Preventing Nuclear Terrorism

Evolving Forms of the Nuclear Genie

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Nuclear Terrorism in the 21st c.

Part I. The Nuclear Terrorism Threat

Theory & Practice

Part II. In the Shadow of 9/11

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A View To The Future

The Nuclear Terrorism Threat

Theory & Practice

“I am become death, destroyer of worlds.”

Manhattan Project scientist J.Robert Oppenheimer, quoting the Bhagavad-Gita, as he witnessed the world’s first nuclear explosion at the “Trinity” test site on July 16, 1945.

Nature of the Problem

THREAT = INTENT X CAPABILITY*

(*Physics of Nuclear Weapons)

Risk Management of Low Probability-High Impact Events

"Make everything as simple as possible, but no simpler."
Albert Einstein

Dangerous Assumptions

- A nuclear weapon is beyond the reach of a terrorist group.
- Terrorists cannot acquire sufficient nuclear material or a nuclear device.
- Terrorists are incapable of constructing an improvised nuclear device (a crude, yield-producing bomb).

"Men in caves can't do this."

Pakistani President Pervez Musharraf
October, 2001

Fundamentals of Nuclear Terrorism

On the Boundaries Between Proliferation and Terrorism

- Supply
- Capability
  - Nuclear or dirty bomb?
  - Expertise
- Building a bomb
  - Material
  - Design
  - Construction
  - Explosives
  - Delivery

Proliferation

- Demand
- Intent
  - Impact
  - Justification
- Planning an attack
  - Target selection
  - Casing
  - Facilitation
  - Logistics
  - Execution

