Science, Security, and Nuclear Weapons: A Conundrum for Our Generation?

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Café Scientifique
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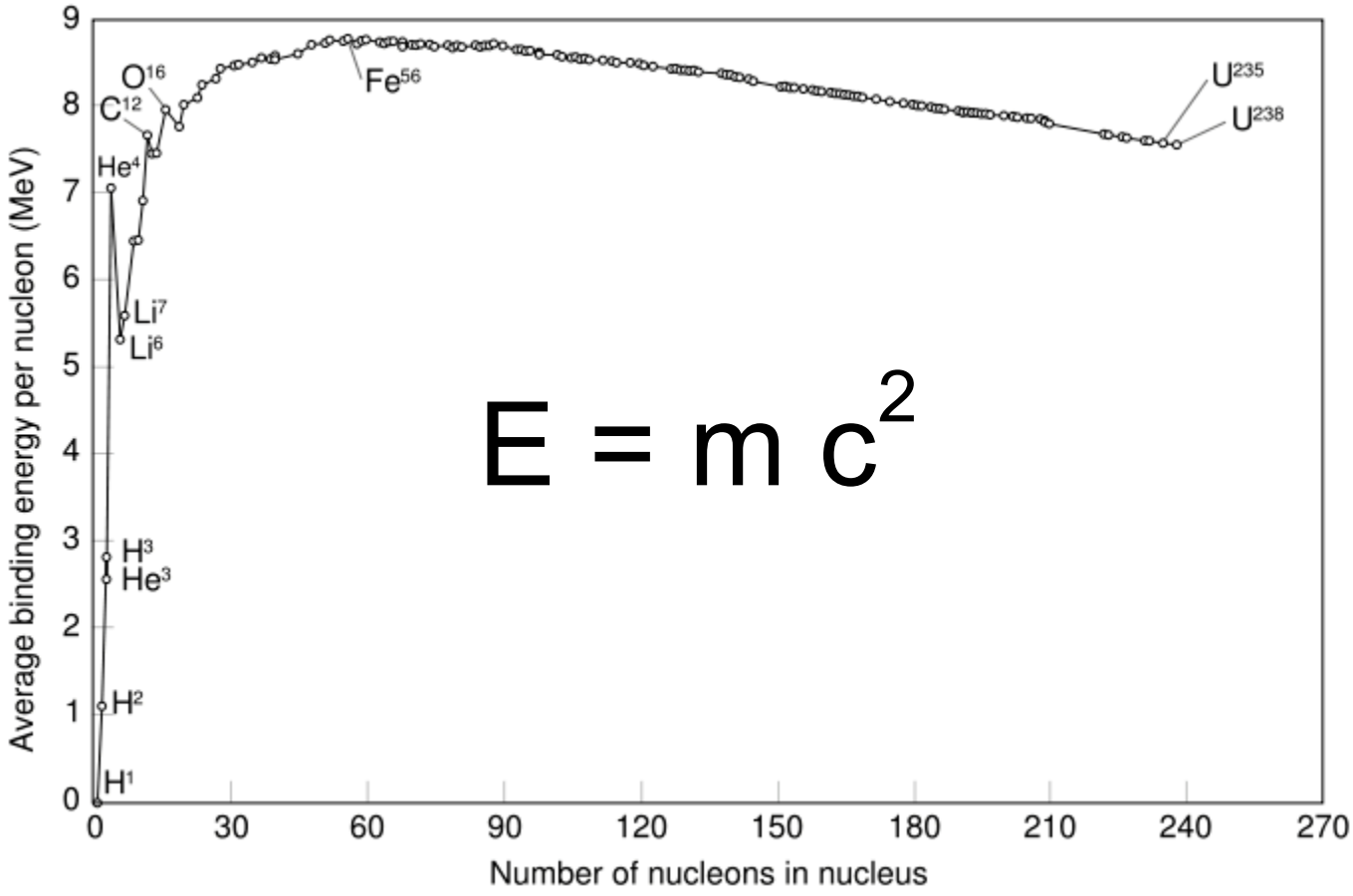
The Curve of Binding Energy



