ПОЛІТИЧНИЙ ТА СОЦІАЛЬНО-ЕКОНОМІЧНИЙ РОЗВИТОК КИТАЮ

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IMPLICATIONS OF CHINESE SPACE POLICY FOR THE ASIAN REGION: REGIONAL SPACE INITIATIVES ANALYSIS

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Chinese proactive space policy is having an increasing impact on the current state of affairs related to space exploration in the Asian region. This includes the establishment of the Asia-Pacific Space Cooperation Organization (APSCO) and the promotion of its activities as an alternative to the already existing Asia-Pacific Regional Space Agency Forum (APRSAF), which was created by Japan, as well as the development of a wide range of initiatives and projects for the space industry within the Belt and Road Initiative (BRI).

The purpose of this article is to compare the two main regional space governance frameworks presented by China and Japan, identify their differences and potential points of convergence, consider the role of the BeiDou Navigation Satellite System (BDS) as an interlink in the Belt and Road Initiative Space Information Corridor (BRISIC), and evaluate the prospect of a possible space race between the three key space actors in the Asian region, which are China, Japan, and India.

The processes that are taking place at the regional level cannot be labeled a space race in the traditional sense (compared to the first space race during the Cold War), since all three "space giants" of the region are guided by their respective national development priorities. There is an understanding that China satisfies all of the requirements that should be met by a space power more effectively than any other nation in the region. In this way, the aspect of rivalry brings a healthy spirit of reasonable competitiveness without a tough ideological or military confrontation.

Keywords: China's Space Policy, Asia-Pacific Space Cooperation Organization (APSCO), Asia-Pacific Regional Space Agency Forum (APRSAF), Belt and Road Initiative Space Information Corridor (BRISIC), BeiDou Navigation Satellite System (BDS), Space Race.

ВПЛИВ КИТАЙСЬКОЇ КОСМІЧНОЇ ПОЛІТИКИ НА АЗІЙСЬКИЙ РЕГІОН: АНАЛІЗ РЕГІОНАЛЬНИХ КОСМІЧНИХ ІНІЦІАТИВ

К. С. Стецюк

Проактивна космічна політика Китаю впливає на сучасний стан справ, пов'язаних із дослідженням космосу, в азіатському регіоні. До неї належить створення та просування діяльності Азіатсько-Тихоокеанської організації з космічного співробітництва (APSCO) як альтернативи для вже існуючого Азіатсько-Тихоокеанського регіонального форуму космічних агенцій (APRSAF), створеного Японією, а також різноманітні ініціативи та проєкти для космічної галузі в рамках ініціативи «Пояс і шлях» (BRI).

Мета цієї статті – порівняти дві регіональні структури з управління космічними справами, представлені Китаєм і Японією, виявити їх відмінності та потенційні точки дотику, розглянути роль супутникової навігаційної системи «Бейдоу» (BDS) як основної сполучної ланки космічного інформаційного коридору ініціативи «Пояс і шлях» (BRISIC), а також оцінити перспективу можливої космічної гонки між трьома основними космічними акторами Азії – Китаєм, Японією та Індією.

Процеси, що відбуваються на регіональному рівні в Азії, не можна назвати космічною гонкою в традиційному розумінні (порівняно з першою космічною гонкою за часів холодної війни), оскільки всі три «космічні гіганти» регіону керуються власними пріоритетами національного розвитку. Присутнє розуміння об'єктивної переваги Китаю за всіма основними критеріями космічної держави, тому елемент суперництва привносить здоровий дух розумної конкуренції без жорсткого ідеологічного чи військового протистояння.

Ключові слова: космічна політика Китаю, Азіатсько-Тихоокеанська організація з космічного співробітництва (APSCO), Азіатсько-Тихоокеанський регіональний форум космічних агенцій (APRSAF), космічний інформаційний коридор ініціативи «Пояс і шлях» (BRISIC), супутникова навігаційна система «Бейдоу» (BDS), космічна гонка.

