

Why build so many nukes?

Factors behind the size of the Cold War stockpile

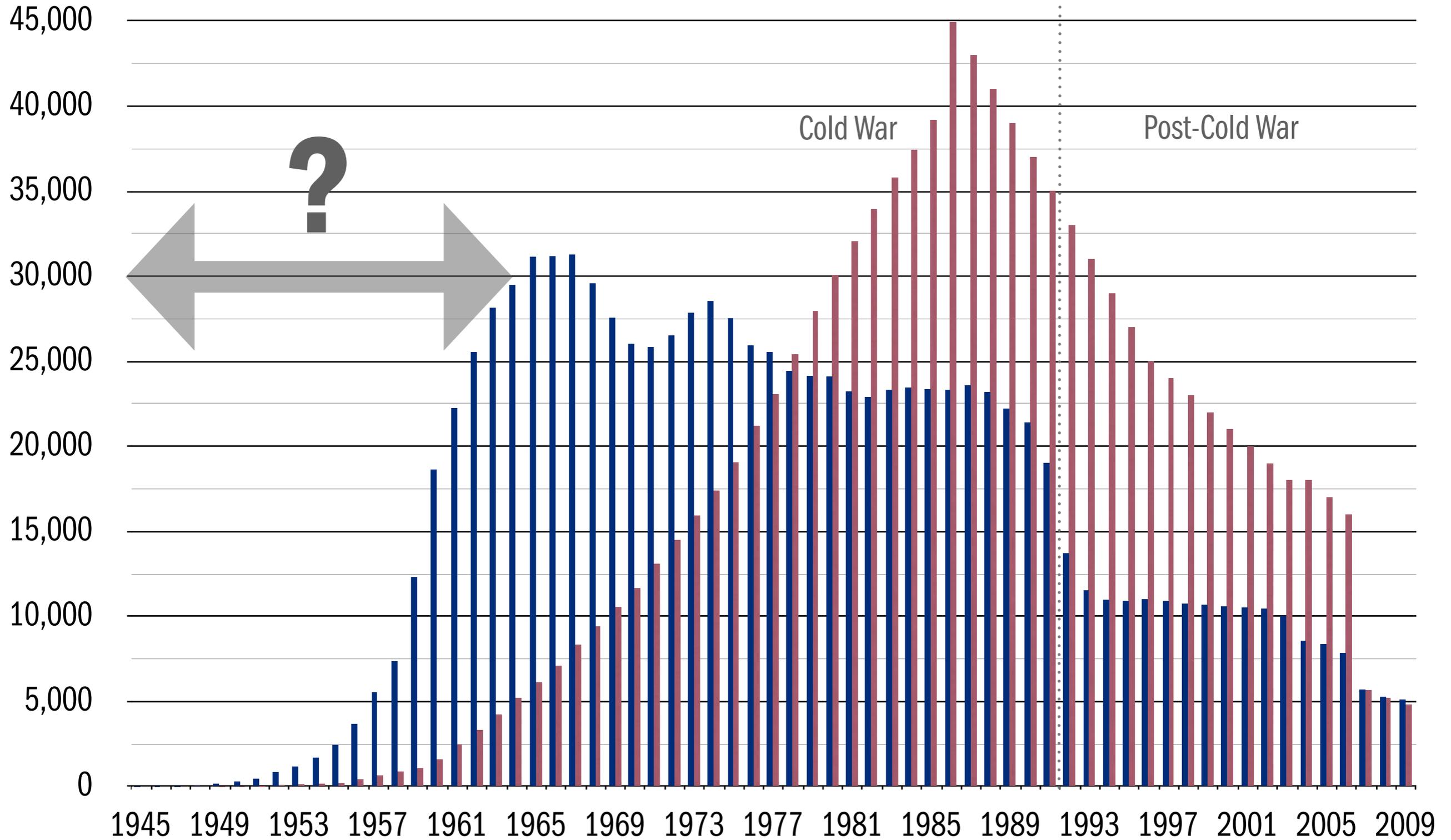
Alex Wellerstein

Lecturer, Department of the History of Science, Harvard University
Research Fellow, Managing the Atom Project, Harvard Kennedy School

Key question

- We are all familiar with the arguments for or against having some nuclear weapons versus no nuclear weapons
- But why did the US in the early Cold War build so many nuclear weapons?
- Manhattan Project scientists would have estimated that at a maximum, 100-200 nuclear weapons would have been more than enough
- So why did we make over 30,000 before we started to manage the stockpile more concertedly?

