The Weird World of Nuclear Weapons

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Some Weirdness of Nuclear Weapons

1. Nuclear weapons *fail* their purpose when they are used

2. No nuclear weapons might be *more dangerous* than 1 nuclear weapon

3. One nuclear weapon might be *more dangerous* than 100 nuclear weapons

4. Defense against nuclear weapons might make war *more likely*
CHART 15
A Smaller and Less Diverse Nuclear Arsenal

TYPES OF WARHEADS IN THE U.S. NUCLEAR STOCKPILE

TOTAL WARHEADS IN THE U.S. NUCLEAR STOCKPILE

2018 Estimated Global Nuclear Warhead Inventories

The world’s nuclear-armed states possess a combined total of roughly 15,000 nuclear warheads; more than 90 percent belong to Russia and the United States. Approximately 9,600 warheads are in military service, with the rest awaiting dismantlement.

<table>
<thead>
<tr>
<th>Country</th>
<th>Retired</th>
<th>Stockpiled</th>
<th>Strategic Deployed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Russia</td>
<td>6,850</td>
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<tr>
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<td>India</td>
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<td>DPRK</td>
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</table>

New START ceiling (February 2018) agreed to by Russia and the United States.

Retired: warheads no longer in the stockpile but remain intact as they await dismantlement.

Stockpiled: warheads assigned for potential use on military delivery vehicles; includes active and inactive warheads.

Strategic Deployed: warheads on ballistic missiles and at U.S. bomber bases. Numbers based on New START counting rule which counts operationally deployed ballistic missile warheads and heavy bombers.

Categories of Nuclear Weapons

- Strategic – ICBMS: Intercontinental ballistic missiles
- Intermediate range – subject of current controversy; IMF treaty; 1K-5.5K km range
- Short range (tactical) – designed for battlefield use; artillery, land mines, torpedoes
Strategic Approaches to Nuclear Weapons

- **First-strike capability** – ability to use nuclear weapons to destroy an opponent before they can inflict unacceptable retaliatory costs on you.

- **Second-strike capability** – ability to absorb a first-strike by an opponent and retain enough nuclear weapons to inflict a devastating retaliatory strike on an opponent.
  - Requires invulnerable strategic forces.
Strategies for Nuclear Weapon Targeting

- Counterforce – enemy’s military capacity
- Countervalue – population centers
- Cold War security was built upon countervalue targeting
Cold War Nuclear Deterrence

- **Mutual Assured Destruction (MAD)**
  - Massive retaliation
  - Maximization of enemy’s pain
  - Secure second-strike capability
Logic of Deterrence

- A policy that seeks to persuade an adversary, through the threat of military retaliation, that the costs of using military force to resolve political conflict will outweigh the benefits
Costs & Deterrence

- Components of costs:
  - Battlefield casualties
  - Destruction & depletion of equipment
  - Occupation & damage to territory
  - Economic pain
  - Civilian losses
Deterrence & The Doomsday Machine
Requirements for Nuclear Deterrence

- Capability
- Commitment
- Credibility
- Communication
Nuclear Capability

• Both the U.S. & Soviet Union sought to possess invulnerable strategic nuclear forces:
  • Allowed each to withstand a potential nuclear first-strike & retain the ability to retaliate
  • No second-strike disadvantage
  • Allows for waiting before retaliation
Nuclear Commitment

• Given possession of nuclear weapons, are you willing to back up a deterrent threat with use?

• What should a U.S. president do in the event of a catastrophic attack on the U.S. homeland?

• The paradox of humaneness
Nuclear Credibility

- Commitment only matters if the opponent believes it
- Defender must convince adversary of resolve – the will to punish
- Building reputation for resolve
Nuclear Communication

• For deterrence to work, countries must be able to communicate their capability and commitment to use that capability

• Communication depends upon signaling

• Signals can be unclear

• Playing chicken
Dangers of Deterrence

- Capabilities are necessary to deter, but:
  - Can lead to an arms race
  - Can lead to a pattern of military escalation
  - Can create a security dilemma
1. Nuclear weapons fail their purpose when they are used

- Logic: The costs of a nuclear war are so unthinkable, no adversary would consider launching a war that risks nuclear war

- Conclusion: Once an actor decides to use nuclear weapons, they have already failed their deterrent mission
  - First-strike
  - Retaliation
Key Risks of Nuclear War With Rational Leaders

- Accident
  - Able Archer 83
  - Black Brant
- Theft
- Misperception
- Use it or lose it
2. No nuclear weapons might be more dangerous than one

- **Logic**: The costs of a nuclear war are so unthinkable, no adversary would consider launching a war that risks nuclear war.

- **Conclusion**: The spread of nuclear weapons would maintain peace & stability
  - Cold War
  - India-Pakistan
  - North Korea
  - Middle East?
3. One nuclear weapon might be more dangerous than 100

• **Logic**: A country with a small nuclear arsenal would seek to deter, lacking aggressive capacity

• A small nuclear arsenal would be a greater risk of first strike destruction than a large nuclear arsenal

• **Consequence**: A small nuclear may not be able to afford to wait & retaliate in the way a large nuclear power can
  • Launch on warning
  • Use it or lose it
  • Implications for North Korea
4. Defense against nuclear weapons might make war more likely

- Logic: Missile defense protects the population from nuclear attack
  - SDI vision – protection against Soviet attack
  - Today’s vision - prevent strikes against the U.S. and its allies by “rogue” states

- Questions:
  - What do you do if you adversary is developing a defense?
  - What effect does defense on credibility & communication?
  - Defense and clarity of expectations
  - How effective can ballistic missile defense be?
Nuclear Grab Bag

• North Korea
• Iran
• Others?