

QUICK READ SYNOPSIS

Confronting the Specter of Nuclear Terrorism

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Assessing U.S. Strategy in the War on Terror

Stephen Van Evera, MIT

Background

Al Qaeda's leaders have sought to obtain weapons of mass destruction (WMD) in the past, and their rhetoric suggests that they would use these weapons if they had them.

- Such a grave menace requires a strong response—yet the United States has so far waged only a one-dimensional war against al Qaeda, fighting hard on one front when it should be fighting on four and failing to devote the political and financial resources an effective war on terror requires.
- The U.S. war against al Qaeda should be waged on every relevant front with all needed resources because al Qaeda is the greatest threat that the United States now faces, and failure to defeat it could bring immense calamity.

Al Qaeda Regroups

The new Afghan government has failed to stabilize the country, and al Qaeda and its Taliban allies have reestablished a strong presence in southern and eastern Afghanistan.

- Pakistan also remains unstable and unable to police its Northwest Frontier Province, allowing al Qaeda free run.
- The Iraq war diverted needed resources away from the war on al Qaeda—al Qaeda posed a far greater threat than Saddam's Iraq and should have taken top priority.
- The U.S. attack on Iraq also inflamed the Muslim world against the United States—helping al Qaeda recruit and find friendly places to hide.

*Homeland
Defense*

The Bush administration's homeland defense effort has large holes.

- Funding, leadership, and institutional reforms have all been inadequate.
- Homeland security funding has increased since the attack of September 11, 2001, but much more remains to be done.
- The FBI has yet to make the transition from a crime-solving to a terror-preventing agency.
- Reforms of the broader U.S. intelligence community, which is key in counterterrorism, have not been adequately implemented.
- U.S. efforts to disrupt terrorist financing have been stymied by infighting among U.S. government agencies.
- Local police, fire departments, and public health labs have not been effectively integrated into homeland security, although they have a key role as likely emergency first responders.
- Many U.S. domestic vulnerabilities remain unaddressed and inappropriately funded: borders, nuclear reactors, chemical plants, railroads, and biodefenses.

NOTE: This situation reflects the administration's decision to focus its efforts on the offensive while doing only enough on homeland security to give the appearance of action.

*Securing
WMDs*

Vast nuclear and biological weapons and materials remain poorly secured in the former Soviet Union and elsewhere.

- Many Soviet nuclear and biological weapons scientists also remain underpaid or unemployed, ripe for hiring by terrorists.
- The three most recent U.S. presidents have all failed to move strongly to lock down these materials and scientists.
- Funding for the Cooperative Threat Reduction Initiative should be tripled.
- A strong-handed approach should be taken toward securing WMD around the world, including poorly secured nuclear materials in Pakistan and in many research reactors elsewhere.

War of Ideas

To defeat al Qaeda, the United States must reach an understanding with the wider Muslim world.

- The Islamist jihadi movement from which al Qaeda grows must be reduced, isolated, and drained of energy.
- The jihadis feed on political and historical myths and lies. These myths must be dispelled by strong U.S. public diplomacy.
- The United States should also push to end other conflicts that al Qaeda exploits. Al Qaeda feeds on war; the United States should stand for peace and promote peace.

*Public
Diplomacy*

The recruiting narrative used by al Qaeda and other jihadi movements is made of historical fabrications and half-truths portraying a period of vast unprovoked one-way violence by the United States and other non-Muslim states against a benign Muslim world innocent of wrongdoing.

- Violence has run both ways between non-Muslims and Muslims.
- Muslim rage would be deflated if Muslims understood the truth, but U.S. efforts to correct the record are half-hearted.
- This failure of public diplomacy reflects the Bush administration's macho approach to foreign policy.

Dampen Conflicts The United States should have a policy of dampening conflict and promoting peace in Kashmir and Chechnya, as well as in Israel-Palestine.

- Al Qaeda feeds on war, so the United States should be the great maker and builder of peace in the region.

Nine Keys to Weakening Terrorism The United States, under the current Bush plan, would define and then deny the inputs that terrorist organizations require to sustain themselves and their operations. Nine key areas are identified:

- leadership;
- safe havens for training and planning;
- funds and finance;
- communications, needed for exerting command and control over operatives and for inspiring a broader political base;
- movement, needed for gaining access to targets, especially in the United States;
- intelligence, needed to make strategy, to plan operations, and to plan countermeasures against attack;
- weapons, including WMD;
- personnel, supplied by the recruitment, training, and indoctrination of new operatives; and
- ideological support, needed to recruit and motivate new operatives and to gain broader support from host societies.

NOTE: The strategy is good but the execution is poor. It still appears by this accounting that the Bush administration is waging a one-dimensional war on terror.

Needed: Policy Innovation Winning the war on terror will require large innovation in U.S. national security policy.

- The United States should put fewer resources into traditional military functions and far more resources into counterterror functions.
 - These include intelligence, homeland security, diplomacy to lock down loose nukes and bioweapons, public diplomacy, and diplomacy to end conflicts that breed terror.
- The organizations that carry out these functions are politically weak in Washington, so they lose out in budget battles.
- Our government is very reluctant to innovate, so the changes needed to defeat al Qaeda face strong natural resistance. Can the U.S. government innovate to the extent required?

Increased Risk Two worrisome long-term trends will likely increase the risk of catastrophic terror in coming decades.

- First, rising violent fundamentalism in Islam, Hinduism, Christianity, and Judaism creates an energy source for future terrorists.
- Second, WMD technology and knowledge are spreading relentlessly.
 - The spread of bioweapons pose a particular danger.
 - In the future, terrorists may be able to make their own superlethal pathogens.

NOTE: We must recognize that we are in an enduring struggle against terror and adapt accordingly. Business as usual will not suffice. One-dimensional policies will not suffice. Nothing less than a wholesale transformation of U.S. national security policy is required.

Curbing the Demand for Mass Destruction

Charles B. Curtis, Nuclear Threat Initiative

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Background A comprehensive approach to catastrophic terrorism requires that we manage both the supply and demand for weapons of mass destruction.

- Nonproliferation strategies that focus solely on supply are merely buying us time.
- The danger is the emergence of a particularly virulent form of “sacred terrorism” operating on a global scale with substantial resources and with a demonstrated willingness to kill on a grand scale.

Nuclear Terrorists For terrorists bent on mass destruction, acquiring a nuclear weapon or the materials to build one is by far the most difficult step.

- Preventing this from occurring is relatively easy, and it remains our first line of defense.
- After a terrorist group secures a weapon or weapons-grade material, all of the subsequent steps become much easier for the terrorists and more challenging for us.
- Unsecured nuclear material is a threat to everyone, everywhere.
- We must address it as a two-pronged challenge of supply and demand.

Nonproliferation Contemporary nonproliferation strategies merely buy us time in a world where technological advances and the operations of a global economy may soon outpace our defenses.

- It is essential to use the time we have to focus more purposefully on the demand side of the equation—the hatred felt by Islamist extremists that fuels the desire to use weapons of mass destruction against us.

Collaboration A global coalition against catastrophic terrorism will require a greater degree of international collaboration than anything ever witnessed, involving more allies and an unprecedented understanding of a far different enemy.

- The enemy that we face does not have borders to defend, people to protect, or territory to control—and as the 9/11 Commission noted, collateral damage is not in their vocabulary.
- Even if we make the case for collaboration against catastrophic terror, the United States will not receive the cooperation it needs unless government leaders enjoy sustained public support for such cooperation.
- It will require the active cooperation of Muslim states and their Muslim majorities. We will never earn their cooperation in addressing our concerns, unless they see us addressing their concerns.

Islamist Extremism The threat comes from those who hijack the Islamic faith to demonize the West; declare the United States and its allies an enemy of Islam; blame them for the ills that befall Muslims; spread this view to as many Muslims as possible; and incite violence against the United States, its people, its property, and its allies.

- We must find a way to defuse this perception of the United States and its role in the world.

- Those who discount the importance of soft power (using influence and persuasion) have traditionally believed that hard power, notably the military, is all that is required to enhance national security.
- It is admittedly beyond U.S. capacity to be universally loved, but we must do much more to counter the spread of anti-American hatred.

Using Soft Power

When it comes to exercising soft power, the first order of business is to understand our enemies and their sympathizers.

- Much of the Muslim world's hostility toward the United States is based on the perception that our policies are hostile to the Muslim world.
- It is not who we are but what we do that counts.
- When regrettable incidents such as the Abu Ghraib scandal occur, they become a symbol of U.S. foreign policy.
- Studies suggest that we need to understand how the Muslim world views our actions so we can better explain and defend our policies, not just our principles.
- Not only do we need to understand the universe of extremist views, we also need to understand the dynamics of how those views are spread: in mosques, in schools, in textbooks, in newspapers, on the Internet, and especially via satellite television.
- We must identify and support third parties who, for their own reasons, are willing and able to serve as voices of moderation within their own communities.
- The United States is faced with a diplomacy challenge: to work with the people and the governments in Muslim nations to isolate and weaken the Islamic extremism that is a fertile breeding ground for terrorism.
- We must aim to separate violent extremists from the vast majority of the Islamic community, while insisting that responsible Arab and Muslim states do the same.

NOTE: The direction of the Middle East over the next ten years is absolutely crucial to our efforts to curb the demand for catastrophic terrorism. If the region can move toward more open, stable societies, its member states can be irreplaceable partners in confronting the threat of catastrophic terrorism.

Conclusion

We face a new strategic reality—one in which “the amount of discontent in the world is becoming a highly significant national security variable.”

- As advances in technology increasingly put in the hands of the discontented the capacity to harm larger and larger numbers of people, anti-American hatred has become a serious national security concern.
- We must address the urgent risk by locking down the supply of nuclear materials.
- In the long run, these weapons of mass destruction, particularly chemical and biological weapons, are going to become easier to make, so the urge to use them must become less, not more.
- We have to learn how to diminish hatred—it must be the work of national security experts; this is the real challenge in the years ahead.