Terrorism

Three Pathways to a Terrorist Nuclear Attack

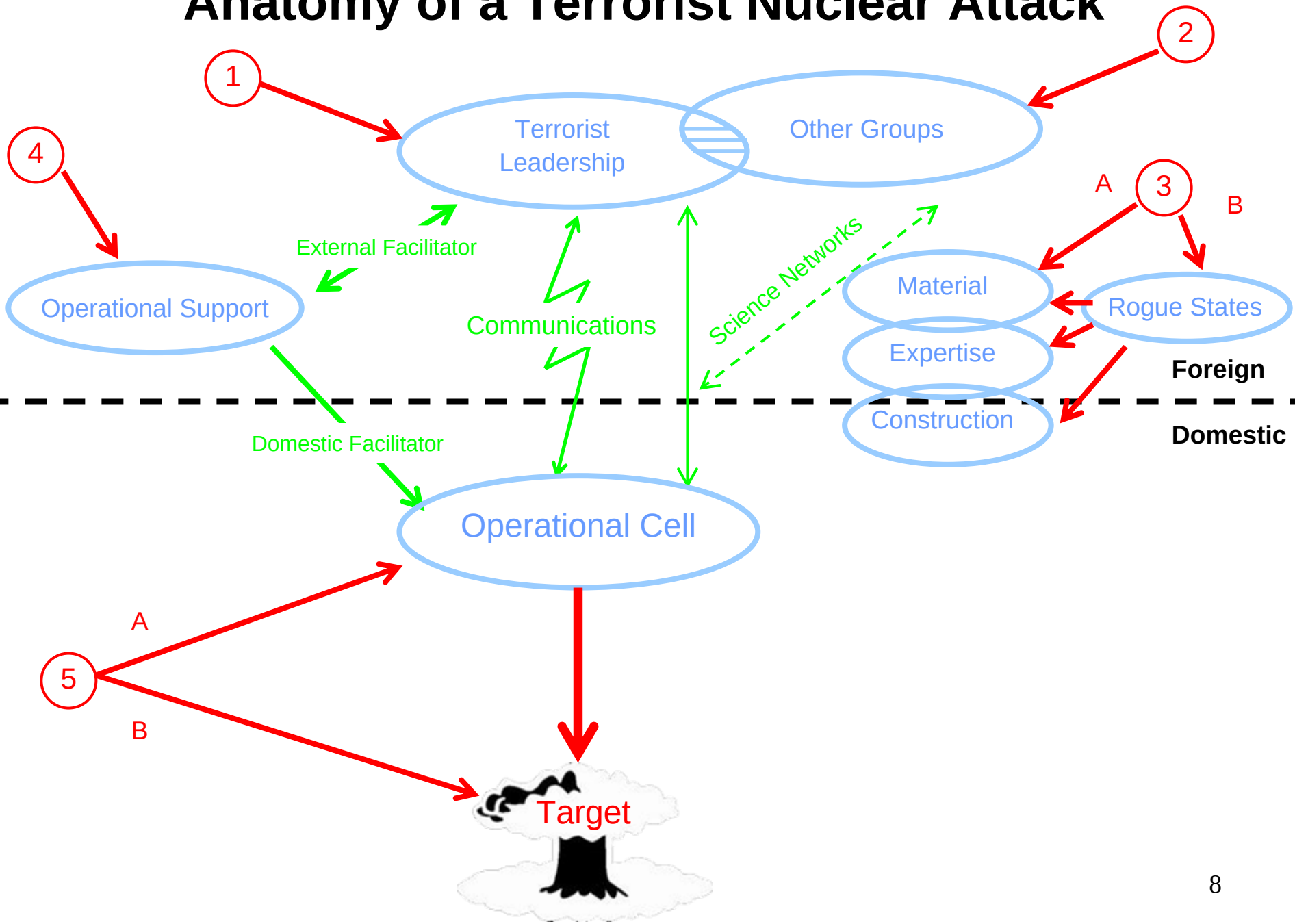
Minding the Middle Path

- Attack on a nuclear facility
- Detonation of a “loose nuke,” nuclear component, or nuclear weapon
- Construction of an improvised nuclear device (IND)

“Do you feel lucky?”

Clint Eastwood in “Dirty Harry”

Anatomy of a Terrorist Nuclear Attack



In the Shadow of 9/11

Building a Sturdy Foundation

"Know your enemy and know yourself, and you will fight a hundred battles without disaster."

Sun Tzu

Understanding Al Qaeda's WMD Intent

"They want to change history."

George Tenet, "Center of the Storm"

"We're behind the 8 Ball"

George Tenet, October 2001

Before 9/11, weak intelligence on al Qaeda's WMD intentions and capabilities

Insufficient US Government focus on WMD Terrorism

Lack of international intelligence and law enforcement cooperation

"Acquiring these weapons for the defense of Muslims is a religious duty."

Osama bin Ladin (Dec 24, 1998)

Al Qaeda's Quest for a Nuclear Bomb

- Nuclear – not "dirty bomb" intent
  - Moral-based justification for slaughter of innocents
  - Al Qaeda *WMD fatwa* May 29, 2003
- Managed by the al Qaeda core leadership
- Non-linear acquisition of material and expertise
- Opportunistic pursuit of capability
- Pursuit of parallel pathways to a bomb
- Professional and compartmentalized planning
- Possible cooperation with other groups

Time favors intent

Al Qaeda WMD: Hype or Reality?

Do terrorists desire CBRN weapons, or do they seek the impact of using WMD?