$$E = m\,c^2$$

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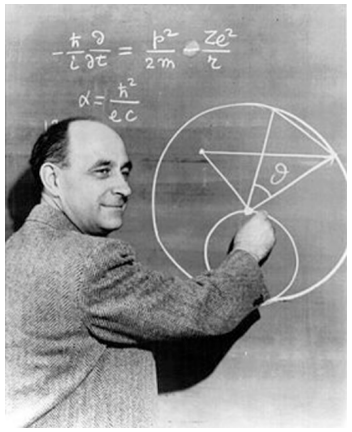
The Discovery of Fission:1930-1939



Enrico Fermi

Early 1930s: protons and alpha particles are used.

1934: Enrico Fermi bombards U with *neutrons*.
Scientists disagree as to what happened!

1938: Hahn and Strassmann bombard U with neutrons and get lighter-elements. Otto Frisch names this “fission”

1939: Neils Bohr, E.O. Lawrence, Fermi - neutrons given off during fission could sustain a “chain reaction”.

The key questions: what isotopes? How fast? Could “fast neutrons” sustain the reaction?

Lise Meitner Otto Hahn

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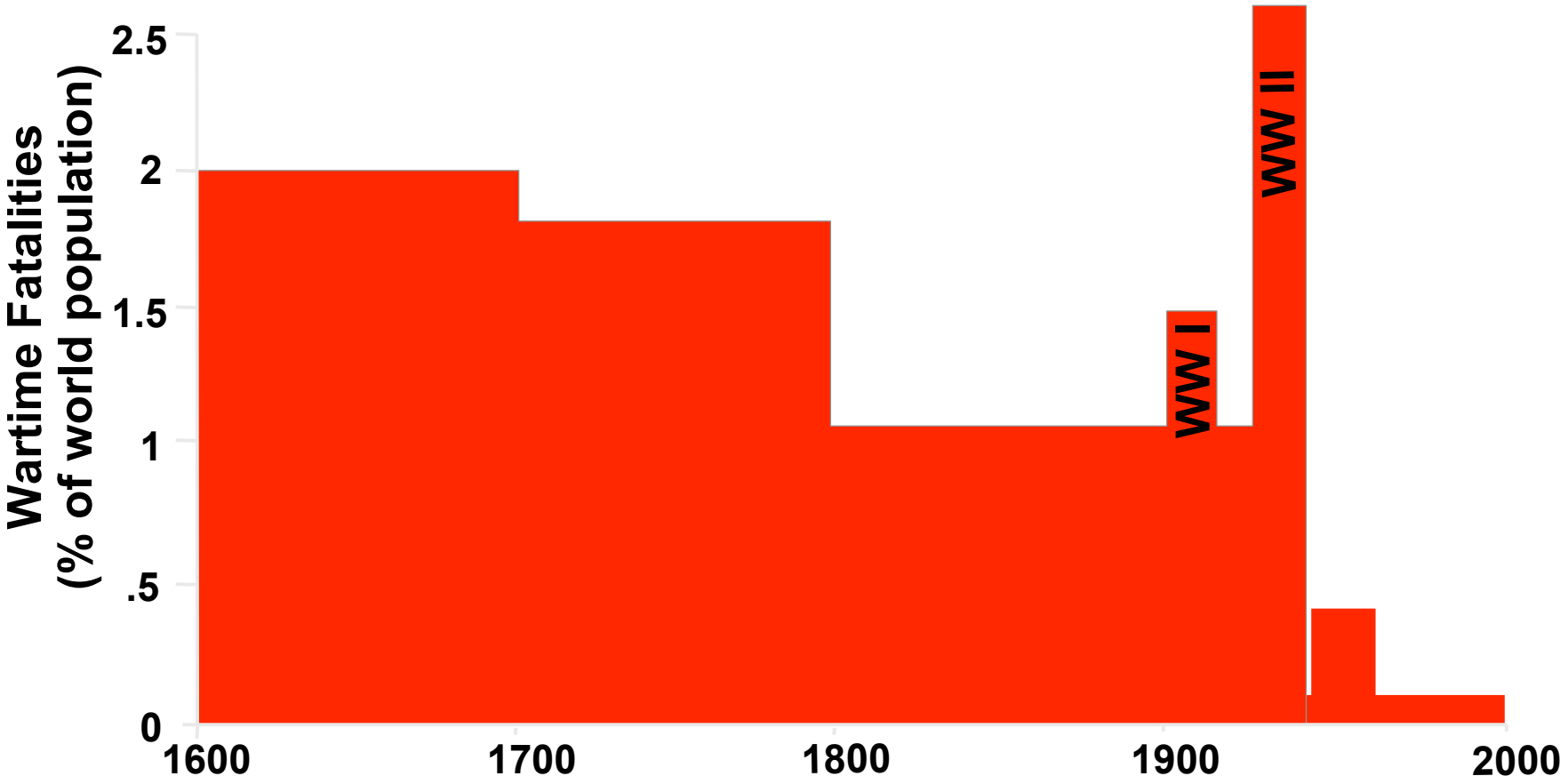
Wartime Fatalities