NOTE: Nonproliferation is an effort to buy time to soothe the world's grievances before they explode in the form of a WMD attack.

Combating Nuclear Terrorism: Addressing Nonstate Actor Motivations

Bonnie Jenkins, Ford Foundation

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- Background* Understanding and addressing the motivations of nonstate terrorist actors should be as important as locking down nuclear weapons and materials.
- International efforts used to reduce a country's incentive to acquire nuclear weapons should also be directed at nonstate actors.
 - When considering such measures, the international community should examine the motivations of such actors.
 - This article suggests a multifaceted approach for understanding, and reducing, the nuclear ambitions of nonstate actors.
- Terrorist Ambitions* The first step in preventing terrorists from acquiring a nuclear capability is ensuring that existing weapons are secure from theft.
- We need to pay attention to the number of nonstate groups that may seek nuclear weapons and the number of potential recruits that may want to join these terrorist groups.
 - Assessing the underlying motivations of nonstate actors is far more difficult than measuring the number of state-owned nuclear weapons and material, or determining how much it will cost to secure a facility.
- New Terrorists* Terrorists can employ a range of tactics to achieve their goals, including conventional weapons, hijackings, suicide bombings, and the acquisition of weapons of mass destruction.
- For today's terrorists, nuclear weapons are perfect for inflicting massive destruction, as well as augmenting their power and prestige.
 - A group's motivations may be understood, but there is no assurance that states may be able, or willing, to address those concerns.
 - Some of these nonstate actors may be too intent on acquiring and threatening the use of nuclear weapons to be persuaded.
- Religious Terrorists* A factor in addressing the motives of terrorist groups is the increase in the number of groups whose motivations are deeply religious in nature.
- These types of groups are known to promote extreme forms of the world's major religions normally in the form of cults.
 - Their incentives and motivations may be much more difficult to address than political groups, such as right-wing terrorists.
 - Deeply religious terrorist organizations like al Qaeda are also more likely than political terrorist groups to seek nonconventional weapons.
- Decentralized Groups* The decentralized structure of new terrorist groups makes it even more difficult to understand them and to address their motivations.
- Terrorism is a transnational problem that must be addressed through international efforts.

*Reducing
the Nuclear
Mystique*

- New technologies and greater geographic mobility mean that loosely connected individuals and organizations continue to function despite attempts to thwart their efforts.
- Even if the international community is able to address the motivation of the leaders, splinter groups may decide to continue their struggle.

Taking steps to demystify nuclear weapons and to reduce the incentive to acquire them requires states that possess them to reduce reliance on such weapons in their own national defense strategies.

- These states should begin by abiding by their international obligations, including the reduction and eventual elimination of those weapons.
- States that have nuclear weapons must acknowledge the impact their decisions to maintain their arsenal have on this issue.
- Unfortunately, nuclear weapons states are not showing adequate signs of taking significant steps toward disarmament.
 - Some states argue nuclear weapons are necessary because there is no assurance of what the world will be like in twenty years.
- The United States saw the Anti-Ballistic Missile (ABM) treaty as hindering its ability to protect Americans from future terrorist or rogue state missile attacks and withdrew from the treaty.
- The Non-Proliferation Treaty (NPT) signatories were unable to obtain a consensus document in May 2005, and the heads of state at the 2005 World Summit did not mention nonproliferation and disarmament in their final document.
- The U.S. nuclear deal with India raises concern that it goes against the spirit of the NPT and opens the door for other states to engage in similar agreements, to the detriment of nuclear nonproliferation.
- The fact that the United States would consider a new class of nuclear weapons, such as bunker busters, is the type of action that does little to diminish the value of nuclear weapons.
- The U.S. administration has sought research funding to begin reprocessing spent fuel. This raises nuclear nonproliferation and security concerns.

Solution Steps

The United States and international community can take a number of steps to reduce the likelihood that nonstate actors would seek nuclear weapons as a means of promoting their agendas.

- We must devise innovative measures to reduce the potential number of terrorist organizations that may seek nuclear weapons by addressing the motivations of nonstate actor groups.
- States that possess nuclear weapons must work to reduce the perceived power and prestige that comes with the acquisition and possession of such weapons.
- We must better understand how our foreign policies affect others, with particular emphasis on exploring their unintended effects.
- We must improve our public diplomacy initiatives.
- We must continue to secure existing nuclear weapons and fissile materials—the supply side of the equation.

The Race between Cooperation and Catastrophe: Reducing the Global Nuclear Threat

Sam Nunn, Nuclear Threat Initiative

Background The effort to reduce the global nuclear threat falls short in terms of speed, resources, and level of effort.

- This article presents four hypothetical nuclear scenarios to illustrate this point and suggests a series of steps that, if taken, could help prevent each crisis.
- The United States and its partners must anticipate plausible nuclear scenarios and do what is necessary to prevent them today. We must act now.

NOTE: Nuclear terrorism is not inevitable. But unless we intensify our level of effort, certain disaster could be at hand. We are in a race between cooperation and catastrophe, and the global nuclear threat is outpacing our response.

Scenario 1 The day after a nuclear terrorist attack, what would we wish we had done to prevent it?

- First, we would wish that the United States had made the security of all existing nuclear weapons its top priority.
- We would wish the United States and Russia had insisted on bilateral transparent accountability of tactical nuclear weapons in both their arsenals.
- At the multinational level, we would wish that the Group of Eight's (G8's) Global Partnership against the Spread of Weapons and Materials of Mass Destruction had met its commitments and directed its resources aggressively against the most urgent dangers.
- We would wish that we had fully implemented the Global Threat Reduction Initiative (GTRI), which seeks in part to remove and secure nuclear materials at vulnerable research reactors around the world.

Scenario 2 The day after a dirty bomb attack, what would we wish we had done to prevent it and also to mitigate the damage?

- First, we would wish that we had developed a risk-based inventory of vulnerable radioactive sources and heightened our efforts to secure them through a partnership effort around the globe.
- We would wish that we had secured radioactive sources at each stage of their life cycle, from production through shipment, use, and disposal.
 - This "cradle-to-grave" approach is the only way to ensure that nuclear materials are safeguarded against their illicit use.
- We would wish that we had sophisticated response plans in place that integrate efforts at the local, state, and federal level.
- We would wish that those plans had been tested and refined through regular exercises.
- We would wish that we had implemented a serious public education program to mitigate the consequences of a dirty bomb attack.

NOTE: The psychological effects of such a strike would likely far outweigh the immediate casualties. Yet without a sufficient public education campaign before a dirty bomb is detonated, the resulting panic could translate into economic disaster.

Scenario 3

The day after a mistaken, accidental, or unauthorized nuclear strike—assuming that there is a day after—what would we wish we had done to prevent it?

- The United States and Russia would first wish that they had removed their nuclear weapons from hair-trigger alert status.
- They would wish that they had recognized that survival depends on the viability and accuracy of the warning systems on the opposing side.
- They would wish that they had followed through on the initiative begun in 1998 to develop a joint early warning center to prevent false warnings and reduce the danger of a catastrophic nuclear mistake.
- The United States and Russia would wish that they had developed the ability to identify, in real time, the source of any nuclear attack, so that a third-party nuclear strike could never trigger a mistaken nuclear exchange.
- And finally, both nations would wish that they had planned and trained jointly for these dire scenarios so that they could reduce the chance of inadvertent destruction.

Scenario 4

As more nations become nuclear states, there is a higher chance of nuclear accidents and more opportunities for weapons or materials to fall into terrorist hands. After this occurs, we would wish that

- The United States and its allies had developed an urgent, coordinated, and direct diplomatic effort with North Korea and Iran to end their nuclear weapons programs, using both carrots and sticks.
- Nuclear nations, especially the United States and Russia, had visibly and steadily reduced their reliance on nuclear weapons at a time when we were asking others to renounce nuclear weapons.
- We had created a nuclear cartel, composed of states with fuel cycle facilities, guaranteeing nuclear fuel at favorable market rates to other states, but only if they agreed to forgo the development of their own capacity to make nuclear material.
- We had followed the Treaty of Moscow with other substantive actions, such as adding benchmarks for progress, mechanisms for verification, timetables for reductions, and an obligation to eliminate warheads.
- We had moved forward with the Comprehensive Test Ban Treaty and ultimately worked toward its ratification.
- We had insisted on a system of stronger rules and stronger enforcement to prevent nations from acquiring nuclear weapons capability.

*From
Hindsight to
Foresight*

When nuclear weapons and materials are involved, the luxury of hindsight is too costly. American citizens have every right to know whether the U.S. government is doing all that it can to prevent each of the above scenarios from taking place. The answer, quite simply, is that it is not.

- The greatest threats we face today we can successfully address only in cooperation with Moscow and many other capitals.
- The nonproliferation debate is rarely a question of direction; it is a question of speed, resources, and level of effort.
- To win the race between cooperation and catastrophe, preventing the spread and use of nuclear and other weapons of mass destruction should be the central organizing security principle of the twenty-first century.

NOTE: Despite recent advances, such a degree of focus has yet to be achieved. If adopted, what would it mean for U.S. foreign and security policy?

We must employ a model of international teamwork in responding to the threats from North Korea and Iran, in securing nuclear materials around the globe, and in confronting catastrophic terrorism anywhere in the world.

- With the rise of global terrorism, with poorly secured nuclear weapons and materials around the globe, with our economies so tightly intertwined, it is possible that a small group of terrorists could acquire nuclear weapons in one nation, launch a nuclear attack in another nation, and stagger the security and the economy of every nation.
- The United States and its partners must be as focused on fighting the nuclear threat in this century as they were in fighting the communist threat in the past century. Why wait until the day after? We must do it now.

Averting Nuclear Catastrophe: Contemplating Extreme Responses to U.S. Vulnerability

Robert L. Gallucci, Georgetown University

Background

Traditional deterrence is not an effective approach toward terrorist groups bent on causing a nuclear catastrophe.