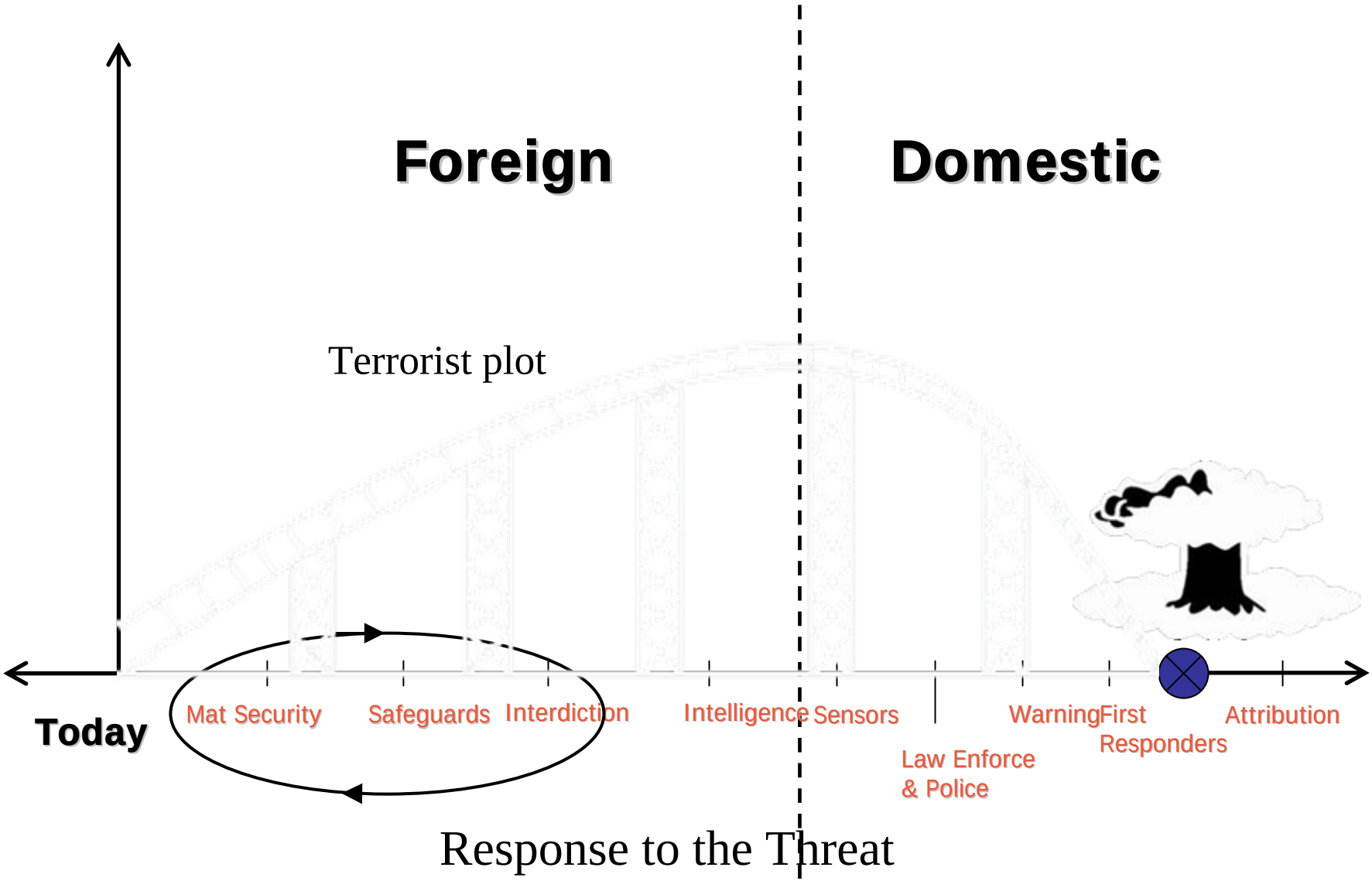
- Terrorist training camps – basic courses in improvised chemical, biological and radiological weapons
- Leadership efforts to acquire nuclear material and expertise before 9/11
  - Focus on former Soviet Union
  - Umma Tameer e Nau (UTN) Pakistan WMD network
- Zawahiri's Project - biological weapons and anthrax
- Abu Musab al-Zarqawi and Associates – cyanide and ricin plots in Europe
- Al Qaeda in Saudi Arabia and WMD planning
- Denying al Qaeda safe haven

Al Qaeda's efforts to acquire WMD may have been disrupted thus far – but their intent remains clear.

