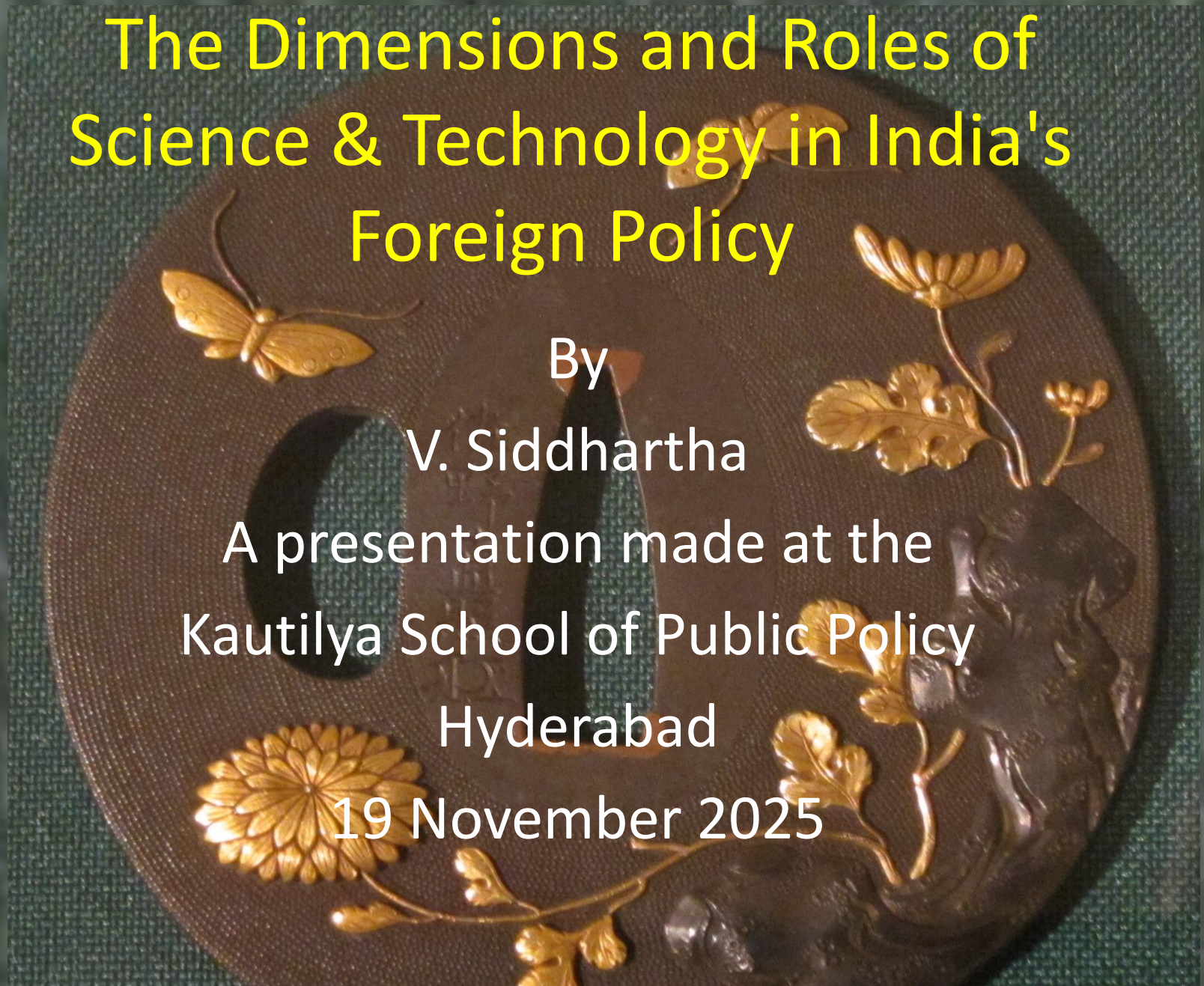
The Dimensions and Roles of Science & Technology in India's Foreign Policy



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Antecedent Perspectives

> "..Repositioning of India in regional and world affairs"

> PM during his visit to the US, September, 2K

> "There is a growing trend of international collaboration in research and development… We should take full advantage of this.

For this reason, I have placed science and technology at the forefront of our diplomatic engagement."