- Preventive strategies, which call for the elimination of an enemy before it can attack, are highly risky and often difficult to implement.
- By threatening retaliation against those states, the United States may be able to deter that which it cannot physically prevent.
- Despite its enormous strength, the United States cannot defend its vital interests, not even its homeland.
- Some of today's adversaries value their lives less than our death; such adversaries are not candidates for deterrence.
 - While they lack a ballistic missile delivery system, they have a variety of other means to deliver a nuclear weapon, and the United States cannot have any confidence in its ability to mount a sustained defense by denial to these means.
- This article assesses the threat of nuclear terrorism and considers two extreme solutions: preventive war and expanded deterrence.

Vulnerability

In the absence of either credible defense or deterrence, today we find the United States to be at once extraordinarily powerful and tragically vulnerable.

- We should want to know if an adversary can acquire a nuclear weapon to attack the United States, and if it wishes to do so.
- Does the enemy have both intent and capability?

Concerns

We must consider the more likely scenarios under which the United States could suffer nuclear terrorist attack, such as

- an al Qaeda cell purchases fifty or so kilograms of highly enriched uranium (HEU), which could be shipped with little or no shielding and be difficult to detect even if it passed through radiation monitors;

- the transfer of fissile material by a government or with their acquiescence—something to worry about from North Korea and Iran; or
- the acquisition, by theft or transfer, of a completed nuclear weapon—the possibility of loss or transfer exists and would presumably increase as stockpiles grew.

U.S. Policy Changes

We should also include here contemplated changes in U.S. policy by the Bush administration that may well make matters worse.

- First, a renewed interest in nuclear energy to decrease American dependence on imported fuels, combined with a desire to change the “mix” of energy sources to decrease the percentage of energy from fossil fuels that exacerbate the tendency to climate change.
- Second, the proposed deal with India, ending a decades-old policy of requiring international safeguards on a nation’s entire nuclear fuel cycle as a condition for the supply of nuclear equipment.

Actions

What should we be doing now?

- The first step is to educate policy makers, the press, and the public—Graham Allison’s book, *Nuclear Terrorism: The Ultimate Preventable Catastrophe* (Times Books, 2004), should be required reading.
 - He advocates a global alliance to deal with nuclear terrorism, eliminating inadequately secured fissile material, raising the standard by which fissile material is stored, blocking fissile material production in Iran and North Korea, shutting down A. Q. Khan–like nuclear black markets, and strengthening both nonproliferation and counterterrorist policies.
- The United States should at least consider two additional policies:
 - preventive war to deal with rogue suppliers and
 - expanded deterrence to obtain the cooperation needed to stop the transfer or leakage of fissile material.

Preventive Strikes

These days, we may have to attack an enemy in anticipation of being attacked, even when not knowing from where or when the attack will come.

- Launching a preventive war at any time would have far-reaching and grossly negative consequences for the United States, regionally and globally, with friends and allies.
- Also, a strike that wounds will only serve to provoke—even a successful strike would only temporarily remove the threat, leading to a new program that is harder to find and destroy.

Deterrence

Because the United States confronts terrorists who cannot be deterred by the threat of retaliation, it should look for ways to deter governments from deliberately transferring or inadvertently leaking fissile material to terrorists.

- We must prevent the transfer of nuclear weapons or material to terrorists. Intentionally or not, we cannot block these transfers, and so we should consider promising retaliation if we are attacked.
- If fissile material used in a nuclear attack on the United States could be attributed to a state that arguably transferred the material intentionally, retaliation would be demanded by Americans and the rest of the world.
 - Promising such a response now could make sense as a way to gain a measure of deterrence.

- Retaliation would draw a great deal of attention to the United States's capability to analyze debris after a detonation and confidently identify the source of the weapon or materials contained therein.
 - Those who would anticipate being high on a list of suspects after an event would presumably have reason to cooperate in order to be excluded from the American retaliatory target list.
- The United States should consider expanding the deterrent threat—to convey our intent to treat a nuclear attack on the United States as an attack by the perpetrator and the country from which the material was obtained.

International Cooperation

As sensible as it may be for countries to cooperate now, establish deterrence, reduce the likelihood of a nuclear catastrophe, and prevent misdirected retaliation, some states may not line up to share their nuclear secrets.

- The United States could perhaps help by sharing its own signature and encouraging friends and allies to do the same.
- The more we do to create transparency before an event, the better the case will be for retaliation against an uncooperative state that cannot be exonerated by forensic analysis after an event.
- The harder case for expanded deterrence involves leakage of fissile material—so far the United States has not been satisfied with the response from other states, like Russia or Pakistan, on how they are preventing theft and illicit sales.
 - Exactly how the United States would retaliate would be left ambiguous, as deterrent threats often are.
 - Even so, the threat should not be made lightly against either Russia or Pakistan. The first retains a substantial strategic nuclear weapons capability, and the latter has been identified as an ally with growing nuclear weapons capability of its own.

Conclusion

Expanded deterrence is like preventive war in that both are extreme policies with potentially devastating consequences for the United States.

- They ought to be considered only as a last resort to protect against outcomes that are even worse.
- Contemplating these extreme policies is appropriate only because of the magnitude and the challenging nature of today's threat.
- If nothing else, thinking about these options should lead policy makers to try that much harder to address the threat by other means.

A Nuclear Response to Nuclear Terror: Reflections of Nuclear Preemption

Andrei Kokoshin, State Duma of the Russian Federation

Background

The events of September 11, 2001, gave the United States more reason to believe that its interests at home and abroad are threatened by a nuclear terrorist attack.

- It is doubtful that any state would voluntarily or deliberately transfer nuclear weapons to a terrorist organization.
- However, radical political forces might obtain nuclear weapons as the result of a sudden destabilization in one country or another or by exploiting weaknesses in their nuclear command and control structure.
- But the deliberate transfer of nuclear weapons or materials from a state into the hands of terrorists cannot be completely ruled out.
 - Terrorists could acquire nuclear weapons if they enjoy a close relationship with a portion of a nuclear state's regime.
 - If a state's nuclear installations are threatened by external forces, it may decide to transfer some into the hands of terrorists prepared to use them against the perceived aggressor.
- The probability that a terrorist group will use nuclear weapons against the United States has increased due to the sharp outburst of anti-Americanism in the Muslim world since the invasions of Afghanistan and Iraq and as a result of the ongoing Arab-Israeli conflict.

NOTE: This has led to a redefinition of the U.S. military posture that envisions the use of nuclear weapons in a preemptive strike against terrorists and their safe havens. The author believes that this stance sets a dangerous precedent both for the United States and the world.

*Preemption
Pitfalls*

After 9/11, the Bush administration formulated a series of fundamentally new positions in both in its military doctrine and in the area of international law.

- One notable reformulation is the concept of nuclear preemption: a nuclear strike against a state in which the preparation for terrorist attacks with weapons of mass destruction (WMD) is apparent.
- Because the offending action has yet to take place, by definition a preemptive attack requires a great amount of reliable intelligence.
- This is complicated by the fact that al Qaeda and other radical organizations are able to skillfully exploit the modern information environment, including disinformation and psychological war, to point their opponents toward false targets.
 - These methods are capable of being used to orient the United States and its allies toward incorrect targets for preemptive strikes—with or without nuclear weapons.

*Vital
Intelligence*

The events of 9/11 and the subsequent “war on terror” demonstrate that U.S. resources and methods for obtaining vital intelligence are inadequate.

- Despite recent attempts to reorganize the U.S. intelligence community, weaknesses remain in its constituent services, including how they interact and coordinate with one another.
- Western experts and politicians believe that the quality of American special services can be expected to radically improve only in the medium term and only given the most favorable circumstances.
- It is safe to say that the inertia of the cold war is still present in many security agencies in the United States and around the world, and this weakens their capabilities in the struggle against terrorists.

*Retaliatory
Strikes*

It is far more difficult under modern conditions to seek obvious targets for retaliatory strikes after a nuclear terrorist attack—it may even be impossible.

- Uncertainty is intrinsic to the very action of carrying out nuclear strikes. These are characterized by error and malfunctions in control, which are more likely to happen in operations involving nuclear rather than conventional arms, due to human and technical components.
- Proponents of a preemptive doctrine believe that the use of nuclear weapons in such a manner can be more controlled than a nuclear exchange between the Soviet Union and the United States would have been.
- They emphasize low-yield nuclear weapons could be used against highly protected terrorist cells with almost none of the consequences that characterize the use of traditional nuclear weapons.
- The authors of the Pentagon's Nuclear Posture Review are unambiguously in favor of the development of such weapons.
 - The authors of this document tried to argue that this reduced nuclear threshold is only for countries in the “axis of evil” and others who may provide refuge for terrorist organizations.
 - But this argument is problematic because it is very hard to draw a distinct boundary between nuclear thresholds for different international actors and different situations.

Conclusion

A shift in psychology relative to the use of nuclear weapons, both among the elite and among the masses, can be observed in a number of countries, but above all in the United States.

- The nuclear “taboo” has once again ceased to exist, and the devastating consequences of nuclear war have been half-forgotten, despite the extremely strong effect that they had during the cold war.
- Increasing international instability and strategic uncertainty requires political, diplomatic, and technological methods for solving these problems among the major powers, including Russia.
- Cooperation between Russia and the United States, not only in the realm of nonproliferation of nuclear weapons but also in deterring their use, has fundamental significance.

Russia: Grasping the Reality of Nuclear Terror

Simon Saradzhyan, Harvard University

Background

This article assesses the magnitude of the threat of radical separatists based in the North Caucasus, considers possible attack scenarios, and suggests ways to reduce the likelihood of a catastrophic attack on Russian soil.

- The security at Russia's civil nuclear facilities remains insufficient to withstand an infiltration by a well-organized terrorist group.
- Radical separatists have been actively seeking weapons of mass destruction (WMD) and related technologies needed to stage acts of catastrophic terrorism.

