that an attack was under way) to launch from runways and silos in the minutes between the detection of a missile attack and the detonation of missile warheads. The capabilities of the day-to-day alert force and the ability to obtain and act on tactical warning generally received greater attention than matters related to the generated alert force and strategic warning.

⁹³ “[T]he Nuclear Posture Review[...]widens the circumstances thought to justify a possible nuclear response and expands the list of countries considered potential nuclear targets.” “America as Nuclear Rogue” (editorial), *New York Times*, March 12, 2002, p. A28. For evidence that past nuclear planning has taken into account a number of potential opponents, see Hans M. Kristensen, *U.S. Nuclear Strategy Reform in the 1990s* (Berkeley, CA: Nautilus Institute, March 2000), available at <http://www.nautilus.org/nukestrat/StratRef.pdf>.

⁹⁴ Press conference with Secretary of Defense William J. Perry; General John M. Shalikashvili, USA, Chairman of the Joint Chiefs of Staff; Deputy Secretary of Defense John M. Deutch; and Kenneth H. Bacon, Assistant to the Secretary of Defense for Public Affairs, DoD News Release, No. 546-94, September 22, 1994 (transcript), p. 7 (emphasis added).

⁹⁵ Robert S. Norris and Thomas B. Cochran, *US-USSR/Russian Strategic Offensive Nuclear Forces, 1945-1996* (Washington, DC: Natural Resources Defense Council, January 1997), p. 2.

With the end of the Cold War, the size and readiness of the nuclear force-in-being were reduced. Bombers were taken off alert in 1991.⁹⁶ Since that time, the number of bombers has declined by 70 percent. While the percentage of SSBNs on patrol remains the same, the submarine fleet is 45 percent smaller and there are 30 percent fewer SLBMs. The alert rate for ICBMs also is unchanged, but their number is down 45 percent.⁹⁷ The NPR-related force reductions would continue this trend, cutting SSBNs/SLBMs by another 20 percent and ICBMs by a further 10 percent.⁹⁸

Nuclear Force Reconstitution and Strategic Warning

The New Triad preserves sufficient force structure, however, to reconstitute a larger nuclear force-in-being—the responsive force—with more than twice the warheads of the operationally deployed force.⁹⁹ Force reconstitution would involve putting more delivery platforms, notably bombers, on alert. In this respect, reconstitution would overlap with generated alert. But reconstitution also would include uploading ballistic missiles with more warheads, a measure absent from Cold War practice. Plans for uploading missile warheads, whether for the responsive force or the earlier “hedge,” add a step to the mobilization process for the strategic nuclear force. Reconstitution of the responsive force would be broadly akin to augmenting active general-purpose forces with their reserve components.

Force reconstitution and strategic warning are likely to grow in importance relative to the force-in-being and tactical warning. Reconstitution could occur under conditions other than a short-term crisis. As noted earlier, the option of reconstituting the responsive force is intended to counter “severe dangers” that might develop over a year or more. These dangers might include an escalation in tensions with a major nuclear power (Russia, for example) or an intense arms buildup by such an adversary.¹⁰⁰ In an uncertain security environment where latent threats can become grave dangers, strategic warning is at a premium and serves as the alarm for force reconstitution. If significant political-military uncertainties persist as the size of the operationally

⁹⁶ Memo, Secretary of Defense Dick Cheney to Secretaries of the Military Departments, Chairman of the Joint Chiefs of Staff, Under Secretaries of Defense, and Assistant Secretary of Defense for Command, Control, Communications and Intelligence, subj: Reducing the United States Nuclear Arsenal, September 28, 1991.

⁹⁷ The percentages refer to reductions between fiscal year (FY) 1991 and FY 2001. Operational missiles and bombers assigned to meet the primary aircraft authorization (PAA) were counted. See *Annual Defense Report to the President and the Congress—1992* (Washington, DC: GPO, February 1992), p. 137; and *Annual Defense Report to the President and the Congress—2001*, p. D-1. According to page 92 of the latter report, “The United States maintains[...]about two-thirds of operational SSBNs routinely at sea[...] All 550 ICBMs, with the exception of a few undergoing routine maintenance, are maintained on a continuous day-to-day alert. The bomber force is no longer maintained on day-to-day alert, although it can be returned to alert status within a few days if necessary.”

