


RESEARCH ARTICLE

# Space and the US–Japan alliance: reflections on Japan’s geopolitical and geoeconomic strategy

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## Abstract

Japan, and its alliance with the USA, is central to the unfolding politics of the new space race. This essay draws attention to the ways the Japanese state has positioned its geopolitical and geoeconomic interests related to space in the context of the US–Japan alliance. It probes the material and ideational elements that are driving the Japanese state to closer alignment with its formal ally in the military, civilian, and commercial space domains. But while all these realities bode well for alliance collaboration, there are reasons to be cautious. While the Japanese state has proactively aligned its space policy and postures with the USA, it is not forever caught in the US orbit. Given the uncertain fate of US domestic politics that bears on great power competition, Japan is also prudently positioning for how the status of its ally may evolve. This is what complicates straightforward projections about alliance cooperation and balance of power politics in the unfolding international space order.

**Key words:** Asia-Pacific Regional Space Agency Forum (APRSAF); geoeconomics; geopolitics; neoclassical realism; new space race; state-centrism; strategy; US–Japan alliance

Japan, and its alliance with the United States, is central to the unfolding politics of the new space race. As a great power, the United States is intent on creating a US-centric international space order. To bring it about in the geopolitical flux today, the US needs allies and partners. One critical – and perhaps the most pivotal ally in its quest is Japan – a country with which the US has had one of the most enduring treaty alliances in the postwar period. In this essay, I focus on the prospects for the US–Japan alliance in outer space activities from the perspective of Japan, a new angle on a subject long of interest to distinguished Japan scholars and practitioners (Pharr, 1993; Krauss and Pempel, 2004; Green, 2010; Smith, 2019; Krauss, 2022). Doing so also gives us a different lens for understanding how and why the Japanese state is positioning in the shifting realities of the contemporary international space order, marked by the rise, wavering, and decline of great powers.

Japan is unquestionably one of the world’s preeminent spacefaring nations. It has full-spectrum and independent capabilities in almost all foundational space technologies – liquid- and solid-fuel rockets, spacecraft for deep space missions and counterspace capabilities, and a wide range of big and small satellites for Earth observation, communications, and position, navigation, and timing (Pekkanen and Kallender-Umezu, 2010, 2011). Japan’s space technology narrative is now well acknowledged, has not reached some plateau, and continues to evolve in important and innovative ways as noted by a wide range of scholars, lawyers, and policy analysts around the world (Oros, 2007; Aoki 2008, 2011; Moltz, 2012: 43–69; Martin, 2015, 2021; Suzuki, 2015; Kallender, 2016; Fukushima, 2017; Kallender and Hughes, 2019; Aliberti and Hadley, 2020; Faton, 2020; Pekkanen,

2020a; Wilson, 2020). In this essay, I draw attention more to how Japan's foundational space technologies are enabling a new Japanese national space strategy at an opportune moment in history, and reflect on what that means for the US–Japan alliance.

A set of intertwined questions animate this essay. What are the forces that are driving the Japanese state down this particular path of alliance cooperation? Are there specific indicators of collaboration in the military, civilian, and commercial space domains? What are the actual prospects for economic gains and profits? What do the unfolding patterns tell us more broadly about the militarization and weaponization of space technologies? What do Japan's strategic choices suggest about the durability of the US–Japan alliance? Are the emerging trajectories the Japanese state is helping to set in motion likely to stay the course? Is any kind of a military space alliance likely to endure? What are the consequences of Japan's choices for the new international space order, and for balance of power politics around and above us?