- Radical separatists are more likely to commit a catastrophic nuclear terrorist attack, as opposed to relying on conventional methods, and the likelihood of such an attack will continue to increase unless Russian leaders act now to improve security at nuclear facilities, minimize insider threat, uproot corruption, end law enforcement abuses, and keep potential attackers on the run.

Russian Nuclear Danger Russian policy makers have defined terrorism as one of the country's major threats.

- In spring 2006, the Russian parliament passed a series of bills to toughen the punishment for terrorism and boost the ability of law enforcement agencies to deter and prosecute terrorists.
- However, an unacceptable gap exists between rhetoric and reality when it comes to tackling the threat of nuclear terrorism in Russia.
- Only a portion of weapons-grade materials is stored at facilities that have undergone comprehensive upgrades.
- Only a fraction of Russian customs and border posts are equipped to detect nuclear materials.

NOTE: As a result of insufficient security, several cases of theft of highly enriched uranium (HEU) and weapons-grade plutonium and dozens of cases of theft of nuclear materials have occurred at the country's nuclear facilities since 1991.

Spread of Terrorist Groups

Once based in Chechnya and adjacent territories, networks of radical separatists, militant Islamists, and other ideologically driven extremists have spread across most of the North Caucasus and beyond.

- Every republic in the North Caucasus is now home to actors of terror and insurgency, who readily enter into alliances with outside networks.
- Of all groups plotting and executing acts of terror in Russia, Chechnya-based terrorist groups have the strongest capabilities to acquire and use WMD materials and devices.
- The separatists enjoy the potential advantage of collaborating with terrorist networks outside of Russia and with Chechen organized criminal groups inside the country.
- These gangsters can potentially take advantage of established criminal channels to help the North Caucasus-based radical separatists acquire nuclear, biological, or chemical components and organize terrorist acts.

NOTE: Chechnya-based radical separatists have acquired radioactive materials, plotted to hijack a nuclear submarine, and attempted to put pressure on the Russian leadership by planting a container with radioactive materials in Moscow and threatening to detonate it.

Terrorist Threat Groups based in Chechnya and elsewhere are developing plans that target the Russian military's nuclear arsenals, according to Russian intelligence briefs.

- It has become increasingly clear that neither acts of conventional terrorism nor guerilla warfare will coerce the Kremlin to start political negotiations with the perpetrators, let alone ceding Chechnya.
 - As a result, the separatists have attempted to acquire and use nuclear, biological, and chemical weapons.

- Chechen-based groups planned at least two attempts to access nuclear facilities in 2002 and 2003, but those attempts were foiled.
- Russian intelligence indicates that terrorist groups based in Chechnya and elsewhere are developing plans that target the Russian military's nuclear arsenals and other nuclear facilities.
- President Vladimir Putin has vowed that "Russia will make no deals with terrorists and will not give in to any blackmail." Russian legislation now prohibits political negotiations with terrorists.
- Chechnya-based radical separatists may increasingly view catastrophic nuclear terrorism as one of the few remaining options after seeing that "conventional" terrorist attacks fail to meet their political objectives.

Religious-Based Terrorists Some groups both inside and outside the North Caucasus believe that a holy war against the infidels is not just a slogan, but also a lifetime duty.

- These groups might be increasingly inclined to ally with radical separatists and resort to WMD terrorism as they, too, deem conventional tactics unsuccessful.
- Karachaevo-Cherkessia has seen the emergence of one of the deadliest and most motivated jihadist groups, Muslim Society No. 3
 - This group has been accused of having organized two suicide bombings in the Moscow subway and the bombings of two airliners in 2004.

Secular Terrorist and Insurgent Groups The North Caucasus has also become one of the primary bases of avenger networks, which enter into alliances with religious-based terrorists. One network, Jenet, has killed dozens of policemen, prosecutors, and security agents in Dagestan.

Attack Scenarios There are several possible terrorist attack scenarios:

- In one scenario, radical separatists could hire organized criminals to either bribe or coerce personnel at a nuclear facility to steal weapons-grade material or spent nuclear fuel.
- Another scenario could include an attempt to sabotage a nuclear facility, such as a power plant or research reactor.
 - A plant explosion would have a psychological impact as great as—if not greater than—that caused by a dirty bomb attack.
- In another scenario, Chechnya-based radical separatists could try to hijack a submarine with nuclear warheads on board or seize atomic demolition munitions en route to a facility to force the Kremlin's hand.

Conclusions Russian armed forces and law enforcement agencies are battling radical separatists on the run in Chechnya and other parts of the North Caucasus, trying among other things to decrease their ability to plan and execute acts of catastrophic nuclear terrorism.

- In their zeal to crush militants, Russian police and troops have applied indiscriminate use of force and harassed Muslims who stand for *Salafiya* (pure Islam) but reject violence.
 - These victimized individuals become easy prey for terrorist and extremist recruiters, and networks of militant *salafis* have spread to virtually every republic of the North Caucasus.

- This offers Chechnya-based radical separatists a variety of opportunities to strike tactical and strategic alliances when plotting terrorist attacks.
- Chechen separatist leaders are increasingly frustrated with their failures to win Chechnya back by means of conventional warfare, conventional terrorism, or peace talks—as their frustration increases, so does their motivation to attempt an act of nuclear terrorism.
- If radical separatists acquire what they and the government believes to be a workable nuclear bomb, it could lead to a Russian withdrawal, and then it would only be a matter of time before either Chechnya-based radical separatists or their allies in foreign terrorist networks acquired such expertise and supplied the last link in the deadly chain of nuclear terror.
 - The risk of such a development is too lethal to ignore.

NOTE: Russian authorities need to keep these implacable radical separatists and terrorists on the run, but at the same time they need to tame abuses in the law-enforcement system that generate resentment, prompting victims and their relatives to take up arms against the government in revenge.

Future Efforts

Russian authorities need to design and implement a sustainable set of measures to prevent thefts and forceful seizures of weapons-grade materials.

- These thefts have happened in the past and may happen again if Russian authorities do not act to ensure adequate security at all nuclear facilities and deny radical separatists the opportunity to assemble and detonate a nuclear weapon.
- This requires strengthening first and second lines of defense, as well as retraining redundant personnel, shutting down excess facilities, and concentrating HEU and plutonium at the best-guarded locations.
- No matter how many lines of defense are built around Russian facilities, borders, and key terminals, efforts will prove futile unless security culture improves and nefarious insiders are winnowed out.
- Russian agencies must be cleansed of corrupt officials who provide safe passage to terrorists for material gain or ideological reasons. Abuses of the population in the North Caucasus at the hands of law enforcers must end.
- Russia needs to fund all of these upgrades and reforms out of its own coffers.

Proliferation on the Peninsula: Five North Korean Nuclear Crises

William J. Perry, Stanford University

Background

To reduce the risk of nuclear terrorism, we must prevent terrorists from obtaining nuclear weapons or materials.

- This will require a sustained effort to keep dangerous nations from going nuclear—in particular North Korea.
- This article reviews efforts the United States has undertaken to keep North Korea from building a nuclear arsenal, arguing that the history of proliferation is marked by five North Korean nuclear crises.

- A sixth could be on the horizon: The danger is that terrorists will acquire a nuclear weapon and detonate it on U.S. soil.
- Reducing the risk will require sustained action on three different fronts:
 - dealing with the “loose nukes” problem,
 - maintaining and strengthening the Nuclear Non-Proliferation Treaty (NPT), and
 - keeping dangerous nations from going nuclear.

Five Crises

The United States has experienced five distinct nuclear crises with North Korea.

- The first crisis, during the Korean War, was about whether the United States should use nuclear weapons during the conflict.
- The next four crises centered on North Korea’s attempts to build a nuclear arsenal.

The First Crisis

The first nuclear crisis began with North Korea’s invasion of the South.

- During the Korean War, the United States considered the use of nuclear weapons in three distinct instances:
 - at the war’s beginning,
 - when the Chinese entered the war, and
 - prior to the beginning of talks.
- It is reasonably clear that the nuclear threat was a principal factor fueling North Korea’s nuclear aspirations after the war.

1990 Crisis

Nuclear aspirations gave rise to a second Korean nuclear crisis in 1990, this time over North Korean as well as American nuclear weapons.

- During the 1970s, Kim Il Sung asked the Russians and then the Chinese for assistance in building bombs, but was turned down.
- Kim Il Sung apparently concluded that North Korea would have to get a bomb the hard way—by itself.
- In 1989, the United States correctly concluded that a nuclear weapons program was under way.
- North Korea finally agreed to a nuclear-free peninsula, but they delayed the acceptance of International Atomic Energy Agency (IAEA) inspectors long enough to reprocess a small amount of spent fuel from the reactor.
- When the IAEA inspectors did arrive, they conducted a thorough inspection and concluded that the North Koreans had produced more plutonium than the small amount they had declared.

1994 Crisis

In 1994, the United States came close to another war on the peninsula over North Korea’s nuclear weapons program.

- The North Koreans announced that they were withdrawing from the NPT and ordered the international inspectors to leave.
- They began preparations to reprocess the hidden fuel, which would have allowed them to build about a half dozen nuclear bombs.
- The United States, Japan, and the Republic of Korea announced their intention to impose severe sanctions if North Korea produced plutonium, and North Korea said sanctions would be an act of war and threatened to turn Seoul into a “sea of flames.”

- The likely result of a nuclear strike by the United States could have resulted in an attack on South Korea by the million-man North Korean army.
- In the end, that crisis was resolved not by war, but by a diplomatic agreement known as the Agreed Framework that required North Korea to continue indefinitely the freeze at Yongbyon, to be followed in time by the dismantlement of those facilities.
- In turn, the South Koreans and Japanese agreed to build new commercial light water reactors for North Korea, and the Americans agreed to supply fuel oil until the light-water reactors were completed.