⁹⁸ No percentage cut in the bomber force is listed because the retirement of 18 B-52Hs will not reduce the number of PAA bombers.

⁹⁹ See note 77.

¹⁰⁰ “[The] Nuclear Posture Review determined that, based on the fact that there are nuclear-armed nations out there, particularly Russia, even though [it has] a new relationship [with the United States], [that] will have nuclear weapons for many, many years to come. And one cannot predict the future with certainty, so therefore, it is wise for us [to have] 1,700 to 2,200 [operationally deployed warheads], with a stockpile of additional warheads that are there as replacement warheads...and to give us a hedge.” Secretary of State Powell, testimony before the Senate Foreign Relations Committee.

deployed force diminishes, strategic warning and force reconstitution offer insurance against the emergence of a major threat.

Both the concept and mechanics of reconstitution will require elaboration. Planning for the responsive force will need to address a number of questions. For example, in what specific contingencies might reconstitution be ordered? What strategic warning indicators could trigger reconstitution? Besides increasing the number of operationally deployed warheads, what would be the objectives of reconstitution? What reconstitution options for the responsive force should be developed? How would the mix of uploaded bombers, ICBMs, and SLBMs vary among options? What time lines would the different options follow? What would hinder timely reconstitution and how could these impediments be removed? How might the adversary react to reconstitution activities? How should the efficiency of the reconstitution process and the adequacy of the responsive force be gauged? Some efforts to work out the details of reconstitution have begun. In one case, the National Nuclear Security Administration plans to examine whether its ground transportation capabilities would be sufficient to move warheads from storage locations to bombers and missiles in a time frame consistent with Defense Department uploading requirements.¹⁰¹

Other Mobilization Options

Nuclear forces should not be the only capabilities of the New Triad that can be increased in response to a new threat. The range of contingencies implies not only a range of attack options, but also a range of mobilization options. Certain contingencies might require much larger inventories of nonnuclear, precision-guided munitions, for example, and the defense-industrial infrastructure therefore requires the capacity to surge production of these weapons. Depending on the time available, new delivery platforms and supporting capabilities also might be produced. Other mobilization options might include improvements in active and passive defenses. Some mobilization potential is built into the current missile defense program, which, among other priorities, is designed “to develop and test technologies, use prototype and test assets to provide early capability, if necessary, and improve the effectiveness of deployed capability by inserting new technologies as they become available or when the threat warrants an accelerated capability.”¹⁰² Reconstitution of the responsive force, then, should be considered with regard to the specifics of the contingency at hand and the options for augmenting or upgrading the nonnuclear strike and defensive capabilities of the New Triad.

Preparations for force reconstitution and other mobilization options ideally will act to dissuade an adversary from military competition, as well as deter aggression and gird the United States to defeat aggression if deterrence fails. Readiness for an overmatching counter-buildup should discourage challenges to the US nuclear position and thereby contribute to what has been called “arms race stability.” The United States also could shift among elements of the New Triad to

¹⁰¹ Gordon, statement before the Senate Armed Services Committee, February 14, 2002, pp. 4-5, 6, 10.

¹⁰² Memo, Secretary of Defense Donald H. Rumsfeld to Secretaries of the Military Departments, Chairman of the Joint Chiefs of Staff, Under Secretaries of Defense, et al., subj: Missile Defense Program Direction, January 2, 2002, available at <http://www.defenselink.mil/news/Jan2002/d20020102mda.pdf>.

close off different avenues of competition that an opponent might pursue and open up competition along avenues where the opponent would be hard put to respond. An adversary's nuclear buildup could be met not simply by an emulative response, but by a combination of improved nuclear, nonnuclear, and defensive capabilities that created the greatest war planning and resource allocation problems for the adversary.

Problem of Delayed Reconstitution

Though strategic warning and force reconstitution are closely linked, warning will not guarantee timely reconstitution. Warning might be ambiguous. The need for reconstitution of the responsive force might appear obvious only in retrospect if relations between the United States and a major nuclear power deteriorated in a gradual and uneven manner toward the point where hostilities loomed. Other responses to warning might be available. These could include military alternatives as well as diplomatic measures and economic sanctions. The president might be reluctant to order reconstitution. Actions to upload warheads and increase the readiness of the strategic nuclear forces very likely would draw domestic and international opposition. The president and his advisers might fear that reconstitution would be perceived as a provocative rather than a prudent step, a move that would deepen rather than discourage confrontation. For these reasons, reconstitution might be rejected, or at least delayed, despite the development of more dangerous strategic circumstances.

