

Delivery Systems

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RECOMMENDATIONS OF THE WMD COMMISSION

Missiles encompass a range of types and technologies, from ground-, sea- and air-launched cruise missiles to land- and sea-launched ballistic missiles, and they are often dual-use—that is, they can deliver conventional weapons or WMD, which greatly complicates their control. Because of the difficulty of achieving accurate missile flight paths, most long-range ballistic missiles that have been developed outside the technically advanced states are not considered suitable for the delivery of conventional warheads. (*Weapons of Terror*, 141)

Around 40 states are known to have acquired or developed ballistic missiles, but most have only short-range (<1,000 km) delivery capability. Fewer than a dozen states possess medium-range (1,000–1,300 km) missiles. In addition to the five NPT-defined nuclear-weapon states, India, Iran, Israel, Pakistan and North Korea also have such capabilities. Only the five NPT nuclear weapon states have long-range (intercontinental) missiles.” (*Weapons of Terror*, 141)

Recommendation 43: MTCR member states should make new efforts to better implement and expand export controls on relevant materials and technology. States subscribing to the Hague Code of Conduct should extend its scope to include cruise missiles and unmanned aerial vehicles. They should establish a multilateral data exchange centre, based on the Russian-US initiatives for the exchange of data on missile launches from early-warning systems. Regional and international non-proliferation measures should include information exchanges, launch notification, and restrictions or bans on specific items or capabilities.

The Commission’s recommendations concerning delivery systems are notably weak. Unlike those for the nuclear, chemical, or biological weapons that these systems might deliver, the delivery systems recommendation neither calls for disarmament nor even for universal measures for meaningful control of further missile development. The Commission’s recommendations are limited to strengthening non-proliferation measures and to modest sta-

bility-enhancing mechanisms, such as missile launch notification and data exchange.

The Commission's meager prescription reflects the state of existing initiatives for the control of missiles and other strategically capable delivery systems. It notes that "[w]hile the Preamble of the NPT cites a goal of eliminating both nuclear weapons 'and the means of their delivery', there is no multilateral treaty requiring missile disarmament."¹ And as one of the expert papers informing the Commission's work ruefully noted:

Of all the normative arrangements surrounding WMD, missile norms remain the most chronically under-developed. An international network of supply-side constraints, an attempt to establish 'rules of the road' through a Code of Conduct, two utterly fruitless studies in the UN, and, frankly, a great deal of hair-tearing and finger-wagging have failed to produce any identifiable consensus beyond an amorphous sense that international demand-side norms would be a Good Thing.²

The limited scope of these recommendations, however, also marks the decline of arms control prospects over the last decade. They are haunting reminders of the opportunities lost in the post-Cold War period when the interests driving "security" achieved through endless pursuit of high-tech military technology were in disarray, an interregnum that in retrospect appears all too brief. They stand in stark contrast to the recommendations made only a decade ago by the Canberra Commission, a similarly constituted expert panel focused on the elimination of nuclear arsenals. The Canberra Commission, whose members included such figures as Robert McNamara, who had served as U.S. Secretary of Defense, and General Lee Butler, who had been commander of U.S. Strategic Command, as well as ex-diplomats and military officials from several other nuclear weapons states, stated:

A global treaty controlling longer range ballistic missiles would provide a universal means of addressing the dangers to international security posed by ballistic missiles; it would also avoid the potential destabilising effect of ballistic missile defence systems. It would increase the confidence of nuclear weapon states that nuclear disarmament will not damage their security, and it would improve the security environment in a number of regions by eliminating destabilising missile arms races. Pending development of such a regime, confidence building measures such as a multilateral ballistic missile launch notification agreement and a ballistic missile flight test ban could be explored.³

Prospects will remain dim for reducing, rather than merely slowing the growth, of missile threats so long as those states that already possess sophis-

ticated missile capabilities continue to improve them. And in missiles and other long-range delivery systems, as in most areas of military technology, the United States far outstrips all other states in the scope and ambition of its efforts. Further, the United States remains the preeminent military power in several of the regions where missile proliferation is of greatest concern, capable of targeting adversaries in Northeast Asia and the Middle East with its own unparalleled arsenal of nuclear-capable missiles and long-range bombers, while confronting them directly with superior conventional forces.⁴ U.S. insistence on refining not only its nuclear bombs and warheads but its “triad” of systems capable of delivering nuclear weapons from the land, the air, and the sea sets the standard for global arms racing. India, for example, has invoked U.S. actions as both model and as political cover for its own weapons development, including ambitions to develop a “strategic triad” resembling that of the United States.⁵