Background

China and Japan are recognized as prominent global players in the field of space exploration, with substantial technological expertise in both traditional and commercial space endeavours. In 2022, China's investment in its space initiatives amounted to $11.94 billion, positioning it as the second-highest spender in this domain. The Japanese government allocated a significant sum of funds, equal to $4.9 billion, to the Japan Aerospace Exploration Agency (JAXA), resulting in reaching the third position [Euroconsult 2022].

Since the early 1990s, each state has shown a significant inclination towards influencing the management of operations conducted in outer space. However, it is noteworthy that these endeavours have been pursued via divergent approaches. Japan has taken on the role of forum leader for the Asia-Pacific Regional Space Agency Forum (APRSAF), which encompasses the participation of both governmental and non-governmental entities. This forum operates on a set of guiding principles. China has chosen to adopt a prominent and official international framework known as the Asia-Pacific Space Cooperation Organization (APSCO), which has a Convention and all the necessary elements of a formal organizational structure [Pekkanen 2021].

The ongoing processes of commercialization and militarization have a significant influence on and are influenced by the technological capabilities of Japan and China.

It is notable that both nations are actively involved in the public international framework of space law as signatories and participants. Nevertheless, it remains a valid remark that despite the deliberate attention given to Asia's space operations, there is currently no comprehensive regional initiative in place to effectively address and regulate the competing interests in this domain. Japan and China have influence on regional space administration via distinct institutional frameworks that seemingly lack significant overlap.

The **purpose** of this article is to compare the two main regional space governance frameworks presented by China and Japan, identify their differences and potential points of convergence, consider the role of the BeiDou Navigation Satellite System (BDS) as an interlink in the Belt and Road Initiative Space Information Corridor (BRISIC), and assess the prospect of a possible space race between the three key space actors in the Asian region, which are China, Japan, and India.

Comparative approaches typically fall into two main categories: country comparisons (such as case studies that compare different nations) and concept comparisons (such as comparison of policy process theory constructs in various settings) [Orvis 2014]. Cross-country comparisons aim to comprehend differences and similarities between nations [Babbie 2020].

A comparative cross-country analysis is applied to the Chinese space policy and the space policies of other Asian actors in order to estimate their mutual influence, potential sites of contact, and points of conflict.

A View of Regional Space Institutions: APRSAF versus APSCO

The beginnings of APRSAF can be traced back to 1993, when Japan held its first annual conference. Since its creation, APRSAF has prioritized the establishment of connections with other stakeholders in the field of space, emphasizing the practical importance of using space technology to promote socioeconomic progress. The APRSAF has mostly functioned as a forum for conversation, facilitating the sharing of information and promoting cooperation. It places significant emphasis on the fact that any decisions reached are not legally enforceable. The stated qualities of this framework may be categorized into three distinct aspects: firstly, an open and flexible regional cooperative framework; secondly, voluntary and cooperative activities; and finally, specific cooperative activities aimed at addressing regional challenges. The organization established five working groups and one workshop that serve as the central focus of its endeavours. These groups include Satellite Applications for Societal Benefit, Enhancement of Space Capability, Space Education for All, Space Frontier, and Space Policy and Law. Additionally, APRSAF supports the establishment of international projects as solutions for common issues such as disasters and environmental protection: Sentinel-Asia, SAFE (Space Applications for Environment), Kibo-ABC (Asian Beneficial Collaboration through "Kibo" Utilization), and NSLI (National Space Legislation Initiative) [APRSAF 2023].

In early 2012, an APRSAF Taskforce convened and reached a consensus on a set of principles, which were later amended. The principles reiterate the voluntary and cooperative character of APRSAF, highlighting its informal institutional framework that remains mostly flexible [Pekkanen 2020].

The main forum for APRSAF is its yearly conference, strategically organized to unveil and strengthen Japan's connections with other entities in the region. In the late 1990s, APRSAF began making every effort to expand the geographical distribution

of its annual meetings by selecting hosts from other countries in the Indo-Pacific area, including Mongolia, India, Australia, South Korea, and Southeast Asian nations. As of 2023, APRSAF has effectively established a track record of organizing 29 annual meetings [APRSAF 2023]. It is now recognized as the most prominent conference in the Asia-Pacific region, with a focus on space-related matters. This meeting brings together many stakeholders, including space agencies, government entities, international organizations, commercial enterprises, universities, and research institutions, representing more than 40 nations.