A sizable operationally deployed force, a substantial portion of which is on alert, provides some insurance against the possibility that reconstitution will not be ordered when necessary. To reduce presidential reluctance to order reconstitution in the face of an emerging threat, several steps could be taken, including the incorporation of reconstitution scenarios into the defense planning process, the development of various reconstitution options, the review of reconstitution plans by the president and other top officials, and the simulation of reconstitution in routine exercises so that the real thing, if carried out, would be less surprising to friends and foes. The decision to reconstitute the responsive force also should be made less daunting by Defense Department plans for periodic assessments that will determine whether and to what extent nuclear reductions should be continued, accelerated, halted, or reversed, because of changes in the security environment.¹⁰³ Reconstitution could be initiated after one of these assessments, rather than in response to a crisis. If reconstitution were ordered, the operationally deployed force could serve as a covering force to deter enemy attack while the responsive force was brought to full strength and other mobilization options were implemented. Deployed defenses also would help guard against an attack during reconstitution.

OTHER IMPLICATIONS

The New Triad makes planning for strategic war more complex. The greater complexity is due, in part, to the greater diversity in adversaries and contingencies and the associated greater uncertainty about the nature of the next major conflict. It also results from the heterogeneity of the New Triad, which contrasts with the all-nuclear, all-offensive makeup of the old triad. With

¹⁰³ Crouch, special briefing on the NPR, January 9, 2002.

the New Triad, offenses (nonnuclear and nuclear), defenses (active and passive), and infrastructure must be carefully integrated to maximize the aggregate capability of the United States for strategic warfare. The future paths along which the three elements develop must be closely coordinated to take advantage of substitutions, complementarities, and synergies. The operations of nonnuclear and nuclear strike capabilities and the various forms of defense also must be meshed in appropriate war plans. And the New Triad overall must be fashioned to meet not just one, but several key goals (assurance, dissuasion, deterrence, and defense).

Key Goals

Specifying these goals for planning purposes will be a challenging task. Deterrence is a difficult goal, even with a familiar opponent, like the Soviet Union, in a relatively static strategic context, like the Cold War. Now the United States must be prepared to deter multiple, less understood opponents in a broader set of contingencies. Dissuasion of military competition is a goal that has received much less attention than deterrence. Missile defense and force reconstitution have the potential to discourage buildups in ballistic missiles and nuclear arms, but how this would be accomplished, and how the New Triad would contribute to dissuasion in other respects, are questions that must be examined in greater detail. Insights into the means of dissuasion might be derived from the “competitive strategies” work done some years ago by the Defense Department’s Office of Net Assessment.¹⁰⁴ Assurance of allies to a large extent will depend on the perceptions of particular foreign elites, that is, how they view the New Triad in relation to the security threats they see. Elite perceptions could be at odds with reality, however, and should be determined empirically before efforts are made to shape the development, deployment, and operations of New Triad capabilities to assure friends of US commitments. Here again, past analytic work supported by Net Assessment would be useful, namely studies of the political-psychological effects of military force that were conducted in the 1970s.¹⁰⁵ Unlike the other goals, the goal of defense—decisively defeating an enemy while protecting the United States and its security partners against attack—essentially has been absent from US nuclear war planning for decades. US planners now are required to think through how to win a war, against a non-Soviet opponent, in which nuclear weapons are used.

¹⁰⁴ The competitive strategies effort sought to design military forces, programs, and operational concepts that, in an extended arms competition, would align enduring US strengths against enduring enemy weaknesses, impose costs on the enemy, compel the enemy to divert resources to less threatening activities, undermine the confidence of enemy leaders in their military capabilities, and channel the competition into the areas where the United States would be safer and the enemy would be at a disadvantage. See Andrew W. Marshall, “Competitive Strategies: Background and History,” prepared statement, in House Armed Services Committee, *Competitive Strategies*, H.A.S.C. No. 101-22, 101st Cong., 1st sess. (Washington, DC: GPO, 1989), pp. 5-10; and David J. Andre, *New Competitive Strategies Tools and Methodologies, Vol. I: Review of the Department of Defense Competitive Strategies Initiative, 1986-1990*, SAIC-90/1506 (McLean, VA: Science Applications International Corporation, November 30, 1990).