The remainder of this essay is in three sections. The first section sets out an analytical framework that connects a body of Japan scholarship to some strands from neoclassical realism, and that accords primacy to the Japanese state in forging a national space strategy as great power competition unfolds. It draws attention to two important drivers for Japan, a systemic threat-based narrative on outer space that aligns with US views at a time of geopolitical flux, and that, as it happens, dovetails also with the domestic economic interests of a set of old and new private space actors. The second section discusses the ways in which the Japanese state has embedded both prongs of its national space strategy – the geopolitical and geoeconomic – under the rubric of the US–Japan alliance. It sets out the three sets of interactions that observably show Japan's closer alignment with its formal ally in the military, civilian, and commercial space domains. While their contents are deeply intertwined, the sets – formal and informal initiatives, domestic reconfigurations, and civil and commercial pathways – are analytically distinct as markers of collaboration. They shine a light on the many ways that Japan remains supportive of the alliance. From dedicated military space units intent on interoperability to the expanding quest for lunar outposts involving some of the most cutting-edge technological ventures, the realities bode well for alliance collaboration. But the third section concludes by setting out reasons to be cautious for any straightforward projections. While the Japanese state has proactively aligned its space policy and postures with the US in the short to medium term, it is not forever caught in the US orbit in the long term. Given the uncertain fate of US domestic politics that bears on great power competition, Japan is also prudently positioning for how the status of its ally may evolve. This uncertainty is what complicates projections about alliance cooperation and balance of power politics in the unfolding international space order.

### 1. Analytical framework

Today, global space realities are transforming human activities on and off the planet, and remapping the economic and national security prospects for all nations (Pekkanen, 2019). As the phenomena under study are emerging, my modest goal for this essay is to offer a set of reflections that bring together analytical and empirical work on Japan in the world and extend it to Japan in outer space affairs.

I use state-centric framing that resonates with a wide variety of material and ideational forces that have historically shaped our scholarly understanding of Japan's foreign and industrial policies; and that keep analyses attuned to the interactions of both international and domestic realities that are not easy to separate in the real world (Johnson, 1982; Berger, 1993; Samuels, 1994, 2007; Pyle, 2007: 41–65; Oros, 2008, 2017; Midford, 2020; Michishita, 2022; Krauss, 2022: 811–812, 826–828). These constructs also connect to some strands in neoclassical realism, which draw attention to the centrality of states at the interface of domestic and international realities, to their placement in the international system, to the relative material power capabilities and place that fundamentally shape their foreign policies, and to the domestic political, perceptual, and institutional contexts that shape their choices (Zakaria, 1992: 178–181, 197–198; Rose, 1998: 146–147, 154; Wohlforth, 2008: 140–141; Lobell *et al.*, 2009; Ripsman *et al.*, 2016).

In the space domain, the Japanese state has long backed emerging technologies, devised policies and strategies that affect their industrial prospects and, of special interest in this essay, determined how and which bilateral and multilateral alignments would affect their evolution in uncertain foreign settings. In short, as it has done historically and in other contexts, the Japanese state intends to safeguard its preeminence by all means necessary in the unfolding new frontiers of space (Pekkanen, 2003; 2022; GOJ, 2021). Today, from the perspective of the Japanese state, there are two deeply intertwined factors that have a bearing on the evolution of the US–Japan alliance in outer space activities.

### 1.1 Geopolitical narrative

The first of these underpins the geopolitical narrative of Japan's space strategy. Because outer space activities are rooted in the rivalries and rifts on Earth, they reflect the changing – and increasingly negative and pessimistic – perceptions of geopolitics in Asia. There is historical precedent for what we are seeing unfolding around us today (Davis, 2008/09). What was thought relevant for a different time and political reality when the Anglo–Japanese alliance was center stage seems to my mind, with slight substitutions, just as apt today for thinking broadly about alliances in and out of Asia:

The [US–Japan] alliance has implications, however, which are broader than the relationship between [the United States] and Japan. It [grows] out of the situation in the far east as a whole: the need for an alliance [is] felt because it seem[s] necessary for them to have a common policy in [Asia] in order to resist the actions of the other powers there. It is necessary, therefore, to analyse the international situation in the far east [today] (Nish, 2012: 14).