US nuclear stockpiles, 1945-2009



Data sources: US Dept. of Defense (May 2010), and NDRC

1. Lack of deliberation (secrecy)

- All stockpile dynamics of early Cold War essentially enabled by fact that stockpile size was not a matter for discussion except in very narrow military circles
- Stockpile secrecy not taken for granted in 1945-1949, but ironically kept secret because of “shamefully” low value
- ‘45: 2 – ‘46: 9 – ‘47: 13, ‘48: 50
- Very few people actually knew even the rough stockpile size for most of the Cold War, which gave it the perfect atmosphere to grow



2. Inter-service rivalry

- In the early Cold War, it appeared that whomever controlled the nukes was going to be the most important service of the armed forces
- Air Force pushes for bomber superiority; Navy pushes for nukes on carriers, submarines; Army pushes for control over intermediate and tactical nuclear weapons
- Outcome is that all services are redundantly pursuing nuclear weapons as a means of staying relevant, and, early on, not coordinating their efforts at all

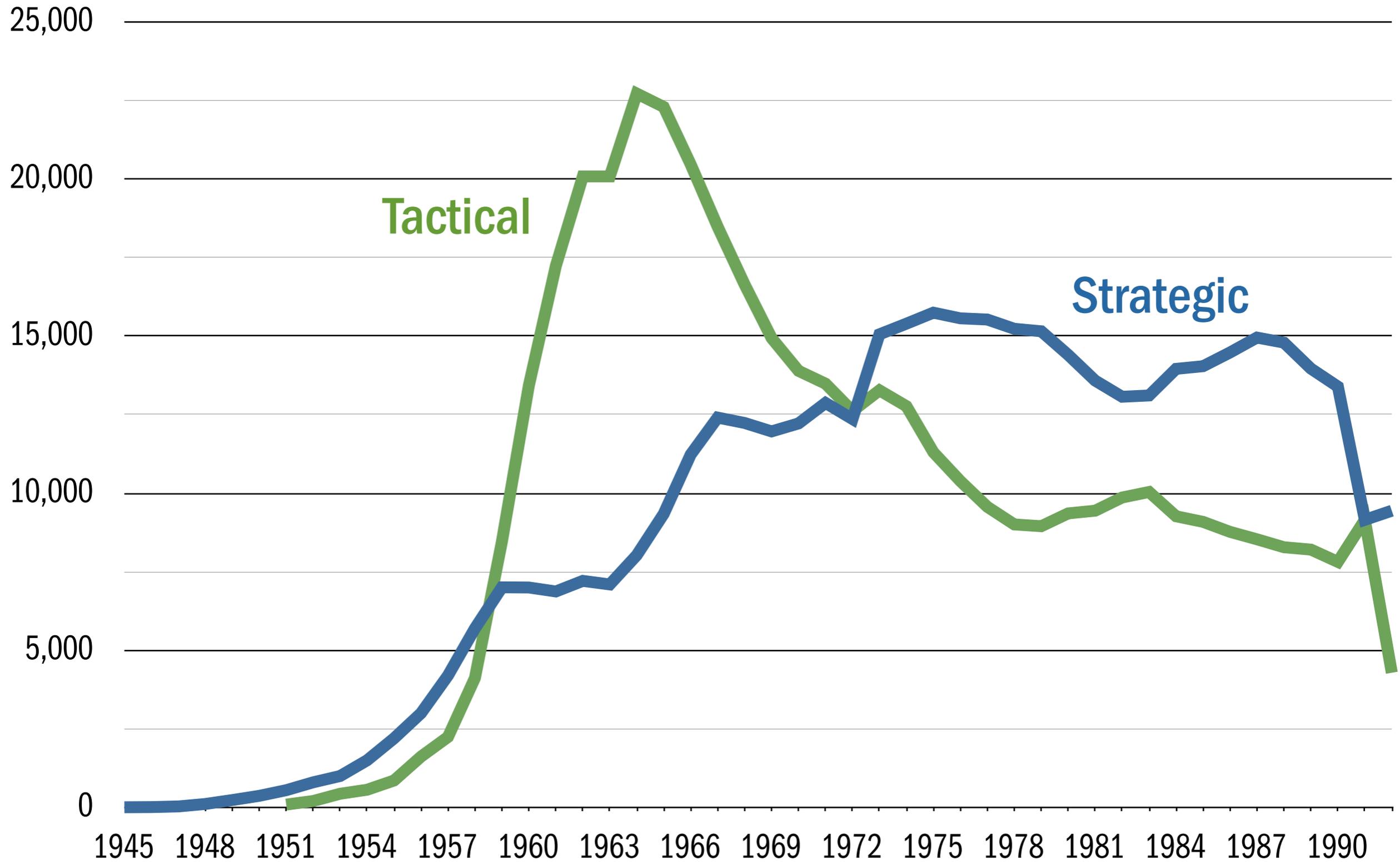


3. Shift towards tactical nukes

- Nuclear weapons initially conceived of as the “ultimate weapon,” only for use in strategic situations (deterrence or nation destroying)
- By the 1950s, many are arguing that such a stance is constraining to US freedom of action – want “limited” nuclear weapons use, “flexible response”
- Result is that by the early 1960s, a huge number of US nuclear stockpile is in the form of “small,” “tactical” nukes



