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The Shape of Things to Come: The Nuclear Posture Review, Missile Defense, and the Dangers of a New Arms Race

In the fall of 2001, discussions between Russia and the United States on nuclear weapons reductions and ballistic missile defense raised hopes that after more than half a century of nuclear confrontation, we might finally move away from the brink. The Bush administration has tried to convince the American people that this is this case, selling its ambitious ballistic missile defense scheme as a way to escape the Cold War deadlock of mutual assured destruction. The January 2002 Nuclear Posture Review (NPR), however, revealed that the United States intends to keep thousands of nuclear weapons for the foreseeable future. While unilateral cuts in *deployed* U.S. strategic arms are anticipated over the next 10 years, the ability to rapidly reconstitute the arsenal size is emphasized. The capability to modify existing nuclear weapons or develop new weapon types will be retained, along with an upgraded capacity to resume full scale underground nuclear tests.

The policies described in the NPR are designed to make the *use* of nuclear weapons more credible, by designing more useable nuclear weapons and by integrating nuclear weapons into a broad spectrum of military capabilities. These include both missile defenses and new military systems ranging from more sophisticated long range, accurate conventional missiles to weapons designed to disrupt or destroy electronic command, control, and air defense systems. The NPR also envisions modernization of the research and production facilities needed to design and build new nuclear warheads and other strategic

weapons.

The NPR gives the “old” strategic triad, consisting of submarine-based ballistic missiles, land-based intercontinental ballistic missiles and strategic bombers, a new name – “[o]ffensive strike forces” – and locates it within a “new” strategic triad. The new triad also includes “[d]efenses,” and a “revitalized defense infrastructure.” These three elements are bound together by “enhanced command and control” and “intelligence systems.”¹

Taken together, this “New Triad” would entail a massive, broad high-tech weapons build-up by the United States. Such a program is likely to erode what remains of the fragile and limited arms control accomplishments of the last three decades. Faced with overwhelming U.S. conventional forces, a constantly modernized nuclear arsenal, and an emerging array of next generation high-tech systems of which missile defenses are only one part, existing nuclear weapons states are likely to hold on to their existing stockpiles or build more. At the same time, the NPR repudiates most of the existing and pending treaties whose purpose is to prevent further nuclear arms competition. The NPR reiterates Administration plans to oppose ratification of the Comprehensive Test Ban Treaty and to proceed with development of missile defenses not permitted by the Anti-Ballistic Missile (ABM) Treaty. It also indicates that any nuclear arms reductions would be achieved via unspecified mechanisms without the

“requirement for Cold War-style treaties.”² And with the leading nuclear power continuing to ignore its Nuclear Non-Proliferation Treaty obligation to end arms racing and move towards nuclear disarmament, that treaty too will be undermined, pushing the world closer to a new, unrestrained, and unpredictable arms race.

Counting The Unthinkable: What Nuclear

Warhead Reductions Really Mean

“In the real world of real political leaders, a decision that would bring even one hydrogen bomb on one city of one’s own country would be recognized in advance as a catastrophic blunder; ten bombs on ten cities would be a disaster beyond history; and a hundred bombs on a hundred cities are unthinkable.” McGeorge

Effects of Nuclear Weapons Use

A number of studies have estimated the effects of nuclear attack. All demonstrate that the thousands of nuclear warheads which will remain after the cuts proposed by the Bush administration would be enough to devastate any country on earth several times over, and that even the accidental launch of a small number of nuclear weapons would be a catastrophe of unprecedented magnitude:

A total of 500 deliverable U.S. retaliatory warheads, for instance, could destroy ‘most [Russian] petrochemical, metallurgical, and heavy-machinery industry; all major [CIS] storage sites for ammunition, fuel, and other military supplies; all major tactical airfields; some troop concentrations; and all major [Russian] transportation nodes and choke points en route to the European and Far Eastern theaters,’ all garrisons for mobile strategic missiles; all primary strategic bomber bases and submarine pens; most strategic bomber dispersal bases; and most major fixed and mobile command posts. A comparable number of survivable Russian strategic warheads could wreak no less comprehensive devastation on the United States. Bruce Blair, *The Logic of Accidental Nuclear War* (The Brookings Institution, Washington, D.C., 1993), quoting U.S. Congressional Budget Office, *The START Treaty and Beyond* (1991) pp.14-15, 21.

As a conservative estimate, an accidental intermediate- sized launch of weapons from a single Russian submarine would result in the deaths of 6,838,000 persons from firestorms in eight U.S.cities. Millions of other people would probably be exposed to potentially lethal radiation from fallout. Lachlan Farrow, et al., “Accidental Nuclear War: A Post-Cold War Assessment,” *New England Journal of Medicine*, v.338 no.18, pp.1326-1331, at 1326.

“The atomic bombs dropped on Hiroshima and Nagasaki shattered all war precedent. The mind-numbing damage these nuclear weapons wrought shook the foundations of human existence....

Beneath the atomic bomb’s mushroom cloud, human skin was burned raw. Crying for water, human beings died in desperate agony. *With thoughts of these victims as the starting point, it is incumbent upon us to think about the nuclear age and the relationship between human beings and nuclear weapons....* [emphasis added]

The unique characteristic of the atomic bombing was that the enormous destruction was instantaneous and universal. Old, young, male, female, soldier, civilian— the killing was utterly indiscriminate. The entire city was exposed to the compound and devastating effects of thermal rays, shock wave blast, and radiation...” November 1995 Testimony of Takashi Hiraoka, Mayor of Hiroshima, before the International Court of Justice in the case *Legality of the Threat or Use of Nuclear Weapons*, General List No. 95 (Advisory Opinion of 8 July 1996).

Bundy, National Security Advisor to Presidents Kennedy and Johnson.³

President Bush has stated that the U.S. will cut its deployed strategic nuclear warheads to somewhere between 1700 and 2200.⁴ These cuts would take place over ten years. The Bush Administration has been reluctant to commit to negotiation of a binding treaty rather than unilateral reductions, although there have been indications that a binding Russia-U.S. agreement of some kind is being considered.⁵ Without a treaty, cuts could be more easily reversed at any time by this President or another one.

The proposed reductions begin from stockpiles consisting of thousands of warheads with explosive power sufficient to destroy human civilization several times over, leaving much of the planet a radioactive wasteland. Herbert York, a former U.S. arms control negotiator and nuclear weapons laboratory director, noted about the Cold War nuclear arsenal that

Throughout this period, most of our Presidents have taken the attitude when they've become President and really seen what the situation is, that my God, this is awful, these forces are simply beyond belief, beyond what is necessary...⁶

The number of warheads that would be retained by the United States still would be sufficient to carry out current nuclear war plans, which contemplate full-scale nuclear war with Russia. In its year 2000 report to Congress, the Department of Defense evaluated the adequacy of numbers proposed for a future START III agreement, which called for 2000-2500 deployed strategic nuclear weapons:

Once the Treaty on Further Reduction and Limitation of Strategic Offensive Arms (START II) has entered into force, the Department is confident that it can maintain the required deterrent at the force levels

envisioned in a future treaty (START III), as agreed to in the March 1997 Helsinki Summit and reinforced at Cologne, Germany, in June 1999.⁷

The January 2002 Nuclear Posture Review, moreover, makes it clear that the U.S. in actuality will retain far more than 2200 warheads for decades to come. Many, and perhaps most, of the warheads withdrawn from deployment will not be destroyed. Instead, they will be retained as part of a “responsive force” of nuclear armaments, enabling the United States to re-deploy an expanded nuclear arsenal far into the future.⁸ The number of additional warheads kept is likely to number in the thousands. An influential Defense Science Board report on nuclear weapons policy stated that plans for numbers of non-deployed warheads kept after implementation of the START II arms control agreements (now bypassed by the Bush policy of unilateral reductions) call for “about a 1:1 ratio with the active stockpile.”⁹ As one analyst pointed out, “[o]ver the next 10 years, this trend could transform the composition of the U.S. nuclear stockpile to a predominantly clandestine posture, in which less than a quarter of all warheads are accountable.”¹⁰

Also uncounted in the Bush reductions of the “strategic” nuclear arsenal are nuclear weapons that had been designated as “tactical” for Cold War arms control purposes. With the growing array of long-range, stealthy delivery systems, the “tactical” designation, always to some degree an artifact of Cold War arms control verification capabilities, has lost much of its meaning. Because tactical nuclear warheads in many instances have lower explosive yield than strategic weapons, however, they are likely to take on added importance as the nuclear weaponeers seek to adapt their Cold War arsenal for uses other than an apocalyptic war with a nuclear-armed adversary. The U.S. currently has over 1600 “tactical” warheads.¹¹

In addition, the U.S. Department of Energy has stored thousands of “pits,” the key nuclear explosive components of warheads. These pits are precision components comprised of various combinations of plutonium, uranium, and other materials. Nuclear disarmament, to be irreversible, requires that these pits first be disabled and then, in the long run, destroyed, their plutonium or weapons grade uranium rendered unuseable for warheads. With an extensive inventory of pits of varying types, the U.S. not only retains the ability to reconstitute a very large nuclear arsenal, but to field nuclear weapons with whatever upgraded military capabilities can be achieved by modifying existing designs.

This ability to redeploy strategic nuclear weapons systems will not be limited to nuclear warheads. The Nuclear Posture Review also called for “force structure” as well as warheads to be “preserved for the responsive force.”¹² Apparently, this means that delivery systems—missiles, aircraft, and submarines—that carried nuclear warheads will either remain operational with reduced warhead loads, or will otherwise be kept in a condition that will allow later re-

activation. The NPR information released to the public only called for the actual elimination of one system, the MX missile, already slated for retirement. B-1 bombers are to be converted to a conventional role, purportedly without contingency plans for restoration to nuclear status.¹³ Four Trident ballistic missile submarines are to be converted to carry large numbers of cruise missiles.¹⁴ These latter two programs constitute part of rapidly expanding U.S. long-range conventional strike capabilities. These capabilities are changing the balance of strategic forces among the nuclear weapon-armed countries, and hence the significance of the warhead counts that traditionally have been used as a rough measure of arms control progress.

Nuclear Weapons Forever: Rebuilding the Nuclear Weapons Complex for the 21st Century

Despite attempts by various officials to portray the Nuclear Posture Review as having little policy import, it to a large degree reflects already existing nuclear policy, and is being used to justify the continuing modernization of the

Two Sets of Books: What are the Real Nuclear Numbers?