There is no question about APRSAF's aspiration for collaborative engagement with other space-faring governments or entities that express interest. However, the crucial inquiry pertains to its ability to establish a collaborative relationship with another prominent institution in the region, which is under the leadership of China.

APSCO has several resemblances to APRSAF. One notable aspect is that both establishments date their origins to the early 1990s. The origins of APSCO may be traced back to a trilateral concept proposed in 1988 by China, Pakistan, and Thailand with the aim of fostering multilateral collaboration in the Asia-Pacific region. That idea eventually evolved into a formal agreement known as the Memorandum of Understanding on Asia-Pacific Multilateral Cooperation in Space Technologies & Application in 1992. When APSCO member states signed the Convention in 2005, China achieved a significant milestone by successfully conducting its first human spaceflight, declaring itself the third nation globally to hold this capability. In 2008, APSCO officially established a documented history of its existence over a period of 15 years [APSCO 2023].

Another point of commonality between the two organizations is their shared commitment to fostering a comprehensive, cooperative, and peaceful vision within the geographic area. Currently, APSCO places significant emphasis on four overarching areas, namely: 1) the facilitation of education and talent development in collaboration with universities; 2) the establishment of cooperative networks with partners to facilitate data sharing, small satellite and ground system collaboration, space object observation, disaster monitoring, and other space-related applications, as well as education and training initiatives; 3) the creation of knowledge-sharing platforms, particularly in the realms of law and policy; 4) fostering collaboration with international organizations. These concepts are evident in several visions and collaborative statements that prioritize the advancement of regional space research, technology, and applications, alongside the development of regional space capabilities and socioeconomic progress [Yan 2019]. The purpose of all this is to serve as a foundation for establishing connections and making contributions to global frameworks and international organizations. The four shared capacity-building goals outlined by the eight member states include satellite research and development, space-based applications, and human capacity-building.

Within APSCO, China plays the role of *primus inter pares* ("the first among equals"). China has considerable influence in shaping the organization's direction and holds substantial decision-making authority. Additionally, China bears a significant share of the financial burden associated with APSCO. In the context of China's comprehensive space diplomacy, APSCO takes a key place, contributing to the nation's pursuit of regional leadership in Asia and its aspirations to exert influence among developing nations [Aliberti 2015].

However, APRSAF and APSCO differ in a number of significant ways. One is the limited number of official participants in APSCO. It is conceivable that APSCO's network-based strategy will enable it to more firmly establish itself in these Member States and to disseminate to potentially larger audiences. Nevertheless, it appears that formalizing and expanding member states is problematic. In 2005, in Beijing, eight parties participated in a signing ceremony for the APSCO convention. Bangladesh, China, Indonesia, Iran, Mongolia, Pakistan, Peru, and Thailand were the original signatories of the APSCO Convention. In 2006, Turkey joined the organization. Mexico is designated as an observer state. Indonesia has not yet formally joined the convention, and it is unclear who might join in the future [APSCO 2023].

The potential for China's advanced space capabilities and accomplishments to attract future participants is a possibility that requires more observation and analysis. The programming framework of APSCO, in contrast to APRSAF's annual conference, may result in a limited display of its operations to an expanding audience. Furthermore, Article 9 of the organization grants voting privileges to its members while simultaneously imposing financial obligations for the sustenance of the entity. This provision may potentially impose hardships on members who possess underdeveloped industrial capacities and limited financial means at their disposal [Nie 2019].

One notable contrast between APRSAF and APSCO lies in their respective institutional frameworks. APSCO has the status of a recognized intergovernmental organization established by a legally binding agreement. The provisions of the aforementioned organization provide a more straightforward evaluation of its structure and regulations, in contrast to the imprecise principles that were ultimately implemented by APRSAF. APSCO is distinguished by the prominent presence of China in a leadership role, as shown by Article 1.2, which designates China as the "host state" and specifies that the headquarters will be located in Beijing [Yan 2019].

These findings provide an opportunity to briefly consider whether these differences will impact cooperation and competition prospects in the coming years.

