



Center for the Study of Weapons of Mass Destruction
National Defense University



2006 Annual Symposium
The Future Nuclear Landscape: New Realities, New Responses

Key Themes

This paper summarizes key themes that emerged from the National Defense University (NDU) Center for the Study of Weapons of Mass Destruction's sixth annual symposium, The Future Nuclear Landscape: New Realities, New Responses, held at NDU on May 17-18, 2006. The views presented here do not necessarily reflect those of the National Defense University, the Department of Defense, or any other U.S. Government agency.

The nuclear landscape is diverse, dynamic, and complex. Important developments are occurring along at least four axes: nuclear terrorism, regional nuclear proliferation, great power nuclear forces and strategies, and the security implications of the coming boom in nuclear energy. These nuclear problems are interrelated in ways we do not fully understand. Strategy and policy frameworks do not address them in a sufficiently integrated fashion. New conceptual thinking is required to develop a more unified understanding of and approach to managing the risks and opportunities that these 21st century nuclear challenges pose.

The world is at a nuclear “tipping point.”

- ***Global nuclear “capacity” is significant and growing.*** More than at any other time in the nuclear era, today there is more nuclear capacity and potential (i.e., knowledge, technology, and materials) accessible to a growing number of actors with more ambitious goals. The result is a high degree of “nuclear latency” that challenges traditional thinking about nuclear threats and even what it means to be nuclear-capable. Several dozen states are believed to be “in the know” and many more could become so based on their participation in civilian nuclear energy. While robust nuclear weapons programs remain the most serious proliferation concern, a range of possibilities below this threshold must be of concern as well. So must be the catalytic events that could push a latent nuclear actor toward a more active or accelerated posture.
- ***Motivations are strong.*** Security considerations account for some of this. For example, the Iraq war may have reinforced perceptions among some U.S. adversaries about the value of nuclear weapons for deterring the United States. Others may look at North Korea or Iran and conclude that possessing or seeking nuclear weapons results in enhanced leverage. But other factors also are at play.

Countries associate “nuclear” not just with security, but with modernity as well. That is, access to nuclear science and technology is seen by those who consider themselves “behind” as a powerful means to join the community of more advanced nations.

- ***The international nuclear nonproliferation regime is under great stress.*** In particular, the progress of determined, hostile proliferators today poses a major threat to the integrity of the regime and the norms it embodies. Failure to resolve these challenges and strengthen the regime could lead to a broad-based loss of faith in its effectiveness to enhance security, and to heightened proliferation pressures. A new, complicating factor is increasing global demand for energy and the emerging geopolitics of oil. In a time of dramatically higher oil prices (which are likely to endure), it will be difficult to impose the type of hard sanctions that may be necessary to induce Iran – a major oil exporter with the capability to interfere with oil shipments – to limit its nuclear ambitions. China’s rapidly growing need for imported energy is of particular concern here, as Beijing seeks to establish strategic relationships with major oil exporters like Iran.

At least four potential “game changers” could substantially shape the nuclear future.

- ***Iran.*** Progress in recent years to strengthen the nonproliferation regime (e.g., indefinite extension of the NPT, UN Security Council Resolution 1540) could be undone if Iran’s brand of “creeping proliferation” is allowed to succeed and to validate Tehran’s assertion of its NPT Article IV rights. Iran’s challenge is a test of the treaty and of the great powers’ ability to forge consensus on critical security issues. Failure to contain Iran’s nuclear ambitions could have a profound impact on security in the Greater Middle East, especially if Tehran pursued more risk-taking behavior or transferred nuclear technology to other problem states (or terror groups). A nuclear Iran could serve as a “tipping point” for some states in their thinking about acquiring a nuclear capability, though it is possible as well that key states in the region (e.g., Egypt, Syria and Turkey) could learn to live with this outcome (perhaps focusing instead on improved conventional or chemical capabilities).
- ***India.*** The U.S.-India nuclear deal is a watershed development whose consequences are likely to be significant – though it is too early to predict precisely what its impact will be. For the United States, the strategic logic of the agreement is clear: to transform relations with India by fixing India’s anomalous position in the nonproliferation regime, and thereby empower India as a force for a more stable order in Asia. The strategic benefits of the initiative can only be known over time. In the near-term, many in the nonproliferation community have focused on the agreement’s risks: promoting a double standard by rewarding a NPT non-signatory, facilitating expansion of India’s nuclear capabilities, and potentially fueling a nuclear arms race among India, Pakistan and China. How serious these risks prove to be will depend in part on how the United States explains the agreement and in part on the choices India makes in negotiating