Compounding all of this is the U.S. policy and practice of preventive war. “As seen in the war to eliminate WMD in Iraq, and in official statements regarding North Korea and Iran,” the Commission Report notes, “the US has claimed a right to take armed action if necessary to remove what it perceives as growing threats, even without the authorization of the UN Security Council.”⁶ The Commission’s analysis, however, remains firmly within the ambit of conventional “non-proliferation” analysis. Its criticism of U.S. policy and actions is couched as objections to over-reliance on the use of military force in “counterproliferation” efforts, and to U.S. rejection of multilateral solutions for WMD threats in favor of a “selective multilateralism” – an increased US scepticism regarding the effectiveness of international institutions and instruments, coupled with a drive for freedom of action to maintain an absolute global superiority in weaponry and means of their delivery.”⁷

Little more is said about the U.S. “drive for freedom of action to maintain an absolute global superiority in weaponry and means of their delivery,” although this arguably is the single most important factor limiting the possibility for meaningful arms control efforts of any kind. This is particularly so as evidence accumulates that U.S. “counterproliferation” efforts and preventive war policies are stalking horses for a far more ambitious political and economic agenda. The invasion and occupation of Iraq on the basis of an exaggerated “proliferation” threat, followed by occupation policies apparently designed with more thought to dividing up the spoils among Western corporations than to establishing stable self-government or even providing basic services, is only Exhibit A. Equally worrisome is the current campaign, also framed as a counterproliferation effort, against Iran and those portrayed as its proxies. It is a campaign being conducted by a regime that too often seems to view diplomacy only as a tiresome but necessary preliminary for military action, and that appears eager to create a “New Middle East” by force of arms.⁸

It is against this background that we must view the wide-ranging U.S. effort to develop the next generation of long-range delivery systems, from

bombers and intercontinental ballistic missiles to new kinds of reentry vehicles deliverable by missile or perhaps in the future from versatile re-useable launch vehicles. Although some of these systems currently are envisioned as exploiting advances in accuracy to deliver conventional weapons by missile at heretofore impracticable distances, they will also be capable of being used to deliver nuclear weapons. The development of conventional weapons with global reach, furthermore, will give the United States a capability to inflict devastation from afar that few states if any can match. This will make the elimination of nuclear weapons and other weapons of mass destruction—viewed by many as a relatively cheap equalizer for superior conventional power—yet more difficult.

While explicitly retaining a spectrum of “[n]uclear attack options that vary in scale, scope, and purpose,”⁹ U.S. military planners also hope to exploit advances in space technology, missile accuracy, computing, and communications to develop conventional weapons that can strike anywhere on earth in a matter of hours. To this end, the U.S. is both modernizing existing forces and, with the aim of achieving a capability of “prompt global strike,” taking the first steps towards development of next-generation delivery systems. As described in the Air Force Space Command Strategic Master Plan for FY 06 and Beyond:

A viable, prompt global strike capability, whether nuclear or non-nuclear, will allow the US to rapidly and accurately strike distant high-payoff, difficult-to-defeat targets. This capability provides the US with the flexibility to employ innovative strategies to counter adversary antiaccess and area denial strategies. Such a capability will provide warfighting commanders the ability to rapidly deny, delay, deceive, disrupt, destroy, exploit, and neutralize targets in hours/minutes, even when US and allied forces have a limited forward presence.¹⁰

Modernization of Existing Nuclear Forces

While development of next generation strategic weapons is in its early stages, the existing “nuclear triad” of nuclear weapons delivered by land and sea launched ballistic missiles and by aircraft is being modernized, with incremental gains in military capabilities. Research on ballistic missile propulsion, guidance, and reentry vehicle technologies is ongoing,¹¹ contributing both to the modernization of existing nuclear delivery systems and to development of next-generation delivery systems. These next-generation systems are intended to be capable of delivering weapons payloads at intercontinental range with increased accuracy.