First, states have an analytical advantage in space activities. This highlights APRSAF and APSCO's geopolitical rivalry, self-interest, and security-related motivations. The very existence of two institutions suggests that China and Japan are intent on going their separate ways, despite the ongoing challenges posed by commercialization and militarization. They, like others, are entangled in a world order that has returned to great power competition and shifted to a paradigm of national security space for all states. In the interim, all spacefaring nations have a vested interest in leveraging the commercial space economy for security purposes.

Second, it is crucial to consider the pragmatic implications of institutional disparities and ensure that they do not overshadow the possible impact of the legal framework on collaboration possibilities. Upon first analysis, it seems that there is little overlap between APRSAF and APSCO, thereby diminishing the prospects of both entities serving as viable forums for space collaboration within the area, much less on a global scale. However, the observed discrepancies between the two institutions may undergo dynamic shifts over time if they continue to progress. Efforts are being made by several working groups operating under the United Nations Committee for the Peaceful Uses of Outer Space (UNCOPUOS), in collaboration with Japan and China. These endeavours aim to illuminate potential avenues for

cooperation between the two nations. Several areas of collaboration outlined in the UNCOPUOUS endeavour align with the principles and structure of both APRSAF and APSCO. These areas include space application and exploration, satellite and commercial operations, and support provided to developing nations [Logsdon 2020].

The collaboration in the field of space exploration within Asia exhibits a complex interplay between cooperative efforts and regional rivalries and disputes. Asia is home to many autonomous spacefaring nations that coexist alongside one another. Competition occurs not just within the realm of individual states but also manifests itself within the context of interstate cooperation. If a state can demonstrate a higher level of cooperation with third parties compared to its counterparts, it has an advantage in the pursuit of prestige [Logsdon 2020]. India and South Korea, both Asian nations, have not launched their own regional space cooperation initiatives. However, both countries have lately shown an interest in participating in the programmes offered by APRSAF [Nie 2019].

Defining the scope and substance of cooperation continues to be difficult in light of current conditions. China and Japan, as signatories to the Outer Space Treaty, have an international legal obligation to cooperate. This is the most foundational fact. Article 24 of the APSCO Convention also provides a potential building block for cooperation with other organizations. Priority one is cooperation with UN agencies. Article 24.2 of the APSCO Convention allows APSCO to form "cooperative partnerships" with non-member states and "other international organizations and institutions in pursuit of its objectives" with the Council's unanimous approval [Yan 2019].

These legislative frameworks provide a platform for initiating a discourse between APRSAF and APSCO. The modes of cooperation that may arise between China and Japan in a highly strategic industry are expected to exhibit a diverse range of characteristics. These modes are likely to incorporate various forms of legal frameworks, encompassing both binding and non-binding agreements as well as formal and informal organizational structures. Moreover, the cooperation is expected to involve elements at both the domestic and international levels.

BRISIC

In China's BRISIC (also known as "Space Silk Road"), the terrestrial component of China's Belt and Road Initiative (BRI), the "shared vision" framework is also evident. China is strategically broadening its "network of friends" among BRI nations by actively providing these nations with sophisticated space technologies. China has shown its commitment to this endeavour by entering into a total of 98 intergovernmental and interdepartmental agreements with 30 countries and three international organizations, including 23 space-related cooperation agreements with 11 countries along the BRI route [Wang 2023].

The Space Information Corridor (SIC) aims to provide member nations with the advantages of space-based earth observation (EO), communications, and broadcasting, as well as navigation and location. This includes the use of ground and application systems. Based on the 2016 "Guiding Opinions on Accelerating the Building and Application of the One Belt, One Road Space Information Corridor", it is projected that the construction of SIC will span a duration of 10 years [Pollpeter 2020]. The ultimate objective is to encompass regions such as Southeast

Asia, South Asia, Western Asia, Central Asia, Africa, Oceania, as well as Central and Eastern Europe. According to the document, the establishment of SIC would serve as a positive aspect of BRI, providing a strong basis for the commercialization and globalization of China's space sector while fostering economic and social progress in BRI-related nations.