implementation details with the IAEA and Nuclear Suppliers Group, producing fissile material, and defining its nuclear weapons requirements.

- **Energy.** Civilian nuclear technology is already widely dispersed around the world: 74 countries, which together account for nearly 88% of global population, have or soon will have nuclear reactors, and 50 countries have spent fuel stored in temporary sites. Some expert projections envision hundreds of billions of dollars in new investment in nuclear energy over the next few decades. As this expansion unfolds, fuel cycle and other dual-use technologies will spread, and spent fuel stockpiles will grow significantly. The proliferation risks are clear enough, and while the United States has a broad strategy to address these risks, the requisite international support and enabling technologies do not yet exist. The U.S. strategy focuses on reducing incentives to possess complete fuel cycles (e.g., through affordable, reliable fuel leasing, as laid out in President Bush's February 2004 speech at the National Defense University) and developing new "cradle to grave" fuel cycle technologies that are proliferation-resistant and produce energy efficiently while minimizing the amount and/or toxicity of nuclear waste (as embodied in the Global Nuclear Energy Partnership (GNEP)). U.S. nuclear fuel cycle proposals have encountered significant resistance from a number of other countries, including some members of the Nuclear Suppliers Group. Moreover, the technologies underlying the GNEP's vision of a more proliferation-resistant fuel cycle may not be in hand for a decade or more.

- **Nuclear "next use."** Prudent policy should assume a next use of nuclear weapons is becoming more likely and will be a shock to the international system, especially if it is deemed successful in achieving the user's objectives. The full range of near- and longer-term consequences is impossible to predict, and will depend greatly on the specific circumstances. Of greatest concern is the impact on a number of interrelated factors: the perceived value and usability of nuclear weapons, the perceived credibility of U.S. security guarantees, degree of damage to the nuclear taboo, state incentives to acquire nuclear capability, and terrorist calculations. While remaining focused on terrorist threats, U.S. policy makers and military planners should also take seriously the possibility of next state use. They must not only focus on intelligence, deterrence and defense efforts, but also on designing responses that will leverage the shock to shape the post-use strategic environment (e.g., restore the nuclear taboo, reassure non-nuclear states, pursue new or stalled nonproliferation initiatives, and defuse calls for universal disarmament).

The United States faces major challenges in developing effective strategies to shape the nuclear landscape.