As then, so now the stability of the status quo is at issue and a search for a 'common policy' is on – this time Japan seeking to act in concert with the US. For these two allies, the situation today is about the rise of China and its conduct. There are significant controversies about China's behavior in the South China Sea, its forceful posture toward Taiwan, and its 'wolf warrior' diplomacy (Zhang, 2019; Chubb, 2020/21; Khan, 2021; Kyodo, 2022). Such concerns also extend to other regions and domains, including space. China is already prominent in the complicated space politics that involves almost every country in East, Southeast, and South Asia; and it is well understood that, taken together, the developments and interactions of these players will also shape the prospects for future competition and collaboration in the international relations of space (Moltz, 2012). Chinese leadership is forthright about making China not just a major space power, but a strong one that can surpass the still dominant status of the US (Pollpeter, 2020: 12). While China has demonstrated its own noteworthy civilian and commercial goals, such as space stations and incredible moon landings, its extraordinary achievements have been tarnished by its much-publicized military assertiveness not just around but above us. China's antisatellite (ASAT) test in 2007, and a recent hypersonic missile test in 2021 attest to the country's determination to modernize its military preparedness in and through space (Tellis, 2007; Hitchens, 2021b; Sevastopulo and Hille, 2021).

These trajectories fuel a great power competition for the US, in which it has named both Russia and China outright as competitors bent on establishing regional preeminence and global influence (Garamone, 2019; Colby and Mitchell, 2020; O'Rourke, 2021). Predictably, doing so shapes reactions from China, deepening prospects for a bipolar world (Maher, 2018; Tunsjø, 2018, 2020; Wang, 2021, Zhao, 2021, 2022). This also has consequences for the space domain. In my judgment, it is this: we are slouching toward an era marked also by the bipolarity of space alliances, meaning two contending sets of formal and informal alliances extending into space that also reflect the concerning geopolitics around us (Pekkanen, 2021b, *forthcoming*). On the one side there is the US with allies like Japan and newfound Quadrilateral Security Dialogue (QUAD) friends, attempting to coordinate like-mindedness in cross-domain operations (Vergun, 2019). On the other is China, with a newly minted lunar pact with Russia, which is anchoring its Space Information Corridor in the customer base within its Belt-and-Road infrastructure initiative (Pekkanen, 2017; Pollpeter *et al.*, 2020: 22–23; Sato, 2020).

Whatever the eventual outcomes, depictions, or stability of such structural shifts, the US–Japan alliance is central to the unfolding trajectories of the emerging bipolarity in space. As is well known, the US and the alliance, has loomed large in Japan’s postwar foreign economic and political relations (Komine, 2017; Matsuoka, 2018; Smith, 2019: 31–54, 190–240; Krauss, 2022). Tokyo’s ‘extreme security dependence on Washington’ makes the alliance dilemmas of abandonment and entanglement even more acute to Japanese strategizing in the vagaries of international politics and the complications of the country’s domestic political culture (Berger, 1993; Katzenstein, 1998; Izumikawa, 2010; Vosse and Midford, eds. 2018; Sakaki *et al.*, 2020: 13 [for quote]). Through the ups and downs over time, the former enemy combatants have managed to forge an alliance focused on stability not just in regional but in global politics (Sakaguchi, 2021). The matter at hand is to see where the alliance is headed in the space domain, to get a sense of the possibilities and constraints.