The Natural Resources Defense Council, a leading independent authority on global nuclear weapons arsenals, estimates that the U.S. nuclear arsenal after the proposed “reductions” may include almost 15,000 nuclear warheads:

- < 1700-2200 “deployed, strategic” warheads
- < ~240 missile warheads on the two Trident submarines in overhaul at any given time;
- < ~1,350 strategic missile and bomber warheads in the “responsive force”;
- < ~800 “nonstrategic” bombs assigned to US/NATO “dual-capable” aircraft;
- < ~320 “nonstrategic” sea-launched cruise missile warheads in the “responsive force;”
- < ~160 “spare” strategic and non-strategic warheads;
- < ~4,900 intact warheads in the “inactive reserve” stockpile;
- < ~5,000 stored plutonium “primary” and HEU “secondary” components that could be reassembled into weapons

Total: 14,970

Source: NRDC Report: *Faking Nuclear Restraint: The Bush Administration’s Secret Plan For Strengthening U.S. Nuclear Forces*, February 2002, p. 2, <http://www.nrdc.org/media/pressreleases/020213a.asp>

nuclear weapons complex and expanded research aimed at making nuclear weapons more useable. In its recent \$5.9 billion request to the U.S. Congress for nuclear weapons activities (not including delivery systems) in Fiscal Year (FY) 2003, the National Nuclear Security Administration (NNSA) cited the NPR in its budget justification:

“The centerpiece of the NPR is the New Triad of flexible response capabilities consisting of the following elements:

- non-nuclear and nuclear strike capabilities including systems for command and control,
- active and passive defenses including ballistic missile defenses, and
- R&D [research and development] and industrial infrastructure needed to develop, build, and maintain nuclear offensive forces and defensive systems

Of particular interest... is that the New Triad reflects a broad recognition of the importance of a robust and responsive nuclear weapons infrastructure in sustaining deterrence and dissuasion. In this connection,... the flexibility to sustain our enduring nuclear weapons stockpile, to adapt current weapons to new missions, or to field new weapons, if required, depends on a healthy program for stockpile stewardship... as well as a robust infrastructure for nuclear weapons production.... Most importantly, this review reemphasizes the importance of nuclear weapons to deter the threats of weapons of mass destruction, to assure allies of U.S. security commitments, to hold at risk an adversary’s assets and capabilities that cannot be countered through non-nuclear means and to dissuade potential adversaries from developing large-scale nuclear or conventional threats.”¹⁵

The NPR emphasizes that existing nuclear warheads and delivery systems, even when augmented by missile defenses and long-range precision conventional weapons, could not assure

the long-term military dominance that the U.S. today equates with “deterrence. It calls for the modernization of U.S. nuclear weapons research facilities and production plants. At the Los Alamos National Laboratory in New Mexico, for example, work is underway to develop “an automated, expandable, robust manufacturing capability to produce, without underground testing, stockpiled and new-design pits within 19 months of the establishment of the need for a new pit and with a stockpile life greater than the weapon system.”¹⁶ Current plans call for a Los Alamos facility that can turn out twenty to fifty nuclear weapons pits per year. And if a nuclear stockpile numbering in the thousands is retained as planned for decades to come, it appears likely that a larger pit factory will be built.¹⁷

In addition to nuclear warhead factories, the U.S. is building an array of new nuclear weapons research facilities of unprecedented sophistication. These facilities, with costs running from hundreds of millions to billions of dollars apiece, will allow the Department of Energy to continue testing many aspects of nuclear weapons function in the laboratory. Together with the world’s most powerful supercomputers, these devices will allow the U.S. to train a new generation of nuclear weapons designers and to explore new weapons concepts despite the moratorium on underground nuclear testing (See box, “Stockpile Stewardship”).

At the same time, the NPR rejects ratification of the Comprehensive Test Ban Treaty (CTBT), long a primary benchmark for nuclear disarmament progress. The United States and the other nuclear weapons states, publicly committed themselves to completion of a CTBT in their successful 1995 effort to persuade the non-nuclear weapons states to extend the Nuclear Non-Proliferation Treaty.¹⁸ Despite statements that the U.S. has no intention of ending its nuclear testing moratorium in the near future, the Bush Administration’s open repudiation of the CTBT further undermines an already shaky nuclear

STOCKPILE STEWARDSHIP: Nuclear Weapons Research and Production for the 21st Century

...[A]n ability to innovate and produce small builds of special purpose weapons, characteristic of a smaller but still vital nuclear infrastructure, would act to convince an adversary that it could not expect to negate U.S. nuclear weapons capabilities. The development and subsequent modification of the B61-7 bomb—converting a few of them into B61-11 earth penetrator weapons—is a case in point. John A. Gordon, Administrator of the National Nuclear Security Administration (NNSA), Written Statement to the Committee on Armed Services, U.S. Senate, February 14, 2002.

The Nuclear Posture Review calls for “revitalized defense infrastructure that will provide new capabilities in a timely fashion to meet emerging threats.” A significant part of this infrastructure is the Department of Energy (DOE)/NNSA nuclear weapons research, testing, and production facilities. To sustain this vast complex, the U.S. is spending almost six billion dollars a year on the “Stockpile Stewardship” program, including billions on new and more advanced nuclear weapons research and production facilities.

These include:

- The National Ignition Facility (NIF), now being built at the Livermore National Laboratory in California. The NIF is a laser driven fusion machine the size of a football stadium, designed to create very brief, contained thermonuclear explosions. It is slated to be used for a wide range of applications from training weapons designers in nuclear weapons science to nuclear weapons effects testing. NIF experiments, together with other fusion research being conducted at the nuclear weapons laboratories, could, in the long run, lead to the development of pure fusion weapons, not requiring plutonium or uranium.
- The Dual Axis Radiographic Hydrotest Facility (DARHT). This facility, near completion at the Los Alamos National Laboratory in New Mexico, will join several already existing facilities where mockups of primaries, the first stage of a thermonuclear weapon, are imploded while very fast photographic or x-ray images are generated, thus allowing scientists to “see” inside. DOE already is developing technology for an even more sophisticated “hydrodynamic testing” facility, the Advanced Hydrotest Facility.
- Pulsed power technologies: Further experiments exploring the extreme conditions created in a nuclear weapon explosion are studied using various types of “pulsed power,” in which a large amount of energy is stored up and then released very quickly in a small space. The energy source can be chemical high explosives or stored electrical energy. Pulsed power facilities at both DOE and Department of Defense laboratories are used to explore nuclear weapons function and effects and directed energy weapons concepts, and could play a role in the development of a wide range of high technology weapons, including new types of nuclear weapons.

The data streams from these and other experimental facilities, along with that from “subcritical” tests which implode nuclear materials but have no measurable nuclear yield and the archived data from over 1000 past U.S. nuclear tests, will be integrated via the Accelerated Strategic Computing Initiative (ASCI). This multi-billion dollar supercomputing program reaches beyond the weapons laboratories, seeking to incorporate the nation’s leading universities into an effort to attract and train yet another generation of nuclear weapons designers. Finally, smaller, modernized nuclear weapons production processes are being developed to allow flexible, small lot manufacturing, with planning underway for a new plutonium pit factory for large-scale production. New production of tritium also is planned.

For a more detailed overview of the Stockpile Stewardship Program, see *Faustian Bargain 2000: Why Stockpile Stewardship is Fundamentally Incompatible with the Process of Nuclear Disarmament*, Western States Legal Foundation 2000, available at <http://www.wslfweb.org/doclib.htm>

nonproliferation regime. (See box, “The Nuclear Posture Review and the Non-Proliferation Treaty”). The NPR also endorsed a higher level of readiness for nuclear testing, meaning that the U.S. could conduct a test of existing or new-design nuclear weapons more quickly. And it is clear that this upgraded test readiness is intended for purposes beyond assuring the reliability of the existing nuclear stockpile. The NPR calls for “reestablishment of advanced warhead concepts teams at each of the national laboratories and at headquarters in Washington.” If worthwhile “advanced concepts” result, “DoD and NNSA will also jointly review potential programs to provide nuclear capabilities, and identify opportunities for further study, including assessments of whether nuclear testing would be required to field such warheads.”¹⁹

The Nuclear Posture Review indicates that the U.S. is heading not towards nuclear disarmament, but rather towards retooling both the warheads and delivery systems that make up its nuclear arsenal to make them more useful instruments of military dominance. In addition to modernizing its nuclear bomb and warhead design and production facilities, the U.S. also plans to improve its capabilities to produce delivery systems:

“[n]ew approaches to development and procurement of new capabilities are being designed so that it will not take 20 years or more to field new generations of weapon systems.”²⁰

Combined with ambitious new nuclear weapons research facilities and a stated intention to retain thousands of nuclear warheads over and above the thousands that will remain deployed, the United States appears determined to remain for many decades to come a nation capable of resuming a full scale nuclear arms race.

Blurring the Threshold: The Search for More Missions and More Useable Nuclear Weapons

“There are several nuclear weapon options that might provide important advantages for enhancing the nation's deterrence posture: possible modifications to existing weapons to provide additional yield flexibility in the stockpile; improved earth penetrating weapons (EPWs) to counter the increased use by potential adversaries of hardened and deeply buried facilities; and warheads that reduce collateral damage.” The Nuclear Posture Review.²¹

When the substance of the Nuclear Posture Review was leaked to leading newspapers, the aspect that was front page news across the country was that the U.S. plans to target a number of countries that don't have nuclear weapons, and that the military also intends to develop nuclear weapons with new capabilities to be used for a wide variety of missions far beyond deterrence of nuclear attack. Nuclear weapons “could be employed against targets able to withstand nonnuclear attack,’ or in retaliation for the use of nuclear, biological, or chemical weapons, or ‘in the event of surprising military developments.”²² Nuclear weapons would not be segregated either operationally or doctrinally from conventional weapons; “nuclear forces will be integrated with, rather than treated in isolation from, other military capabilities.”²³ The Bush Administration claims that this approach “will not blur the line between nuclear and non-nuclear weapons,” because the NPR also calls for the development of a wide range of advanced conventional options that can accomplish military missions that previously could only be fulfilled with nuclear weapons.²⁴

This assertion is questionable on two counts. First, the development of powerful, accurate conventional weapons with global reach threatens to blur the boundary between conventional and nuclear warfare “from the bottom” by giving the U.S. capabilities that other countries may feel they only can counter with nuclear weapons or

other weapons of mass destruction (see “The New Strategic Triad: Making the Unthinkable Possible,” below) But in addition, a major thrust of the NPR is precisely to accelerate research on more useable nuclear weapons, nuclear weapons that could be used not just to deter a nuclear exchange but to provide “[n]uclear attack options that vary in scale, scope, and purpose” that “will complement other military capabilities.”²⁵ New nuclear capabilities slated to be explored include both warheads and delivery systems, ranging from “warheads that reduce collateral damage” and an existing warhead fitted to a new 5,000 pound earth penetrator bomb, to modifications of delivery platforms now in the pipeline to equip them to deliver nuclear weapons.²⁶

The widespread surprise at the latest NPR revelations, however, mainly manifests how effective the nuclear weapons establishment has been in recent years at keeping its programs, policies, and plans out of the spotlight. The NPR push for new nuclear weapons capabilities did not come out of nowhere. Rather, it added impetus and resources to ideas that long have been advocated by some weapons designers and nuclear strategists: that in order to make nuclear threats more “credible,” the United States should make nuclear weapons more useable. And the initiatives proposed in the NPR will not have to start from scratch. Over the last decade, research has continued on both warhead concepts and targeting techniques to make nuclear weapons more useable, particularly against deeply buried targets and against chemical and biological weapons facilities.²⁷ At the same time, the experimental facilities and computing capabilities used to design nuclear weapons also have been upgraded, culminating recently in the first “full-system three-dimensional simulations of a nuclear weapon explosion.”²⁸

The effort to use nuclear weapons to target regional adversaries and facilities where weapons of mass destruction might be made, stored, and deployed gained momentum after the Gulf War.

After that conflict, the U.S. military found that it wanted new weapons to attack certain difficult to destroy targets, especially deeply buried, hardened facilities and chemical and biological weapons, which pose a danger if dispersed rather than destroyed. Along with these new missions came a push for new technology, for it was evident that the massive city and silo-busting nuclear warheads which predominated in the long-range nuclear arsenal were unuseable in the regional expeditionary warfare considered likely by the U.S. military in coming decades:

...[T]he Gulf War focused attention on the need to attack very specific Third World sites (bunkers, nuclear laboratories) with massive but geographically confined force.

The technology is now in hand to develop power projection weapons and very low yield nuclear weapons in earth penetrators with precision guidance to meet this need.

All of these technologies merit immediate attention.²⁹

Beyond Cold War Deterrence: Targeting “Rogue States” and “Non-State Actors.”