> PM in his address to the Indian Science Congress, Mumbai, January, 2015

A Quarter Century later..

… in the four territories beyond national jurisdiction (TBNJ) of ***Oceans***; ***Polar Regions***; ***Space*** and ***AI*** >> which is the "territory" of *cognition* without assignable nationality of the cogniscent

….Bharat has moved:

> from registering an episodic technology-enabled *presence*, largely as a norm-disruptor: e.g. nuclear, (1974/98); or self-restrained model, ASAT (2019);

to being

> a technological *resident* which shapes the norms of international behavior in the territory; e.g. UNOOSA: Space Debris Mitigation Guidelines; Antarctic Treaty; BBNJ; UN-AI Panel

Geopolitical re-positioning

….. as a 'recessed shaper' of global norms ('*Vishwa Guru*'?) is now possible because India's S&T and dual-capable military capabilities have grown to be globally deployable as instruments for her to be:

- One of the Energy 5 with co-responsibilities for climate stewardship
- One of the Nuclear 8 (15?), until abolition
- One of the Space 6 (ASAT-capable/proven?; Moon?)
- One of the P (7-9?) of the UNSC with global co-responsibilities for international peace and security

A morphological distinction

Needs to be recognised as between

- International collaborations in scientific and technological fields having IR-effects – broadly *Science Diplomacy,* e.g. NISAR; DST-Other Country

and

- S&T in Foreign Policy: When the findings of science, or the potential use of technology, may have ramifications for international relations beyond the 'S' or 'T' themselves, then the pursuit of the 'S' or the use/denial-of-use of the 'T' influence – and are influenced by – Foreign Policy: Technology Control Regimes >> NSG; MTCR; AG; WA

S&T in diplomatic engagement

- When a *quid pro quo* is negotiated for India in return for India's participation *as a State* using her scientific or other advantages, such as: *locational* > UN-sponsored TERLS at the Magnetic Equator; *epidemiological* > WHO-sponsored vaccine trials; *technological* > contribution in kind of sub-systems; e.g. for ITER in France; mirror actuators for the Thirty Metre Telescope in Hawaii; *reciprocal use of facilities*> GMRT (Pune) and Arecibo (Chile)
- Non-reciprocal offers of unique Indian facilities, e.g. Infra-red telescope in Ladakh >Soft power

Science-in-diplomacy

- As human threats to the global commons become ever-more severe, global diplomatic negotiations over treaty-based national actions to mitigate them become increasingly underpinned by a common trans-national appreciation of the underlying science.

  Two hardly-known Indian traces to international science-informed diplomatic negotiations

- Kothari-Krishnan-Parthasarathy report on the Effects of Nuclear Explosions >> LTBT
- Kulkarni-Ramanathan (late 1940s) work on the vertical transport of Ozone in the atmosphere > Ozone-CFC chemistry >> Montreal Protocol

“High Technology” engagement

…. has traversed from India being a targeted discriminat*ee*: 1974 N-test > NSG; 1987-ASLV > MTCR; 1998 N-tests > ‘Entities List’; to being a participant-discriminat*or*:

- Regulations notified under Indian laws pertaining to ‘dual-use’ and military materials and technology whose export from India is controlled in ways designed to advance India’s Foreign Policy goals through trade in “high technology”
- Indian Export Control evolution over two decades: 1993 > 2000 CWC Act > 2005 UNSCR 1540 WMD Act > 2013 selective concordance with regime-lists
- 2014: Wide extant-member support for India’s membership of export control regimes.

Science ‘re-balance’ to Asia?

“A fundamental shift is taking place in the geography of science. Networks of research collaboration are expanding in every region of the globe. The established ***science superpowers*** of the United States and Europe have dominated the research world since 1945. Yet this ***Atlantic axis*** is unlikely to be the main focus of research by 2045, or perhaps even by 2020”

Data-supported article in Nature *18 October 2012.*

*[Note use of **these** expressions]*

The Confluence

> As India enlarges her "scientific presence" in more fields of S&T, more entities from more countries with similar "scientific presences" will seek to collaborate with her State and non-State institutions. And conversely.

> As India's technological capabilities rise "higher" -- in part through such collaborations themselves – increasing proportions of the implications of these collaborations will lie at the confluence of

S&T, Foreign Policy and National Security

Thank You