1998 Crisis

In 1998, the North Koreans had designed two long-range missiles that could reach targets in parts of the United States and all of Japan.

- This missile program again raised a serious concern about North Korea's nuclear aspirations since an intercontinental ballistic missile (ICBM) makes no military sense without a nuclear warhead.
- In an outside Policy Review conducted jointly with the United States, South Korea, and Japan, the key finding was that North Korea was undergoing terrible economic hardship, including widespread famine, but those hardships were unlikely to cause the regime to be overthrown.
- It was recommended that the allies establish two alternative strategies:
 - If North Korea would forgo its long-range missile program as well as its nuclear weapons program, the allies would move to a comprehensive normalization of political and economic relations, including the establishment of a permanent peace.
 - If North Korea did not demonstrate by their actions that they were willing to remove the threat, the allies agreed to take necessary actions to contain the threat.
- Within a few months, there was substantial evidence of a general thawing under way, but at that critical junction, a new administration took office in the United States.
- Bush disowned the Clinton policy and said he would create a new policy—engagement with North Korea was broken off, and for one and a half years, there was neither a dialogue nor a new policy.

2002 Crisis

Whatever policy might have developed was preempted, when in 2002 it was discovered that North Korea had secretly started another nuclear program.

- The North Koreans at first denied the existence of a uranium program but then became defiant and argued that they had a right to nuclear weapons because of the hostile attitude of the United States.
- The Bush administration then cut off the fuel oil and persuaded Japan and South Korea to cease work on the reactor called for under the Agreed Framework.
- In response to these steps, North Korea ejected the IAEA inspectors at Yongbyon, reopened their reactor, and announced they were starting to reprocess the fuel rods.

- After several unproductive talks involving the United States, North Korea, China, Russia, Japan, and South Korea, a meeting held in September of 2005 resulted in an understanding:
 - The North Koreans said that they were prepared to give up their nuclear weapons.
 - The United States said that it was prepared to pledge not to initiate military force to overthrow the North Korean regime.
 - All sides agreed that North Korea was entitled to have a peaceful nuclear program, but the day after the meeting, there were conflicting reports from Pyongyang and Washington as to what the third component of the understanding really said.
 - Washington said that full disarmament is the first step; then they would “consider” North Korea’s request for a light water reactor.
 - The Koreans said that the light water reactor must be provided before any disarmament begins.

*North Korea
Moves Ahead*

During this current stalemate, the North Korean nuclear program has moved ahead at full speed.

- They have the fuel for making eight to ten nuclear bombs.
- It is highly probable that this fuel has been used to make plutonium.
- It is likely that the resulting plutonium has already been used to make some or all of the bombs.
- The North Koreans have restarted their research reactor at Yongbyon to produce more plutonium.
- A reasonable conclusion is that North Korea does have a highly enriched uranium program, but it is probably not close to production.
- Taken together, the evidence is strong that North Korea is well on its way to building a sizable nuclear arsenal.

The New Crisis

The growing nuclear arsenal in North Korea is a security disaster for several compelling reasons, but the overriding reason is the possibility that a North Korean nuclear bomb will end up in one of our cities, not delivered by a missile, but by a truck or freighter.

- Al Qaeda has already stated unequivocally that it is seeking weapons of mass destruction.
- We must take seriously the consequences of such a terror group gaining access to nuclear weapons.
- If North Korea proceeds unchecked with building its nuclear arsenal, the risk of nuclear terrorism increases significantly.
- Checking the nuclear aspirations of North Korea should be a top security priority for the United States.

*What Drives
North Korea?*

What is driving North Korea to pursue a nuclear weapon program so single-mindedly?

- Kim Jong Il may believe that North Korea’s possession of nuclear weapons is necessary to head off a preemptive attack from the United States.
- We know that there is a ready market for nuclear weapons and material, and North Korea, which is in desperate economic straits, has already stated its right to sell its nuclear wares.

- We should never underestimate the importance of the presumed prestige that goes with being a nuclear power.
- Any hope of stopping a program with so much momentum will require understanding and the addressing of these motivations.
- Restarting talks is not only necessary to advance our nonproliferation goals, but it is crucial to reduce the risk of nuclear terrorism.
- If diplomacy does not resume, we may witness the beginning of the sixth nuclear crisis with North Korea, which is grimly on schedule.

Intelligence Estimates of Nuclear Terrorism

Micah Zenko, Harvard University

Background

The prospect of a clandestine nuclear attack on the United States, be it from the Soviet Union, China, or al Qaeda, has been a regular concern for U.S. officials since the advent of nuclear weapons.

- The key findings suggest that the threat of nuclear terrorism is very real, and the U.S. government remains ill prepared to counter the threat.
- This article represents the first comprehensive analysis of publicly available intelligence assessments regarding the threat of nuclear terrorism to the United States.
- Given the threat posed by nuclear terrorism, it is essential to understand the collective judgments of the U.S. Intelligence Community (IC) during the past five years and over the past fifty.
- A careful review of the available evidence reveals four key findings:
 - Nuclear weapons or materials are at risk of being stolen.
 - Terrorist groups are obsessed with obtaining a nuclear weapon.
 - A bomb could be smuggled into America without detection.
 - The United States remains insufficiently prepared for these threats.

The National Intelligence Estimate

In the U.S. government, the crown jewel of intelligence estimates is the National Intelligence Estimate (NIE).

- An NIE is the most authoritative written judgment concerning a national security issue authorized by the Director of National Intelligence (DNI).
- Estimates are designed not just to provide information but to help policy makers think through issues.
- The NIE is disseminated as a classified document to policy makers under the signature of the DNI.

An Iraq NIE

An October 2002 NIE estimate concluded that Iraq had chemical and biological weapons and could have a nuclear weapon within eight years.

- The ninety-three-page estimate of Iraq's weapons of mass destruction (WMD) capabilities suffered from an assortment of intelligence tradecraft errors.
- It took "defensible assumptions (of Saddam Hussein's prior behavior) and swathed them in the mystique of intelligence, providing secret information that seemed to support them but was in fact nearly worthless, if not misleading."

NIEs in the 1950s and 1960s

In 1951, the CIA produced its first complete analysis of the issue of atomic smuggling with an NIE titled “Soviet Capabilities for Clandestine Attack against the U.S. with Weapons of Mass Destruction and the Vulnerability of the U.S.”

- This NIE found that the Soviet Union, from the least to greatest probability, could
 - smuggle an atomic bomb through customs as a commercial shipment;
 - conduct a clandestine attack with civilian aircraft of a type used by U.S. or foreign transoceanic airlines;
 - use a merchant ship for delivering an atomic weapon into a key U.S. harbor; or
 - smuggle an atomic bomb, especially if disassembled, from a Soviet port into an isolated section of the United States.
- The final method above was deemed the most likely means of a Soviet clandestine atomic attack on the United States.
- In spite of the threat, no coordinated overall plan has yet been completed for the detection and prevention of the smuggling of atomic weapons into the United States at secluded points—*this is still the case today*.
- Early NIEs make clear that a clandestine nuclear attack from Russia or China was alarmingly achievable and a constant possibility.

Modern

International terrorism in its modern connotation exploded onto the world stage when the Palestinian Liberation Organization (PLO) conducted plane hijackings, embassy attacks, and the massacre of Israeli athletes at the 1972 Munich Olympics.

- In April 1976, the CIA produced for the first time a comprehensive analysis of international terrorism, which concluded that *transnational terrorism* had a marked and enduring upsurge since 1967.
- The prospect of nuclear-armed terrorists can, in fact, no longer be dismissed, as terrorists could seize a nuclear weapons storage facility or a nuclear power plant.
- Since the late 1960s, officials in the Atomic Energy Commission had been scrutinizing the relative insecurity of nuclear reactor facilities.
 - A panel recommended that the AEC require nuclear power operators to improve and upgrade existing safeguards—specifically, physical protection, accounting, and oversight to prevent the diversion of nuclear material.
 - The panel also warned, for the first time in a U.S. government publication, that safeguards should also be designed in recognition of the problem of the terrorist or criminal groups clandestinely acquiring nuclear weapons or materials.

Storage Targets

In 1978, a leaked CIA estimate identified the more than six thousand warheads stored in NATO nuclear depots in Western Europe as the most vulnerable and therefore most likely targets for future terrorist activity.

- Unlike a state, terrorists with a mobile base of operations need not be concerned with the threat of counterattack; hence, they are not subject to the deterrence of defense systems that constrain states.

- On a positive note, sufficient systemic constraints against nuclear-armed terrorists show that nonstate actors seem likely to be more an aberration than a characteristic of nuclear proliferation.
- A September 1996 leaked CIA report demonstrated the persistent and challenging problem of protecting Russia's nuclear weapons.
 - Along with the threat of loose nuclear material, the decline of the Soviet Union assisted in creating the second significant modern nuclear terror threat.
 - As early as 1993, U.S. intelligence officials learned of Osama bin Laden's efforts to acquire nuclear materials or warheads from former Soviet republics.

Terror 2000

The *Terror 2000* report predicted terrorists would use chemical or biological agents on a major subway system; conduct multiple, simultaneous attacks to strain government response capabilities; strike a major financial center in the United States; and hijack civilian airliners to strike American landmarks.

- Easy access to biological, chemical, and nuclear technologies will bring many new players to the game of mass destruction.
- These players may not even be limited to states and traditional terrorist groups.
 - Organized crime, fanatical single-issue groups, and even individuals will be able to acquire weapons.

September 11

September 11, 2001, demonstrated that the United States was both a host to, and victim of, attacks that former Director of Central Intelligence George Tenet aptly described as “professionally conceived and executed.”