Ensuring a Proactive Response

- Defending the Homeland
  - Establishing one place to call in USG for nuclear terrorism
  - Integration of effort
  - Closing seams in homeland security defenses
  - Being prepared to respond to a nuclear attack
  - Special role of science and technology
- The Intelligence A Team
  - Bringing together the “best and the brightest”
  - Skunkworks approach - harnessing creativity
  - Overcoming the “Thermopylae Syndrome”
- International Engagement
  - Setting a new standard for information sharing
  - Driving intelligence and law enforcement action
  - The Global Intelligence imperative

After 9/11, an independent, interagency organization was created to ensure WMD terrorism had its own “in box” among the many competing priorities of the day. This was meant to ensure that in the course of winning battles, the US would not lose the war by allowing a terrorist WMD attack against the homeland.



Response to the Threat

The Growing Threat of Nuclear Terrorism

Why Is This So Hard?

Oppenheimer was asked in a closed Senate hearing room …whether three or four men couldn't smuggle units of an [atomic] bomb into New York and blow up the whole city. He responded, "Of course it could be done, and people could destroy New York." When a startled senator followed by asking, "What instrument would you use to detect an atomic bomb hidden somewhere in a city?" Oppenheimer quipped, "A screwdriver." [to open each and every crate or suitcase].

1946

Nuclear Black Market – Passing the Armageddon Test

- Nuclear Black Market – what is it?
- Missing Material – past, present and future
- Materials Seizures – lessons learned
  - Fortuitous nature of success in interdicting material
  - Material not reported missing from facility of origin
  - Several seizures of unresolved cases of weapons usable material
  - Seizures of sample quantities of larger amounts
  - Under-reporting due to secrecy, lack of transparency and perceived national interests
  - Failure to identify customers
  - Mistrust among states due to stings and fears of "stimulating the market"

"No material. No Bomb. It's that simple."

US Nuclear Weapons Designer

The Legacy of AQ Khan

The "X Factor" – Taking a Shortcut to a Bomb

- Prosecuting AQ Khan and associates
  - Deterring future AQ Khans – Rogue supplier problem
  - Criminalization of trafficking in nuclear materials
- Preventing reconstitution of the Khan network
- Increasing accessibility of nuclear weapons-related information on the internet
- Implications of the AQ Khan network
  - An unanswered call – Al Qaeda and AQ Khan
  - A busy line - Pakistani NGO UTN and AQ Khan
  - What's next- North Korea, Syria?
- Potential Sources of WMD Facilitation Networks
  - Mercenaries from state nuclear weapons programs
  - Organized crime
  - People smuggling networks
  - Nongovernmental organizations
  - Financial networks

Will intelligence find the next AQ Khan?

Single Threat Spectrum

The threat of a globally transforming nuclear event flows from any state or sub state actor's capability to construct one yield producing bomb, along a spectrum that ranges from the most sophisticated nuclear weapons to a crude bomb or improvised nuclear device. Combinations of actors include states working alone, states working with states, groups working with states, and groups working with groups. Supplier networks can enable states and groups. Such rapidly multiplying combinations of possible actors increase the number of pathways to a nuclear event.

The defense must be successful every time.
The attacker only has to be successful once.

Finding the Footprints of the Next Muhammed Atta

- Conventional methods are not sufficient to eliminate the threat of WMD terrorism
  - Resources are not enough – out-thinking the enemy
  - Overarching importance of leadership
  - New intelligence collection *modus operandi*
  - New intelligence analysis *tradecraft*
- A culture of ***truth seeking*** is required
  - Capturing imagination
    - Analyzing dark matter of the unknown
    - Connecting non linear, non obvious relationships
  - Promoting Experimentation and Creativity
    - Finding something that has never happened before
    - Dynamic versus static planning
    - Reward system for proving the negative
  - Overcoming risk aversion
  - Avoiding the dangers of group think

Intelligence must be able to distinguish between the norm and the extreme of terrorist activity in order to disrupt terrorist plots. A distinction must be made between the kind of safe haven required to plan and carry out one attack, and safe haven that is required to build an infrastructure for a terrorist group.

