

The background is a solid, textured red color with a slightly grainy appearance. A horizontal, textured yellow brushstroke runs across the upper portion of the image, just above the text.

Nuclear arms race in the first nuclear age

Nuclear Weapons Proliferation

- 1st Nuclear Age – 1945 – 1989
 - Vertical proliferation
- 2nd Nuclear Age – 1990 – present
 - Horizontal proliferation

Motives for NW Proliferation

- USA 1945
- USSR 1949
 - Belarus
 - Ukraine
 - Kazakhstan
- Great Britain 1952
- France 1960
- China 1964
- Israel 1966
- India 1974
- South Africa 1979
- Pakistan 1998
- North Korea 2006

Nuclear RMA

„The historical trajectory of the (US) nuclear RMA was as follows:

- (1) the scientists told the politicians and bureaucrats what might be achieved with patience, a great deal of money, and a huge industrial effort (1939–41),
- (2) the politicians and officials, after much delay and notwithstanding some initial skepticism, decided that the scientists' story had to be tested (1941–45);
- (3) the military sought to fashion a nuclear-armed long-range striking force which actually could express a radical change in the character and conduct of war (1948–54/55);
- (4) and finally a body of scholar-commentators appeared which tried to make strategic sense of the nuclear RMA that already was a well established fact (1954–57).

Each of these four clusters of people shared parentage of the nuclear RMA. When we refer to the nuclear revolution we mean not just the military-technical epiphanies exploded in 1945, 1949, 1952, and 1955. In addition, we mean the military instrument(s) and the political, moral, strategic, and other contexts shaped by the radical change in warfare.“

Gray, C. S.: Strategy for Chaos, p. 204.

Nuclear Stockpiles of the USA and USSR 1945-1989

	USA	USSR
1945	6	0
1950	369	5
1955	3057	200
1960	20 434	1605
1965	31 642	6129
1970	26 119	11 643
1975	27 052	19 055
1980	23 764	30 062
1985	23 135	39 197
1989	22 174	35 805

U.S. Strategic Concepts

- Massive Retaliation
- Flexible Response

Soviet Thinking on NW

- Stalin
- Khrushchev
- Brezhnev
- Gorbachev

Strategic Weapons

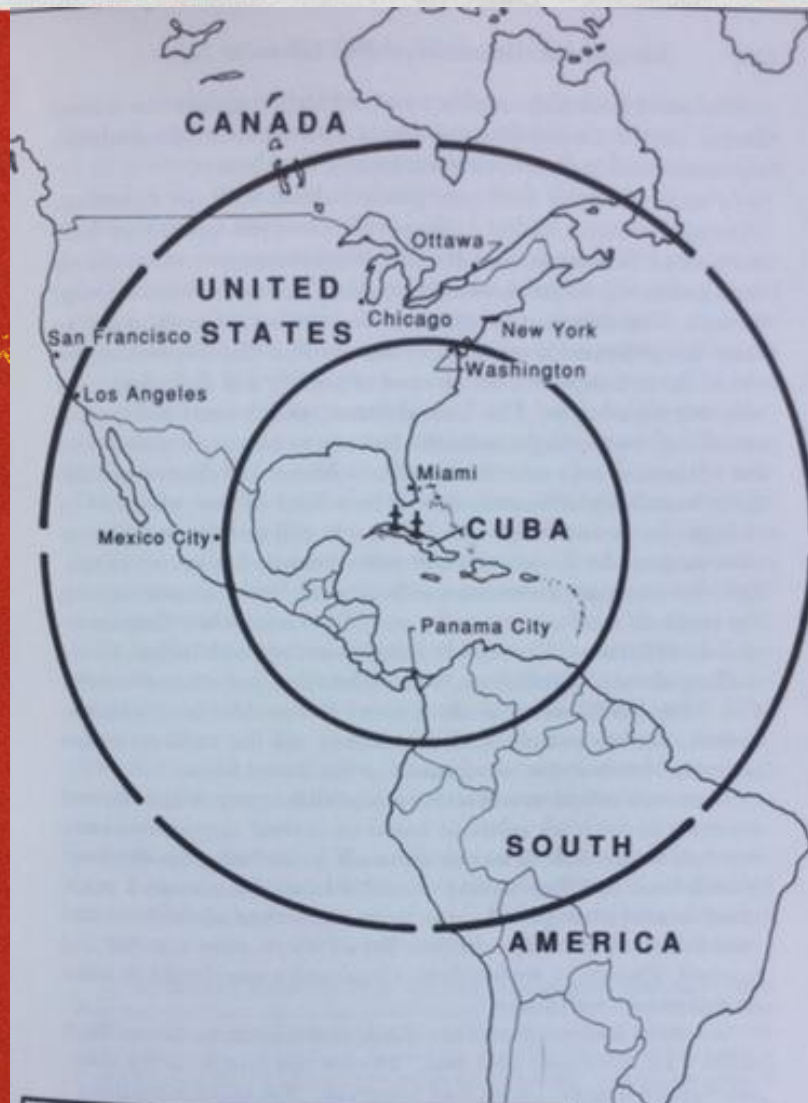
Table 7.1 American and Soviet strategic forces as of October 1962

	Soviet Union	United States
ICBMs	75 (approx.)	100 Minuteman I (approx.) 90 Atlas 36 Titan <hr/> 226
SLBMs	0	144 Polaris missiles carried by nine Polaris submarines
Long-range bombers	70 Bears <hr/> 120 Bisons 190	600 B-52s (approx.) <hr/> 750 B-47s (approx.) 1350

NOTES: Bear and Bison are NATO code names. The Bear was a propeller-driven heavy bomber; the Bison was a lighter bomber with four jets, somewhat less capable than the B-47. The B-47s were being rapidly phased out at this time.