- Two facets of 9/11 caused the IC to reevaluate the nuclear threat
 - First, the use of conventional means, civilian airliners, led to a conclusion that U.S. territory is more likely to be attacked with WMD using nonmissile means than by missiles, primarily because nonmissile delivery means are less costly, easier to acquire, and more reliable and accurate.
 - Documents recovered from al Qaeda safe houses revealed that Osama bin Laden meant it when he declared in 1998 that obtaining a weapon of mass destruction was “a religious duty.”
- The Commission on the Intelligence Capabilities of the United States regarding Weapons of Mass Destruction later revealed that intelligence analysts were largely unaware of the extent of al Qaeda's weapons of mass destruction research and development.

Conclusion

American intelligence estimates about the development of nuclear weapons by other states and their intentions for their use have been a mixed bag of quiet successes and notable failures.

- In reviewing the history of known intelligence estimates of the threat of nuclear terrorism, several important themes emerge:
 - the proliferation of interest among nonstate actors in obtaining a bomb,
 - the acknowledged ease with which terrorists could assemble a crude nuclear device,

- the ease with which any malicious actor could smuggle it into the United States, and
- the continued surprise of the U.S. government that this threat has persisted over a half century.
- If a terrorist bomb were detonated on American soil tomorrow, given the sustained strategic warning that the intelligence community has provided to policy makers, it would be a “bolt from the blue” only to the indifferent, but not the unaware.

A Mathematical Model of the Risk of Nuclear Terrorism

Matthew Bunn, Harvard University

Background

This article presents a mathematical model of the risk of nuclear theft and terrorism, which can be used to assess policies for combating the threat.

- All of the parameters that determine the risk are highly uncertain.
- The article discusses available information for estimating the value of each of the model parameters and policy options to change those values to reduce risk.
- Estimates by well-informed observers of the probability of terrorist use of a nuclear bomb in the next decade range from 1 to 50 percent.
- While the uncertainties are large, even a risk dramatically smaller than that estimated in the numerical example used in this article would justify a broad range of actions to reduce the threat.
- The most promising policy options are based on a forward defense, combining strengthened counterterrorism policies that reduce the number of groups contemplating nuclear violence and their likely effectiveness with an urgent global campaign to secure or remove the nuclear stockpiles from the world's most vulnerable sites.

Probabilities

Assumptions similar to those proposed in this article would support estimates of a 30 to 50 percent probability of nuclear terrorism over the next decade.

- As a numerical illustration of the use of the model, the article introduces a set of plausible values for the model parameters.
- If those parameter values were correct, the probability of a terrorist nuclear attack in the next decade would be 29 percent.
- The expected loss over that period would be \$1.17 trillion (undiscounted), or more than \$100 billion per year.
- Radically different parameter values would be needed for the probability of terrorist nuclear attack over the next ten years to be only 1 percent.
- Even with only a 1 percent probability over ten years, the expected cost per decade would be \$40 billion (without discounting), or \$4 billion per year.

Groups and Attempts

Two key factors in the model are the number of plausible nuclear terrorist groups and the frequency with which those groups make serious attempts to get nuclear weapons or materials.

- The number of terrorist groups interested in committing nuclear terror and with sufficient capability to have some nonzero chance of succeeding in doing so is small, but not zero. A plausible current estimate is two (al Qaeda and some Chechen factions).
- The model shows that even modestly successful counterterrorist efforts can reduce the risk of nuclear terrorism substantially, by reducing the number of plausible nuclear terrorist groups and decreasing the effectiveness of those that remain.
- The limited public record includes three to six terrorist nuclear acquisition attempts in the past fifteen years, though more may have occurred that are not publicly known.
- Policies that would make attempts to get nuclear weapons or materials less likely to succeed, such as improving security for nuclear stockpiles, will presumably make serious terrorist acquisition attempts less frequent.
- To get a nuclear weapon or the material to make one, a group might attempt to organize an outsider attack on a nuclear facility or transport leg, instigate an insider theft attempt, buy such items on the black market from others who had already stolen them, or get a state to provide them. Each of these approaches is assessed in the article.

*Theft
Probabilities*

All of the terrorist nuclear acquisition paths except conscription by a state begin with the theft of a nuclear weapon or the materials to make one.

- Nuclear theft is not a hypothetical worry but an ongoing reality: the International Atomic Energy Agency has documented eighteen cases of theft of highly enriched uranium (HEU) or plutonium.
- The probability that a nuclear theft attempt will be successful is determined by the level of capability the thieves are able to bring to bear and the security level at the nuclear site or transport leg where the attempt occurs.
- Since there are no binding global nuclear security rules, security levels vary widely from one country to the next, creating a lumpy global distribution.
- At the low end of this distribution, security at some facilities with potential nuclear bomb material amounts to little more than a night watchman and a chain-link fence, suggesting a high probability that a determined theft attempt would succeed.
- The risk of nuclear theft is likely to be dominated by the few facilities with the weakest security, because thieves are more likely to choose these facilities and more likely to succeed if they do.
- Modest investments in improving nuclear security at the most vulnerable facilities, or removing the nuclear weapons or materials from them entirely, may be able to drastically reduce the probability of nuclear theft.
- Urgent steps to strengthen nuclear security at the most vulnerable facilities and transport legs around the world are justified.
- If, however, terrorists are able to observe nuclear security improvements and react to them by involving more thieves, using better weapons, and developing more sophisticated tactics, the benefit of improved security measures would be limited.
- Therefore, police and intelligence efforts designed to increase the probability that larger conspiracies would be detected in advance are an important complement to improved nuclear security measures.

Nuclear Black Market

Terrorist groups look to the black market when they seek nuclear capabilities.

- The probability of success in acquiring nuclear weapons or materials on a nuclear black market can be broken into two component probabilities:
 - the probability of a potential seller coming into possession of such goods and
 - the probability that the seller and the buyer will succeed in finding each other and making the transaction.
- The known cases suggest that the problem of making the connection between potential buyers and sellers—with the risks each faces that the other may be a scam artist, killer, or government agent—is a major barrier on this path.
- Improved nuclear security measures would reduce the probability of additional thefts of HEU and plutonium in the future but would not address material that may already have been stolen.
- The fraction of the nuclear terrorist risk arising from already stolen nuclear material is probably small—but it is probably not insignificant.
- Police and intelligence actions to carry out stings, scams, and the like can provide intelligence on organizations in the nuclear black market and make it harder for real sellers and buyers to find each other.
- Well-publicized anonymous tip hotlines, rewards, and similar measures could encourage those aware of a nuclear conspiracy under way to report to the authorities.
- All potential source states and likely transit states should have units of their national police force trained and equipped to deal with nuclear smuggling cases. Other law enforcement personnel should be trained to call in those units as needed.

Acquisition from States

The last option for attempting to acquire a nuclear weapon or weapons-usable nuclear materials is from a state in possession of such items.

- Under all but a few circumstances, states are extremely unlikely to transfer a nuclear weapon or weapons-usable nuclear materials to a terrorist group deliberately, as this would mean giving immense power to a group the state could not control, and risking devastating retaliation if the source of a terrorist nuclear attack were traced back to them.
 - Nevertheless, putting together a package of carrots and sticks sufficient to convince states such as North Korea and Iran to verifiably abandon their nuclear weapons programs is another important element of a program to reduce the danger of nuclear terrorism.

Beyond Acquisition

Once terrorists have acquired a nuclear weapon or the materials to make one, the policy options available to reduce the danger become more limited.

- Intelligence efforts focused on detecting the recruitment and activities involved in making a crude nuclear bomb should be expanded, but the operations needed to make a bomb could be difficult to detect.
- Efforts to install nuclear detectors at key border crossings should continue, but the nuclear materials for a bomb would easily fit in a briefcase, their radiation is weak and difficult to detect, and nuclear terrorists and smugglers are likely to pick routes that are not monitored by nuclear detection equipment.

- Efforts should be made to deter terrorists from using any mass destruction capabilities they acquire—we should make the case within the communities from which terrorists draw support that the use of nuclear weapons to murder on a mass scale is morally illegitimate.
- Some investments in preparing for the consequences of a terrorist nuclear attack are worth making, but the consequences will always be overwhelming, putting the primary focus on prevention.

NOTE: The very uncertainty of the danger highlights what we do not know—including the possibility that a major nuclear theft could be in the planning stages at any time. There is, in short, no time to lose.

Toward a Comprehensive Safeguards System: Keeping Fissile Materials Out of Terrorists' Hands

Siegfried S. Hecker, Stanford University

Background

Studies stress the protecting of nuclear weapons, but conclude that improvised nuclear devices (IND) built from stolen or diverted materials, either plutonium or highly enriched uranium (HEU), pose a greater threat.

- The consensus is that terrorists would face significant challenges to build a primitive but devastating nuclear device, which would most likely be delivered to its target by truck, boat, or light airplane.
- Fortunately, the technologies and materials required to enrich uranium or construct reactors to produce plutonium are considered beyond the reach of even the most sophisticated terrorist groups today.
- The good news is that today's terrorists are unlikely to make weapons-usable HEU or plutonium from scratch.
- The bad news is that they can steal it or buy it because some of it is inadequately secured.

Fissile Materials

The author presents five reasons why securing fissile material is more difficult than generally appreciated.

- Existing inventories of fissile material are far larger than the amount required for a nuclear bomb.
- Fissile materials exist in every imaginable form.
- Fissile materials exist in many locations, not just in a few vaults.
- Fissile materials are difficult to measure and handle.
- Military secrecy hampers safeguards and transparency.

Safeguards

Each state that possesses weapons-usable fissile materials must provide for their *physical protection, control, and accounting*—the three pillars of a rigorous, comprehensive safeguards system.

- Uneven and incomplete application of domestic and international safeguards contributes to inadequate security worldwide today.

- Although international safeguards are necessary to prevent diversion of nuclear materials by a state, they are not sufficient to prevent theft of weapons-usable material by determined individuals or groups.
- Adequate security depends on rigorous application of domestic safeguards; in addition to the international safeguards that may apply.
 - With the social, political, and economic upheaval that followed the dissolution of the Soviet Union, past practices become Russia's liability—physical protection alone is not adequate.
- Physical protection consists of measures to protect nuclear material or facilities (and their transportation) against sabotage and theft.
- Material control and accounting systems are designed to offer accurate nuclear materials inventory information and to
 - control nuclear materials to deter and prevent loss or misuse;
 - provide timely and localized detection of unauthorized removal of materials; and
 - ensure, in near real time, that all nuclear materials are accounted for and that theft or diversion has not occurred.

