Reassessing STI Diplomacy in the Age of Techno-Politics

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Introduction

Science, Technology and Innovation (STI) Diplomacy is at a pivotal juncture. It has slowly been moving from a relatively neutral "soft-power" or "door opener" issue in diplomacy[1], to a prominent role in shaping bilateral and multilateral cooperations in an evolving geopolitical landscape. This article highlights key techno-political factors, drawing from Dutch diplomacy practices, which have propelled this changing role of STI diplomacy. It delves into ongoing shifts that increasingly recalibrate existing organisational practices within international relations, necessitating a repositioning of diplomats and the adoption of diverse instruments for effective STI diplomacy. The article thereby re-examines the meaning of STI diplomacy in today's world.

A Case for STI Diplomacy

The concept of science diplomacy is well-studied and commonly defined as diplomatic activities aimed at fostering international scientific research partnerships or influencing foreign policies with scientific evidence and advice.[2,3] Traditionally, and often in practice in diplomatic organisations like embassies, science diplomacy is understood as a way to exert soft power. In what is frequently called *science for diplomacy*, science is seen as an instrument to establish better relationships between nations. Notably, initiatives like joint science programs between the People's Republic of China and the United States during the 1970s exemplify this approach.

A second understanding of science diplomacy is to see it as a strategy to achieve scientific goals, such as increasing a country's knowledge reservoir by attracting talent, R&D investments and collaboration.[4] This is known as *diplomacy for science,* in which diplomacy is understood as a promotion strategy that is poised towards 'selling' the science and innovation ecosystem of a nation abroad.

Finally, a third take can be coined as *science in diplomacy*, in which science instruments are used in international organisations and relations.[4] An example is the role of climate-related research in climate diplomacy by entities like the Intergovernmental Panel on Climate Change (IPCC).

"Innovation diplomacy," less defined than science diplomacy, often navigates between science diplomacy and trade and commerce diplomacy. It is partially aligned with the science diplomacy definitions above, as it is equally seen as a set of activities to establish better relations with other nations and extend a nation's innovation ecosystem. Leijten (2017)[4] and Bound (2017)[2] characterise innovation diplomacy as a distinctive domain, more than traditional science diplomats; it is poised towards 'international pre-commercial partnerships' between businesses, universities, and governments to generate national economic growth. Furthermore, Bound[2] states that innovation diplomacy is invested in creating framework conditions for international innovation collaborations and tech transfers through intellectual property schemes, trade conditions, innovation funding instruments, and better knowledge.

How the World Changed STI Diplomacy

At least three techno-political shifts have significantly reshaped the landscape of STI diplomacy, making it a fundamental element of the discussions on geopolitical shifts and addressing global tensions.

Firstly, a strong awareness of socio-economic dependence on technology, accentuated by disruptions in the semiconductor ecosystem during the COVID-19 pandemic, revealed our acute and heavy reliance on chips and their production hubs. These disruptions exposed vulnerabilities and risks in our economies, which led to increased geopolitical tensions. This has led to increased political investments and prioritisation of STI themes and collaborations in international relations. This shift prompted closer cooperation between diplomats managing political relations, classically from Foreign Affairs, and attaches from science and innovation networks, especially in crucial technology domains like semiconductors.

Secondly, the urgent need for science and technology solutions to global challenges, notably evident during the COVID-19 pandemic, emphasised the reliance on effective and safe vaccines. This intensified focus on STI for global challenges has been ongoing, evidenced by concerted efforts within ministries and research funders to make research spending more strategic and aligned with societal goals. This has led to multilateral research instruments such as Horizon Europe, Eureka's Globalstars, or, more recently, IPCEI funding to prioritise societal goals in research funding. In the Netherlands, for instance, within the Ministry of Economic Affairs, a shift has been made to mission-oriented innovation, in which tackling societal goals or missions has become the starting point for much government-funded research and innovation. The newest funding instruments, such as the Knowledge and Innovation Covenant (KIC), bring businesses into the classical academic programs to work together on these missions from a triple or quadruple helix model. The National Growth Fund, with a budget of 20 billion euros, is perhaps the largest innovation funding program. It strives to solve national and international societal goals and future-proof the Dutch economy.