The existing Minuteman land-based missiles are being modernized, to improve accuracy and reliability and to extend their service life. Supporting infrastructure also is being upgraded to allow for more rapid re-targeting.¹²

The Minuteman refurbishment is so extensive that the retired commander of U.S. ICBM forces, Major General Thomas H. Neary, likened the process to “jacking up the radiator cap and driving a new car under it.”¹³

Over the last several years, the Air Force conducted an analysis of alternatives for the future of its land-based intercontinental ballistic missiles, asking contractors to consider approaches that will provide such new capabilities as improved reentry vehicle maneuverability, trajectory shaping, and greater accuracy. The program goal is “maintaining US qualitative superiority in nuclear warfighting capabilities in the 2020-2040 time frame.”¹⁴

Trident submarine launched ballistic missiles also are being modernized. Improvements include guidance system upgrades and changes in the W76 warhead arming, fusing and firing system to allow ground burst use, making these warheads more effective against hardened targets.¹⁵ Attack submarines are being provided with new portable fire control systems for launching nuclear Tomahawk cruise missiles, designed to provide “increased flexibility and retargeting capability.”¹⁶

The nuclear-capable B-2 long-range bombers are being upgraded as well,¹⁷ and the Air Force is beginning concept studies for a nuclear-armed enhanced cruise missile, examining potential capabilities such as increased range, accuracy, and survivability in difficult “anti-access” environments.¹⁸

The Next Generation of Strategic Weapons

In late 2005, the Air Force issued a “Prompt Global Strike Request for Information,” beginning the process of examining alternatives for new weapons capable of hitting targets anywhere on earth. Supporting materials state that the Prompt Global Strike Analysis of Alternatives will examine “a range of system concepts to deliver precision weapons with global reach, in minutes to hours,”¹⁹ and that “Global is defined as the capability to strike any target set in the world.”²⁰ A “Study Plan Draft” provided along with the RFI provides a laundry list of possible concepts to be considered:

- High Speed Strike Systems. This approach requires development/adaptation of a piloted, remotely controlled, or autonomous subsonic/supersonic/hypersonic vehicle (aircraft, sea craft, or missile) to deliver precision standoff or direct attack subsonic/ supersonic/hypersonic munitions.
- Operationally Responsive Space. An expendable and/or reusable launch vehicle that can deliver precision guided munitions.
- Military Space Plane. A reusable launch vehicle that could directly deliver precision guided munitions.
- Ground or Sea-based Expendable Launch Vehicle. This approach consists of either modification of current space launch vehicles, conversion of deactivated intercontinental ballistic missiles or sea-

launched ballistic missiles, or building a new launch vehicle to deliver weapon payloads; such as small launch vehicle or submarine launched intermediate range ballistic missiles. An advanced reentry vehicle/body; such as, a common aero vehicle could be developed to accompany these missile systems.

- Air-Launched Global Strike System. This concept consists of an aircraft that air-launches Pegasus-like space launch vehicles configured with weapons and/or an aircraft delivering supersonic or hypersonic long-range cruise missiles.”²¹

Several of these concepts already are in the initial stages of development, including the Air Force effort to develop next-generation delivery systems to replace existing land-based ICBM's (e.g. the Land Based Strategic Deterrent Analysis of Alternatives and the Force Application and Launch for the Continental United States (FALCON) program).²² A key component of the FALCON effort is the Common Aero Vehicle (CAV), a maneuverable gliding re-entry vehicle that could carry a wide range of munitions and that could be delivered by missile or, further in the future, by a reusable launch vehicle of some kind.²³ Congress, mainly driven by concerns that conventionally armed missiles could be mistaken for a nuclear attack by another nuclear power, has placed some limits on the FALCON program and the CAV. Congress is allowing applicable research on hypersonic flight technology to go forward, but has limited testing of an actual weapons delivery system until the nuclear ambiguity problem can be resolved.²⁴ New long-range weapons, however, remain a high priority to the Bush administration, which announced in the recently released Quadrennial Defense Review that it plans to “begin development of the next generation long-range strike systems, accelerating projected initial operational capability by almost two decades.”²⁵

While these plans for new kinds of strategic weapons are ramping up, the Pentagon also wants to convert some existing nuclear delivery systems to conventional use. In the near term, the Department of Defense this year requested funding for the conversion of 24 Trident submarine launched ballistic missiles to carry conventional payloads. Central to this program are guidance system improvements for the Trident re-entry vehicle.²⁶ Congress has expressed similar concerns about the dangers that a conventional Trident could be mistaken for a nuclear launch, and is likely to require additional information before allowing this program to go forward, but appears prepared to provide at least some initial funding.²⁷