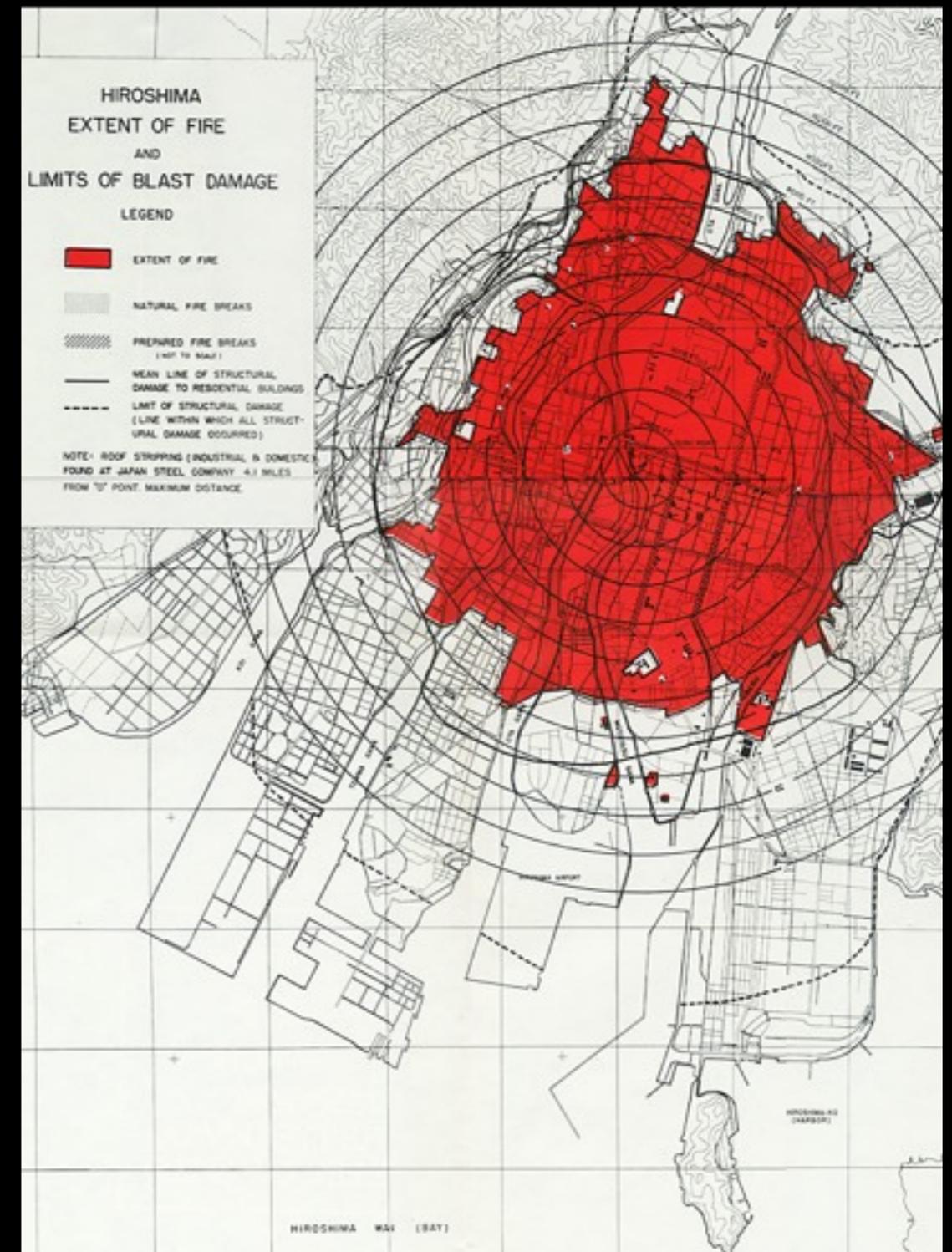
US nuclear stockpile, 1945-1992



Source: Bulletin of the Atomic Scientists

4. Problematic targeting models

- Knowing how many nukes you might need requires knowing what the damage effects will be
- Most modeling by war planners relies on effects that are easy to measure: pressure, radiation, thermal radiation
- Very few take into account secondary effects, like the firestorm, which are very hard to model
- Result: Massive “overkill” assumptions – in 1960, Navy estimated it would take 500 kt to take out a Hiroshima-like target



5. Endless quest for “certainty”

- Starting in the 1960s, but continuing through the present, is an endless quest for the “certainty” of attack damage
- Though the US always assumes that “one will get through” when projecting defenses, has always been worried that its own deterrent will not be credible without total guarantee of total destruction
- Result: Heavy redundancies in targeting, probably unrealistic fears of nukes not “working”