¹⁰⁵ See, for example, Herbert Goldhamer, “The US-Soviet Balance as Seen from London and Paris,” *Survival*, 19 (September-October 1977), pp. 202-207; and *International Perceptions of the Superpower Military Balance*, ed. Donald C. Daniel (New York: Praeger Publishers, 1978).

Measures of Merit

Measures of merit that apply across elements of the New Triad will be important in creating an optimal mix of capabilities and allocating defense dollars accordingly. Such measures are lacking today. Both defenses and offenses could limit the damage enemy air and missile forces were capable of inflicting on the United States and its allies. What criteria should be used to determine how much and what kind of offensive and defensive capabilities should be acquired? Repeated nonnuclear strikes might be necessary to neutralize a target that could be destroyed by a single nuclear weapon. If the choice between nonnuclear and nuclear attack should not be made on efficiency grounds alone, by what other standards should one alternative be preferred over the other? (Preservation of the tradition against nuclear use would be of considerable significance, for example.) The operationally deployed force is aimed at near-term contingencies, while the responsive force and the defense-industrial infrastructure can be brought to bear on dangers that emerge over the longer term. What criteria should be applied in deciding how much to spend preparing for near-term versus longer-term eventualities?

Effects-Based Targeting

Differences in the damage mechanisms of New Triad strike capabilities should promote effects-based targeting. Effects-based targeting is intended not simply to destroy targets, but to do so in a way that produces broader military, political, economic, and social effects that further operational and strategic objectives.¹⁰⁶ The damage mechanisms for nuclear weapons include blast, thermal radiation, nuclear radiation, and electromagnetic phenomena (electromagnetic pulse, for example). Those for nonnuclear munitions are blast, fragmentation, penetration, and fire. Damage mechanisms for offensive information operations include software tools (such as malicious code) that manipulate or destroy computer networks within military, economic, or telecommunications infrastructures, and directed energy from high-power microwave weapons that can knock out military or commercial electronic systems. Because their damage mechanisms have disparate direct (or first-order) physical effects on targets, nuclear weapons, nonnuclear munitions, and information operations must be compared and traded off in terms of their capabilities for achieving indirect (or higher-order) effects that impair the ability or weaken the will of the enemy to fight. The problem is not one of calculating how many more high-explosive weapons are needed in lieu of a single nuclear weapon to produce sufficient blast to destroy a given target. Instead, the problems will lie in acquiring more detailed intelligence and better understanding of critical vulnerabilities in targets and target systems; predicting the effects when different strike capabilities are applied against these vulnerabilities; assessing actual effects under wartime conditions (the consequences of offensive information operations may be especially hard to ascertain); determining the linkages among effects, outcomes, and objectives; and deciding how best to employ the various means of attack.

¹⁰⁶ See *Joint Doctrine for Targeting*, pp. I-5—I-8; and Maj. T.W. Beagle, Jr., USAF, *Effects-Based Targeting: Another Empty Promise?* (Maxwell Air Force Base, AL: Air University Press, December 2001), available at <https://research.maxwell.af.mil>.

Development Paths

As the New Triad evolves, the coordinated development of its elements will be complicated by their different starting points. Nuclear forces are mature, with certain delivery platforms slated for retirement and the rest to be maintained and, in some cases, upgraded. Advanced nonnuclear strike capabilities, in contrast, are relatively new and growing. The program for missile defense of the United States has been given greater priority and increased funding, but the path to the deployment of an effective system is uncertain. The defense-industrial infrastructure is a going concern, but suffers from deficiencies in certain areas, particularly in the nuclear weapons complex. Because of these differences, the optimal mix of capabilities will not be fixed, but will change over time.

Organizational Arrangements

Balanced development of the New Triad and planning for the integrated operations of its elements likely will require changes in current organizational arrangements for strike capabilities, strategic defenses, and the defense-industrial infrastructure. At present, responsibilities for different parts of the New Triad are scattered among an assortment of organizations.

