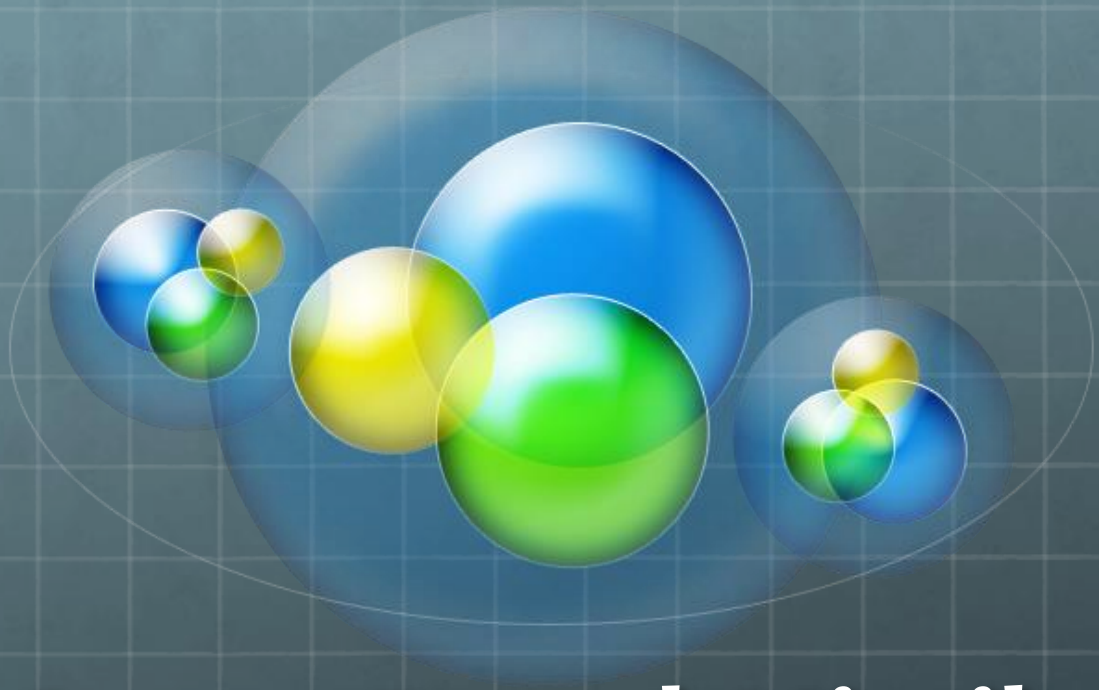

Space-Based Missile Defense: Still Grounded

Theresa Hitchens
CISSM
March 23, 2018

History

- March 23, 1983: Reagan's "Star Wars" speech raising issue of a "peace shield" vs Soviet arsenal (35 years ago Friday)
- 1984: SDIO set up, pursues SBI, lasers, particle beams
- 1984-1986: focus on limited "Phase 1" deployment; estimated cost: $75-150 B
- First SBI hardware contracts issued Sept. 1987
  - APS 1987 study: DE tech not ready
  - 1989 JASONs Brilliant Pebbles : tech not ready
- 1991: Bush approves GPALS/Brilliant Pebbles
  - Estimated $10-20 B price tag balloons to $55 B

History, cont'd

- 1993: Clinton restructures SDIO to BMDO, GBI/theater focus
  - 1994: Brilliant Pebbles terminated/not replaced
- 2003: GWBush restructures BMDO to MDA, GBI/limited national defense focus
  - Includes "space-based test bed" for applied SBI research
  - APS: 1,600 SBIs in best case; program deemed "impractical"
- 2009: Obama kills test bed; SBI research (P-gon has requested no funds for SBI since 2008)

History, cont'd

- 2015: FY2016 NDAA calls for "concept definition" for SBI "layer" for BPI or to counter ASATs
- 2017: FY2018 NDAA calls for research into boost-phase, restart of space-based test bed if consistent with new P-gon BMD review (yet to be finished)
- March 2018: Hyten "not convinced" SBI needed

Challenges

- 4 categories of challenges to SB Missile Defense have remained since SDI was conceived: technical, practical, cost, geostrategic
- Technical
  - SB lasers: power, beam coherence
  - SBI deployment technically possible but …
    - Interceptor size/speed (mass to orbit)
    - Detection, tracking, discrimination still not adequate
    - Short time for kill (2-3 mins)
    - Countermeasures (easy to create gaps, decoys)

Challenges cont'd

- Practical
  - Thousands of SBIs needed to kill even one incoming
  - Absentee ratios
  - Required increase in launch capacity
  - Very short decision to fire time – likely would require automated launch on detection
  - C2 for constellation
  - Heightened debris/collision risks

Challenges, con't

- Costs
  - CBO 2004: constellation to kill one liquid fuel NK missile plus 20 years ops $24B to $78B; one solid fuel NK missile $57B to $224B
  - IDA 2011: $26B for launch of "limited" system; $60B for a "medium capacity;" $200B for a "global" capacity
  - NAS 2012: SB boost-phase "10 times as expensive as any other alternatives," $300B in 2010 dollars for a very limited capacity (650 SBIs)
  - Despite falling costs of launch, the mass to orbit requirements for SBI still mean exorbitant costs

Challenges, cont'd

- Geopolitical
  - Since Reagan years, Russia/China fears re impact on deterrent capability
    - Historical concern re Russia/China increased nuke deployment to counter
    - Negative impact on nuclear security
  - SBI = weapons in space: controversial in most countries including allies and U.S. public
    - Potential for use as ASATs, or as strike weapons re terrestrial targets

Challenges, cont'd

- Geopolitical, cont'd
  - Raises incentives for adversaries to target US space assets, including EW sats used for launch detection
    - Increases risk of nuclear conflict
    - Justifies adversary counterspace actions
  - Even a "limited" system aimed at regional threats (NK, Iran) would cover parts of China (laws of physics)
  - Russia/China deployment of SBI in response would greatly increase risks to US space assets
    - Thus fueling current trends toward space arms race

Conclusions

- Technical, practical, cost and geopolitical challenges to SBI (whether KE or DE based) still fails cost/benefit analysis
- Potential effects on nuclear deterrence unchanged
- Potential effects on space security highly negative

STILL A BAD IDEA