SIC has the capability to provide a comprehensive "4-in-1" space information service to the nations involved in BRI. The space-based remote sensing, satellite navigation, and communication capabilities of China are expected to provide assistance to BRI participants in multiple areas. These include the development of infrastructure such as ports, railroads, and highways, as well as support for activities such as maritime search and rescue, marine resource development, disaster prevention and mitigation, coastal zone environmental monitoring, telemedicine, transportation, entertainment, and counterterrorism within BRI member countries [Wang 2023].

China will establish an open laboratory for the study of space information technologies, and its space programme will conduct collaborative research on climate change, water resources, and geological disasters. In addition to conducting collaborative research, China's Asia-Pacific Regional Center for Space Science and Technology Education and the APSCO Education and Training Center will train personnel from BRI member states in the use of space technologies. The member states "commit to working together through a community of shared interest to shape the future via the Asia-Pacific partnership" [Lele 2019b].

China intends to facilitate the exportation of satellites and associated technology to BRISIC participants. Chinese exports are strategically designed to facilitate the use of Chinese technologies and the acceptance of Chinese technological standards. This includes the establishment of satellite telecommunications networks and the development of ground-based satellite reception and processing stations.

As a result, the significance of China's satellite-based technology, which offers inputs for positioning, navigation, and timing (PNT), has grown. The indispensability of the PNT system for establishing connections across many modes of transportation, including water, road, rail, and air, has been acknowledged [Lele 2019b]. China's satellite navigation and communication system intends to dominate the new digital infrastructure by connecting industries and infrastructure projects along the BRI routes. China has made significant advancements in the field of space-based internet service technologies, positioning itself at the forefront of this domain.

BDS is a project that has been constructed and is now being managed by the Chinese government. It serves as an integral part of China's comprehensive strategy, which includes national security, economic growth, and social development. After undergoing extensive development over a prolonged period, the aforementioned technology has emerged as a significant component of China's infrastructure. It offers precise location, navigation, and timing services to users worldwide, regardless of weather conditions [China's BDS in the New Era 2022].

The rapid development of BDS began with the 18th National Congress of the Communist Party of China (CPC) in 2012. President Xi Jinping made a public declaration on July 31, 2020, on the formal commissioning of BDS-3, indicating the start of worldwide service provision by the BDS [China's BDS in the New Era 2022].

There were three phases in the development of China's global navigation system:

− BDS-1 was initiated in 1994 and became operational by the end of 2000, making it available for commercial use in China and surrounding areas. The experimental BDS was made up of three satellites. China became the third nation on the globe to possess a navigation satellite system at that time.

− BDS-2 was initiated in 2004 and became operational in 2012, providing Asia-Pacific with positioning services.

− BDS-3 was initiated in 2009 and became fully functional in 2020 to provide global satellite navigation services. This signified the successful conclusion of the BDS strategy's three phases.

China currently possesses a 45-satellite system (including 15 for BDS-2 and 30 for BDS-3) for providing a global network for PNT services, which has attracted global interest due to its quality and China's systematic administration of the entire project [BDS 2023]. This system is at the core of the entire BRI and is frequently referred to as "digital glue." BDS is known to play an important role in advancing the BRI. Since its official launch, BDS has been consistently operational, and more than 120 countries and regions are now utilizing it [Lele 2019b].

Based on data acquired from the International Disaster Database, it is evident that the relative losses resulting from meteorological catastrophes along the BRI exhibit a twofold increase compared to the global average. The Fengyun satellite, which was created by China's Aerospace Science and Technology Group, has significant importance within the global EO and meteorological satellite systems. The use of these satellites enables all nations participating in the BRI to get comprehensive and reliable meteorological data. This includes all-weather, three-dimensional observations that accurately monitor variations in wind patterns and cloud formations. Satellite observations efficiently address the limitations of ground-based meteorological observations [BDS 2023].

In 2018, the People's Republic of China engaged in the sale of the Techo-1 communications satellite to the Kingdom of Cambodia, marking the first satellite transaction that was officially associated with the BRI. In addition to ground systems, insurance and technological transfers were also included in the agreement. China operates overseas space surveillance stations in six countries: Australia, Chile, Kenya, Namibia, Pakistan, and Sweden [Lele 2019b].

