

TECHNOLOGY & NUCLEAR WEAPONS



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ATOMIC WARFARE, THE EARLY YEARS

Hiroshima and Nagasaki (1945)

- A strategy of shock → element of surprise → unique
- Effects on the doctrine of strategic bombardment of rocketry (V-2) and of the atom bomb

Heavy Bomber v. “push-button warfare”

US Air Force’s atomic strategy

Defense against a nuclear attack?

- Jet fighters and missiles
- Radar
 - (DEW Line, completed in 1957)
- NORAD (1958- integration of Canadian and US air defenses)



THE EARLY YEARS, PART II

Soviet Union breaks US atomic monopoly in August 1949

In response, the US raised the stakes by developing hydrogen (fusion) bombs

In the 1940s to mid-1950s, the US SAC (Strategic Air Command) relied on B-29 bombers—reaching the USSR required European bases or aerial tankers.

Arrival in 1955 of the B-52 made long-range bombing practical.

Soviet bombers could not reliably reach the US until after 1956-57 (except through one-way suicide missions). But Western Europe was in easy reach.

“Super” (hydrogen) bomb v. Tactical (battlefield) nuclear weapons

- A number of scientists such as Oppenheimer opposed the H-Bomb.
- Tactical weapons- alternative or supplement to the H-Bomb?

NSC-68, KOREA, AND CONVENTIONAL STRATEGY

NSC-68 (April 1950)- Nuclear strategy more appropriate to the SU than the US because totalitarian states could more easily make surprise attacks.

With weaker conventional forces, the US had to rely on its nuclear arsenal and NSC-68 rejected the proposed policy of no US nuclear first strike.

Korean War- lack of political will to use the A-Bomb; lack of targets.

NATO (July 1949)- reassurance to European allies that the US would be there at the start of any new war. But substantial numbers of US troops in Western Europe follows only from September 1950.

Problems of limited, conventional war- Cost and possible stalemates.

Limitations of containment- the SU and allies get the “first move.”

"MASSIVE RETALIATION"

“Massive retaliation”- Idea that the US would respond to any communist-inspired aggression, however insignificant, with a massive nuclear strike against the centers of the SU and China. (John Foster Dulles- Jan. 1954)

- Clarifying his speech in a subsequent article, Dulles spoke more about “flexible retaliation”- a range of nuclear options.
- Belief that the US should not yield tactical advantages to the SU.

“Rollback”- (never implemented beyond rhetoric, idea toyed with of picking fights with communists in certain areas). Containment remains as policy.

Why this shift towards nuclear option?

- Shift from nuclear weapon scarcity to abundance (by 1954)
- Cost of rearmament of conventional forces.
- Nuclear weapons- “a bigger bang for a buck”?
- A parallel shift in British thought (Conservative gov’n’t from 1951)

THE "NEW LOOK" AND DETERRENCE

The "New Look" (1953) shifts NATO to emphasize nuclear weapons

- Belief that the West could not afford to match the East in conventional forces.
- US troops in Europe would be a "trip-wire" (for use of the US nuclear arsenal) and not a shield.
- Truman years strategically had been cautious and restrained (containment); Eisenhower years (in sentiment, not in policy) endorsed more of a "best defense is offense" idea.

Shifts in ideas of deterrence

- Large nuclear arsenals would cancel each other out in a balance of terror. Shift from earlier view that the West had to have more nukes than the East to achieve deterrence.
- Preventive war? (~1954 as US nuclear advantage began to erode).

SPUTNIK, ICBMs, AND THE SOVIET UNION

Sputnik I (4 Oct. 1957)- the world's first artificial satellite

- Shock to US self-confidence; fears of a science gap.

SU had emphasized ICBM (intercontinental ballistic missiles) over long-range bombers so Soviet ICBMs began appearing first (mid-1957).

Soviet euphoria at their ICBM lead//Western fear of a missile gap//both were wrong (by 1961, a US missile lead is clear).

Mutual fears of a surprise attack lead both US and SU planners to prepare for pre-emptive attacks.

Improved protection against first strikes

- *Minutemen* ICBMs in underground silos would be harder to hit.
- Similarly, *Polaris* missiles launched from submarines were mobile.

ONWARD To MAD

Cuban Missile Crisis (1962)

MAD (mutually assured destruction)- (~1964 “assured destruction”)- Idea that the US could deter nuclear attack by maintaining the ability to inflict unacceptable damage on the attacker even after absorbing a first-strike attack.

- Advocated by Robert McNamara (JFK’s Secretary of Defense)

Not an entirely new idea; a formalization of US doctrine from the 1940s.

Under Brezhnev (after Khrushchev's fall in 1964), the SU military is able to push through a major military build-up to catch up with the US in missile power (at least numerically).

- SU planners concerned about what to do if deterrence failed.

OTHER BOMBS

China (October 1964)- limited nuclear force; no full second-strike capability.
Rhetoric of atom bombs as “paper tigers” v. “real tigers.”

Britain- technological dependence on the US (*Polaris* then *Trident* subs)

France

- Sought nuclear weapons for reasons of national prestige.

Israel

India and Pakistan

South Africa (aborted program)

NPT (Nuclear Non-Proliferation Treaty, signed 1968, in force 1970)

- No nuclear states (amongst the signers) but those already with nuclear weapons can keep them.