

High-technology Geopolitics in the Post-pandemic World

Pranay Kotasthane

A. Introduction

On January 31, 2023, National Security Advisor (NSA) Ajit Doval led the Indian delegation at the inaugural meeting of the US-India initiative on Critical and Emerging Technology (iCET). The readout from the meeting was unconventional. You would expect meetings chaired by NSAs to discuss defence cooperation and co-production, intelligence sharing, and anti-terrorism. Instead, they discussed building “innovation bridges” through expos, hackathons, and pitch sessions; developing joint ventures and technology partnerships on mature semiconductor technology nodes and packaging in India; launching a public-private dialogue on telecommunications and regulations; and initiating new STEM talent exchange programmes¹.

This agenda illustrates the elevation of high-technology as a major geopolitical domain. Over the last few years, technologies that were shaped by industry and academia have come to be seen by governments from a primarily “strategic” lens. Governments now actively seek to intervene in high-technology domains and shape incentives of industry and academia. **Essentially, the narratives that emphasise the links between high-technology and national power have become more assertive. The internalisation of this new perception by governments is the**

¹ ‘FACT SHEET: United States and India Elevate Strategic Partnership with the Initiative on Critical and Emerging Technology (ICET)’. The White House, 31 January 2023. <https://www.whitehouse.gov/briefing-room/statements-releases/2023/01/31/fact-sheet-united-states-and-india-elevate-strategic-partnership-with-the-initiative-on-critical-and-emerging-technology-icet/>.

most significant way in which the post-pandemic high-technology world differs from the one we were accustomed to until 2018².

This paper analyses the consequences of the “entanglement” of high-technology and national power. The next section discusses four ways the post-pandemic high-technology world is likely to differ. Section 3 presents a framework for instruments that nation-states will likely deploy in this new world. The last section concludes with a brief discussion of India’s prospects.

B. The Consequences of Government Focus on High-Technology

In September 2022, Jake Sullivan, the US National Security Advisor declared that three technologies are “foundational” to the US — Computing-related technologies, Biotechnologies and biomanufacturing, and clean energy technologies. These technologies are foundational because they will disproportionately impact future national capabilities. He said the US would not settle for being ahead of China in these three areas. The US would actively try to increase the gap between the two ecosystems. A few weeks after this statement, the US imposed unprecedented export controls, expanding the breadth and scope of licensing requirements with the explicit aim of restricting the “PRC’s ability to obtain advanced computing chips, develop and maintain supercomputers, and manufacture advanced semiconductors”. Extrapolating from this change in stance, a few trends look likely over the next decade³.

²The “Post-pandemic world” is a phrase used to denote the state of the world order in 2023. It does not imply that changes are being exclusively caused by the COVID-19 pandemic. Rather, these changes are a result of a number of concurrent events, such as rise of China as a technological power, the US-China confrontation, and the Russia-Ukraine War.

³ I asked this question to chatGPT: What are some new trends in technology geopolitics? Here is the result: There are several emerging trends in technology geopolitics:

1. The rise of China as a technology power: China is increasingly investing in advanced technologies such as artificial intelligence and 5G and becoming a major player in the tech industry, leading to a potential shift in the balance of technological power.

One, trade wars are likely to be tech wars at their core. Nuclear weapons make large-scale conventional conflict unlikely. Similarly, globalisation has made any large-scale economic decoupling unfeasible. But the backstops in the high-technology domain are not understood well enough. Moreover, the emphasis on the importance of high-technology to national power means that governments are willing to incur the costs of high-technology decoupling. This decoupling might happen at the level of materials, machines, humans, and ideas. The precise pathway will be technology-specific.

Two, aggressive national competition over high-technology might produce some non-linear breakthroughs this decade. The literature on national innovation suggests that a nation-state's net negative balance of security concerns (termed 'creative insecurity') helps explain why only some nation-states choose to focus on innovation⁴. Given that leading powers increasingly feel 'creatively insecure', national policies will focus on innovation more than before, sometimes at the expense of consumers and other policy priorities. Regardless, this situation sets the stage for some key breakthroughs. This is not unlike the Sputnik moment when a beachball-sized artificial satellite led to a drastic change in science and innovation policies in the US.