Pakistan has significant strategic importance for China as a key collaborator in the Space Silk Road initiative within the South Asian region. Since the 1970s, the science and technology relationship between Islamabad and Beijing has typically included China's assistance in technology transfers, collaborative initiatives, and training. The China-Pakistan Economic Corridor (CPEC), a prominent BRI initiative, has facilitated the expansion and deepening of bilateral cooperation in recent years. Already, China has launched satellites for Pakistan. Using ground stations, BDS coverage in Pakistan reportedly now achieves two-centimeter accuracy [Khan 2021].

China announced its intentions to launch 320 low-orbit satellites for global connectivity in July 2018. This worldwide, two-way, real-time data transmission system offers multimedia data services. It will offer the energy and engineering industries global asset management, personnel location, emergency rescue, and communication services. The satellite communication network will eventually

replace the terrestrial network, allowing mobile phones to be connected worldwide, even in deserts and oceans. The whole 320-satellite system should be finished by 2025 [Lele 2019b].

Discussion: Intra-Asian Space Race Prospects

With acknowledgement of K. Suzuki's analysis [Suzuki 2013; Suzuki 2019], an initial approach to examining the similarities between present-day intra-Asian or global space dynamics and the historical US-Soviet space race involves conducting a more detailed examination of the specific parameters and constituents that characterized the first space race. The competition between the USA and the Soviet Union in the realm of space exploration served as a surrogate battleground for their geopolitical disputes, effectively showcasing their respective levels of influence in space-related capacities, particularly in the domain of human spaceflight. Both players believed such dominance needed technological superiority for national security, economic prosperity, and ideological superiority. The original adversaries were engaged in a space race that included three interrelated but distinct domains of rivalry [Aliberti 2015].

First, civilian space programmes competed for international prestige or soft power by pursuing space firsts. Examples of this one-upmanship competition included the deployment of satellites, planetary probes, astronauts, lunar exploration, and the building of space stations, all of which bolstered the prestige of the competing ideologies.

Second, the US and USSR "battled" in space to generate hard power. Although neither country's human spaceflight programme had military relevance, other space assets eventually became valuable tools for the two giants' military strength. Telecommunications, EO, meteorology, and navigation were needed to obtain strategic and tactical advantages over the opposing bloc.

A third competition was for space-related services or public goods. The United States and the Soviet Union created the Intelsat and Intersputnik satellite telecommunications programmes, as well as the Intercosmos and Freedom station flight programmes, to aid their allies in developing space capabilities [Aliberti 2018].

Upon scrutinizing the present condition of competition within these three domains, the notion of an intra-Asian space race loses its persuasiveness. The policy orientations of Japan's and India's space development illustrate that the current and prospective future dynamics should not be seen as reflective of a competition in space exploration.

It is true that Japan, China, and India launched almost simultaneous lunar probes in 2007–2008, and JAXA and the Indian Space Research Organization (ISRO) announced ambitious robotic and human space exploration plans to counterbalance China's space activities. Kaguya in Japan, Chang'e in China, and Chandrayaan-1 in India were aimed at exploring the Moon independently and under different domestic conditions [Pekkanen 2021]. A launch glitch delayed the 2005 Japanese probe launch until 2007. The Indian space community's economic growth and the rise of scientists who wanted to move beyond practical applications inspired the Chandrayaan-1 mission. China has completed five lunar exploration programmes, from Chang'e-1 to Chang'e-5. At the moment, India is catching up with Chandrayaan-3, its third lunar exploration mission. The privately funded and launched by ispace in December 2022, the Japanese HAKUTO-R Mission 1

lunar lander was supposed to land on the Moon in April 2023, but it crashed upon reaching the lunar surface. The second lander will take another rover to the Moon by 2024 as part of the company's lunar exploration strategy. Plans are ongoing for a third mission [ispace 2023].

In Japan, political setbacks have jeopardized the lunar exploration programme's implementation. JAXA's Vision 2025 included a proposal for the implementation of an autonomous human spaceflight programme, which was even more unfortunate [Pekkanen 2020]. The decision to forego manned spaceflight was manifestly reflected in the space budget allocations of subsequent years. In a broader sense, the nation has continued to focus on "less noble but practical space activities" [Suzuki 2019] consistent with its traditional science- and technology-oriented approach, thus allowing China to pass.