- ***There is a large disconnect between the United States and the rest of the world concerning the importance of nuclear weapons.*** While interest in the rest of the world is rising, in the United States there has been an erosion of interest and institutional expertise in the Office of the Secretary of Defense, the Services, Congress, and academia. Moreover, efforts to transform the nuclear stockpile have made only limited progress.
- ***The United States can expect only limited help from Russia and China in advancing its combating WMD and counter-terrorism agendas.*** Moscow and Beijing care about containing the spread of nuclear weapons, just not as deeply as does Washington. While Moscow and Beijing do not wish to see unchecked proliferation, neither are they interested in de-legitimizing nuclear weapons or unreservedly supporting a nonproliferation agenda that is viewed at least by some officials as preserving American advantage or hegemony. Strategic economic considerations increasingly reinforce this: nuclear technology is one of the few things Russian can sell, and China's aggressive effort to secure energy sources colors its posture toward proliferation problems like Iran. These "equities" must factor into U.S. policy.
- ***The war in Iraq has been costly to U.S. nonproliferation efforts.*** Many governments feel alienated from Washington because the public rationale for the war is widely viewed as either illegitimate or based on a massive intelligence failure. The damage to U.S. credibility has been serious, making it more difficult to marshal others to confront vigorously new proliferation threats (or support U.S. objectives more broadly). Forging a common approach to Iran within a coalition that divided bitterly over Iraq has compelled the United States to make significant adjustments to its strategy. The war also has deepened political divisions at home, making the search for bipartisan approaches more difficult. These domestic political constraints and the strain on U.S. forces resulting from the war are recognized by Iran and North Korea, who likely now see the United States as less willing or able to threaten or execute military action in response to their proliferation activities. As a result, these countries may feel emboldened to resist international pressure to dismantle their nuclear capabilities.
- ***Cultural and organizational obstacles hamper effective responses to dynamic nuclear challenges.*** Those doing strategy and policy analysis tend not to understand science and technology well. Nuclear functionalists tend to lack sufficient regional expertise, while regional or country specialists are not always well versed in strategic force issues (China is a good example). There also is a gap between nuclear analysts and those working on other military issues. These cultural problems both reflect and perpetuate divergent vocabularies and frames of reference, and contribute to stovepipes and turf battles. In the Combating

WMD arena, stovepiped organizations and processes have been a persistent problem.

- ***There are large gaps in knowledge and understanding of suspect programs and activities.*** Especially for key nuclear programs of concern, like Iran and North Korea, and the nuclear activities of terror groups like al-Qaeda, intelligence remains limited. There are some areas of consensus regarding the nuclear intentions and capabilities of al-Qaeda, and some areas of divided judgment. U.S. strategy to combat WMD terrorism gives prominence to improving intelligence with respect to the intentions, capabilities, and plans of terrorists interested in WMD. It also emphasizes capabilities-based planning to help compensate for intelligence gaps.

Important progress is being made on key pillars of U.S. combating WMD and counter-WMD terrorism strategy, but much work remains.

- ***Capabilities have improved to deny, disrupt, detect, prepare for, and attribute nuclear attacks.*** Through activities such as the Proliferation Security Initiative (PSI), accelerated Cooperative Threat Reduction (in particular nuclear site security enhancements in Russia), and disruption of terrorist financing, enhanced capabilities exist to deny access to materials, technologies, expertise, and resources. The Domestic Nuclear Detection Office (DNDO) has formulated a global nuclear detection architecture and is systematically enhancing capabilities to detect and disrupt the movement of nuclear or radiological materials into the United States. The Domestic Nuclear Event Attribution (DNEA) program has achieved an initial operational capability for post-detonation technical nuclear forensics to support an attribution decision that would also be informed by intelligence and law enforcement findings. This should support both deterrence of and response to a nuclear attack. Lessons learned from Hurricane Katrina are being used to improve domestic preparedness for nuclear events. While much more work remains to be done, these and related activities are advancing the creation of a layered defense against nuclear threats leveraging the capabilities of the entire interagency community.
- ***DoD is moving toward greater unity of effort*** through the designation of U.S. Strategic Command as lead combatant commander for combating WMD and the establishment of STRATCOM's Center for Combating WMD. The test of these new command and organizational arrangements will be the degree to which they can assist regional commands to rigorously define, plan and resource for, and execute all aspects of the combating WMD mission. The Department of State is reorganizing to align its activities with national combating WMD priorities, to include nuclear detection activities, nuclear information sharing, consequence management, and the development of country- and region-specific plans that can be synchronized with DoD plans. These indicators of greater intra- and interagency "jointness" are encouraging, though a strong push is needed to ensure

interagency structures and processes are capable of effectively managing complex contingencies involving WMD.

Russia and China are modernizing their nuclear forces while the United States is struggling to establish a consensus on its future nuclear weapons needs.