With regard to strike capabilities, Strategic Command (STRATCOM) is charged with the planning, targeting, and wartime employment of the nuclear forces of the old triad. The unified combatant commands for specific geographic areas (Pacific Command, for example) are tasked with planning and, if necessary, executing nuclear attacks in their respective theaters. STRATCOM supports the nuclear planning of the geographic commands. The Air Force and Navy provide intercontinental-range nuclear forces to STRATCOM and shorter-range nuclear strike aircraft and submarine-launched cruise missiles to the geographic commands.¹⁰⁷ The Air Force's Air Combat Command and the Navy's Combined Fleet Forces Command and Type Commanders (for air, surface, and submarine forces) also provide the geographic commands with nonnuclear strike capabilities in the form of conventionally armed aircraft and cruise missiles.¹⁰⁸ United States Space Command (USSPACECOM) supports the geographic commands in the planning and coordination of nonnuclear strikes conducted by means of computer network attack and other offensive information operations.¹⁰⁹

¹⁰⁷ *Doctrine for Joint Nuclear Operations*, p. III-4; JCS, *Doctrine for Joint Theater Nuclear Operations*, Joint Publication 3-12.1 (Washington, DC: JCS, February 9, 1996), pp. I-3—I-5, III-1, III-9—III-10, IV-1, IV-3, available at http://www.dtic.mil/doctrine/jel/new_pubs/jp3_12_1.pdf; and US Air Force, *Nuclear Operations*, Air Force Doctrine Document 2-1.5 (Washington, DC: US Air Force, July 15, 1998), pp. 3, 21-22, 25-26, available at http://www.dtic.mil/doctrine/jel/service_pubs/afd2_1_5.pdf.

¹⁰⁸ "Air Combat Command," US Air Force Fact Sheet, February 2002, available at http://www.af.mil/news/factsheets/Air_Combat_Command.html; and information provided to Col. Robert O. Work, USMC (ret.), CSBA, by Capt. Robert "Brick" Nelson, USN, Navy Operations Group (Deep Blue), telephone conversation, June 13, 2002.

¹⁰⁹ "U.S. Space Command Takes Charge of Computer Network Attack," US Space Command News Release, No. 15-00, September 29, 2000, available at <http://www.spacecom.mil/2000presrels/CNARel.htm>; and "Joint Information Operations Center Joins USSPACECOM," US Space Command News Release, No. 20-99, October 1, 1999, available at <http://www.spacecom.mil/99presrels/jioc.htm>.

The planned merger of STRATCOM and USSPACECOM should foster the integration of nonnuclear and nuclear strike capabilities. The merger is scheduled for October 2002. The new command will encompass nuclear forces, capabilities for “long-range conventional attacks,” and offensive information operations.¹¹⁰

The command also will have responsibility for defense against missile attack and defense of information systems, including protection of US military computer networks.¹¹¹ Other defenses of the New Triad, however, are assigned to different organizations. Strategic air defense is under the control of the North American Aerospace Defense Command (NORAD). As of October 2002, NORAD will be headed by the commander of Northern Command (NORTHCOM), a new organization charged with land, aerospace, and sea defense of the United States.¹¹² Efforts to safeguard critical nonmilitary information systems are conducted by the Defense Department, civilian government entities, and the private sector.¹¹³ Passive defenses against WMD attack likewise fall within the purview of various Defense Department organizations and civilian agencies. A number of the activities to protect information systems and mitigate the consequences of WMD use would be consolidated within the proposed Department of Homeland Security.¹¹⁴

For the defense-industrial infrastructure, the Office of the Deputy Under Secretary of Defense for Industrial Policy “ensures that an adequate defense industrial base exists and remains viable for defense production to meet current, future, and emergency requirements.”¹¹⁵ The Department of Energy’s National Nuclear Security Administration is responsible for the research laboratories, test site, and production plants that comprise the nuclear weapons complex.¹¹⁶

¹¹⁰ “DoD Announces Merger of U.S. Space and Strategic Commands,” DoD News Release, No. 331-0, June 26, 2002, available at http://www.defenselink.mil/news/Jun2002/b06262002_bt331-02.html; and Eric Schmitt, “New Command Would Meld Missile Defense and Offense,” *New York Times*, June 25, 2002, p. A22.

¹¹¹ Ibid.

¹¹² JCS, *Aerospace Defense of North America*, Joint Publication 3-01.1 (Washington, DC: JCS, November 4, 1996), available at http://www.dtic.mil/doctrine/jel/new_pubs/jp3_01_1.pdf; and Secretary of Defense Rumsfeld, special briefing on the Unified Command Plan (transcript), April 17, 2002, available at http://www.defenselink.mil/news/Apr2002/t04172002_t0417sd.html.