By the mid-nineties, use of nuclear weapons against a broad range of potential targets ranging from weapons of mass destruction and delivery systems to underground facilities had become part of the nuclear weapons doctrine of the U.S. military services. U.S. nuclear weapons doctrine contemplates the use of nuclear weapons to destroy the weapons of mass destruction of an adversary, if deemed necessary even before they can be used:

While there will certainly be long-term effects from the use of a nuclear device against any target, counterforce strategy focuses on the more immediate operational effect. *Nuclear weapons might be used to destroy enemy WMD before they can be used*, or they may

be used against enemy conventional forces if other means to stop them have proven ineffective. This can reduce the threat to the United States and its forces and could, through the destruction of enemy forces, bring an end to the conflict.³⁰

U.S. doctrine also explicitly provides for nuclear weapons use against “non-state actors”--commonly called “terrorists” by government officials when speaking to the public:

As nations continue to develop and obtain WMD and viable delivery systems, the potential for US operations in such a lethal environment increases. In addition to proliferation of WMD among rogue states, *proliferation may also expand to include non-state actors as well...*³¹

Enemy combat forces and facilities that may be likely targets for nuclear strikes include WMD and their delivery systems, ground combat units, air defense facilities, naval installations, combat vessels, *nonstate actors*, and underground facilities.³²

Old Nukes in New Packages

The emerging nuclear doctrine, which implicitly envisioned use of small numbers of nuclear weapons against adversaries that did not have them, posed difficulties for a nuclear arsenal developed to fight a global war against a nuclear-armed state. A Navy strategic planning document from the early 90's emphasized the political obstacles to using existing nuclear warheads against many types of targets, and reiterated the call for smaller warheads and delivery methods with tailored effects:

Nuclear warhead options are attractive against hard targets (e.g., hardened underground bunkers and storage sites) and area targets (e.g., airfields, troops/armored vehicles). While existing nuclear warhead

technology is generally sufficient to fulfill these missions, advanced technology concepts are designed to minimize the political and economic factors associated with the maintenance and deployment of nuclear weapons. The most appealing concepts focus on nuclear weapons with very small yields and with design and delivery techniques that minimize fallout, residual radiation, and collateral damage.³³

The Department of Energy nuclear weapons design laboratories responded to this new “need” by researching a variety of nuclear warhead concepts, including a Precision Low-Yield weapon, a radio-frequency weapon intended to disrupt or destroy electronic equipment, and various replacements for cruise missile warheads and for gravity bombs.³⁴ But in the FY 1994 Defense Authorization Act, Congress passed legislation placing what appeared to be sharp limits on further “mini-nuke” development, banning research “which could lead to the production by the United States of a low-yield nuclear weapon [of less than five kilotons yield], which, as of the date of the enactment of this Act, has not entered production.”³⁵ This legislation, however, included exceptions for modifying existing warheads to meet “safety or reliability” or “proliferation” concerns.

Research aimed at developing more useable nuclear weapons continued, however, its public presentation carefully skirting the edges of the “no new weapons” policy. In late 1996, the military began deployment of the B61-11, a nuclear bomb designed to penetrate into the ground to increase its effectiveness against buried targets, such as the caves or tunnel complexes, and that can be delivered by the B-2 stealth bomber. The B61-11, a modification of an existing nuclear weapon rather than a “new” design, was developed and deployed by the U.S. nuclear weapons laboratories without a nuclear explosive test, using the existing warhead component testing and simulation capabilities of

the Department of Energy nuclear weapons laboratories—capabilities that are being expanded with billions of dollars in new facilities and associated supercomputing resources (see box, “Stockpile Stewardship”).

The B61-11, however, did not satisfy the military’s demand for more useable nuclear weapons. A 1999 Department of Defense planning document identified as a priority the ability “to provide national leaders with improved options by increasing the responsiveness of strategic forces and developing more discriminate options, as done most recently with the introduction of the B61-11 earth-penetrating weapons.”³⁶

The following year, Congress requested a study by the Departments of Defense and Energy on options for the defeat of hard and deeply buried targets. The resulting report noted the “unique ability” of nuclear explosions to “destroy both agent containers and CBW [chemical and biological warfare] targets.” It also stated that if a nuclear warhead was very accurate and had sufficient ability to penetrate deep into the ground, “it is possible to employ a much lower yield to achieve the needed neutralization,” which “would reduce weapon produced collateral effects.” Existing weapons (presumably including the B61-11) possess “some limited capability and lower yield options,” but were “not developed with this mission in mind.”³⁷ The report stated that “[c]omprehensive reviews of feasibility and cost for suitable nuclear and conventional weapons and their associated operations concepts” for defeat of weapons of mass destruction and associated facilities currently are underway.³⁸

The NPR supports continued research on nuclear weapons with new military capabilities, while the administration continues to take an ambiguous public position on the possible design and deployment of “new” nuclear weapons. Assistant Secretary of Defense J.D. Crouch told

reporters that “there are no recommendations in the report about developing new nuclear weapons,” but that “we are trying to look at a number of initiatives. One would be to modify an existing weapon, to give it greater capability against deep and hardy -- or hard targets and deeply-buried targets. And we're also looking at non-nuclear ways that we might be able to deal with those problems.”³⁹ Similarly, Secretary of State Colin Powell, seeking to blunt the international response to the NPR, told a national television audience that “We are not developing brand new nuclear weapons, and we are not planning to undergo any testing.”⁴⁰

Yet at the same time, the Department of Energy is requesting funding in the next fiscal year to begin study of a new or modified design, a “Robust Nuclear Earth Penetrator.”⁴¹ And from the perspective of a country targeted with modernized U.S. nuclear weapons and delivery systems with additional military capabilities, whether the warhead is “brand new” or a “modification” is not likely to make much difference.

It is important to emphasize in this regard that the U.S. likely can field nuclear weapons with at least some new military capabilities without underground nuclear testing. Sandia National Laboratory Director Paul Robinson told the Senate Armed Services Committee in 1999 that while the national laboratories

cannot create completely new concepts without testing, many previously tested designs could be weaponized to provide new military capabilities.

Over time, the question of whether the U.S. stockpile contains the appropriate warheads for the evolving threats is bound to become an issue. For example, if nuclear weapons emerge as the right answer to deter the use of other weapons of mass destruction in a regional conflict, the nuclear weapons we

currently deploy may carry too high a yield and be far too disproportionate a response to be a credible deterrent. Proven designs of lower yield exist that might be adaptable for new military requirements in the future. I believe that such weapons could be deployed this way without the need for nuclear tests.⁴²

Even if the government has no immediate intention to field genuinely “new” nuclear weapons designs, it is clear that it wants to rebuild its capabilities to design and produce nuclear weapons. John Gordon, Administration of the National Nuclear Security Agency (NNSA), which is responsible for nuclear weapons design and production, told the Senate Arms Services Committee that the NPR endorsed NNSA plans to “[r]eestablish nuclear warhead advanced concepts teams” at the nuclear weapons laboratories and at NNSA headquarters.⁴³ The eventual goal “is to maintain sufficient R&D and production capability to be able to design, develop, and begin production on the order of five years from a decision to enter full-scale development of a new warhead.” This is roughly the same length of time it took to develop a new nuclear weapon during the Cold War.⁴⁴

In addition to researching nuclear weapons designs and rebuilding production facilities, the DOE and military laboratories are trying to increase their understanding of how nuclear weapons work so that it will be politically feasible to use them against this broad range of targets. One Defense Department planning document described the problem:

Technical challenges are presented by the rapidly developing need to hold evolving enemy targets at risk using the reduced stockpile, and recognizing greatly increasing political and environmental constraints. As a result, we must improve our understanding of weapons outputs and target interactions without underground testing, using only calculations and the ASCI [Accelerated

Strategic Computing Initiative] capabilities of DOE [Department of Energy] laboratories, and apply this understanding to update effects calculational capabilities and develop innovative targeting techniques to defeat increasingly clever enemies—both national and terrorist.⁴⁵

A major goal is to develop “improvements in the warfighters ability to hold at risk very hard targets with greatly reduced collateral damage.”⁴⁶

These broad missions for nuclear weapons encourage the search for nuclear weapons that are useable in warfare, and further legitimate nuclear weapons as instruments of state power. As was pointed out by the National Academy of Sciences Committee on International Security and Arms Control five years ago,

A policy of nuclear deterrence of CBW [Chemical and Biological Weapons] would provide incentives and an easy justification for nuclear proliferation, which is inimical to U.S. security. Many other countries face far more plausible and immediate CBW threats than the United States. If U.S. policy points to nuclear weapons as the ultimate answer to CBW, other states could have an increased motivation to acquire nuclear arsenals. Highlighting new or continuing missions for nuclear forces could damage the nuclear nonproliferation consensus throughout the world.⁴⁷

In the current bellicose global atmosphere, factions that favor acquisition, retention, or expansion of nuclear arsenals in a number of countries may want to follow the U.S. example, arguing that they face adversaries that might possess weapons of mass destruction. India, Pakistan and Israel, even Russia and China, all have states right on their borders who they can claim are either potentially hostile and armed with WMD or are harboring “non-state actors” that might somehow acquire WMD. And there is an

even larger number of countries lacking the resources to acquire nuclear weapons that have reason to see themselves as a possible target of military action by a nuclear power— and that may see chemical or biological weapons as the only feasible “equalizer” for modern high-tech weapons. Combined with the rejection of most arms control mechanisms by the world’s most powerful state, one that has military forces capable of inflicting devastation anywhere on earth, we have the ingredients for a new, unpredictable global arms race.

The New Strategic Triad: Making the Unthinkable Possible

The NPR calls for a “New Triad” to replace the Cold War strategic triad of nuclear-armed land-based missiles, ballistic missile submarines, and long-range bombers. None of these Cold War forces would be taken out of service, however—they would instead be augmented by missile defenses, a robust array of weapons testing and production facilities, and a variety of non-nuclear offensive weapons, ranging from highly accurate conventional missiles to exotic new devices that will impair or destroy electronic equipment. Missile defenses have received a good deal of attention in nuclear strategy and arms control debates, although it has focused almost exclusively on the national missile defense system currently undergoing initial flight tests— only one of many missile defense technologies being researched. The burgeoning assortment of stealthy, precise conventional weapons systems deployed or under development by the United States, however, may also have an effect on the strategic calculations of existing and potential nuclear weapons states at least as great as missile defense development.