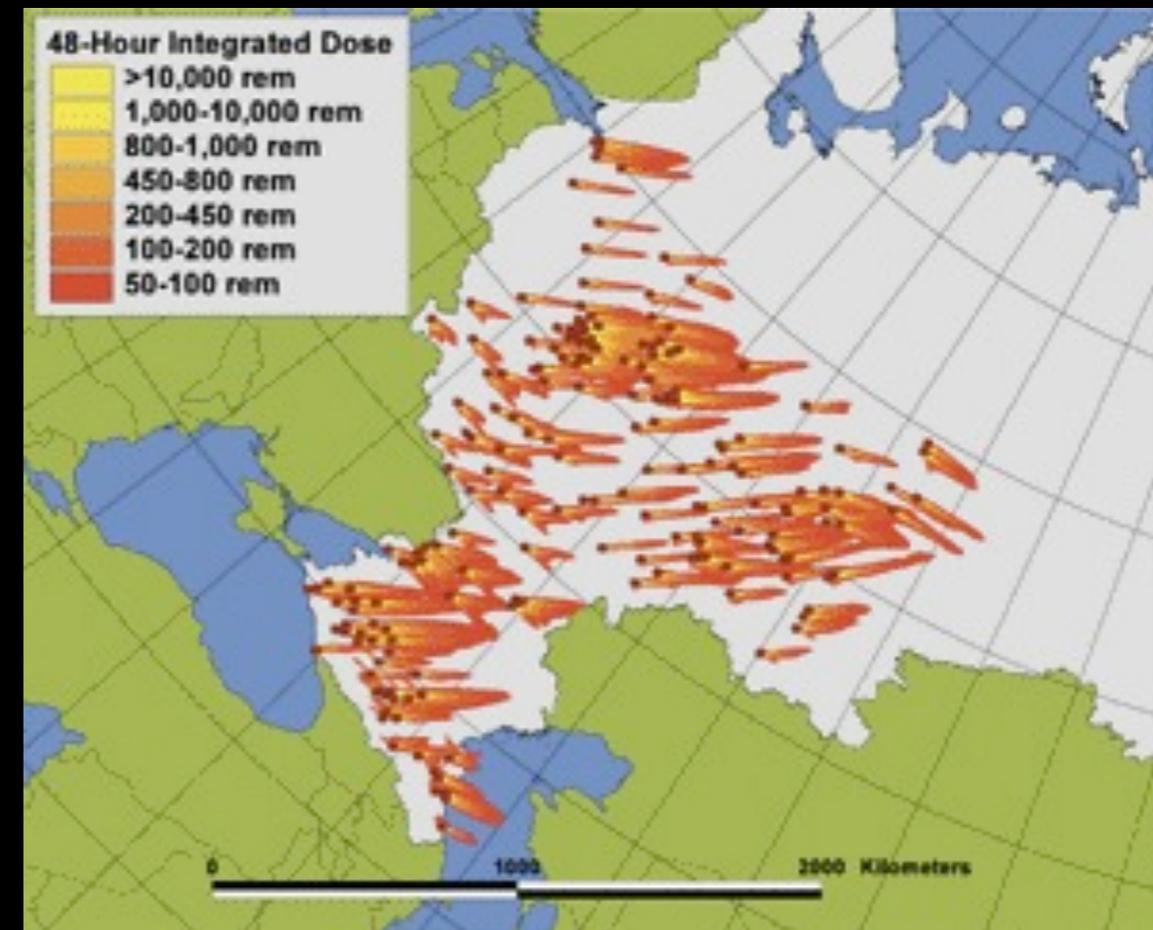


Image: NRDC

6. A quest for supremacy, not parity

- The goal in 1945-1960 was never deterrence through parity — it was for the achievement of first strike status
- Gen. Groves to Gen. Eisenhower, Dec. 1945: “The United States must for all time maintain absolute supremacy in atomic weapons... If there are to be atomic weapons in the world, we must have the best, the biggest and the most.”
- Great myth of the Cold War: That the US really believed in deterrence, was willing to accept a second-strike status — in reality, eagerly pursued first strike capability again and again



Take home points

- Main reasons for the uncontrolled growth of the early Cold War US stockpile: Secrecy, organizational competition, strategic choices, problematic modeling, obsession with certainty, and lack of real belief in deterrence
- Net effect is the US stockpile ballooning to ridiculous proportions, even as developments in weapons and delivery systems meant that they could increasingly guarantee ever more sophisticated destruction
- Lack of overall coordination meant the American side of the arms race was practically “running itself” for a great deal of the time — making it more of a “race” than it probably had to be