The Atomic Bomb

- "The A-bomb ended the war, but radar won it."
- Aug. 1945: Single bomb destroys an entire city
  - Little Boy
    - Uranium bomb dropped on Hiroshima
    - 8900 lbs, 16 Ktons TNT
  - Fat Man
    - Plutonium bomb dropped on Nagasaki
    - 10300 lbs, 21 Ktons TNT

Offensive and Defensive Responses

- Longer Range, Faster, Higher Flying Bombers to deliver the bombs
  - 1946: Strategic Air Command formed
  - B-52 first flies in 1954
- Bigger Hydrogen (Fusion vs. Fission) Bomb
  - Aug. 1949: First Soviet Atomic Bomb
  - Nov. 1952: First US H-bomb test (10 Mtons)
  - Nov. 1955: Soviet Union explodes their first H-Bomb
- O-T-H Radars and Defensive Lines
  - 1957-9: DEW (Distant Early Warning) Line
- Anti-Aircraft Missiles to intercept bombers
  - 1944: Design of Nike Ajax system

Ballistic Missiles: Germany’s V-2 Rocket

- Over 1000 fired at London towards end of WW 2
- Could destroy a city block—but very inaccurate
- 2700 killed, 6500 injured
- Psychological effect: Essentially no warning and no defense, other than to destroy the launching sites
- What if you marry a nuclear warhead to a rocket?

Ballistic Missiles: How to Intercept?

- Most vulnerable during boost phase
- Hard to intercept during terminal phase: "bullet hitting a bullet!"
- Also consider effects of nuclear air burst caused by interception—must be 20 mi up or more

Boost Phase
- 200 mi up
- 15000 mph
- 300 s

Midcourse Phase
- 800 mi up
- 20 minutes

Terminal Phase
- 5 minutes
Weird Logic of Nuclear Deterrence

- Massive Retaliation: Invade a little country, and we will destroy you—only works as a deterrent if the other guy has no nuclear weapons
- Mutually Assured Destruction (MAD): “Whoever shoots first, dies second”
  - Sufficient counterforce that no matter what the aggressor does—even if he destroys a considerable number of the defender’s missiles on the ground—missiles will likely survive to still threaten his cities with utter destruction
  - U.S. No first use policy
- Strategic Triad/Flexible Response
  - Ground-based Missiles (ICBMs): arrive in 20-30 minutes
  - Strategic Bombers: time on target 12 hours
  - Nuclear Submarines (SLBMs): can lay in wait for days or even months—assuming subs remain invisible and know that their home country has been destroyed

Cuban Missile Crisis

- Cold War: Great power politics in Asia, Middle East, Africa, Latin America
  - Communist insurgencies and Soviet-leaning governments in N. Korea, N. Vietnam, Cuba
  - E.g., U.S. response: CIA-supported Bay of Pigs invasion of Cuba (1961)
  - Soviet fears of U.S. “Massive Retaliation” — How to reach parity with the Americans when USSR is so technologically far behind?
    - Soviet missiles of the time could only reach European cities from their launching sites
    - U.S. deploys medium range missiles in Turkey in a highly provocative move (April 1962)—Soviets now fear a first strike
  - Soviet response: deploy own missiles into Cuba (September 1962)

Soviet-Cuban Friendship

- Castro declares his country “Communist” after the Bay of Pigs
- Seeks protection from U.S. aggression through support of Soviet Union

Cuban Missile Crisis

- Medium range missiles could reach Dallas or DC in 5 minutes
- Longer range missiles could reach virtually any major U.S. city
- Soviets: restores the MAD equation
- U.S.: what if their missiles could “decapitate” our ability to strike back? Mitigates MAD

Land Based Missiles of the Cuban Missile Crisis

- U-2 Reconnaissance Plane
  - Reconnaissance Photo
  - Mitigation of MAD
“Red Dragon Rising”

- Rise of China as a World Power
  - 1947-9: Red Army expels Nationalist Chinese government to Taiwan
  - 1950-3: Korean War
    - The Cold War becomes HOT
    - North Korea in battle invades South Korea
    - UN (USA) intervenes on behalf of South Korea
    - China intervenes on behalf of North Korea
    - Cease fire along the DMZ 38th Parallel
  - Recent threats: Russia, Vietnam, India