The United States already has a great advantage over any other country in conventional armaments. Since the end of the Cold War, it has constantly upgraded the electronics of its conventional fighters and bombers and deployed

stealth aircraft unmatched by any other nation. The U.S. also has significantly expanded the capabilities of the conventional bombs and missiles that its high-tech aircraft and ships can carry, steadily increasing the accuracy of its bombs and missiles and improving other capabilities, for example the ability to penetrate bunkers and tunnels.⁴⁸

Despite the superiority of U.S. high-tech weapons, it is continuing with plans to deploy next-generation aircraft, including the stealthy, supersonic (and super expensive) F-22 and the Joint Strike Fighter. An assortment of additional highly accurate and destructive conventional weapons that can be delivered by ship, submarine, or airplane are either being actively developed or are on the drawing boards, ranging from improved earth penetrator bombs to supersonic cruise missiles.⁴⁹

The U.S. also is planning conventional systems that can strike on the other side of the globe, delivering a variety of weapons through or from space. These systems are seen by U.S. planners as a way to reduce dependence on forward bases, which both are potentially vulnerable targets and which also can create political difficulties for allied governments, as has been evident in U.S. efforts to obtain bases in Pakistan and Saudi Arabia from which to conduct offensive air operations in Afghanistan.⁵⁰ The Defense Department has funding programmed, for example, for “the modification of a strategic ballistic missile system to enable the deployment of a non-nuclear payload.”⁵¹ One option of this kind already being considered is a “common aero vehicle,” a maneuverable re-entry vehicle that can travel through space aboard a variety of delivery systems. According to the *Air Force Space Command Strategic Master Plan for FY02 and Beyond*,

During the mid-term [2008-2013], we will expand the options available to our warfighting commanders by fielding an initial

global Conventional Strike capability. The Common Aero Vehicle (CAV) will evolve from the High-Speed Precision Penetrator (HSPP) and CAV demos planned for the near-term. CAV will provide warfighting forces with a Conventional Strike capability with near-global range, prompt response time from launch to target, penetration of hostile natural or man-made terrestrial and atmospheric environments and enemy defense avoidance. The CAV system will be capable of dispensing a variety of munitions against ground targets to include WMD storage sites, C2 [command and control] facilities, maritime forces and massed ground forces.⁵²

In addition to these new ways to deliver conventional weapons accurately with global reach, the U.S. military is developing weapons and methods to deceive, impair or destroy electronic equipment, central communications, command systems, air defenses, and other military systems. The purposes of such systems range from interference with the operation of computers via (largely classified) “information warfare” techniques to destruction of electronics by high-power microwave devices.⁵³

And over the long term, a variety of more speculative weapons programs could lead to an intensified arms race, both on earth and in space. These programs include research on hypersonic flight, which could lead to military applications ranging from supersonic standoff missiles to air/space vehicles with global range that can strike with a variety of weapons from near space. They also include directed energy research aimed at developing a variety of laser weapons. Directed energy weapons of various kinds are in the long range plans of U.S. military space strategists, who see systems like the Space-Based Laser as offering potential both for missile defense and for an offensive capability with global reach against space and airborne targets.⁵⁴ There also are extensive research programs aimed at improving basic space technologies. Goals include allowing

more frequent and cheaper launches of larger payloads and improving all aspects of space technology, from electronics that can survive the harsh space environment to light strong structures and efficient, long-lasting power sources.⁵⁵ The infrastructure and technology base being put in place for missile defenses may, over the long run, provide the basis for more ambitious military space operations. According to the U.S. Space Command *Long Range Plan*,

Many of the systems and concepts for Missile Defense may have applicability to Force Application. This concept envisions holding a finite number of targets at risk anywhere, anytime with nearly instantaneous attack from space-based assets.⁵⁶

Some of these programs have been proceeding for a number of years, although often as relatively low-level concept development and feasibility studies. But with the Bush Administration’s enthusiasm for military space programs, huge increases in the defense budget, and no visible Congressional opposition, a number of these programs are likely to accelerate.

Missile Defenses: One Weapon Among Many

It is in this broader context of an intensive hi-tech weapons build-up, given new impetus by the Bush Administration’s enormous military spending increases, that we must consider the likely impacts of the last element of the NPR’s “New Triad,” ballistic missile defense. Ballistic missile defense (BMD) programs encompass far more than efforts to protect the U.S. from incoming intercontinental ballistic missiles (called “National Missile Defense” prior to Bush Administration program reorganization). The public debate in the U.S. over missile defense has focused almost entirely on a single National Missile Defense technology, mid-course ground-launched interceptors. But ballistic missile defense efforts also include a wide range of programs intended to protect “forward deployed”

U.S. troops and bases, U.S. allies, or other U.S. “interests” against missiles of shorter range. Both types of missile defense programs are exploring a range of technologies, from a variety of ground and sea-based interceptors to air-borne and space-based lasers.

In regard to the relationship between missile defenses and other types of weapons development, it also is important to consider the long time cycles of military technology development. By the time most of the anticipated missile defense systems might be deployed, a decade or more from now, they will be accompanied by new U.S. offensive capabilities, whose particulars are difficult to predict but that will likely far outstrip all competitors.

The current administration has made missile defense the centerpiece of its strategic military policy, increasing funding and announcing its intention to withdraw from the Anti-Ballistic Missile Treaty. It has tried to portray missile defense as a way to end the dilemmas of Cold War nuclear deterrence, but the NPR clearly reveals purposes quite different from the common understanding of this long-sought goal, the desire of people everywhere to be free of the constant threat of annihilation. Instead, the apparent intent is to make the United States alone undeterrable.

Missile defense isn't about defending the United States against a “bolt from the blue” attack, either from Cold War adversaries or from some other state that may someday develop missiles of sufficient range. In the Nuclear Posture Review, as in numerous think-tank studies and planning documents, a central purpose of missile defense travels under the euphemism of “freedom of action.”

Advances in defensive technologies will allow U.S. non-nuclear and nuclear capabilities to be coupled with active and passive defenses to help provide deterrence and protection against attack, preserve U.S. freedom of

action, and strengthen the credibility of U.S. alliance commitments.⁵⁷

What this means in large part is that the United States wants to be able to send its forces anywhere on earth without risking casualties that would make a military operation overseas unsustainable at home. Missile defenses, working together with overwhelming U.S. air power, global surveillance and communications networks, and long-range precision conventional weapons, are designed in to make military action abroad more politically feasible. In the words of the NPR, “Defense of the U.S. homeland and protection of forward bases increase the ability of the United States to counteract WMD-backed coercive threats and to use its power projection forces in the defense of allies and friends.”⁵⁸ The aim is to eliminate the limits to U.S. use of force that a regional adversary might be able to impose if it has chemical, biological, or nuclear weapons, and is willing to run risks for interests it sees as vital, while seeing the U.S. as “an over-the-horizon power that often makes the choice to disengage when costs begin to outweigh interests.”⁵⁹ The fear is not that there will be a surprise attack on the U.S. but rather that when either threatened or under attack by U.S. forces, a foreign leader might be able to prevent an attack or force a U.S. withdrawal by using WMD against U.S. or allied troops, or against U.S. or allied civilian populations. As the Director of the Defense Intelligence Agency told the Senate Select Committee on Intelligence,

At the worst, asymmetric approaches threaten to undermine the 'full spectrum dominance' envisioned in our Joint Vision 2020 concept. While specific adversaries, objectives, targets, and means of attack will vary widely from situation to situation, I think most asymmetric approaches will fit generally into five broad, overlapping categories:

- Counter will ... designed to make us 'not come, or go home early' ... by severing the

'continuity of will' between the US national leadership, the military, the people, our allied and coalition partners, and world public opinion.

- Counter access ... designed to deny US (allied) forces easy access to key theaters, ports, bases, facilities, air, land, and sea approaches, etc.
- Counter precision strike ... designed to defeat or degrade US precision intelligence and attack capabilities.
- Counter protection ... designed to increase US (allied) casualties and, in some cases, directly threaten the US homeland.
- Counter information ... designed to prevent us from attaining information and decision superiority.⁶⁰

Most worrisome to military planners in their efforts to defend their ability to attack are short and medium range missiles, already in the arsenals of many countries that the United States sees as potential adversaries. As the Naval Studies Board of the National Research Council noted,

Ballistic missiles with ranges from 200 to over 1,000 miles are proliferating among large and small nations around the world. Even if they do not deliver the weapons of mass destruction that they are capable of delivering, their use with conventional warheads--and often even their presence alone—can have a profound political as well as military impact on regional conflict. As evidenced during the Gulf War, the application of even a limited defense against such attacks can also have important political and military significance. Defenses against ballistic missile attack will, in the future, be an even more important part of our developing, joint military capability. The theater missile defense (TMD) systems will ultimately cover the gamut of defense possibilities, from finding and destroying command centers and launchers, through destruction of missiles in boost and ascent

phase to prevent dispersal of chemical and bacteriological submunitions and to prevent damage by nuclear warheads either detonating within damage range or following purely ballistic trajectories to their targets after intercept, to terminal defense against weapons that leak through. The imperative of preventing effective attacks by ballistic missiles that may carry warheads of mass destruction leads to the concept of placing a 'cap' over an aggressor state to prevent such attacks from reaching beyond the aggressor's borders, with terminal defense as final 'insurance.' In this sense, TMD enhances overall offensive capability.⁶¹

And it is for these reasons that many in the military sees defenses against short and medium range missiles as a more pressing priority than national missile defense: the possibility of the U.S. fighting wars against countries with shorter range, relatively unsophisticated missiles is far greater than any of the threats that national missile defenses are intended to counter.⁶²

There are other aspects of this enhanced "overall offensive capability" that missile defenses together with other weapons systems imply, that affect not only regional powers seeking some kind of counter to overwhelming U.S. conventional forces, but the broader strategic relationship with Russia and China as well. The extensive array of new space-based sensing systems being developed to support global missile defense systems also is likely to have additional applications that further increase U.S. advantages in targeting and coordinating precision offensive weapons, both conventional and nuclear.⁶³ At the same time, U.S. nuclear warheads, delivery systems, and supporting infrastructure continue to be modernized. China in particular, with its small number of nuclear missiles capable of reaching the United States, may see the combination of missile defense and the broader U.S. high-tech weapons build up as capable of nullifying its nuclear forces. With the U.S. developing forces

that might be able to destroy all or most of China's command structure and nuclear arsenal, a multi-tiered missile defense system may need only to be only effective enough to deal with the possibility that a few missiles may make it off the ground. All of this is occurring in a context where the NPR lists China as a country that "could be involved in an immediate or potential contingency."⁶⁴

Even limited missile defenses are envisioned by their advocates as working together with the formidable U.S. nuclear arsenal to assure that the U.S. retains its "freedom of action"-- its ability to use its powerful conventional forces where it pleases-- in a crisis, even against a nuclear armed adversary:

By forcing a large attack to penetrate or destroy the defense, a national missile defense raises the stakes for a potential attacker and thereby gives American leaders considerably more flexibility in a crisis. An American leader might be prepared to act under the protection of a limited national missile defense despite a threat of nuclear retaliation, even knowing that the retaliation could ultimately overwhelm the U.S. defense. An adversary would understand that the relatively large attack required to defeat even a limited American ABM system would risk overwhelming retaliation from the entire U.S. nuclear force.⁶⁵

How Arms Races Begin

Ballistic missile defenses and other advanced weapons systems do not have to "work" as advertised to trigger a new arms race. Further, when tens of billions of dollars are spent on weapons research, new kinds of weapons will be developed, even if not of the precise kind originally envisioned.⁶⁶ The U.S. is retaining and modernizing thousands of nuclear weapons, building missile defenses, and drastically expanding its spending for a wide variety of other

high-tech armaments, while issuing frequent military threats against a number of countries. In this context, any state that sees the possibility of conflict with the U.S. will be likely to maintain or expand its own weapons spending.

The military establishments of other states understand that the course of technological development is unpredictable, and that it takes many years to develop complex modern weapons. And they will use this argument to justify starting development of new systems now to assure that they will be able to overwhelm or evade U.S. missile defenses in the future. For their part, U.S. Defense Department officials, viewing the world from the pinnacle of perhaps the greatest position of military advantage in history, demand more, arguing that any capability that an adversary "might" possess must be countered. U.S. Undersecretary of Defense Douglas Feith told the Senate Armed Services Committee that

...[B]ecause we know something about technology and we know something about capabilities of potential adversaries, we can anticipate that we're going to have to confront certain capabilities and then we need the capabilities to respond to the capabilities that our enemies might have.⁶⁷

Imagine for a moment the shape of the future if every government that sees the U.S. as a "potential adversary" seeks to counter the military capabilities the United States "might have." This is the kind of thinking that creates and sustains arms races.

By engaging in a continuing high-tech military build-up, the United States is helping to bring about the world envisioned by its own "worst case" military contingency planners. This world would be dominated by a new kind of arms race, with many more significant actors and a bewildering variety of weapons. In the near term, no country will be able to come close to matching the U.S. in conventional armaments, so one result

may be the further spread of weapons of mass destruction, and the quest for secure, and perhaps covert, means for their delivery. And we are likely to see determined and creative efforts to counter the high-tech dominance of the most powerful states by turning the whole planet into a battlefield.-- a process those states began long ago by developing military forces with global reach that can crush a medium sized country in weeks-- or annihilate a civilization in a day. U.S. military planners like to call such efforts "asymmetric warfare," but they resemble instead a quest for symmetry, for a fearful leveling of human experience under the universal threat of terror. The heightened pursuit of technologically perfected violence as the main response to violence may turn the facile media cliché that "September 11 changed everything" into a self-fulfilling prophecy.