¹¹³ *Final Report of the Defense Science Board Summer Study Task Force on Defensive Information Operations* (Washington DC: Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics, March 2001), pp. 71-72, 85-99, available at <http://www.acq.osd.mil/dsb/dio.pdf>; Executive Order 13231, “Critical Infrastructure Protection in the Information Age,” October 16, 2001, *Federal Register*, October 18, 2001, pp. 53063-53071, available at http://www.gpo.gov/su_docs/aces/aces140.html; and Jeff Wynne, “White House Advisor Richard Clark Briefs Senate Panel on Cybersecurity,” *Washington File*, February 13, 2002, available at <http://www.usinfo.state.gov>.

¹¹⁴ Message to Congress Transmitting Proposed Legislation to Create the Department of Homeland Security, June 18, 2002, in *Weekly Compilation of Presidential Documents*, June 24, 2002, pp. 1034-1038, available at <http://www.access.gpo.gov/nara/v38no25.html>; and David Walker, Comptroller General, “Homeland Security: Proposal for Cabinet Agency Has Merit, But Implementation Will Be Pivotal to Success” (GAO-02-996T), prepared statement before the Senate Judiciary Committee, June 25, 2002, available at www.gao.gov.

¹¹⁵ Office of the Deputy Under Secretary of Defense for Industrial Policy, “Our Mission,” n.d., available at <http://www.acq.osd.mil/ip>.

¹¹⁶ National Nuclear Security Administration Act, Oct. 5, 1999, available at <http://www.nnsa.doe.gov/docs/titlexxxii.txt>.

Given this distribution of responsibilities among different commands and agencies, new organizational arrangements probably will be necessary to weld offenses, defenses, and infrastructure into a coherent whole. At a minimum, a high-level staff element within the Office of the Secretary of Defense should be assigned responsibility for preparing a long-term plan for the coordinated development of the New Triad, serving as a liaison with relevant agencies outside the Defense Department, and monitoring implementation of the plan.

New Capabilities

The New Triad will entail new or modified military capabilities and added expense. As Secretary of Defense Rumsfeld has pointed out,

Constructing the New Triad, reducing our deployed nuclear weapons, and increasing flexibility in our strategic posture has resource implications. It costs money to retire old weapons systems and create new capabilities. Restoring the defense infrastructure, developing and deploying strategic defenses, improving our command and control, intelligence, planning, and non-nuclear strike capabilities will require new defense initiatives and investments.¹¹⁷

To date, defense officials have associated several initiatives with the New Triad. For nuclear strike capabilities, service life extension programs will maintain Minuteman III ICBMs through 2020, Trident SSBNs/SLBMs through 2030, and B-52H and B-2 bombers through 2040.¹¹⁸ Nonnuclear strike capabilities will be improved by converting the four retired Trident SSBNs to guided-missile submarines (SSGNs), each of which will be able to carry 154 nonnuclear cruise missiles or perhaps some number of other nonnuclear weapons (for example, shorter-range ballistic missiles with variable payloads).¹¹⁹ In addition to the Trident conversion program, funds have been provided for modifying a strategic ballistic missile system to deliver a nonnuclear payload, developing a “fast-response, precision-impact conventional penetrator for hard and deeply buried targets,” and exploring options for other advanced nonnuclear strike systems.¹²⁰ No longer constrained by the Anti-Ballistic Missile (ABM) Treaty, the Defense Department will pursue deployment of a multilayered ballistic missile defense system as the centerpiece of its

¹¹⁷ Unclassified cover letter for Nuclear Posture Review report to Congress.

¹¹⁸ Crouch, special briefing on the NPR, January 9, 2002; Secretary of the Air Force James G. Roche, prepared statement before the Senate Armed Services Committee, February 12, 2002, p. 38, available at http://www.senate.gov/~armed_services/statemnt/2002/Roche.pdf; Lockheed Martin Missiles and Space, “Navy Awards Lockheed Martin \$248 Million Contract for Trident II D5 Missile Production and D5 Service Life Extension,” press release, January 29, 2002, available at <http://lmsm.external.lmco.com/newsbureau/pressreleases/02.07.html>; and *U.S. Air Force Long-Range Strike Aircraft White Paper*, p. 5.