Although the “Prompt Global Strike” concepts under consideration currently are slated to deliver only non-nuclear weapons, such technologies as more maneuverable and accurate missile re-entry vehicles and delivery of weapons with some variety of re-useable launch vehicle could, if developed, be used to deliver nuclear weapons should the government decide to do so. This has been acknowledged in other planning documents. The 1997 Air Force Space Force Application Mission Area Development Plan noted that:

Common Aero Vehicles (CAVs) can deliver both nuclear and non-nuclear weapons to targets anywhere on the globe from CONUS [continental U.S.] bases with appropriate deployment systems. The CAV can be deployed from multiple deployment vehicles including missiles, Military Spaceplanes (MSPs), or space based platforms. The inherent maneuverability of the CAV, provides increased accuracy, lethality, and enemy defense evasion.²⁸

These programs—a number of which began in the 1990s, before Bush took office—threaten to blur the distinction between nuclear and conventional weapons from both ends. There has been considerable discussion of the dangers posed by making nuclear weapons more useable, for example by improved accuracy allowing lower yields on long range missiles. There has been far less attention given to the dangers that may arise if the United States is able to develop non-nuclear weapons with global reach that are able to inflict severe damage on an adversary—for example, destroying air defenses in preparation for an overwhelming U.S. air offensive or even killing leadership—in a world where the only “strategic” weapons other states possess are nuclear weapons.

All of this is taking place in a context where the U.S. has declared its willingness to engage in preventive warfare against unilaterally declared “threats.” “Global Strike” is envisioned as a primary instrument for initial strikes in such preventive warfare, designed to hit quickly, without warning, at global range:

Because many Global Strike scenarios involve threatened (or actual) preemptive attacks on very-high value targets that will only be exposed for brief periods, Global Strike capabilities must also be highly reliable. Simultaneous attacks against all the major targets in a given category (*e.g.*, all division headquarters, all WMD facilities) may be required against more capable adversaries, although the total scope and duration of operations will remain dramatically less than those associated with major combat.²⁹

The 2006 Department of Defense Strategic Deterrence Joint Operating Concept suggested that “Global Strike” should have both visible and covert elements for maximum effectiveness:

Key elements of Global Strike capabilities should be periodically demonstrated openly on the world stage—to ensure adversaries fully comprehend the credible threats they face. However, in all scenarios, it will be highly desirable to conduct strike operations without alerting in advance the adversary, who, if warned, might employ certain capabilities (*e.g.*, WMD) rather than lose them. A “black” or covert component within an otherwise highly visible Global Strike capability is highly desirable.³⁰

This public reference to possible new, covertly developed strategic weapons should not be allowed to escape notice, particularly in the context of a Pentagon “black budget” for secret programs that has returned to Cold War levels,³¹ and an administration in power that has shown itself willing to ignore express statutory limits on executive authority in military matters. In order to allow such preemptive strikes, furthermore, the Pentagon wants Congress to further delegate its war making authority to the president. Among the desired “capabilities” identified by the 2006 Quadrennial Defense Review is:

Prompt and high-volume global strike to deter aggression or coercion, and if deterrence fails, to provide a broader range of conventional response options to the President. This will require broader authorities from the Congress.³²

According to the Quadrennial Defense Review, the aim of this new round of strategic arms development, of which the “Global Strike” technologies are only a part, is to “possess sufficient capability to convince any potential adversary that it cannot prevail in a conflict and that engaging in conflict entails substantial strategic risks beyond military defeat.”³³ This passage—threatening adversaries with “strategic risks beyond military defeat”—calls into question U.S. commitment to fundamental principles of international law, particularly those, as stated by the International Court of Justice, limiting the use of force to measures of self-defense “which are proportional to the armed attack and necessary to defend against it.”³⁴

For over half a century, American military and political elites have wrestled with the dilemmas at the heart of nuclear “deterrence”—that nuclear weapons by their nature inflict such horrific damage that a war between nuclear-armed adversaries is likely to constitute mutual suicide, and that using nuclear weapons against an adversary that has none is likely to inflict damage so great that it far exceeds anything permissible under the laws of war. Both the Quadrennial Defense Review and the path of U.S. weapons development suggest that those in power in the United States now have chosen to fully embrace the technological capacity to destroy societies as a first principle of warfare *outside the context of deterring a major power possessing nuclear weapons*. In this view, U.S. conventional expeditionary forces, backed by the threat of societal destruction, whether inflicted with nuclear or non-nuclear strategic weapons, will be able to operate freely worldwide. As a recent Air Force long term planning directive put it:

The NR [Nuclear Response] CONOPS [Concept of Operations] will provide a credible deterrent umbrella under which conventional forces operate and, if deterrence fails, strike a wide variety of high-value targets with a highly reliable, responsive and lethal nuclear force.... Desired effects include: Freedom for U.S. and Allied forces to operate, employ, and engage at will...³⁵

Aside from its general wisdom, morality, and legality, one may doubt the practicality of this approach, given U.S. experience in Iraq, Vietnam, and Korea. Nonetheless, that it is a dominant trend in U.S. planning is not in question.

There is no way to predict what mix of nuclear weapons and high-tech “global strike” technologies the United States will develop and deploy. Near term military spending priorities may shift significantly towards conventional ground forces as the United States attempts to sustain costly large-scale military occupations for long periods of time, reducing funds available for new strategic weapons. Expensive, high technology strategic weapons systems, however, have the support of constituencies that wield great economic and political power (the nature and effect of which receives little close analysis, impairing the ability of both arms control professionals and the decision-makers they advise to understand either the present or any likely future). And the fundamental commitment to a new generation of more capable strategic weapons with the ability to deliver either nuclear or conventional weapons anywhere on earth with greater precision is reflected in a broad range of U.S. policy and planning documents. Finally, it is clear that the United States has no intention of pursuing or achieving nuclear disarmament, unless and until it can obtain the same kinds of military advantages now provided by nuclear weapons in other ways. As the 2006 Quadrennial Defense Review states, future U.S. military forces “will include a wider range of non-kinetic and conventional strike capabilities, while maintaining a robust nuclear deterrent, which remains a keystone of U.S. national power.”³⁶

Missile Defenses

RECOMMENDATIONS OF THE WMD COMMISSION

Other specific causes for concern include the June 2002 withdrawal from the ABM Treaty by the United States, its pursuit of a multi-layered ballistic missile defence system, and various research and development activities under way in the US and other states that may lead to the testing and deployment of weapons in space. Another cause of concern is that the Conference on Disarmament has for many years been unable to agree to commence negotiations on a treaty to prevent an arms race in outer space.

Illustrating the lack of an international consensus to move forward in addressing these threats, the report of the first UN

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panel on missiles noted that its participants held different views on ‘the implications of missile defences for arms control and disarmament; the effects of missile defences as well as of missile defence cooperation on the further spread and refinement of missiles; the effects of missile defences on the weaponization of space; and the effects of missile defences in addressing growing vulnerabilities to missile threats and attacks.’ (*Weapons of Terror*, 144)

Recent US defence budget requests have envisaged parallel paths to acquire both a ground-based and a space-based intercept capability. Described in various official US statements as the ‘ultimate high ground’, outer space is characterized as offering options not only for missile defence but also for a broad range of interrelated civil and military missions. The US Congress has been reluctant to allocate funding as requested and thus has slowed down developments, but this has not resulted in the abandonment of the objective of space-based interception. Concerns have continued to grow internationally that the US pursuit of ballistic missile defences is likely to increase nuclear dangers and reduce international security. The potential value of these systems is not in proportion to the risks they pose to the international community, including to the states possessing such systems. (*Weapons of Terror*, 145)

Recommendation 44: States should not consider the deployment or further deployment of any kind of missile defence system without first attempting to negotiate the removal of missile threats. If such negotiations fail, deployments of such systems should be accompanied by cooperative development programmes and confidence-building measures to lower the risk of adverse effects on international peace and security, including the risk of creating or aggravating arms races.

Given the weakness of the Commission’s recommendations on ballistic missiles and other long-range delivery systems, its prescription for missile defenses is about as strong as it could be—meaning not very. Only the most advanced military powers are capable of developing meaningful missile defenses in the foreseeable future. With universal controls on long-range missiles (not to mention controls on other weapons systems carrying great strategic weight, such as advanced aircraft armed with accurate conventional

and nuclear stand-off weapons) already ruled out, the chance that those who might be attacked by missile defense-capable great powers will be willing to limit their missile programs is small. In context, the Commission's recommendation at best is a faint reiteration of appeals to sustain "stability," despite the facts that such appeals have little record of success, and that the country with by far the most ambitious missile defense programs, the United States, has largely abandoned "stability" as a strategic goal in favor of "full spectrum dominance."³⁷ Viewed more darkly, this recommendation could be seen as acceptance of a two-tiered world where major nuclear powers exchange data and "build mutual confidence" while accepting the use of missile defenses, together with overwhelming conventional expeditionary forces operating beneath the "umbrella" of increasingly capable nuclear and conventional missiles and other long-range delivery systems, essentially turning the rest of the world into a free fire zone.