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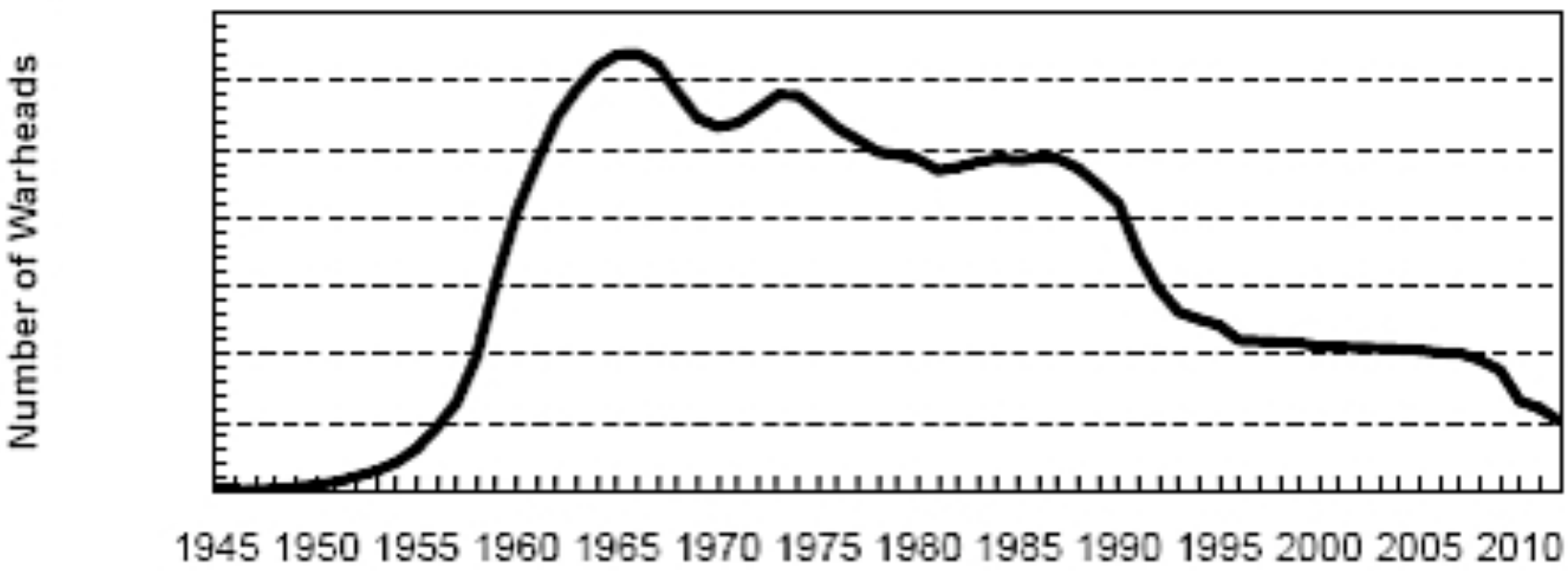
The Number of Nuclear Weapons in US Has Decreased since 1965