The Path Forward

The Nuclear Posture Review sets forth with chilling clarity the levels of violence those in power in the United States think necessary to preserve their vision of order in the coming century. It should cause all of us to reconsider the risks of placing our hopes for "security" in the quest for military dominance, and should compel a fundamental re-thinking about what security means. It is all the more important in these dark times that we take up with renewed urgency proposals for the control and the eventual elimination of the most dangerous kinds of weapons, even though the possibility of success may seem remote. Such proposals are too often dismissed as both utopian and risky. Arms control mechanisms that would limit the ability of the U.S. to deploy the kinds of weapons it wants implicitly are expected to achieve a perfect world, one without conflict or the dangers posed by aggressive or unjust governments. Instead, they should be compared to the road we already are traveling: the unending pursuit of high-tech weapons, the permanent readiness for an apocalyptic nuclear exchange, and the likelihood

of a new, multi-player arms race extending across most of the globe and into space.

There are a number of worthwhile proposals for the control of nuclear weapons and their delivery systems. One is the Model Nuclear Weapons Convention, drafted in 1997 by an international group of lawyers, scientists, and disarmament specialists,⁶⁸ which provides for the phased elimination of nuclear arsenals. It begins by taking nuclear weapons off alert, moves through a series of additional steps, and eventually places all weapons-useable plutonium and uranium under international control.

Opponents and skeptics frequently argue that nuclear abolition is unworkable, because an unscrupulous state could "cheat" and hide nuclear weapons or the materials and equipment to manufacture them quickly. Even presuming that elimination of nuclear arsenals could not be adequately verified, this is an example of abstractly comparing an arms control proposal to a perfect world, rather than the one we now live in. If our main concern is the future of the planet, and the safety of billions of human beings, (as opposed, for example, to the survival of any particular political regime), which is a safer world? A world with many thousands of nuclear weapons, with enough on hair-trigger alert to destroy most of civilization in a day, or one where every effort has been made to eliminate nuclear arsenals, and there is some possibility that a small number may have been concealed? A world in which one state concealed a small nuclear capacity could result in that country successfully imposing its will on others for some period of time, or even, in the worst case, to a terrible war in which a few nuclear weapons were used. But the apocalyptic risk of global thermonuclear warfare would have been eliminated.

Even this comparison ignores many of the realities of any path to disarmament. The process of achieving meaningful reductions in nuclear

The Nuclear Posture Review and the Nuclear Nonproliferation Treaty

Each of the Parties to the Treaty undertakes to pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament, and on a treaty on general and complete disarmament under strict and effective international control. Treaty on the Non-Proliferation of Nuclear Weapons, Article VI

Article VI of the Nuclear Non-Proliferation Treaty (NPT) embodies that Treaty's central bargain: in exchange for their promise not to develop nuclear weapons, the non-nuclear weapons states received an agreement from three of the declared nuclear weapons states— the United States, the Soviet Union, and the United Kingdom— a promise to work in good faith towards the elimination of nuclear arsenals. The remaining two original declared nuclear weapons states, China and France, eventually joined the NPT as well.

The policies declared in the Nuclear Posture Review do not constitute a radical break from the past, but they nonetheless may prove decisive in eroding the fragile NPT regime. During the two decades between the entry into force of the NPT and the end of the Cold War, the Article VI promise was held hostage to the nuclear standoff between the Western nuclear powers, China, and the U.S.S.R. But with the main engine of the nuclear arms race apparently gone, expectations rose world-wide that the long-ignored obligation finally would be fulfilled. The nuclear weapons states only were able to obtain an indefinite extension of the NPT in 1995 by promising to take a number of concrete steps towards nuclear disarmament, the most significant being the completion of a comprehensive nuclear test ban treaty (CTBT). A year after that reaffirmation of the Article VI obligation, the International Court of Justice ruled that the treaty requires more than endless negotiations, stating that “[t]here exists an obligation to pursue in good faith *and bring to a conclusion* negotiations leading to nuclear disarmament in all its aspects under strict and effective international control.”⁶⁹ (Emphasis added).

Between 1995 and the NPT Review Conference in 2000, the nuclear weapons states, and the U.S. in particular, showed little evidence of “good faith” efforts to eliminate their nuclear arsenals. What progress there was in post-Cold War arms control discussions stagnated. The CTBT, centerpiece of the tacit bargain underlying the 1995 NPT extension, was rejected by the U.S. Senate. The U.S. continued its ambitious program to modernize both its nuclear weapons and its nuclear weapons research and production facilities. Using its already extensive experimental and simulation facilities, the U.S. modified and deployed without nuclear explosive testing a nuclear bomb with new military capabilities, the B61-11 earth penetrator bomb. Numerous policy documents stated that the U.S. intended to keep thousands of nuclear weapons indefinitely, along with the capacity to reconstitute an even larger arsenal if desired. With the U.S., despite its unprecedented dominance in conventional arms, clearly intending to keep a large and constantly modernized nuclear arsenal for the foreseeable future, there was little chance that the other nuclear weapons states would make meaningful moves towards nuclear disarmament. And in 1998, India and Pakistan joined the ranks of declared nuclear weapons states, with a round of nuclear tests. Although neither had signed the NPT, this development dramatically demonstrated the fragility of the global norm against nuclear weapons proliferation, and the potential dangers of overlapping regional arms races if the NPT regime collapsed.

Against this background, the non-nuclear weapons states at the 2000 NPT review conference extracted a new set of commitments from the nuclear weapons states to take concrete steps towards nuclear disarmament.⁷⁰ These steps included: ratification of the Comprehensive Test Ban Treaty; the principle of irreversibility as applied to nuclear disarmament and related arms control and reduction measures; an unequivocal undertaking to accomplish the total elimination of their nuclear arsenals; full implementation of START II and conclusion of START III as soon as possible while preserving and strengthening the Anti-Ballistic Missile (ABM) Treaty; increased transparency regarding nuclear weapons capabilities; concrete measures to reduce the operational status of nuclear weapons (i.e. de-alerting); and a diminishing role for

nuclear weapons in security policies.

The policies endorsed by the NPR amount to an unequivocal rejection of most of these steps, as well as of nuclear disarmament itself. At best, it could be argued that the “cuts” proposed by the Bush Administration will reduce the operational status of a significant number of nuclear weapons— but thousands will remain at a high state of readiness for the foreseeable future. The NPR not only rejects the CTBT, but calls for improved capabilities to conduct nuclear tests if desired. It discards the ABM treaty, and the Bush Administration has embarked on the development of a multi-tiered missile defense architecture with global reach. The NPR abandons further steps in the START process in favor of still-unspecified arms control measures, and proposes storing large numbers of warheads and delivery systems indefinitely rather than destroying them.

The entire thrust of the NPR is not to make weapons reductions “irreversible,” but rather to assure for many decades to come that an enormous force of nuclear warheads and delivery systems can be reconstituted, and that new and improved nuclear weapons can be designed and built. While administration officials claim that the new NPR approach to “deterrence” will de-emphasize nuclear weapons— mainly by developing an array of more powerful, accurate conventional weapons with global reach— research is going forward on improving nuclear weapons for new missions, including the destruction of deeply buried targets and chemical and biological weapons and materials.

In essence, one of the main goals of the policies and programs endorsed by the NPR is to make U.S. threats of force, including nuclear threats, more credible. U.S. policy makers have decided to solve the problem by approaching it from both ends: more powerful conventional forces for use where nuclear weapons would be untenable, and more useable nuclear weapons where nothing else has sufficient power to intimidate or destroy. The notion that this de-emphasizes the role of nuclear weapons has a certain fearsome circularity. In most circumstances, the U.S. purportedly will be able to counter “aggression” with its missile defenses and its unparalleled conventional forces. And where these are insufficient, U.S. decision makers will have nuclear weapons that adversaries actually can believe they will use, hence increasing the possibility that they will be “deterred,” and thus supposedly reducing the chance of nuclear weapons use. All of this assumes, of course, that the United States will use force only defensively, and nuclear weapons only in the face of the most extreme threats.

It is clear that the policies contemplated by the NPR are not a step on the road to nuclear disarmament. The U.S. appears to be seeking a very different destination: a future in which the U.S. can more effectively threaten to use nuclear weapons against countries that don’t have them, while reducing the chance of an apocalyptic nuclear exchange among the original nuclear weapons states. In such a future, the NPT would be unambiguously transformed into a permanent two-tier system, with Article VI a dead letter and the Treaty itself little more than a justification for sanctioning those who refuse to accept their place.

U.S. agreement at the 2000 NPT Review conference to an “unequivocal undertaking by the nuclear-weapon States to accomplish the total elimination of their nuclear arsenals leading to nuclear disarmament,” appears in retrospect as little more than a cynical ploy. Swedish Ambassador Henrik Salander, who will chair the April 2002 NPT Preparatory Committee meeting, hailed as “unprecedented” the “recognition” manifested by the disarmament commitments in the 2000 NPT Review Conference final document “that all issues relating to the disarmament process, including questions of a diminishing role for nuclear weapons and reducing their operational status, are recognized as a concern of all States parties and have for the first time been jointly addressed by all the States parties...”⁷¹ It remains to be seen if that “concern” can be translated into a meaningful response to a superpower that sees 20th century arms control as a ramshackle edifice rapidly receding in its rear-view mirror.

arsenals will require sustained negotiations among previously hostile states. The step-by-step success of these negotiations is likely to improve relationships among the nuclear weapons states, which are also the world's leading military powers and the producers of most of the world's conventional weapons. In addition, the phasing out of the institutions that design and produce nuclear weapons and their delivery systems could do a great deal to change the dynamic of arms competition. These institutions—nuclear weapons design laboratories, defense contractors who receive billions of dollars every year to build and maintain nuclear weapons delivery systems and the infrastructure that supports them—wield significant political power.

In the United States, these institutions have used their power and control over relevant information to resist such essential arms control measures as the Comprehensive Test Ban, and have pushed successfully first for more nuclear weapons research facilities, and now for more useable nuclear weapons. For this reason, if it is to be successful, the path to disarmament likely will require cessation of warhead production and a ban on further nuclear weapons research by all states possessing nuclear weapons relatively early in the process. A good first step, (the direct opposite of what the Nuclear Posture Review recommends), would be the closure of all remaining sites where underground nuclear tests are conducted, and the cessation of activities like “subcritical” nuclear tests that both increase nuclear weapons knowledge and help to maintain the capability to resume nuclear testing quickly. Although some new nuclear weapons capabilities can be gained by modifying existing warheads and bombs without underground explosive tests, test site closure would be a visible, concrete step towards nuclear disarmament, and might provide a “firebreak” between simulation-based testing and deployment of weapons based on substantially new concepts.

A second proposal, which would complement a Nuclear Weapons Convention, would be a negotiating framework for the elimination of

ballistic missiles, beginning immediately with a ban on the flight testing of missiles. Such a ban would also prohibit the testing of ballistic missile defense systems. There have been a number of proposals of this kind in recent years, some quite extensively elaborated.⁷² The immediate ban on missile and missile defense testing should apply to all states. It would halt development of the threats that ballistic missile defenses are being developed to counter. A ban also could prevent development of certain kinds of destabilizing systems currently under consideration by the U.S., for example intercontinental ballistic missiles carrying new kinds of conventional weapons payloads.