There can be little doubt that this is the goal of the United States, which sees missile defenses as a further means of assuring that other states have no effective response should the U.S. choose to impose its will by force of arms. Their importance in offsetting other states' missile capabilities was underlined by the Director of the U.S. Missile Defense Agency in testimony before a Senate committee in March 2006:

Ballistic missiles provide a way for our adversaries to attempt to achieve some degree of strategic equality with us, *especially at a time when ballistic missile defense is still striving to catch up with the progress made by ballistic missile offense over the past four decades.*³⁸

Largely sold to the U.S. public as defense against a "bolt from the blue" attack by a "rogue state," ballistic missile defenses are viewed by U.S. policy makers—who know how unlikely such an attack is—as one more means to preserve "freedom of action" for U.S. military forces.³⁹ Missile defenses are seen by U.S. planners as working together with nuclear weapons, globe-girdling surveillance and communications, and a devastating conventional arsenal to impose unacceptable "costs" on those who would resist military enforcement of U.S. global "interests."

As stated by a 2006 Defense Department planning document:

When combined with US force projection and Global Strike capabilities, active and passive defenses have a synergistic effect on deterrence by enhancing the credibility of US threats to impose costs. By reducing US vulnerability to a wide range of asymmetric attacks, active and passive defenses increase adversaries' perceived probability of incurring costs from counterstrikes on key assets. In other words, effectively integrating offensive and defensive

operations can powerfully influence an adversary's perception of the likelihood of their aggression or coercion will elicit an extremely costly military response.⁴⁰

Similarly, in the words of the 2001 Nuclear Posture Review, "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."⁴¹ The aim is to counter 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. The concern is that the adversary might be willing to run risks for interests it sees as vital against "an over-the-horizon power that often makes the choice to disengage when costs begin to outweigh interests."⁴²

Especially worrisome to U.S. military thinkers 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 in 1997:

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.⁴³

Even before the Iraq war and the Bush administration's doctrine of preventive war, many in the military saw defenses against short and medium range missiles as a more pressing priority than national missile defense.⁴⁴ They

understood that the U.S., at least in the near term, is far more likely to fight wars against countries with shorter range, relatively unsophisticated missiles than against those having long-range missiles that what were called “national” missile defenses are designed to counter. The debate in the U.S. has focused mainly on the technical merits, cost, and effects on arms control regimes of defenses against intercontinental ballistic missiles. The implications for arms control efforts of dominant conventional forces combined with partially effective defenses against shorter range missiles, all backed by a devastating nuclear arsenal, has received little attention.

There are other aspects of the enhanced “overall offensive capability” that missile defenses together with other weapons systems imply, which 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.⁴⁵ 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 in a preemptive strike, a multi-tiered missile defense system may need only to be effective enough to deal with the possibility that a few missiles may make it off the ground. These developments are occurring in a context where the U.S. Nuclear Posture Review lists China as a country that “could be involved in an immediate or potential contingency.”⁴⁶

U.S. military planners sometimes do acknowledge the potentially destabilizing effect of missile defenses, especially if combined with programs like Global Strike designed to make strategic weapons more useable.⁴⁷ These concerns, however, have had little discernible effect on U.S. missile defense development. And although military planners still couch their arguments in the language of “deterrence” and countering “aggressor” states, the weapons and doctrine they are developing now are deployed not only to defend against attack, but in the service of what are politely described in arms control-speak as “preventive” wars or “wars of choice.”

Weapons in Space

RECOMMENDATIONS OF THE WMD COMMISSION

The stationing of nuclear weapons or any other WMD in outer space or placement of such weapons in orbit are both prohibited under the 1967 Outer Space Treaty (OST), but nuclear warheads on BMD interceptors launched from terrestrial bases are not prohibited, nor is the sub-orbital transit of outer space by nuclear warheads on ballistic missiles. (*Weapons of Terror*, 147)

Recommendation 45: All states should renounce the deployment of weapons in outer space. They should promote universal adherence to the Outer Space Treaty and expand its scope through a protocol to prohibit all weapons in space. Pending the conclusion of such a protocol, they should refrain from activities inconsistent with its aims, including any tests against space objects or targets on earth from a space platform. States should adapt the international regimes and institutions for space issues so that both military and civilian aspects can be dealt with in the same context. States should also set up a group of experts to develop options for monitoring and verifying various components of a space security regime and a code of conduct, designed inter alia to prohibit the testing or deployment of space weapons.