- ***Nuclear weapons remain central to Russia’s conception of security, and a major focus of defense modernization efforts.*** The discussion of nuclear weapons in Russia is vastly different from that in the West. There is a preoccupation with nuclear weapons as defining Russia’s status as a world power and as the key to prevailing in a broad range of nuclear and non-nuclear contingencies. Nuclear doctrine places significant emphasis on Russia’s ability to control a process of nuclear escalation to achieve war termination on favorable terms. NATO and the United States remain the principal adversaries. Russia’s nuclear force modernization program is ambitious and broad in scope, but it is not clear new systems can be deployed in significant numbers; strategic forces overall are expected to decline over the next 10-15 years due to aging and financial constraints. Still, Moscow seems intent on maintaining a full range of weapon types and exploring new ones, including precision low-yield, pure fusion, “clean” penetrators, and nuclear isomer weapons. The tactical nuclear weapons stockpile, while dramatically reduced from Cold War levels, remains large (reportedly in the 3,300-5,700 range).

- ***China is serious about modernizing its nuclear forces to ensure deterrence, but does not appear to be competing with the United States for nuclear supremacy.*** In part, China is motivated to maintain a modern nuclear force in order to avoid nuclear blackmail from other major powers; this is an enduring legacy from the 1950s, reinforced by contemporary Chinese threat perceptions. But Beijing also seeks to cast a nuclear shadow over Eurasia to advance its strategic interests, and believes its nuclear capabilities could decisively influence U.S. behavior in a crisis or conflict over Taiwan. That said, China’s modernization efforts have had no real impact on the strategic nuclear balance with the United States, and appear intended to maintain the status quo. The transformation process triggered by the 1996 Taiwan Straits episode has been directed at maintaining a viable deterrent, defined as the ability to absorb an attack and launch a counter-attack. Reinforced by the U.S. Nuclear Posture Review – which many in China saw as signaling a pre-emptive strategy and a U.S. effort to “escape the nuclear balance” – this process is producing a more diverse force with greater range, mobility, and survivability. But it is not as yet a much bigger force in terms of deployed warheads. China currently is debating the requirements of “sufficiency” and whether it needs to do more than pace improvements in U.S. New Triad capabilities. Beijing is particularly concerned with ensuring that U.S. missile defenses do not deny it an assured retaliatory capability. There is debate in some quarters about whether to tailor the New Triad to negate the Chinese deterrent. The potential for mutually reinforcing perceptions leading to intensified nuclear and strategic competition underscores the need for strategic dialogue.

- ***U.S. nuclear policy and posture need to be fundamentally re-thought.*** The current debate in the United States about nuclear weapons is divisive and unproductive because it has not engaged first principles and sought to build consensus around a fundamental reconsideration of the role of nuclear weapons in U.S. security. Retaining a large inventory to address threats no longer considered acute does not make much sense, is costly, and is an obstacle to reasoned debate on what many consider to be a pressing need for a different class of weapons better suited to contemporary security challenges. Only by addressing analytically “Why nuclear weapons and how many of what kind?” will it be possible to begin building a more persuasive case for these weapons and the modern infrastructure required to develop them. Rather than investing in high cost life extensions for most aging weapons, it may be more sensible to retire unneeded warheads, develop and deploy a certain number of new and more reliable weapons, and in so doing establish a “warm” capability to design, test, and produce that is responsive to future requirements. With confidence in this warm base, the number of required deployed weapons conceivably could be modest. Current leadership does not seem motivated to reshape and lead the domestic debate along these lines – but progress is not possible without more serious engagement from the DoD civilian leadership and the White House. The United States also needs to take a fresh look at declaratory policy to ensure it remains relevant to emerging nuclear challenges, including states that may transfer weapons capabilities to terrorists or otherwise support terror groups seeking WMD. Declaratory policy must also be examined in light of potential changes in U.S. nuclear, non-nuclear, and defensive strategic capabilities.