A flight test ban would be relative easy to verify. As part of its verification apparatus, a flight test ban also should include inspections of civilian space launches, in order to assure that they are not used covertly to test military delivery systems. Such inspections also could make it more difficult to develop and deploy weapons systems that operate through or from space. If the type of inspections appropriate for controlling ballistic missiles worked well, they could provide a technical and political starting point for more comprehensive agreements aimed at preventing the further militarization of space. Such inspections, while not a substitute for a comprehensive treaty halting the further militarization of space, could help to prevent the placement of weapons in space.

Serious efforts to first halt further development of ballistic missiles and then move towards their elimination, like the abolition of nuclear weapons, seldom are discussed in the United States. Yet the U.S. government is already spending billions of dollars a year to develop missile defenses. It appears ready to spend hundreds of billions more over the next several decades to deploy missile defenses and new offensive weapons intended to destroy missiles before they can get off the ground. Here again, the question is worth asking: Which is more likely to prevent people in the United States from dying in a missile attack? Spending hundreds of billions on high-tech weapons systems that may not work

as advertised, and that are likely to lead to a new arms race? Or global measures, starting now, to prevent the further development of missiles by the countries who are touted by the U.S. government as the main threat? For example, if a flight test ban were in place, it would be implausible that Iran, Iraq, or North Korea could develop missiles with intercontinental range.

It is important to keep in mind that missile defenses are intended to do far more than defend the continental United States from attack. They also are an integral part of the military's plans to protect "forward bases" to "increase the ability of the United States to counteract WMD-backed coercive threats and to use its power projection forces in the defense of allies and friends."⁷³ It would be a substantial step forward for the public debate if the current administration would highlight these broader missions for missile defenses, rather than seeking to give the impression that their only aim is to end the Cold War dilemma of mutual nuclear threat— a predicament that the policies advocated in the NPR will assure continues for decades to come.

Redefining Security

Terrorism feeds on the hatreds and resentments that have been built up in the rest of the world against Western society as it continues to reap much of the benefits from globalization. The statistics are all too familiar: half the world's population living in abject poverty and 80 per cent living on less than 20 per cent of global income. Too many people in too many countries lack the freedom to take advantage of the new opportunities of modern technology and are consequently left on the sidelines. In the global village, sooner or later, someone else's poverty becomes one's own problem. Douglas Roche, senator from Alberta and Canada's former Ambassador for Disarmament⁷⁴

If debate remains limited to which military hardware will best protect "American interests," the most important comparisons, the most

fundamental gambles, still will remain unexamined. We live in a world where key resources are stretched to the limit, where the poorest countries have the fastest growing populations, and where unequal access to both the necessities of life and the benefits of modern technology remains the rule. In the words of United Nations Secretary General Kofi Annan,

How can we call human beings free and equal in dignity when over a billion of them are struggling to survive on less than one dollar a day, without safe drinking water, and when half of all humanity lacks adequate sanitation? Some of us are worrying about whether the stock market will crash, or struggling to master our latest computer, while more than half our fellow men and women have much more basic worries, such as where their children's next meal is coming from....⁷⁵

This is the terrain on which we choose a path to "security." The wealthiest twenty five million who live in the United States had a larger combined income than the two billion poorest human beings with whom we share this planet.⁷⁶ Collectively, we must decide whether we will devote our wealth and ingenuity to preparing to fight to keep a disproportionate share of resources in a crowded world, or whether we instead might devote them to building a world where everybody has clean water and enough to eat.

The choices we make now will resonate in both time and space. For yet another generation or more, enormous material resources and the labor of many thousands of skilled people will be squandered on weapons whose use would be a catastrophe of unforgivable magnitude. A massive U.S. military build-up, accompanied by frequent U.S. military actions around the globe, will likely have cascading effects. Corresponding build-ups by potential U.S. adversaries that exacerbate regional arms races, especially in East and South Asia and the Middle East, are to be expected. Further diversion of resources to military spending in these regions, where conflicts over resources and disparities of wealth already

are at the base of regional enmities, only will heighten social tensions, making it more difficult to escape further rounds of instability and violence:

India and Pakistan rank among the lowest of the 174 countries listed by the UN Development Program's Human Development Index: Pakistan's rank in the human development index fell from 120 in 1992 to 138 in 1998, while India's ranking fell from 134 in 1995 to 139 in 1998. This is not a function of poverty alone, but involves horrendous neglect and callousness towards basic human needs, as well as distorted public spending priorities. Nuclearization will further distort these priorities, reducing the people's real security.⁷⁷

The ascendancy of those who favor and profit from high-tech military force also bodes ill for democracy and human rights, regardless of the country. The use of "national security" as a rationale for those in power to suppress internal opponents has been the rule rather than the exception in recent history. We in the U.S. need not look beyond our own borders for this lesson. Yet we are showing no signs of having learned it, with the U.S. Congress enacting in days, with little scrutiny and no national debate, legislation that shredded rights hard-won in centuries of struggle.⁷⁸

In the end, the high tech weapons of the strategic "triad" hold little hope for a better future for the ordinary people of this planet. Responding to the Nuclear Posture Review, United Nations Under Secretary General for Disarmament Affairs Jayantha Dhanapala called for a different kind of "triad," a global effort aimed at "eradicating poverty, preventing conflict, and promoting democracy:"

This is the "triad" that will genuinely serve the interests of international peace and security. And in the realm of preventing conflict, the goals of disarmament, arms control, and the

peaceful settlement of disputes must remain the triad within the triad. Let us put an end to the debate whether arms cause conflicts or vice versa and recognize that each continues to affect the other, as they have from time immemorial. Let us dedicate our triads to productive, not destructive uses.⁷⁹

In the interests of real national and global security, the United States should:

- C Immediately halt all efforts aimed at "improving" the military capabilities of its nuclear arsenal, including research and development for "mini" nukes and the "robust nuclear earth penetrator"
- C Halt plans for upgrades to existing weapons research and production facilities and forgo building new facilities, including those for plutonium pit manufacturing and tritium
- C Ratify the Comprehensive Test Ban Treaty and close the Nevada Test Site
- C Initiate sweeping, verifiable, real reductions in both strategic and tactical nuclear weapons and their delivery systems
- C Together with Russia take all nuclear weapons off hair-trigger alert
- C Initiate multilateral negotiations to eliminate nuclear weapons worldwide
- C Halt development of ballistic missile defenses including theater missile defenses
- C Initiate multilateral negotiations to eliminate ballistic missiles, with a flight test ban as a first step

Notes

1. Nuclear Posture Review, p. 1, provided in “Nuclear Posture Review Excerpts,” Globalsecurity.org, at <http://www.globalsecurity.org/wmd/library/policy/dod/npr.htm>
2. U.S. Department of Defense Briefing Slides, “Findings of the Nuclear Posture Review,” January 9, 2002, <http://www.defenselink.mil/news/Jan2002/g020109-D-6570C.html> (hereafter NPR Briefing Slides)
3. McGeorge Bundy, “To Cap the Volcano,” *Foreign Affairs*, October 1969, p.10, quoted in Carl Kaysen, Robert McNamara, and George Rathjens, “Nuclear Weapons After the Cold War,” in Rotblat et al, eds., *A Nuclear Free World: Desirable? Feasible?* (Westview Press, Boulder, CO: 1993), 33, 46.
4. Fact Sheet, “New Strategic Framework with Russia,” White House Office of the Press Secretary, November 14, 2001
5. See Phillip C. Bleek, “U.S., Russia Agree to Codify Nuclear Reductions,” *Arms Control Today*, March 2002 (Internet edition).
6. Herbert York, Interview, April 1982, In Appendix, Robert Scheer, *With Enough Shovels: Reagan, Bush, and Nuclear War* (Random House, New York: 1982), at 266.
7. William S. Cohen, U.S. Secretary of Defense, *Annual Report to the President and Congress 2000*, Chapter 6, “Nuclear Forces and Missile Defenses.” The Annual Report identified the required “deterrent” that could be met at these levels as including not only “survivable strategic nuclear forces of sufficient size and diversity” but “deployment of theater nuclear weapons to NATO and the ability to deploy cruise missiles on submarines...” *Id.* The 1700-2200 strategic deployed warheads cited as the eventual target level in the Nuclear Posture Review represents a number comparable to START III levels, because the NPR proposal no longer counts warheads on ballistic missile submarines that are being overhauled, which can account at any given time for several hundred warheads.
8. “When I talk about the immediate -- the operationally deployed force to deal with immediate and unexpected contingencies, those are, in fact, the forces that are deployed on a day-to-day basis that can respond in anywhere from minutes to days and a few weeks. The responsive capability would be able to augment that force. And it essentially will be additional warheads that could be uploaded back onto that force if necessary and, obviously, if the president were to make a decision to do that. And that would take weeks, months, even years to do that, depending upon the system and the character of the threat.” United States Department of Defense News Transcript, “Special Briefing on the Nuclear Posture Review,” Presenter: J.D. Crouch, Assistant Secretary of Defense for International Security Policy, January 9, 2002 (Hereafter NPR Briefing Transcript).
9. Office of the Secretary of Defense for Acquisition and Technology, *Report of the Defense Science Board Task force on Nuclear Deterrence* (1998), p.48. [Http://www.wslfweb.org/docs/usg/dsb98.pdf](http://www.wslfweb.org/docs/usg/dsb98.pdf)
10. Hans Kristensen, “The Unruly Hedge: Cold War Thinking at the Crawford Summit,” *Arms Control Today*, v.31 no.10, December 2001, pp.8, 11. http://www.armscontrol.org/act/2001_12/kristensenov01.asp
11. *Ibid.*, at p.9.
12. NPR Briefing Slides.
13. It may, however, be difficult to tell whether the B-1 can be reconfigured for nuclear weapons delivery. Since 1997, The B-1 has been portrayed publicly as a conventional bomber, but there have been plans in place for restoring its nuclear role in a matter of months. See Hans Kristensen, “The B-1 Bomber: Not “Conventional-Only,” sidebar to Kristensen, “The Unruly Hedge: Cold War Thinking at the Crawford Summit,” at 11. See also the FY 1998 U.S. Air Force Program Element Descriptive Summaries for Nuclear Weapons support, which listed among FY1997 programs “B-1B Block E design for nuclear capability roll-in.” RDT&E Budget Item Justification Sheet (R-2

Exhibit), Engineering and Manufacturing Development, 0604222F, Nuclear Weapons Support, project 5708 (February 1998) p.9.

14. Both NPR and the FY 2003 military budget request recommend the ballistic missile submarine conversion, with the converted boats to carry up to 150 cruise missiles. see NPR slides and Paul D. Wolfowitz, Prepared Testimony on the FY2003 Defense Budget Request to the Senate Appropriations Committee Subcommittee on Defense, February 27, 2002.

15. Weapons Activities/Executive Summary, FY 2003 Congressional Budget, available on line at <http://www.cfo.doe.gov/budget/03budget/content/weapons/weapons.pdf>

16. *Institutional Plan: FY2001-FY2006*, Los Alamos National Laboratory, April 2001, p.31

17. According to Senate Armed Services Committee testimony by National Nuclear Security Administration head John Gordon, “Current plans envision Los Alamos producing about 20 pits per year with a surge capacity to perhaps 50.” Gordon emphasized that this capacity would not be adequate, telling the committee that “One thing is now certain—the Los Alamos production capacity will be insufficient to meet future requirements for pits. As a result of the NPR, we seek to accelerate planning and initial design work to establish an MPF [Modern Pit Facility].” Statement of John A. Gordon Under Secretary for Nuclear Security and Administrator, National Nuclear Security Administration (NNSA), U. S. Department of Energy Before the Committee on Armed Services U.S. Senate 14 February 2002

The FY 2003 Department of Energy NNSA Weapons Program budget request also emphasizes the need to begin planning of a new pit facility:

The Pit Manufacturing and Certification Campaign is focused on the near-term development of manufacturing processes and a certification methodology applicable to the W88 pit, with a long range goal of reestablishing the capability to manufacture all pit types within the stockpile; and a plan to design and construct a Modern Pit Facility to support future pit manufacturing needs. U.S. Department of Energy FY2003 Congressional Budget Request, National Nuclear Security Administration, Weapons Activities, Executive Summary p.9 (pdf file pagination)

18. 1995 Review and Extension Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, “Principles and Objectives for Nuclear Non-Proliferation and Disarmament,” NPT/CONF,1995/L.5, 9 May 1995.