*Each State's
Responsibility*

It is imperative that each state with nuclear facilities implement its own rigorous, comprehensive safeguards system.

- The Group of Eight (G-8) should reprioritize its nuclear security financial assistance to help states develop their own rigorous systems.
- The international safeguards system should be strengthened by adoption of the Additional Protocol and greater access for International Atomic Energy Agency (IAEA) inspectors, with stricter enforcement by the UN Security Council.
- Each state must also develop a complete registry of weapons-usable plutonium and HEU along the lines of the U.S. Department of Energy (DOE) plutonium study.

Vulnerabilities

Since many countries still fall short today in their safeguard systems, nuclear materials could already be in the wrong hands or at least outside state-controlled systems.

- Each state should enhance its internal detection and tracking capabilities and enhance its border and port security.
- Efforts to interdict potential shipments of nuclear materials should be strengthened—increased intelligence sharing is important.
 - Cooperative sting operations may flush out material outside state-controlled systems.
 - Enhanced emergency response capabilities will help manage the consequences of an attack and potentially help disable suspected terrorist devices.
 - Forensics and attribution will be important, both for response and for preventing repeat attacks.
- Over the longer term, we must also guard against “mining” of low-grade materials, such as nuclear waste, spent fuel, and lost or abandoned materials.
 - We must safeguard any material that is easier to obtain and less costly than building an enrichment plant or a reactor.
 - In addition, the commercial nuclear industry must redouble its safeguards efforts as nuclear power expands worldwide.

Why No Nuclear Attacks Yet?

Why have terrorists not yet crossed the nuclear threshold?

- Perhaps it is the lack of access to weapons-usable fissile material. Nuclear attacks may also present an unacceptable level of risk and uncertainty to terrorists—not only the risk of injury or death in preparing the mission but also the potential failure of the mission.
- Terrorists are much more certain of success using chemical explosives, with which they have much greater familiarity.
- The best preventive measure is to keep the weapons-usable material out of their hands.

Six Threats

The following six threats represent the highest probability of theft or diversion of several tens of kilograms of weapons-usable plutonium or HEU and these materials getting into the hands of terrorists.

- Pakistan heads the list.
- North Korea is a threat.
- HEU-fueled research reactors around the world are still operating in about forty countries, many with inadequate safeguards.
- The Russian nuclear complex remains excessively large, and the amount of weapons-usable materials is staggering.
- Kazakhstan returned Soviet nuclear weapons to Russia under the Nunn-Lugar program, but it did not return all weapons-usable material.
- Iran is last on this short list because it apparently does not yet have weapons-usable materials—it is clearly determined to get them, and when it does, it will move to second place.

NOTE: This short list illustrates the extreme urgency of the threat posed by loose fissile material. But it also emphasizes the need for tailored nonproliferation strategies.

Terrorist Nuclear Weapon Construction: How Difficult?

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Background

The likelihood of a nuclear terrorist attack depends in part on the ability of terrorist groups to acquire, construct, and detonate a nuclear device.

- While the danger should not be exaggerated, a nuclear terrorist attack is not an impossible undertaking.
- Government studies have repeatedly concluded that even without direct help from a state, a capable and well-organized terrorist group with access to enough weapons-usable nuclear material might well be able to make at least a crude nuclear bomb.

Essential Ingredients

Getting the needed nuclear material is the key to making a nuclear bomb.

- The nuclear materials needed for a bomb are typically highly enriched uranium (HEU) or separated plutonium. Neither material occurs in significant quantities in nature.

- “Enriching” uranium—separating the uranium-235 (U-235) needed for a bomb from the U-238 that makes up more than 99 percent of natural uranium—requires complex and expensive technologies.
- Plutonium is typically produced when U-238 absorbs neutrons in a reactor and must then be chemically separated from the irradiated reactor fuel, a process known as reprocessing.
- Producing either HEU or plutonium is a technically daunting enterprise. It is extremely unlikely that a subnational terrorist group would be able to make its own nuclear bomb material. Hence, if stockpiles produced by states can be protected from theft or transfer to terrorist groups, nuclear terrorism can be prevented.
- “Weapons-grade” HEU is often defined as material including 90 percent or more U-235, but bombs can readily be made with less enriched material. Material at 20 percent U-235 and more is defined as HEU and is weapons-usable. The bomb that incinerated the Japanese city of Hiroshima had an average enrichment of 80 percent.
- The radioactivity from uranium, whether HEU or low-enriched uranium (LEU), is so weak that uranium metal is routinely handled by hand. The amount of uranium required for a crude, inefficient terrorist bomb design is the size of a six-pack. Smuggling of HEU is thus extremely difficult to detect.
- Plutonium is more radioactive, easier to detect, and somewhat harder to handle than HEU. The amount of plutonium required for a bomb would fit in a soda can.
- The phrases *weapon-grade* and *reactor-grade* are again misnomers, as separated plutonium of any isotopic composition other than those with very large fractions of Pu-238 is “weapon-usable.”
- Any state or subnational group capable of making a crude bomb from weapon-grade plutonium would also be capable of making a crude bomb from reactor-grade plutonium.

*Making the
Fission Bomb*

Although it is not easy to make a nuclear bomb, it is not as difficult as many believe, once the essential ingredients are in hand.

- The basic problem in making a fission bomb is getting a supercritical mass of material together fast enough so that the reaction does not blow the material apart before it can generate an appreciable explosive yield. Two basic types of bomb design accomplish this: “gun-type” and “implosion-type” bombs.
- A gun-type weapon slams two pieces of HEU together at high speed. It is the simplest type of nuclear bomb to build. The bomb that destroyed Hiroshima was a cannon that fired a shell of HEU into rings of HEU.
- Implosion-type weapons, such as used at Nagasaki, use a set of shaped explosives arranged around a less-than-critical mass of HEU or plutonium to crush the atoms of material closer together.
- Either type of nuclear bomb is potentially within the capabilities of a sophisticated and well-organized terrorist group.
- Making such a bomb would require only a small group of technically competent individuals, using commercially available equipment. Access to classified information, people with previous weapons experience, or large fixed facilities would not be necessary (though they would be helpful).

Terrorists' Path to a Bomb The terrorists' main path is getting the essential ingredients of nuclear weapons (or a weapon itself) after they have already been produced by a state.

- It is highly unlikely that a state would consciously decide to transfer nuclear weapons or the materials to make them to a terrorist group because any terrorist nuclear attack traced back to the state would put the very survival of the state at risk.
- A more likely scenario is that nuclear weapons or materials might be stolen—by outsiders who might attack a facility or sneak into it, by insiders with authorized access, or by both working together.
- Thousands of nuclear weapons and hundreds of tons of plutonium and HEU exist in hundreds of buildings and bunkers in some forty countries, with security ranging from excellent to appalling.
- Some thefts of weapons-usable plutonium and HEU from insecure facilities have already occurred.
- Terrorists might attempt to steal such items themselves or to purchase them from others who have done so.

Material Processing

Some types of HEU or plutonium would require some processing to be used in a nuclear bomb—but in most cases, this processing is not an insurmountable obstacle.

- The best material for use in a nuclear bomb is pure HEU or plutonium metal.
- Plutonium or HEU oxides could be used in a bomb directly, or the group could reduce them to metal using straightforward chemical processes.
- Research reactor fuel containing HEU—one of the nuclear materials most commonly vulnerable to theft around the world—is often in the form of HEU powder dispersed in aluminum.
- Such research reactor fuel would require chemical processing to separate the uranium and convert it to metal. While the need for such processing would require an additional set of expertise and equipment, it would probably not drastically reduce the probability that a high-capability terrorist group could make a nuclear bomb from this material.
- The chemistry involved in converting opium poppies to heroin is probably roughly as complex as the chemistry required to separate uranium from research reactor fuel.

Setting Off a Stolen Weapon

A terrorist group that got hold of a stolen nuclear weapon would face somewhat different challenges.

- Many U.S. nuclear weapons are equipped with “permissive action links” (PALs), which are like electronic locks intended to make it difficult to detonate the weapon without inserting an authorized code.
- In addition to PALs, many weapons are equipped with devices that prevent the weapon from detonating until it has gone through its expected flight-to-target sequence.
- Unfortunately, information suggests that older Soviet-designed weapons, particularly older tactical weapons, may either lack such locks or be equipped with older models that could be readily hotwired.
- Neither the United States or Russia has made any commitment to destroy all weapons without hard-to-bypass electronic locks—Pakistan, India, and China are not believed to incorporate equivalents to modern PALs in their weapons.

- Terrorists could also cut a stolen weapon open and mine it for nuclear material to make a crude bomb.
- Terrorists in possession of a stolen nuclear weapon would be in a position to make fearsome threats, for no one would know for sure whether they could set it off.

*Why No
Attacks So Far?*

If nuclear terrorism is such a serious possibility, why have terrorists not yet done it?

- The answer appears to be that there *are* a number of obstacles—from acquiring enough nuclear material to fabricating it into a bomb—that make an attack difficult to accomplish. Making connections between those in a position to steal nuclear material and those eager to buy has proved especially difficult.
- The disruptions al Qaeda has suffered since 9/11 have reduced the probability that al Qaeda will succeed in getting the needed material and making a nuclear bomb. Unfortunately, however, even a fairly small group could potentially design and fabricate a crude nuclear explosive—possibly a group as small as a single al Qaeda cell.
- The removal of al Qaeda’s Afghanistan sanctuary would make a bomb effort more difficult. But making a crude bomb does not necessarily require large fixed facilities—and other potential sanctuaries exist in scores of “stateless zones” around the world where U.S. intelligence believes terrorists are operating.