Initially, India's manned spaceflight programme obtained more political support than Japan's. However, India had to reconcile early expectations with reality. Last year, India spent approximately $1.93 billion on its space programme [Euroconsult 2022]. Despite a substantial rise in the total allocation for space-related expenditures, the budgetary dedication towards human spaceflight has maintained a very low level. India, cognizant of its current limitations in directly rivaling China in this domain, seems to be actively exploring alternative avenues to attain global recognition. This includes a well-publicized shift in focus within its space programme towards the exploration of Mars and the Moon, where it has a comparatively higher likelihood of accomplishing notable milestones, particularly when compared to China. While the incorporation of exploration activities within India's space portfolio suggests the growing importance of prestige-related factors, it is improbable that they would overshadow the development-oriented objectives of the space programme. This suggests that the "needs-based approach" remains the dominant principle of Indian space policy [Aliberti 2018; Goswami 2020].

Chandrayaan-3 is ISRO's third and most recent lunar mission. Prior missions were unable to demonstrate the essential capability to securely soft-land on the lunar surface, so this is the central concept. The lander (Vikram) and rover (Pragyan) landed on August 23, 2023. Thus, India became the first nation to land a spacecraft near the lunar South Pole and the fourth to soft-land on the Moon after the USSR, the USA, and China [ISRO 2023].

From this standpoint, it is apparent that both India and Japan are not engaging in direct competition with China in their endeavours to attain global recognition via accomplishments in human spaceflight. Japan and India show significant concern over China's space capabilities. However, it is difficult, and perhaps deceptive, to argue in favour of a space arms race among these three Asian space giants.

In contrast to the first two areas (the pursuit of "space firsts" and the development of military power), the third area (particularly between Japan and China) is marked by genuine rivalry. The fundamental Japanese worry is China's threat to its regional leadership in space-related services and to its attempts to drive regional growth and integration. In 1993, it established APRSAF, an informal dialogue mechanism to coordinate Asia-Pacific space operations and improve collaboration among regional space organizations [APRSAF 2023]. In 2005, APSCO was established as a full-fledged international organization with compelling initiatives for developing Asia-Pacific space states, and Japan lost its preeminent position as a result. Japan's intended

"targets", Bangladesh, Indonesia, Thailand, and Mongolia, joined the China-led APSCO since they appreciated the idea behind it.

Moreover, China's human space programme's early successes also sent a clear signal that the country's space technology was competitively priced and dependable. China's human spaceflight has, in Japan's estimation, progressively eroded its position as the technological leader in Asia and provided a comparative advantage to the APSCO diplomatic initiative.

Japan and China are competing against one another strategically in this space arena – and only this arena. Nevertheless, it is essential to refrain from spotting this contest for leadership as a mere quest akin to the space race. Furthermore, it has produced some favourable results in a more comprehensive context, which should not be disregarded. As a result, some nations in the region have seen an expansion in their policy choices, leading to improved accessibility and affordability of space applications, EO data, and telecommunications capabilities. Competition has played a significant role in facilitating the achievement of the international space community's competence level.

In terms of political influence in regional space policy, the Indian stance appears relatively limited, as the nation does not engage in direct competition with Japan or China for regional leadership in cooperative initiatives. Unlike Japan-led APRSAF or China-led APSCO, India does not possess a comparable regional organization under its leadership [Lele 2019a].

It is noteworthy that India is making notable progress in the domain of commercial space launches, leveraging some competitive advantages over Japan, whose services are more costly. In addition, it is remarkable that Indian endeavours are mostly focused on domestic use, aligning with its overarching political and economic objective of attaining self-reliance in the realm of national satellite launches [Lele 2019a]. The competition in this domain is influenced by global dynamics rather than regional ones and hence cannot be accurately characterized as a space race.

From these findings, it can be said that the planetary exploration programs in Asia are driven by their own internal policy logics rather than the aspiration of winning the space race. The name of the game for planetary exploration is not who reaches the Moon or Mars orbit first, but to satisfy space community while pursuing different sets of goals based on their national policy logics. Japan is the least enthusiastic for planetary exploration because its policy logics aim at developing commercial, industrial, and security capabilities. China is the most enthusiastic party because its policy logics are driven by the logics of science, technology and national pride. India is in the middle because the space community demands for challenging exploration missions, but there is a little political enthusiasm [Suzuki 2019].