19. NPR p. 35, provided in “Nuclear Posture Review Excerpts,” Globalsecurity.org, at <http://www.globalsecurity.org/wmd/library/policy/dod/npr.htm>

20. Letter forwarding NPR to Congress, <http://www.defenselink.mil/news/Jan2002/d20020109npr.pdf>

21. NPR at pp.34-35, provided in “Nuclear Posture Review Excerpts,” Globalsecurity.org, at <http://www.globalsecurity.org/wmd/library/policy/dod/npr.htm>

22. William M. Arkin, “Secret Plan Outlines the Unthinkable,” *The Los Angeles Times*, March 10, 2002 (web edition), quoting passages from the Nuclear Posture Review.

23. Statement of the Honorable Douglas J. Feith, Undersecretary of Defense for Policy Senate Armed Services Hearing on the Nuclear Posture Review February 14, 2002, p.5

24. *Id.*

25. John H. Cushman Jr., “Rattling New Sabers,” *New York Times*, March 10, 2002 (web edition), quoting passages from the Nuclear Posture Review.

26. William M. Arkin, "Secret Plan Outlines the Unthinkable," The Los Angeles Times, March 10, 2002 (web edition)
27. For an in-depth account of recent efforts to make nuclear weapons more useable, see *Looking for New Ways to Use Nuclear Weapons: U.S. Counterproliferation Programs, Weapons Effects Research, and "Mini-Nuke" Development*, WSLF Information Bulletin, Winter 2000, available at <http://www.wslfweb.org/docs/mininuke.pdf>
28. "NNSA Laboratories Each Complete First 3D Simulations of a Complete Nuclear Weapon Explosion," National Nuclear Security Administration News Release, March 7, 2002.
29. "The Role of Nuclear Weapons in the New World Order," Briefing by Thomas C. Reed, Chairman of the Joint Strategic Target Planning Staff Strategic Advisory Group Deterrence Study Group, October 10, 1991, p.8.
30. *Nuclear Operations*, Air Force Doctrine Document 2-1.5, 15 (July 1998), pp. 8-9 (Emphasis added)
31. United States Joint Chiefs of Staff, *Doctrine for Joint Theater Nuclear Operations*, Joint Pub 3-12.1 (February 1996), p.I-3 (emphasis added).
32. *Id.*, p. viii (emphasis added).
33. Department of the Navy, Office of the Deputy Chief of Naval Operations for Plans, Policy and Operations, *Stratplan 2010 Phase II, Final Report* (June 1992), V.I, pp.92-93. Obtained through the Freedom of Information Act by the Greenpeace Nuclear Free Seas program, 1994 (emphasis added).
34. The Department of Energy FY 94 budget request showed several ongoing efforts, asking funding to "continue to support Phase 1 and 2 studies for High Power Radio Frequency warhead; Precision Low-Yield warhead; Cruise Missile-type warhead; and B-61 diameter bomb." Quoted in William Arkin, "Nuclear Junkies: Those Loveable Little Bombs," *Bulletin of the Atomic Scientists*, July August 1993
35. National Defense Authorization Act For Fiscal Year 1994, Sec. 3136, Prohibition on Research and Development of Low-yield Nuclear Weapons.
36. U.S. Department of Defense, Deputy Under Secretary of Defense (Science and Technology), *Defense Technology Area Plan*, (2000), p.XI-7, obtained by Western States Legal Foundation under the Freedom of Information Act. Full document available at <http://www.wslfweb.org/docs/dstp2000/dtappdf/contents.pdf>
37. *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 in response to Section 1044 of the Floyd D. Spence National Defense Authorization Act for the Year 2001, PL 106-398, July 2001, p.19. The unclassified content of the report can be found at http://www.nukewatch.org/nwd/HiRes_Report_to_Congress_on_the_Defeat.pdf
38. *Ibid* at p.6.
39. NPR Briefing Transcript
40. Secretary of State Colin Powell, appearing on CBS "Face the Nation," as quoted in Michael R. Gordon, "Nuclear Arms for Deterrence or Fighting?" *New York Times*, March 11, 2002.
41. U.S. Department of Energy FY2003 Congressional Budget Request, National Nuclear Security Administration, Weapons Activities, Executive Summary p.10 (pdf file pagination)
42. Statement of C. Paul Robinson to the U.S. Senate Armed Services Committee, October 7, 1999.

43. Statement of John A. Gordon, Under Secretary for Nuclear Security and Administrator, National Nuclear Security Administration U. S. Department of Energy Before the Committee on Armed Services U.S. Senate, February 14, 2002.

44. *Ibid.*

45. U.S. Department of Defense, Deputy Under Secretary of Defense (Science and Technology), *Defense Technology Objectives for Defense Technology Area Plan*, (2000), "Nuclear Phenomenology," p. II-372, obtained by Western States Legal Foundation under the Freedom of Information Act . (Emphasis added) The full document can be found on the WSLF web site at <http://www.wslfweb.org/docs/dstp2000/dtopdf/24-NT.pdf>

46. *id.* For more about U.S. low-yield nuclear weapons research, see *Looking for New Ways to Use Nuclear Weapons: U.S. Counterproliferation Programs, Weapons Effects Research, and "Mini-Nuke" Development*, WSLF Information Bulletin, Winter 2000, available at <http://www.wslfweb.org/docs/mininuke.pdf>

47. Committee on International Security and Arms Control, National Academy of Sciences, *The Future of U.S. Nuclear Weapons Policy*, National Academy Press, Washington, D.C. 1997, p.75.

48. For an overview of long-range precision weapons recently deployed or under active development, see A.F. Krepinevich, Jr. and R.C. Martinage, *The Transformation of Strategic-Strike Operations*, (Washington: Center for Strategic and Budgetary Assessments, 2001), pp.21-22. This study recommends a reconfigured strategic "triad" somewhat similar to that proposed by the Nuclear Posture review, with nuclear weapons augmented by expanded long-range precision strike and electronic and information warfare capabilities.

Several upgraded weapons have been deployed to Afghanistan, including an earth penetrating air launched cruise missile. See Vernon Loeb, "Concrete-Piercing Bombs Hammer Caves," *The Washington Post*, December 13, 2001. Another weapon rushed into production for the Afghanistan war is the thermobaric bomb, a high-tech variant of fuel-air explosives that generates enormous blast pressures. Also significant is the speed with which these new weapons were fielded. The thermobaric weapons being used now in Afghanistan resulted from a program approved September 21, 2001, with flight tests of the finished product in mid-December. See Briefing Slide, "Thermobaric Weapons - Case Study In Rapid Technology Transition," Dr. Ron Sega, Director, Defense Research and Engineering, Presentation, "Technology: A Foundation for Transformation," National Defense Industrial Association Science and Engineering Technology Conference/DoD Tech Expo, Feb 6, 2002 <http://www.dtic.mil/ndia/2002science/sega.pdf>

49. A recent report to the U.S. Congress on "Defeat of Hard and Deeply Buried Targets" summarized these and other of weapons programs intended to increase U.S. conventional precision strike capabilities. 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 in response to Section 1044 of the Floyd D. Spence National Defense Authorization Act for the Year 2001, PL 106-398, July 2001, pp.16-18 (Hereafter *HDBT Report*). The unclassified content of the report can be found at http://www.nukewatch.org/nwd/HiRes_Report_to_Congress_on_the_Defeat.pdf For more on the supersonic cruise missile program, see "Joint SuperSonic Cruise Missile (JSSCM) ACTD Breakfast Club Brief" briefing slides, June 18, 2001, available at http://www.wslfweb.org/docs/12_jsscm.pdf

50. Offensive systems operating through and from space are seen as part of a broader effort aimed at "integrating space forces into warfighting capabilities across the full spectrum of conflict..." U.S.Space Command's label for its missions directly related to world wide force projection is "Global Engagement:"

"Global Engagement. This concept includes global surveillance of the Earth, worldwide missile defense, and the potential ability to apply force from space. The need to address the increasing threat from ballistic and cruise missiles and the ability to have increased forward presence with reduced forward basing is a high priority for U.S. senior leadership" U.S. Department of Defense, Deputy Under Secretary of Defense (Science and Technology), *Defense Technology, Area Plan*, (1999), Chapter VIII, "Space Platforms", pp. VIII-6-VIII-7 (obtained by WSLF under the Freedom of Information Act, <http://www.wslfweb.org/docs/dstp2000/dtappdf/contents.pdf>

51. Statement of the Honorable Douglas J. Feith, Undersecretary of Defense for Policy Senate Armed Services Hearing on the Nuclear Posture Review February 14, 2002, p.10.

52. *Air Force Space Command Strategic Master Plan for FY02 and Beyond*, February 9, 2000, section 6.2.2, <http://www.spacecom.af.mil/hqafspc/library/AFSPCPAOffice/2000smp.html>

The Air Force SAB Hypersonics Report described the Common Aero Vehicle program as follows:

Boeing and Lockheed Martin have been participating in Air Force–sponsored studies of advanced maneuvering reentry vehicles, often referred to as CAVs.... These vehicles with high lift-to-drag ratios have no primary propulsion, but have movable surfaces to provide high cross-range capability. They are designed to carry conventional weapons (small bombs, submunitions, or penetrators) and can be deployed from conventional ICBMs or a hypersonic cruise vehicle operating at high altitude. United States Air Force Scientific Advisory Board, *Report on Why and Whither Hypersonics Research in the US Air Force*, December 2000, p.35

53. “High Power Microwaves (HPM) Technology develops and demonstrates HPM technology to disrupt, degrade, and destroy electronics in various systems such as communications, information, or weapon systems to support warfare missions. Adversaries will be denied use of electronic information processing, communications or weapons systems by using high-peak power (damage) and high-average power (disruption) microwave sources packaged for an air-deliverable bomb, submunition, portable device or unmanned aerial vehicle (UAV). Technology development efforts will initially concentrate on portable (short-range) or heavy transportable weapons for command and control infrastructure and integrated air defense applications, followed by airborne weapons on UAVs or as submunitions, as prioritized by user needs and technical maturity.” U.S. Department of Defense, *In-House RDT&E Activities FY2000 Management Analysis Report*, Air Force Research Laboratory, Directed Energy Directorate, pp.4-49-4-50.

For an overview of electronic and information warfare techniques being explored by the U.S. military, and their emerging role in strategic operations in combination with nuclear weapons and long-range precision conventional weapons, see Andrew. F.Krepinovich and Robert C. Martinage, *The Transformation of Strategic Strike Operations*, (Washington: Center for Strategic and Budgetary Assessments, 2001), pp. 24 et seq.