The 24 Character Strategy

“冷静观察，沉着机警，灵活应付，韬光养晦，善于守拙，绝不当头。”

“Observe calmly; secure our position; cope with affairs calmly; hide our capacities and bide our time; be good at maintaining a low profile; and never claim leadership.” – Deng Xiaoping

Military Power of the People’s Republic of China
Report to Congress, 2008

- “The pace and scope of China’s military transformation have increased in recent years, fueled by acquisition of advanced foreign weapons, continued high rates of investment in its domestic defense and science and technology industries, and far-reaching organizational and doctrinal reforms of the armed forces. China’s expanding and improving military capabilities are changing East Asian military balances; improvements in China’s strategic capabilities have implications beyond the Asia-Pacific region.”
Military Power of the People’s Republic of China
Report to Congress, 2008

- China’s nuclear force modernization, as evidence by the fielding of the new DF-31 and DF-31A intercontinental-range missiles, is enhancing China’s strategic strike capabilities. China’s emergent anti-access/area denial capabilities – as exemplified by its continued development of advanced cruise missiles, medium-range ballistic missiles, anti-ship ballistic missiles designed to strike ships at sea, including aircraft carriers, and the January 2007 successful test of a direct-ascent, anti-satellite weapon – are expanding from the land, air, and sea dimensions of the traditional battlefield into the space and cyber-space domains.

DF-21 (CSS-5) MRBM
- 60-80
- 500kT nuclear warhead
- over a distance of 1,800km
- 3-400m CEP

Crisis in the Straits
- 1999: President Lee of the ROC:
  “The Republic of China has been a sovereign state since it was founded in 1912. Moreover, in 1991, amendments to the Constitution designated cross-strait relations as a special state-to-state relationship. Consequently, there is no need to declare independence. The resolution of cross-strait issues hinges on the issue of different systems. We cannot look at issues related to the two sides simply from the perspective of unity or independence. The Chinese mainland’s promise of a ‘one country, two systems’ formula for Hong Kong and Macau is irrelevant to Taiwan … the ROC is a sovereign, independent state.”

PRC and Taiwan
- “In recent years, the situation of the Taiwan Strait has become increasingly complicated and severe … our army … has stepped up its efforts to prepare for military struggles to safeguard the security and unity of the state.” – General Cao Gangchuan, Minister of Defense
Taiwan Straits

There are currently 11 aircraft carriers, 22 cruisers, 60 destroyers, two littoral combat ships, 31 frigates, 11 amphibious assault ships, two amphibious command ships, 12 amphibious transport docks, 12 dock landing ships, 61 attack submarines, 14 ballistic missile submarines, 4 guided missile submarines, 14 mine countermeasures ships, eight patrol boats, and one technical research ship (military intelligence ship, the USS Pueblo, which is currently held by North Korea).

Support ships include two hospital ships, four salvage ships, two submarine tenders, four ammunition ships, five combat stores ships, four fast combat support ships, nine dry cargo ships, 15 replenishment oilers, four Fleet Ocean Tugs, four ocean surveillance ships, four container ships, 16 cargo ships (used for pre-positioning of Marine and Army materiel), and seven vehicle cargo ships (also used for prepositioning).

U.S. Navy Assets in Comparison

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On Arms Sales to Taiwan, China Sends Mixed Signals

WASHINGTON — China sent a clear and unmistakable signal on Thursday about its position toward the United States two weeks after the Obama administration angered the Chinese by approving the sale of a $700 million worth of arm sales to Taiwan.

Immediately after the approval was announced, the Chinese Foreign Ministry (MOFA) issued a less-stern but still tough warning with the Taiwan issue and said China would take necessary measures to punish American companies that produced the weapons.

But on Thursday, China signaled some willingness to cooperate by sending an American official visiting Beijing to visit Hong Kong on Friday, a move that some analysts say was aimed at sending a message to the United States that the Chinese government is willing to cooperate if the United States would send a clear and sensible message.

This week’s visit is expected to be the first visit by a U.S. official to Hong Kong in recent years.

China has a history of lack of cooperation by American officials, who visit Beijing but do not attend high-level meetings or make policy statements during their visit. The Chinese government has also been known to intermittently restrict American officials’ access to its government officials and top leaders.

All China did not seem to be sending a clear message on Thursday. The MOFA’s official statement was hopeful but not promising.