¹¹⁹ Crouch, special briefing on the NPR, January 9, 2002; “SSGN: A Transformational Force for the U.S. Navy,” *Undersea Warfare*, 4 (Fall 2001), available at http://www.chinfo.navy.mil/navpalib/cno/n87/usw/issue_13/ssgn.htm; GAO, *Force Structure: Options for Enhancing the Navy’s Attack Submarine Force*, GAO-02-97 (Washington, DC: GAO, November 2001); Andrew Koch, “USN Studies New Payload for Ohio SSGNs,” *Jane’s Defence Weekly*, January 16, 2002, p. 10; and Owen R. Coté, Jr., *The Future of the Trident Force: Enabling Access in Access-Constrained Environments* (Cambridge, MA: MIT Security Studies Program, May 2002).

¹²⁰ Feith, statement before the Senate Armed Services Committee, February 14, 2002, p. 10.

effort to build up strategic defenses.¹²¹ To strengthen the defense-industrial infrastructure, the nuclear weapons production complex will be modernized, teams will be established to examine options for future warheads, and the time needed to resume underground nuclear testing will be reduced.¹²² Increased funding also will support “efforts for unique technologies for strategic systems, such as missile electronics and navigation” and the “development and qualification of radiation-hardened parts for strategic systems.”¹²³ With regard to the command and control, intelligence, and planning capabilities of the New Triad, additional money has been proposed “for the development of advanced sensors and imagery, for improved intelligence and assessment, and for modernization of communications and targeting in support of evolving strike concepts.”¹²⁴ These planned improvements include systems for secure, wideband communications, systems that supply better intelligence on deeply buried and mobile targets, and changes to make STRATCOM’s war planning system more adaptive.¹²⁵

Current planning for the New Triad could do more to increase nonnuclear strike capabilities with intercontinental range. Under present plans, the lion’s share of US intercontinental strike capabilities—the ICBMs and SLBMs—will remain nuclear, B-52H and B-2 bombers will retain the flexibility to carry nuclear or nonnuclear weapons, and B-1B bombers will be equipped for only nonnuclear missions.¹²⁶

The number of intercontinental-range ballistic missiles modified to carry nonnuclear weapons is likely to be limited. An ICBM or SLBM is a relatively expensive means of delivering a relatively small payload, especially when that payload has an explosive force measured in thousands of pounds rather than hundreds of kilotons of TNT. The throw-weight of a Minuteman III ICBM (2,500 pounds) or a Trident D-5 SLBM (6,200 pounds) is only a fraction of the payload of a long-range bomber (40,000 or 50,000 pounds).¹²⁷ Unlike bombers, missiles are not reusable. Moreover, the inventory of Minuteman missiles is fixed (the production line shut down long ago)

¹²¹ Statement on Formal Withdrawal From the 1972 Anti-Ballistic Missile Treaty, June 13, 2002, in *Weekly Compilation of Presidential Documents*, June 17, 2002, p. 1011, available at <http://www.access.gpo.gov/nara/v38no24.html>; Crouch, special briefing on the NPR, January 9, 2002; Feith, statement before the Senate Armed Services Committee, February 14, 2002, p. 10; Kadish, statement before the Senate Armed Services Committee, March 7, 2002; and Kadish, special briefing on missile defense, June 25, 2002.

¹²² Gordon, statement before the Senate Armed Services Committee, February 14, 2002.

¹²³ Crouch, special briefing on the NPR, January 9, 2002, p. 10.

¹²⁴ *Ibid.*

¹²⁵ Crouch, special briefing on the NPR, January 9, 2002; and Ellis, statement before the Senate Armed Services Committee, February 14, 2002, p. 6.

¹²⁶ Ellis, statement before the Senate Armed Services Committee, February 14, 2002, “Basic Terminology of the Nuclear Posture Review”; and *U.S. Air Force Long-Range Strike Aircraft White Paper*, p. 22.

¹²⁷ For ballistic missile throw-weights, see Memorandum of Understanding on the Establishment of the Data Base Relating to the Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Reduction and Limitation of Strategic Offensive Arms, in Arms Control and Disarmament Agency, *Arms Control and Disarmament Agreements: START* (Washington, DC: Arms Control and Disarmament Agency, 1991), p. 120. Throw-weight is the useful weight (reentry vehicles, postboost vehicle, penetration aids) carried by the boost stages of an ICBM or SLBM. For bomber payloads, see *U.S. Air Force Long-Range Strike Aircraft White Paper*, pp. 20, A-1.

and, at present, only a dozen Trident missiles are procured each year.¹²⁸ Ballistic missiles do have advantages, however, in their shorter times of flight (minutes as opposed to hours) and in the tremendous kinetic energy their weapons gain during reentry. Consequently, a limited number of missiles might be modified for nonnuclear strikes against high-priority, time-sensitive targets, such as certain underground WMD storage facilities or command-and-control bunkers.