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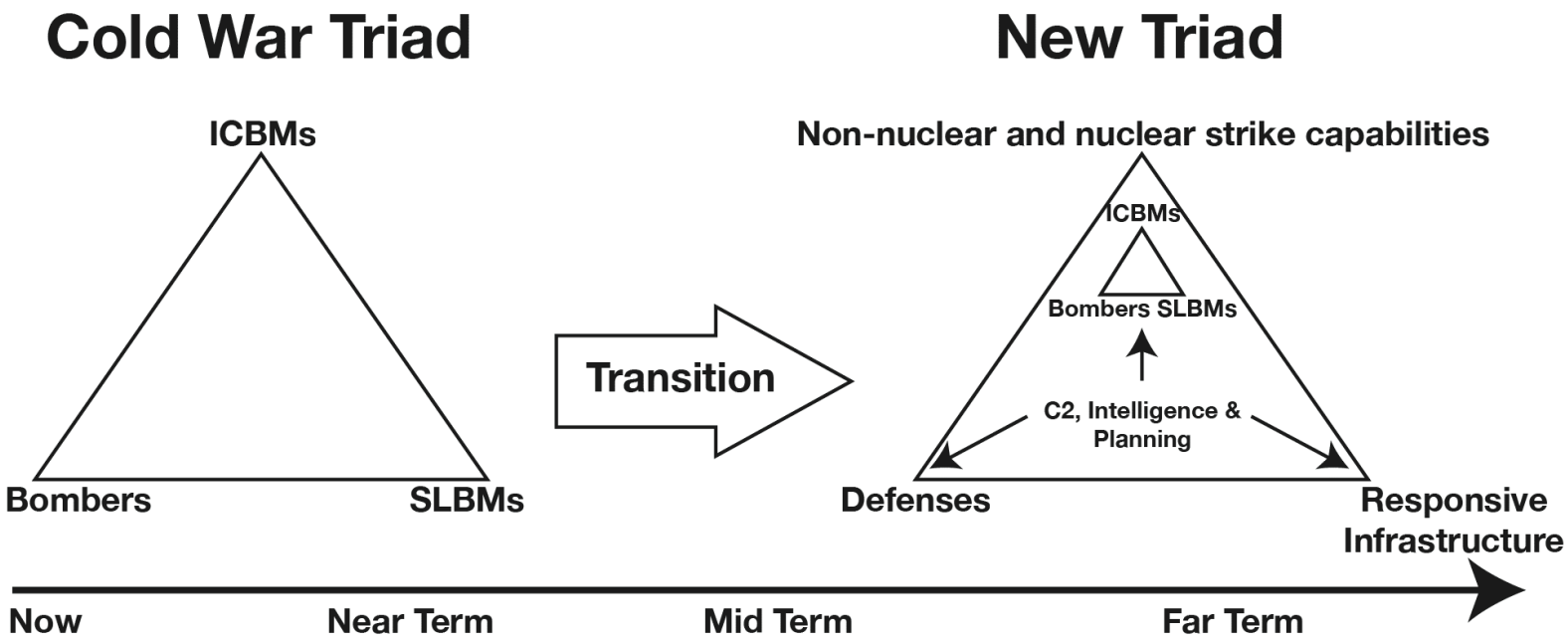
Deterrence by Capability as Nuclear Policy



From the 2001 Nuclear Posture Review