All Things Nuclear

A Systems Approach for Reducing Nuclear Threats

"Some argue that the spread of these weapons cannot be stopped, cannot be checked -- that we are destined to live in a world where more nations and more people possess the ultimate tools of destruction. Such fatalism is a deadly adversary, for if we believe that the spread of nuclear weapons is inevitable, then in some way we are admitting to ourselves that the use of nuclear weapons is inevitable."

President Barack Obama, Prague April 5, 2009

History and Science

"We are at a tipping point." Sen. Sam Nunn

- World War II: Manhattan Project unleashed the nuclear genie
- 20th century was defined by nuclear arms race between states
- 21st century will be defined by a paradigm shift to states and groups seeking nuclear weapons and nuclear-related capabilities
- The probability of a nuclear event occurring somewhere in the world is a real and growing threat in the 21st century

Yesterday- Japanese Cult Group Aum Shinryko.
Today- Islamic Militant Extremists al Qaeda
Tomorrow- ?

Nuclear Threats in an Age of Globalization and Modernization

A growing number of states are pursuing nuclear weapons and nuclear energy.
Nuclear threats are fueled by broad trends such as the asymmetric vulnerabilities, interdependencies, and economic disparities of globalization.
The gap between the power of states and individuals is narrowing.
The level and forms of terrorist violence will continue to rise; interest in acquiring WMD to achieve their aims will grow accordingly.
In terms of responding to the 21st century world of emerging and inherently less predictable threats, what worked in the past half century will not work in the next.
States can no longer assure their security by exercising unilateral power alone.
A multilateral, collective security framework is necessary in order to eliminate the shared nature of the risks posed by nuclear weapons and nuclear-related technology and materials.

Organizing for the World of Today and Tomorrow

Nuclear weapons and nuclear energy are distinct domains with nuclear proliferation and nuclear terrorism at their nexus.

An effective response requires an understanding of the interplay between these domains.
Only a systems approach will synchronize priorities across domains, allow for the proper allocation of resources, and enable more reliable foresight and warning of nuclear threats.

Development of an integrated strategy connecting all nuclear related matters is essential to breaking down stove pipes and enhancing coordination within the US government and with other countries, international institutions and negotiating partners.

All Things Nuclear

A Systems Approach

In the 21st century, effective decision making will require the integration of *all things nuclear* into a single framework in a systems approach to assess and analyze the risks and benefits of

- Nuclear Weapons
- Comprehensive Test Ban Treaty
- Strategic Arms Reductions
- Anti Ballistic Missile Defense
- Space
- Nuclear Nonproliferation
- Nuclear Terrorism
- Nuclear Energy
- Advanced Nuclear Concepts
- Science and Technology Surprise

A development in one area must be assessed against the impact it will have on others. Policy making must take into account possible trade offs that can be made in one area against others. The unifying objective is to eliminate the risk of a single nuclear weapon ever being detonated in an attack.

A World Free of Nuclear Weapons

Putting the Genie Back in the Bottle

- Reconstruction of the global nuclear order
  - Broadening international commitment to agreements
  - Deepening arms cuts and banning nuclear testing
  - Strengthening collective security arrangements to systematically reduce nuclear threats
- Ensuring no new states acquire nuclear weapons
- Managing the renaissance of nuclear energy while lowering risks of proliferation and terrorism
- Eliminating risk of a single bomb being detonated anywhere in the world
  - Provision of actionable intelligence for decision makers
  - Meeting a Fort Knox standard for securing nuclear material
  - Ending the nuclear black market and resolving all cases of missing material

"A leader is a dealer in hope."

Napoleon