All Soviet ICBMs were at very vulnerable aboveground launch sites. So were the U.S. Titans and most of the Atlases. The Minuteman I missiles were in hardened underground silos. The Minuteman I force was being rapidly expanded at this time; eight months later, in July 1963, about 450 were deployed.

SOURCE: *The Communist Bloc and the Western Alliance: The Military Balance 1962-63.* London: Institute of Strategic Studies.



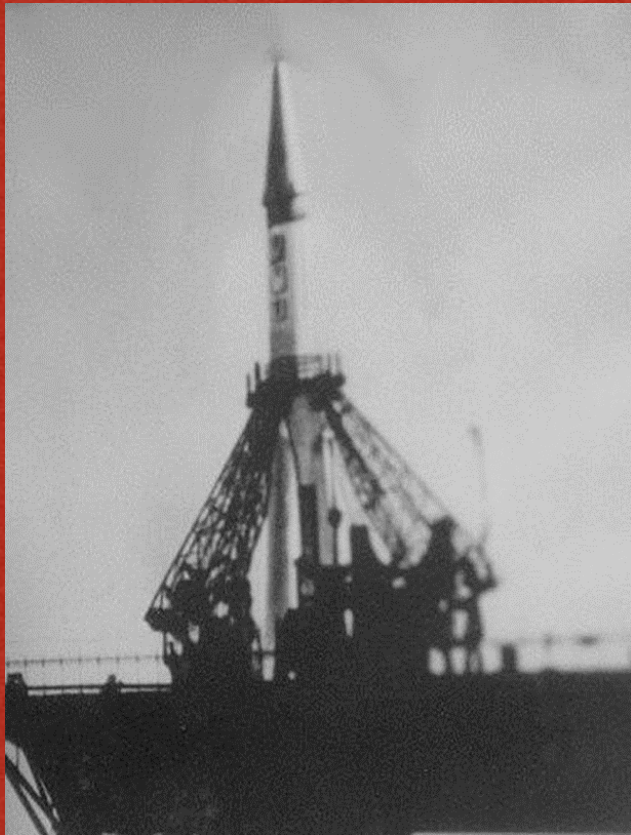
The Cuban Missile Crisis: Range of Cuba-based Soviet Missiles

- Approximate range of medium-range missiles (900-1,080 miles)
- - - Approximate range of intermediate-range missiles (2,100 miles)



MAD

- Declaratory doctrine



Strategic Triad



SS-11 Sego

- 990 missiles deployed between 1966-1972



Strategic Weapons

Table 7.2 American and Soviet strategic forces at the end of 1969

	<u>Soviet Union</u>	<u>United States</u>
ICBMs	1,200	1,054 (1,000 Minuteman and 54 Titans)
SLBMs	230	656 (41 Polaris submarines each carrying 16 missiles)
Long-range bombers	150 Bears and Bisons	540

NOTE: At this time the Soviet totals of both ICBMs and SLBMs were rising rapidly. American totals were constant, although substantial qualitative improvements were being made in the American missile forces.

SOURCE: *Strategic Survey, 1969*. London: Institute of Strategic Studies.

Strategic Weapons

Table 10.1 American and Soviet strategic forces as of mid-1975

	Soviet Union	United States
ICBMs	1,618 (included about 70 new SS-17, SS-18, SS-19 missiles)	1,054 (included 550 Minuteman III missiles)
SLBMs	784 in 75 submarines	656 (included 400 Poseidon missiles) in 41 submarines
Long-range bombers	135 Bears and Bisons	463 B-52s and FB-111s

NOTES: Data for Soviet long-range bombers do not include about 25 Backfire bombers deployed as of this time. The American FB-111 was technically a medium-range bomber, but acquired long range with aerial refueling, a technique long practiced and perfected with FB-111s.

SOURCE: *The Military Balance, 1975-76*. London: International Institute of Strategic Studies.

MIRVs



Strategic Weapons

Table 11.1 American and Soviet strategic forces as of mid-1985

	Soviet Union	United States
ICBMs	1398 (includes 308 "heavy" SS-18s)	1018 (includes 26 Titans being phased out)
SLBMs	979 in 77 submarines	616 in 37 submarines
ICBM & SLBM warheads	9207	7654
Long-range bombers	170	236 (includes 180 B-52s, 56 FB-111s)
ALCMs	25-50	1080
Total strategic warheads	9987	10,174

Strategic Weapons

Table 15.1 U.S. and Soviet Strategic Forces as of Mid-1991

	Soviet Union	United States
ICBMs	1,086	1,000
SLBMs	912	640
ICBM and SLBM warheads	10,352	7,890
Long range bombers	177	307
ALCMs	720	1,720
SLCMs	150	357
Total strategic warheads	11,309	10,102