-
2. The growing importance of data: With the increasing amount of data being generated and collected, countries are seeking to control how data is stored, used, and shared, leading to concerns about privacy and the potential for abuse.
 3. The US-China technology competition: The US and China are in a race to dominate key technologies such as AI, 5G, and quantum computing, leading to increased competition and tensions between the two nations.
 4. The fragmentation of the internet: Countries are increasingly seeking to exert greater control over the internet within their borders, leading to a fragmentation of the internet into regional or national networks and raising questions about the future of the open internet.
 5. The growing importance of tech diplomacy: Technology is becoming an increasingly important area of diplomacy, as countries seek to negotiate agreements on issues such as data privacy and the use of technology in military and security contexts.

⁴ Taylor, Mark Zachary. *The Politics of Innovation: Why Some Countries Are Better than Others at Science and Technology*. New York, NY: Oxford University Press, 2016. Page 5.

Three, there will be higher alignment between private high-technology players and their national governments.

The position of Intel in China illustrates this change. Until as late as November 2021, Intel was deeply interested in China. A WSJ report showed that Intel is among the active investors in a Chinese Electronic Design Automation (EDA) firm. Another Bloomberg report pointed out that Intel wanted to build a fab in Chengdu. Both these stages of the semiconductor value chain are precisely where the US had planned to restrict Chinese access. But after the CHIPS Act was announced, Intel dropped its plans to start a new fab in China. Instead, it now plans to invest more in the US, even though making chips there is much costlier. These flips are likely to become more commonplace.

Four, we will likely encounter selective international cooperation on high-technology subject to geopolitical considerations.

High-technology ecosystems are transnational; they rely on comparative advantages to accelerate innovation. To get ahead of each other, high-technology powers such as the US and China are likely to transfer technologies to their respective partners, provided these strengths are complementary. Such cooperation was recently seen in the AUKUS deal and then in the iCET announcement on GE jet engines.

The next section looks at some politico-economic instruments that will be deployed in high-technology domains.

C. What will be the Instruments of Choice in High-Technology Geopolitics?

Table 1 below is a framework mapping politico-economic instruments that nation-states might deploy to serve specific strategic objectives in any high-technology domain.

Assumed Impact on National Power	Strategic Objective	Instruments Used	Underrated Repercussions
Technology X underlies another critical & emerging tech	Denial	Secondary Sanctions	Difficult to sustain; incentives for backroom deals with adversary
		Restrictions on the movement of high-tech labour	Can slow down technical progress
		Export controls, End-use restrictions	Encourages adversary to build local capacity in a focused manner
		Investment restrictions	Can slow down technical progress
	Outpace adversary	Industrial espionage to steal secrets, targeted poaching	Invites stricter controls on professionals from the stealing country
		Build partnerships for resilience	Self-sufficiency is a myth.
		Indigenisation and industrial policy	Difficult to sustain.
		Sabotage	Self-damage
		Increase dependence and control	Helps manage the adversary's pace to an extent
	Remove major bottlenecks	Promote Open Source	Still a nascent field
		Build partnerships	Self-sufficiency is a myth.
Technology X can have direct cognitive effects	Influence minds and actions	Espionage	Limited impact on national power
		Decouple information flows	
		Disinformation	

Table 1: A framework for High-technology Geopolitics

In the pre-pandemic era, making the adversary dependent was an instrument that allowed nation-states to manage the adversary's pace of progress. This strategy now seems to be out of the Overton Window. Nation-states are more likely to deploy instruments that might show short-term benefits.

Depending on the technology under consideration, some of these instruments might be more effective than others. For example, in AI Research, tools such as restrictions on the movement of high-tech labour are more relevant. For advanced semiconductors, export controls and investment restrictions seem more likely.

D. Conclusion

High-technology domains have already found a place in national security conversations and strategies. This trend is likely to accelerate. This paper suggests four ways in which high-technology geopolitics will change. It also presents an initial framework mapping politico-economic instruments to strategic objectives.

India is not the focus of this paper. However, a brief discussion of India's prospects follows. One, the global focus on high-technology will create employment opportunities. Given the high-technology worker shortages in the West, more trained Indians might occupy critical positions across high-tech industries. Two, there is a higher possibility of critical tech transfer from the West than was possible ever before. And three, India and Europe can champion open technology to inch towards techno-strategic autonomy.