A third factor changing the face of STI diplomacy is a rebalancing of the global economic playing field. With China's rise to become the second-largest economy, a tense stand-off and weaponisation of economic instruments and a so-called 'tech-war' between power blocks such as China, Russia and the US, the discourse on economic security has taken hold of the field on STI. In the classical definitions, science and innovation are seen as tools for soft diplomacy to attract other nations and investors to one's STI ecosystem. These definitions all rely on understanding STI diplomacy as a promotional set of practices. Economic security practices, including the protection of knowledge, science and scientists, intellectual property, and technology, have become integral to diplomatic strategies. This change is reflected in the EU Commission's recommendation paper*, which emphasises the need to 'Promote, Protect, and Partner' to strategically promote the EU's competitiveness by bolstering its single market, innovation, technological and industrial capacities. It is necessary to protect the EU's technological and knowledge security and strategically partner with reliable allies to strengthen economic security.

Consequently, STI diplomats are increasingly engaged in forging geo-economically inclined strategic tech partnerships between individual states and regional blocks. Notably, there has been a proliferation of such partnerships in recent years. For instance, the emergence of the EU-US Trade and Technology Council (TTC, 2021), the EU-India TTC (2022), the India-US Initiative for Critical and Emerging Technologies (iCET, 2022), the EU-Singapore Digital Partnership (2023), and the Japan-Netherlands MOC on semiconductors (2023) highlights this trend.

Organisational Implications

These shifts underscore the significant incorporation of geo-economics within STI diplomacy. Economic instruments are increasingly used in power politics, signifying that diplomacy is changing in many ways. The classical divisions governments used to organise themselves are becoming less effective and require

* Commission Recommendation of 03 October 2023 on critical technology areas for the EU's economic security for further risk assessment with Member States.

restructuring. Many countries have separate departments for Foreign Affairs, for Science, for Economic Affairs, and for Innovation or (Information) Technology, which too often work in silos. At embassies, we see this translated into rigid boundaries and a division of tasks of units that focus solely on politics, trade, STI promotion, or Foreign Direct Investment attraction. As STI intertwines with geonomics and geopolitics become more technical, a recalibration of diplomacy is necessary, and organisational boundaries need to be reassessed. Political departments will increasingly rely on technical knowledge, networks, and know-how as technology is becoming central to political negotiations. Simultaneously, STI diplomats need to go beyond technical details or promotional narratives and embrace a more geopolitical view of their field. This will require a lot of organisational changes and investments. As the 'promote' element has always been at the core of STI diplomacy, it will be demanding for STI diplomats to learn new skills, narratives, and modus operandi. Particularly, the focus for STI diplomats will be on increasing the 'protect' measures and employing various existing and new tools for this purpose. However, the new status quo necessitates these readjustments, particularly for diplomats in countries that aspire to wield substantial geoeconomic power.

Conclusions

This article highlights that science, technology, and innovation diplomacy are no longer separate entities but integrated elements within diplomats' operational practices, collectively termed STI diplomacy. Beyond this integration, it advocates for a broadened understanding of these operational practices. Classical definitions position STI diplomacy as a way to promote and extend a nation's STI ecosystem abroad and forge better relations for scientific, technical and economic growth. Whereas this view sheds light on a core set of objectives for STI diplomacy, on-ground practices reveal a shift. It observes that STI diplomats are moving beyond promotional activities and are increasingly engaging in geopolitics and geoeconomics, shaping and being shaped by these domains.

Three contextual factors drive this urgency: 1) increased technological dependence, 2) global harnessing of science and innovation power to address urgent societal goals, and 3) the rebalancing of global economic power, elevating economic security in international relations. In practice, this has transformed the daily roles of STI diplomats. Their objectives now encompass not only promoting their STI ecosystems and forging new relations, but also understanding the politics of technology, geoeconomic relations, economic security, and strategic dependencies. This knowledge and understanding will lead to work on, for instance, data protection, knowledge protection, and IP protection. Additionally, bilateral and regional tech partnerships have become more strategic and geopolitical, emphasising the diplomatic significance of science and technology collaborations.

These practices necessitate breaking down classical walls and silos between departments in international governmental organisations to facilitate sharing of knowledge, expertise and capacities. Theoretically, classical definitions of STI require a revamp and an extension to include economic security and geoeconomics, aligning with current diplomatic practices.

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