

# NUCLEAR DISARMAMENT VERIFICATION CHALLENGES AND BUILDING GLOBAL CAPACITY



**HASSAN ELBAHTIMY**

**War Studies Department  
Centre for Science and Security Studies**

**KING'S**  
*College*  
**LONDON**

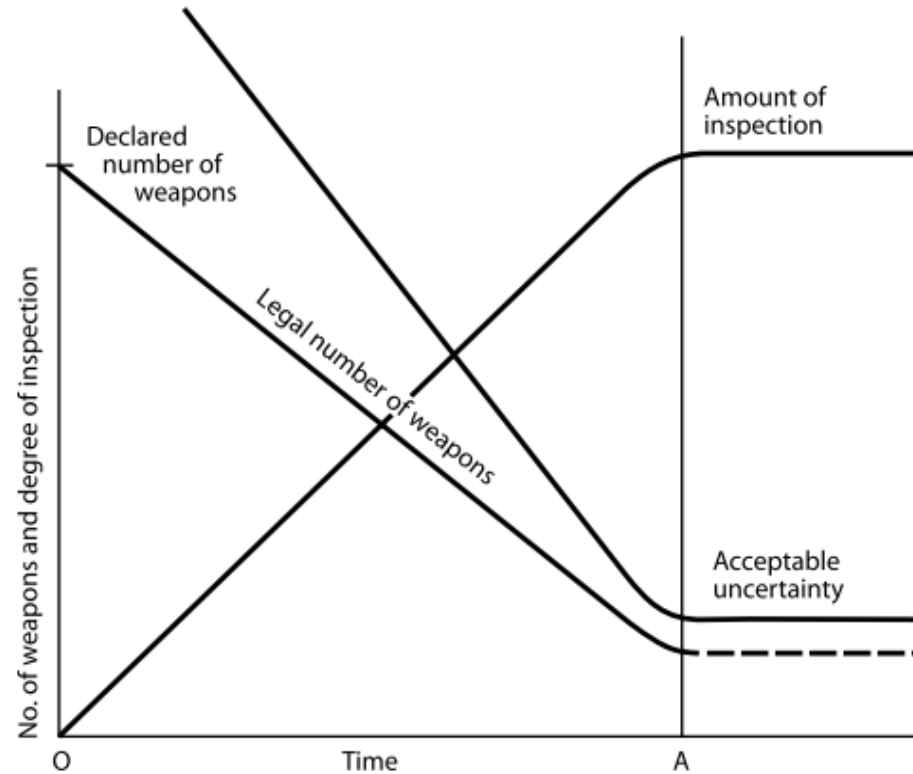
# Revival of interest in disarmament verification

---

- **NWS**
  - UK ‘precondition for fulfilling the goals of article VI’
  - US: ‘essential condition’
  - Russia & US: emphasis on New START Verification
  - China: an ambitious disarmament verification R&D
- **Non-nuclear alliances: NAC, NAM and NPDI**
  - transparency, irreversibility and verification
  - focus on ‘applying safeguards on nuclear material derived from the dismantling of nuclear weapons’
  - NPDI (2013): Extension of VoA to NM in NWS designated as no longer in military use – complementary access proposals
  - NAM (2014): ‘the statutory role of IAEA on nuclear disarmament’

# Why growing interest in disarmament verification?

- Significant lowering in numbers of warheads :
  - Stricter assurances likely to be needed
  - Potential opening up of the reductions process - multilateral
  - Large scale post-cold war dismantlement campaigns
- Growing centrality of disarmament discourse within NPT :
  - NNWSs
  - NWS (P5 process)
  - And beyond NPT (Obama)
- Demonstrated impact of collaborative work



## Wiesner Curve (1961):

Relation between:

- a) Number of nuclear warheads,
- b) Accepted uncertainty
- c) Verification scrutiny

# What do we mean by verifying disarmament?

## Multilateral frameworks either too general or focus almost exclusively on NM

- NPT IV ‘effective international control’
- 1995 Reiteration of principles
- 2000 13 practical steps including 3 principles
- 2010 Action Plan:
  - ‘legally binding verification’
  - Safeguards for FM no longer required for military use
  - ‘that comprehensive safeguards and additional protocols should be universally applied once the complete elimination of nuclear weapons has been achieved.’
- IAEA statute (III.A.5) and (III.B.1) enabler but no direct mandate



## On the other hand, the scope is wider

- **Fetter (1996)** ‘at a minimum, dismantling all nuclear explosive devices under national control’
- **OTA (1993)** the removal of all non-nuclear components, including the chemical high explosive that surrounds the nuclear materials, and also includes waste management and disposal of other parts and materials



# Many challenges

- No regime currently exists
- Most practical experience of relevance: Delivery systems or nuclear material accountancy & containment/surveillance
- Warheads as *Accountable Items*:
  - NTM not enough - intrusive on-site inspections (FT 34 & Robinson Cttee report)
  - Establishing inventory baselines
  - Authentication or initialisation
  - Chain of custody
- Constraints related to non-proliferation, national security and health and safety
- Weapons complexes: Secrecy, transparency and verification requirements
- What role would NNWSs play?



# But promising solutions too

- Dismantlement can be considered part of the life cycle of NWs.
- Many technical solutions have been put forward
  - Information barriers
  - Zero knowledge protocol
  - Development of managed access methodology relevant to disarmament as part of UKNI
- IAEA: Medium-term Strategy and role in trilateral initiative
- Satisfactory outcomes from verifying South Africa (establishing baseline for inventory)



# Minding the gap or filling it?

---

- **Developing international capacity**
  - Scoping relevant expertise in current national & int'l institutions
  - Refine and develop technical solutions: tools, equipment and methods
  - how political context influences verification standards- timely detection and significance of non-compliance
  - Systematically address verification regime design: what, who, how and cost?
  - Partnerships with academia and civil society
- **Building political momentum**
  - Long-term positive engagement is needed in support of disarmament verification solutions
  - Keep on NPT Review agenda - NWS-NNWS coalitions
  - International Group of Scientific Experts (GSE) modelled on test-ban example



**THANK YOU FOR YOUR ATTENTION**

**HASSAN ELBAHTIMY  
CENTRE FOR SCIENCE AND SECURITY  
STUDIES  
EMAIL: [HASSAN.ELBAHTIMY@KCL.AC.UK](mailto:HASSAN.ELBAHTIMY@KCL.AC.UK)**