Recommendation 46: A Review Conference of the Outer Space Treaty to mark its 40th year in force should be held in 2007. It should address the need to strengthen the treaty and extend its scope. A Special Coordinator should be appointed to facilitate ratifications and liaise with nonparties about the reinforcement of the treaty-based space security regime.

The Commission's recommendations on weapons in space are stronger than those for either delivery systems or for missile defenses, calling for an outright prohibition of space weapons to be implemented by an expansion of the Outer Space Treaty (*see section 1.4*). It is easier to call for stringent controls on space-based weapons for several reasons. First, so far as we know, no state currently deploys weapons in space. Second, placing weapons in space for any purpose remains extremely expensive, and making space-based weapons platforms of any kind both effective and defensible still poses significant technical challenges. Third, for many purposes, the effects

achieved by weapons based in space largely can be accomplished far more cheaply with weapons based on the ground.⁴⁸

All advanced military powers, and the United States most of all, increasingly rely on satellites for surveillance, communications, navigation, and the targeting of weapons. Even terrestrially-based U.S. ballistic missile defense programs call for massive upgrades in space-based sensing, and the United States has ambitious plans to expand the advantages it already derives from its global network of satellites and ground stations. A main justification for exploring space weapons in the near term is to defend “space assets” that U.S. ground forces depend on, purportedly requiring technologies with the capability to detect and if need be destroy anti-satellite weapons that might operate in or through space. The second application for space-based weapons that the U.S. appears to be seriously considering is missile defense, employing either kinetic-kill devices or directed energy.

Attack on terrestrial targets from space occasionally is mentioned in long-range planning documents, attracting a disproportionate amount of attention due to its sci-fi glamour. However, other new capabilities for weapons delivery to ground targets are emerging, with greater range and global coverage for nuclear or highly accurate conventional payloads. This implies that attacks on terrestrial targets likely can be accomplished more easily with upgraded ballistic missiles and re-entry vehicles, perhaps supplemented by re-useable launch vehicles that could either place satellites in orbit or deliver several weapons payloads at once from a sub-orbital trajectory.

The combination of increased use of space technologies for surveillance, communication, and navigation by terrestrial military forces, additional sensing and targeting demands from evolving missile defenses, and the extremely profitable nature of high-end military space technologies are likely to drive the continued development of fundamental space technologies—cheaper and more reliable space launch, space-hardened materials, efficient means of generating and storing energy in space, etc. All of this increases the potential for space-based weapons of some kind to become practical at some time in the future. A prohibition on space weapons thus is a worthwhile goal.⁴⁹

It should not be allowed to distract our attention, however, from more easily achievable improvements of ballistic missiles and other long-range delivery systems that are far more likely to be developed and deployed in the next decade or two, and that hence present a greater real threat.

And at least so long as U.S. military R&D budgets remain nearly unlimited, there is a dangerous synergy at work. Missile defenses, after decades of being sold as an “alternative” to the terrible dilemma of nuclear “mutually assured destruction,” carry an ideological weight virtually independent of any rational argument. At the same time, the everyday use of satellite-based technologies by U.S. military forces at war around the world continues to grow, providing credibility to claims that further development of military space technologies is both essential and practical. The high-tech appeal of

both missile defenses and military space generally as “the ultimate high ground” help to sustain budgets for technologies such as space launch and hypersonic flight, contributing to a steady flow of incremental improvements in already highly dangerous and inherently de-stabilizing strategic weapons, such as highly accurate long-range missiles.

Recommendation for U.S. Policy

- The United States should abandon the quest to maintain long-term military supremacy through modernization and development of missiles and other strategic delivery systems as well as anti-missile systems and possible deployment of space-based weapon systems. It should instead support the establishment of international controls on delivery systems and anti-missile systems as part of a global process of reducing and eliminating nuclear forces, banning weapons in space, limiting strategic weapons generally, and implementing a policy of “non-offensive defense.”