Conclusion

A nuclear attack might be one of the most difficult missions a terrorist group could hope to try, but if a sophisticated terrorist group acquired a stolen nuclear bomb or enough nuclear material to make one, there can be few grounds for confidence that they would be unable to use it.

Denying Armageddon: Preventing Terrorist Use of Nuclear Weapons

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Background

By tracking multiple factors and constructing many layers of defense, the United States could identify, thwart, and destroy nascent nuclear weapons programs long before enemies have the ability to threaten the homeland.

- By controlling the technologies and the materials necessary to build a bomb, manipulating the activity of the nuclear black market, and monitoring the behaviors of would-be nuclear actors, this approach can be used to prevent the proliferation of nuclear weapons.
- This article’s approach enables the United States to establish layered defenses to deter the nuclear aspirants from their pursuit, to discover illicit nuclear-related activities in their infancy, and to take action against them before they can produce a useable weapon.

Terrorists' Methods

Terrorists may not seek to deliver nuclear weapons by missiles or aircraft since they may deliver their weapons aboard cargo ships or via freight trucks.

- These terrorists may employ alternative designs and isotopes that, while awkward and inefficient, will produce a nuclear detonation.
- Building nuclear weapons now is not as daunting as it was in the 1940s.

Preventing Acquisition

The first line of defense in preventing an adversary from developing nuclear capabilities is to strengthen the control regimes of the cold war era:

- Update lists of materials to include new weaponizable isotopes.
- Strengthen the control and monitoring of nuclear materials, technologies, and know-how.
- Improve the safety and security of all the nuclear arsenals in the world today.
- Let it be widely known that nuclear forensics can trace nuclear materials back to their country of origin.

The second line of defense is to manipulate the nuclear black market so that nuclear aspirants are persuaded it is too risky and uncertain to fulfill their objectives.

- Take advantage of the asymmetry in information between buyers and sellers.
- Actively pursue sting operations, outright fraud, and other techniques.
- The market can be seeded with nuclear myths and disinformation that can be used to force perpetrators into bad technical decisions that waste time and resources and expose them to capture.
- Use this additional line of defense to drive transaction costs to extremes forcing buyers and sellers to nonnuclear options.

Early Detection

For those adversaries who have decided on the nuclear option, there are two acquisition pathways: (1) buy, steal, or coerce a weapon from a nuclear state; or (2) build one from parts.

- Both pathways involve multiple steps and tasks that might be discovered and observed through appropriate intelligence activities.
- Many physical aspects of nuclear weapons development or acquisition programs are detectable:
 - low to moderate levels of radioactivity;
 - special scattering and absorption of subatomic particles;
 - an ionized air cloud exists near radioactive materials as well as temperature and heat emissions;
 - electromagnetic interference is generated from tests, for example, of firing devices;
 - special chemicals are present in the effluent from isotope separation facilities, actinide foundries, machine shops, and other facilities used for fabricating or modifying a weapon;
 - these facilities also use large amounts of electrical power and can inject high frequency ripples into the power grid; and finally,
 - nuclear devices produce unique spectral responses to pulsed neutron sources and moderate-energy x-ray sources.

*Refining the
Means to
Respond*

- Existing and planned sensors can detect the signatures of these activities, but a suite of purpose-built sensors could improve the detectability.

NOTE: It is essential to have intelligence capabilities designed to “see” the earliest steps in an enemy nuclear weapons program where the signatures are most abundant and the threat is still nascent.

Ever since Israel bombed Iraq’s Osirak reactor, aspiring nuclear actors have taken note.

- Some states, including Iran, purchase advanced air defense systems to defend their nuclear facilities.
- Others, such as North Korea, build installations deeply underground.
- Subnational groups could distribute their nuclear activities within otherwise well-established research or industrial facilities.
- All of these defensive techniques present obstacles to U.S. forces if they are directed to take action against such targets.
 - U.S. forces may have to plan multiple incursions and overcome significant defenses to reach their objectives.
 - Target location errors may make direct attack impractical.
 - The fortifications or depth at which a facility is buried may be beyond the technical capabilities of today’s ordnance.
- The United States should consider what force structure would be needed to mount an effective military operation against an enemy weapons program, given the assumptions about likely near-term adversaries.
- To discover and respond militarily to enemy nuclear activities should be a key design point for today’s U.S. military, just as the Soviet Union and Warsaw Pact once were during the cold war.

*A Preventative
Strategy*

Preventing the detonation of a nuclear weapon in the United States is the highest stated priority in the National Security Strategy.

- The research strongly suggests that the conventional nonproliferation control regimes established during the cold war must be strengthened as the first layer in a multilayer defense against nuclear terrorism.
- The additional counterproliferation layers range from manipulating the nuclear black market to detecting an active program in its early stages.
- Although each defense layer is imperfect, taken together the ensemble of layers can be robust.
- Early discovery of enemy nuclear activity is key. The intelligence community must develop additional techniques and tools to discover illicit nuclear activities at exactly the right time, which is
 - when they are mature enough so that little ambiguity surrounds their purpose
 - but immature enough so that a deployable weapon has not been produced.
- Detection may necessitate direct military action. The authors believe that the U.S. military must move from a nonproliferation posture to a counterproliferation posture.
- Destroying nuclear activity will require purpose-built military forces.

Conclusion

This research has shown that the United States can have multiple opportunities to prevent the acquisition of a nuclear weapon by subnational groups.

- To be successful, the United States needs both a multilayered approach to discover the nuclear-weapons-related activities of these groups and a force structure to take military action against them.
- Multifaceted defenses are always preferred to single-point defenses; no single layer can be perfect, but with all of the layers functioning, the possibility of a nuclear detonation in the United States could be made vanishingly small.

Flight of Fancy

Graham Allison, Harvard University

Background

This article examines scenarios four years into the future.

- The author says we must imagine the speech that an official might deliver as the lights are cut and the doors are closed at the demise of the International Atomic Energy Agency (IAEA) in December 2010.
- He starts with saying the world had little excuse for the expressions of shock when North Korea conducted its nuclear weapons test in 2007.
- More surprising was how swiftly Japan and South Korea followed.
 - Less than a year after North Korea's test, Japan withdrew from the Non-Proliferation Treaty (NPT) and told the IAEA inspectors to leave—four months later, it finished construction of its first twelve nuclear warheads.
 - In early 2009, the Japanese government declared that its self-defense capabilities now included a robust nuclear deterrent, announcing the first battery of nuclear-armed missiles to protect Japan from North Korea or any other regional power.
- South Korea followed Japan, withdrawing from the NPT, readying weapons and conducting its first nuclear weapons test in early 2010.
- North Korea's January 2007 test also flipped a switch in Beijing.
- Iran's success in enriching uranium for its own nuclear program proved to be the straw that broke the nonproliferation regime's back.

End of NPT

The nuclear breakout of North Korea and Iran would probably have undermined the nonproliferation regime by themselves, but then the deluge:

- The first nuclear terrorist attack occurred in New York City on the seventh anniversary of the 9/11 attacks.
- Then, Chechen terrorists exploded a nuclear bomb in Moscow.
- Bush and Putin concluded that North Korea had sold al Qaeda the weapon that killed eight hundred thousand people in New York City and that a Pakistani bomb, stolen by al Qaeda sympathizers and passed to the Chechens, had done the deed in Moscow.
 - Bush and Putin felt compelled to act, and life moved from nuclear nightmare to the apocalypse that consumes us today.

Retaliation

In retaliation for New York, in January 2009, the anything-but-lame-duck President Bush launched a nuclear attack on North Korea to destroy all known and suspected military facilities, killing some 6 million people.

*The End of
Atoms for
Peace*

- President Putin's attack on Pakistan's nuclear capabilities and military facilities in retaliation for Moscow cited the Bush precedent.
- It was less of a surprise when Israel conducted attacks on Egypt's nuclear weapons and production facility and on Syria's developing capabilities, and it was not a surprise when China acted against Taiwan.
- Following this flurry of devastation, the United States and Russia launched major nuclear modernization programs and resumed nuclear testing.

Since Japan had used its civilian nuclear capabilities to build a nuclear arsenal, the United States (joined by a number of other leading suppliers) declared that the era of Atoms for Peace was over and halted all civilian nuclear cooperation with countries around the world.

- The nonnuclear parties to the NPT began dropping out in droves.
- With the new Security Council inspection force in place, no remaining civilian nuclear cooperation to promote, and many aspiring nuclear states outside the NPT, the United States refused to continue paying its share of the IAEA's budget.
- Thus in 2010, the NPT was effectively a dead letter, and at the end of this month, the IAEA will officially close its doors.

NOTE: As we, alumni and friends of the IAEA and the nonproliferation regime it served, meet to reflect on these developments, we must address the question, Was there anything we could have done to have prevented this catastrophe?

Back to Today

Fortunately, in the matter of nuclear terrorism, we already understand the consequences of our actions.

- If we choose to undermine the nonproliferation regime and fail to lock down loose nuclear materials, we may encounter a future that resembles the nightmare envisioned above.
- Alternatively, if we take the necessary steps to prevent nuclear terrorism, our future will likely be one of security for the United States and the international community.
- We must implement a zero-tolerance policy in three areas: no loose nukes, no new nascent nukes, and no new nuclear weapons states.
- The United States and Russia should jointly develop a "gold standard," act at once to secure their own fissile materials, and persuade other countries to follow suit.
- The crucial challenge to no new nascent nukes is preventing Iranian completion of its nuclear infrastructure, which will require a combination of benefits and credible threats to persuade Tehran to accept a grand bargain for denuclearization.
- The immediate challenge to no new nuclear states is North Korea—preventing Pyongyang from becoming a "Nukes R Us" for terrorists is the biggest challenge the international community faces in Asia.

NOTE: The international community has crucial choices to make, and the stakes could not be higher.