54. “The ability to halt an enemy’s operations within hours, minutes, or even seconds, rests with providing a prompt, global, conventional strike capability. The far-term addition of an SOV[space operations vehicle], combined with CAV [common aero vehicle], will provide warfighting forces with improved and more flexible conventional strike capabilities. Moreover, space-based directed energy weapons systems, such as the SBL [space-based laser], will offer US and Allied forces revolutionary air superiority and global attack advantages in speed, range and response time over all terrestrial systems. The SBL capability for rapid global strike against space and airborne targets will give the US a formidable military advantage. The combination of SBL, along with SOV assets delivering the CAV, provides a complete range of prompt, global, conventional strike options to the future NCA [National Command Authority].” Air Force Space Command, *Strategic Master Plan for FY02 and Beyond*, February 9, 2000, section 6.2.3, <http://www.spacecom.af.mil/hqafspc/library/AFSPCPAOffice/2000smp.html>

For an overview of U.S. military laser programs, see Office of the Under Secretary of Defense For Acquisition, Technology, and Logistics, *Defense Science Board Task Force on High Energy Laser Weapon Systems Applications Report* June 2001, <http://www.acq.osd.mil/dsb/rephel.pdf> and for a look at hypersonic weapons concepts currently being explored, ranging from hypersonic missiles to global strike space craft, see United States Air Force Scientific Advisory Board, *Report on Why and Whither Hypersonics Research in the US Air Force*, December 2000, <http://www.sab.hq.af.mil/archives/reports/2000/Hypersonics-Report.PDF>

55. See generally U.S. Department of Defense, *Space Technology Guide FY 2000-2001* <https://www.space.gov/technology/myer.pdf>

56. U.S. Space Command, *Long Range Plan: Implementing USSPACECOM Vision for 2020* (1998). p.6-65.

57. Nuclear Posture Review, p. 7, provided in "Nuclear Posture Review Excerpts," Globalsecurity.org, at <http://www.globalsecurity.org/wmd/library/policy/dod/npr.htm>

The Quadrennial Defense Review, a top-level Department of Defense review of the entire U.S. military posture, uses similar language:

Integrating missile defenses with other defensive as well as offensive means will safeguard the Nation's freedom of action, enhance deterrence by denial, and mitigate the effects of attack if deterrence fails. The ability to provide missile defenses in anti-access and area-denial environments will be essential to assure friends and allies, protect critical areas of access, and defeat adversaries. U.S. Department of Defense, *Quadrennial Defense Review Report*, September 30, 2001, p.42.

58. Nuclear Posture Review, p.13, provided in "Nuclear Posture Review Excerpts," Globalsecurity.org, at <http://www.globalsecurity.org/wmd/library/policy/dod/npr.htm>

59. Brad Roberts, *Asymmetric Conflict 2010* Institute for Defense Analyses/Defense Threat Reduction Agency, 2000, p.4.

60. Vice Admiral Thomas R. Wilson, Director, Defense Intelligence Agency, Global Threats and Challenges Through 2015, Statement for the Record, Senate Select Committee on Intelligence, February 7, 2001

61. National Research Council, Naval Studies Board, Commission on Physical Sciences, Mathematics, and Applications, Post Cold War Conflict Deterrence, Chapter 3 (Washington, D.C.: National Academy Press, 1997) <http://www.nap.edu/html/pcw/Dt-3.htm>

62. As the recently retired Commander of U.S. Joint Forces Command stated in the fall of 2000,

This issue's been studied by panel after panel after panel and we got it-- Our current policy is one that I support and understand. The priority is lower tier theater ballistic missile defense systems first, upper tier systems second, national missile defense third. That's the way the threat is arrayed. Admiral (Retired) Hal Gehman, former Commander-in-Chief, US Joint Forces Command, speaking at a Washington, D.C. conference, "National Strategies and Capabilities for a Changing World," November 16, 2000, transcript at <http://www.ifpafletcherconference.com/army2000/new.htm>

63. See on this point John Steinbruner, "National Missile Defense: Collision in Progress," *Arms Control Today*, Vol. 29 No. 7, November 1999, p. 4, 5.

It is important to note that the full capabilities of satellite sensing systems often are not apparent until the system is deployed, and are likely to evolve as both ground and space-based elements of the system are improved and replaced over time. In a recent speech to the Air Force Association, the Vice Commander of Air Force Space Command predicted that the Space Based Infrared System (SBIRS), a major component of anticipated missile defense systems, would have a variety of applications beyond missile defense:

SBIRS brings exciting new capabilities to the battle space.... But people forget that SBIRS has far more capability than just as a missile warning sensor. The intelligence capabilities, the battle space characterization kinds of capabilities that this fire-improved sensor is going to bring to our national security equation, I think, would have important advantages.... When we get that kind of capability in orbit, we are going to discover all kinds of applications in a horizontal sense across the battle space that we never envisioned because we've never had experience with that kind of phenomenology and that kind of timeliness and that kind of sensitivity. It is very difficult to speculate exactly how powerful that will turn out to be. Lieutenant General Roger G. DeKok, Lieutenant General Roger G. DeKok Vice Commander Air Force Space Command, Air Force Association National Symposium, Los Angeles, CA, November 16, 2001. Transcript at <http://www.aef.org/symposia/dekok1101.asp>.

For a useful account of the way in which some past U.S. satellite sensing systems have provided military capabilities

beyond those originally envisioned, see Jeffrey T. Richelson, *America's Space Sentinels: DSP Satellites and National Security* (Lawrence, KS: University Press of Kansas, 1999).

64. William M. Arkin, "Secret Plan Outlines the Unthinkable," *The Los Angeles Times*, March 10, 2002 (web edition), quoting passages from the Nuclear Posture Review.

65. Jan Lodal, *The Price of Dominance: The New Weapons of Mass Destruction and Their Challenge to American Leadership* (New York: Council of Foreign Relations Press, 2001), p.58. Lodal served on the National Security Council staff under presidents Nixon and Ford, and Deputy under Secretary of Defense for Policy in the Clinton administration. It should be noted that Lodal recommends but a more limited BMD effort and larger cuts in nuclear forces than does the Bush administration, along with changes in nuclear policies and force structure designed to assure Russia and China that the U.S. does not seek a first strike capability.

66. "Nearly always, it is the evolutionary follow-on of a new concept that produces a revolution in capability. For example, the nuclear weapon was the most revolutionary weapon ever invented. It not only changed the nature of warfare but also it changed the nature of all interactions among nations, and it changed the way all science was viewed by the public. The first two nuclear weapons, however useful as a demonstration of the principle, would not, had they been duplicated many times, have had that effect. It was the evolutionary development of the thermonuclear weapon from the fission weapon coupled with the evolution of the ICBM from the V-2 that produced the profound effects on society. Frequently, too, it is the association of well-known principles in an innovative way that produces the revolutionary result....

Thus, we can seldom expect to produce truly revolutionary effects with the first manifestation of a new technology. In recognition of this fact, demonstrations should not include all aspects of a new technology. Smaller steps should be taken to minimize the total cost and to permit more flexibility. The first attempt to apply new concepts is a necessary, but not sufficient step. In military systems, the second step in the development of a radically new concept must be determined after operational deployment. The warfighters will use the system in innovative ways not described in the manuals, and it is this experience that will define the path to revolution." U.S. Air Force Scientific Advisory Board, *New World Vistas: Air and Space Power for the 21st Century*, Summary Volume, Chapter I, "Technologies for Arming the Air Force of the 21st Century," December 1995, p.13.

67. Testimony of the Honorable Douglas J. Feith, Undersecretary of Defense for Policy Hearing on Nuclear Posture Review (NPR) before the Senate Armed Services Committee, Open Session, February 14, 2002, Transcript, P.28

68. The Model Nuclear Weapons Convention can be found in the web site of the International Physicians for the Prevention of Nuclear War (IPPNW) at <http://www.ippnw.org/NWCText.html> A book of analysis and commentary by experts and activists on the idea of a Model Nuclear Weapons Convention, *Security and Survival*, is available in both electronic and print form at <http://www.ippnw.org/IPPNWBooks.html#NWC>

69. International Court of Justice, Legality of the Threat or Use of Nuclear Weapons, General List No.95 (Advisory Opinion of 8 July 1996), sec. 105F

70. 2000 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, Final Document, NPT/CONF.2000/28, 22 May 2000.

71. Statement by Henrik Salander, Permanent Representative of Sweden to the Conference on Disarmament, on behalf of the countries of the New Agenda Coalition (Brazil, Egypt, Mexico, New Zealand, South Africa, Sweden), to the First Committee, United Nations General Assembly, Fifty-Fifth Session, October 2, 2000, p.4.

72. For an overview of ballistic missile control proposals and an argument for their revival, see A. Lichterman, Z.Mian, M.V. Ramana, and J. Scheffran, *Beyond Missile Defense*, International Network of Engineers and Scientists Against Proliferation and Western States Legal Foundation Joint Working Paper, January, 2002, <http://wsflweb.org/docs/missilecontrol.pdf>

73. Nuclear Posture Review, p.13, provided in “Nuclear Posture Review Excerpts,” Globalsecurity.org, at <http://www.globalsecurity.org/wmd/library/policy/dod/npr.htm>
74. Excerpts Debates of the Senate of Canada, Tuesday, February 6, 2002, Lessons to be Drawn from Tragedy of Terrorist Attacks in United States on September 11, 2001(Honourable Senator Roche).
75. Statement of Secretary General Kofi Annan to the United Nations General Assembly, Presenting the *Millennium Report of the Secretary General of the United Nations*, April 3, 2000
76. *United Nations Human Development Report 2001: Making New Technologies Work for Human Development*, (New York: Oxford University Press, 2001), p.19
77. Praful Bidwai and Achin Vanaik, *New Nukes: India, Pakistan, and Global Nuclear Disarmament*, (New York: Interlink, 2000), p.154.
78. See, for example, “USA Patriot Act Boosts Government Powers While Cutting Back on Traditional Checks and Balances,” ACLU Legislative Analysis, <http://www.aclu.org/congress/1110101a.html>
79. “Multilateral Approaches to WMD Threats After September 1,” Prepared Remarks by Jayantha Dhanapala Under-Secretary-General for Disarmament Affairs United Nations Annual Luncheon of the Arms Control Association Washington, D.C. January 22, 2002.

Special Report for Western States Legal Foundation by Andrew M. Lichterman

WEB RESOURCES**U.S. Nuclear Weapons Policies**

For a collection of government documents, links, and commentary on the Nuclear Posture Review, see <http://www.wslfweb.org/nukes/npr.htm>

For more information on U.S. low-yield nuclear weapons research, see *Looking for New Ways to Use Nuclear Weapons: U.S. Counterproliferation Programs, Weapons Effects Research, and "Mini-Nuke" Development*, WSLF Information Bulletin, Winter 2000, available at <http://www.wslfweb.org/docs/mininuke.pdf>

For links to a wide range of government and non-government resources on nuclear weapons, see the **Western States Legal Foundation web resource guide** at <http://www.wslfweb.org/links.htm>

Worldwide Nuclear Arsenals: Basic Information

Center for Defense Information, Current World Nuclear Arsenals
<http://www.cdi.org/issues/nukef&f/database/nukestab.html>

Stockholm International Peace Research Institute, Nuclear Forces and Arms Control (SIPRI)
<http://projects.sipri.se/nuclear/index.html>

Missile Defenses, Efforts to Control Ballistic Missiles, and the Militarization of Space

"Moving Beyond Missile Defense," an initiative which brings together experts and activists from across the globe to consider alternatives to missile defenses, including measures to control ballistic missiles. <http://mbmd.org>

The Global Network Against Weapons and Nuclear Power in Space provides both information and comprehensive organizing resources at <http://www.globenet.free-online.co.uk/>

For more information on U.S. programs to further militarize space, see the **Western States Legal Foundation** page on ballistic missile defense and space at <http://www.wslfweb.org/space.htm>, and our library of U.S. government planning documents and links at <http://www.wslfweb.org/space/spacedocs.htm>

Organizing for the Abolition of Nuclear Weapons

Abolition 2000 Global Network for the Elimination of Nuclear Weapons, a network of over 2000 groups in more than 90 countries <http://www.abolition2000.org/>

Reaching Critical Will, a project of the Women's International League for Peace and Freedom, coordinates NGO activities at United Nations disarmament events. Web site has extensive disarmament resources and links, from both from the UN and from a variety of NGO's
<http://www.reachingcriticalwill.org>