Intercontinental-range strike aircraft—current bombers and future platforms (unmanned combat air vehicles and aerospace planes, for example)—are well suited to the requirements of the New Triad, yet the Defense Department has no plans to expand the existing force any time soon. Indeed, B-52Hs are to be cut from 94 to 76 and B-1Bs from 93 to 60, with the savings used to modernize the remaining aircraft.¹²⁹ Bombers, unlike shorter-range fighter-attack aircraft or sea-launched cruise missiles, can strike targets located throughout the territory of any potential adversary, including targets deep in Eurasia. They also can strike from bases less likely to be vulnerable to enemy attack. Bombers can conduct either nonnuclear or nuclear strikes, depending on the contingency. With force reconstitution, bombers in relatively short order can be placed on nuclear alert and loaded with large nuclear payloads. Despite these advantages, deployment of a new intercontinental-range strike aircraft is not planned for 15 to 30 years.¹³⁰ Given their value for the New Triad, and the present imbalance between bombers and fighter-attack aircraft (120 bombers versus 2,000 fighters), acquisition of additional intercontinental-range strike aircraft should receive higher priority.¹³¹

Old Concepts, New Context

As much of the foregoing discussion suggests, some of the most important changes related to the New Triad will be conceptual. A good deal of the conventional thinking about strategic warfare will need to be reconsidered. During the Cold War, nuclear superiority, arms buildups, war-winning strategies, disarming attacks (including preventive operations), and strategic defenses were seen by many as unquestionably detrimental to the stability of the US-Soviet military balance. Now, with non-Soviet adversaries, different contingencies, and the New Triad, these capabilities could make useful, and perhaps essential, contributions to the security of the United States, its allies, and friends. Nuclear superiority can dissuade those who would compete with the United States in nuclear arms and assure allies protected by guarantees of US nuclear retaliation on their behalf. The manifest readiness of the United States to counter challenges to its offensive and defensive capabilities can discourage arms competition. Winning a strategic war was a

¹²⁸ The procurement rate for Trident missiles can be found in “NRDC Nuclear Notebook: U.S. Nuclear Forces, 2002,” *Bulletin of the Atomic Scientists*, 58 (May/June 2002), p. 72, available at <http://www.thebulletin.org/issues/nukenotes/mj02nukenote.pdf>.

¹²⁹ Secretary of the Air Force James G. Roche, prepared statement before the Senate Armed Services Committee, July 25, 2001, pp. 8-9, available at http://www.senate.gov/~armed_services/statemnt/2001/010725roche.pdf; and *U.S. Air Force Long-Range Strike Aircraft White Paper*, p. 2.

¹³⁰ *U.S. Long-Range Strike Aircraft White Paper*, pp. 5, 27, 29; Nick Cook, “USAF Hones Future Bomber Requirement,” *Jane’s Defence Weekly*, January 2, 2002, pp. 24-25; Laura M. Colarusso, “Aldridge Instructs Air Force to Accelerate Long-Range Strike Work,” *Inside the Air Force*, May 17, 2002, p. 1; and “Critical Intelligence: Air Force Studies Accelerating Long-Range Strike Option,” *Inside the Pentagon*, June 20, 2002, pp. 5-6.

¹³¹ Figures for bombers and fighters are for primary mission aircraft, including 12 B-52Hs “held ready for nuclear missions.” See *Annual Defense Report to the President and the Congress—2001*, pp. 53-56, D-1—D-2.

dubious aim when the opponent was the Soviet Union, but against a future adversary with a less formidable military, winning (achieving national political goals at acceptable cost) could be an attainable objective. Disarming attacks may be both necessary and feasible against WMD-armed powers that cannot be deterred. Strategic defenses will face less severe threats (in comparison to the Soviet nuclear arsenal) and could provide a degree of protection against accidental or unauthorized attacks and strikes by aircraft and missiles that escaped destruction by US offensive forces. New conditions and the New Triad, in short, demand new thinking.