Overall, it can be seen that Asian space states are adopting diverse strategies in their pursuit of space activities and lack a common set of "rules of engagement" that characterized the first space race. In summary, Japan does not engage in direct competition with China and India in the aforementioned domains. Rather, its primary objective is to retain its regional dominance in the field of space services while also acknowledging its pursuit of soft power benefits via this endeavour. The primary objective of the Indian space programme is to develop space infrastructure for domestic purposes rather than pursue an ambitious agenda to exert influence in the region. Unlike China, India does not seek to directly challenge its regional

counterparts through endeavours such as manned spaceflight. Instead, India has shifted its focus towards Mars exploration as a means of reorientation. In the case of China, it is evident that its endeavours are characterized by more ambitious objectives compared to those of Japan and India.

Conclusions

China's space ambitions are in perfect harmony with the technological requirements of the developing countries participating in the BRI. In the 21st century, the collection and control of information have emerged as the primary basis of power, with the domain of space acting as the medium via which this knowledge will be disseminated.

The rapid progress of the Digital and Space Silk Road has the capacity to drive economic growth in China and position the country as the leading provider of digital and space-related services, particularly among the nations included in the BRI. Chinese technology companies want to position themselves as leaders in the domains of information technology and network equipment manufacturing, benefiting from significant support from the state.

China is actively engaged in influencing global standards for developing technologies, utilizing its "first mover advantage" to expedite the introduction of numerous dual-use technologies. China is actively pursuing its ambition to become a prominent global digital connector and a dominant provider of 5G technology. This initiative is anticipated to play a crucial role in the development of advanced artificial intelligence technologies, such as facial recognition systems and autonomous vehicles, particularly in developing countries [Pollpeter 2020].

China's Ministry of Industry and Information Technology promotes the BRISIC as an entirely self-sufficient technology infrastructure that anticipates life in the 21st century and as a "civilian-led programme primarily intended for commercial and scientific purposes" [BDS 2023].

Chinese services are often seen as possessing qualities of economic efficiency and attractiveness. This behaviour may be attributed to the underlying principles of demand and supply. China has a notable ability to understand the distinct requirements of developing nations and consequently provides customized products and services to fulfil those needs. Countries participating in the BRI that have limited finances, weak information and communication technology, or insufficient space infrastructure see China as a substantial financial accelerator. The inclusion of China in these poorer nations' development processes may have expedited their progress towards achieving parity with industrialized economies across all sectors, perhaps shortening the timeline by several decades. This phenomenon also illustrates the fragmentation of the global landscape, with China endeavoring to provide a novel and economically efficient alternative in the realm of space technology.

The APSCO, originally established by China with the aim of spearheading space collaboration in Asia, has been acknowledged as an eligible contributor to the BRISIC. This recognition allows the APSCO to engage in joint initiatives and provide its expertise and services to relevant programmes. Nevertheless, the current legislative frameworks, both internal and external to the APSCO, are inadequate in guaranteeing the advancement of its initiatives related to space projects under the BRI. There is a need to examine a legal agreement between APSCO and the accountable administrations of BRI space programmes while concurrently enhancing the legal structure of APSCO.

A broader application of the "fair return" concept might potentially have a significant impact, as it facilitates the establishment of a sustainable cooperation mechanism that equitably acknowledges the efforts made by all member states. In relation to APSCO, the current programmes heavily depend on both technical and financial assistance from China. Consequently, the entities responsible for executing the contracts for APSCO's projects are often Chinese governmental institutions or enterprises. As a result, the motivation of the other member nations of APSCO to enhance their contributions to the organization's activities diminishes [Nie 2019]. Hence, it is possible to build a durable mode of collaboration that leads to mutually beneficial outcomes. Moreover, the current legislative framework is inadequate in its ability to effectively facilitate APSCO as a service provider. In light of this matter, it is imperative for the APSCO Council to develop more specific guidelines and establish appropriate governing bodies if deemed necessary.

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