Well aware of the strategic reorientations on the part of its formal ally in space matters, Japan today is playing a pivotal role in deepening the geopolitics and shape of space-relevant alliances (Pekkanen, 2021b). In a departure from the past, Japan’s political leaders have begun to publicly articulate their concerns about Taiwan, and their interest in closer military cooperation with the US in the regional security dynamics (Gale and Tsuneoka, 2021; Liff, 2021: 275). Japan also presently shares, and openly vocalizes, the same threat assessments concerning outer space activities as the United States (Pekkanen, 2022: 769–771). These are rooted in a common understanding of great power competition as it extends to space, especially between the US and China. One pessimistic conclusion in that domain is that there appear to be virtually no legal or normative constraints on testing weapons in space, meaning also that the very idea of peaceful prospects in outer space is endangered (West, 2021). Countries continue to brazenly test ASAT capabilities – China in 2007, the USA in 2008, India in 2019, Russia in 2021 – and remain undeterred by the resulting orbital debris that can devastate both space assets and human operations indiscriminately. The ambiguities of dual-use space technologies also mask counterspace capabilities such as those tested openly by Japan, including ballistic missile defense (BMD) systems that can double up as ASAT weapons or long-duration spacecraft capable of shooting bullets into asteroid surfaces in the name of scientific missions (Pekkanen 2015a: 223–224; 2020a).

These trends pose a significant threat to the stable, safe, and secure uses of space, and undermine the ‘right of access to space and freedom of navigation in space’ for all stakeholders (Sheehan, 2015: 7–8). They are especially threatening to the world’s most space-dependent power, the US, which accounted for over 60% of all operational satellites at the end of 2021 (UCS 2005[2021]). In a rivalrous world this dependence is concerning to the US. Hostile targeted actions against US space assets imperil the country’s civilian, commercial, and military realities, and its great power status. US allies, like Japan, also then face the potential loss of extended nuclear deterrence. This is why singling out the stable uses of space is a top priority for Japan as well, because any such hostile actions threaten not just the security of its ally but also prospects for its own defense (Cabinet Office, 2019).

## 1.2 Geoeconomic realities

A geopolitical threat-based narrative is not the only driver of Japan’s space strategy, however. And it would be a mistake to think that it is. The banner problem of orbital debris also helps to connect to the geoeconomic side of Japan’s space strategy. The idea of geoeconomics draws attention to ‘the logic of war in the grammar of commerce,’ in which the causes as well as the instrument of conflict are economic, and in which states (or blocs of states) promote technological innovation not for its own sake but rather to maximize national benefits (Luttwak, 1990: 18–19 [for quote], 21). These themes resonate widely in Japan’s international political economy, drawing attention to the role of states and markets in industrial strategy, foreign economic policy, regional realities, and economic–security linkages (Johnson, 1982; Samuels, 1994; Heginbotham and Samuels, 1998; Pekkanen, 2003; Katada, 2020; Funabashi and Ikenberry, 2020; Iida, 2022). The Japanese state has of course been watchful of its industrial and commercial interests since the launch of its *Pencil* rocket in 1955 and its first satellite, *Ohsumi*, in 1970. But the geoeconomic lens also draws attention to both established and new private

space actors, with a diverse portfolio of interests within Japan's boundaries that can advantage national defense.

Some of Japan's most well-known corporations have long been involved in shaping the twin pillars of the country's space industry, rockets and satellites. These include Mitsubishi Heavy Industries, Mitsubishi Electric, Ishikawajima-Harima Heavy Industries, and NEC to name a few (Pekkanen, 2003: 161–191; Pekkanen and Kallender-Umezu, 2010: 71–92; Pekkanen and Kallender-Umezu, 2011). These established space players have now been joined by a new generation of entrepreneurs intent on leaving their mark in some of the cutting-edge space technologies today (Pekkanen, 2020b: 29). These include, for example, Axelspace with microsatellite technologies for Earth observation, Synspective with synthetic-aperture radar satellites and geospatial data solutions, ispace with an eye on lunar water resources and exploration, and Astroscale focused on the problem of space debris removal.

All these businesses have visions of profits in a space economy projected to go from over \$350 billion in 2018 to over a \$1 trillion by the 2040s (Foust, 2018). But as the long trajectory of Japan's commercial space aspirations shows, profits have a hard time materializing in the marketplace. As their products and services can be of service in defense of the homeland, all these private actors have economic incentives to push for national security projects. This is what they have done historically with BMD, for example. It is what they are doing also at present, with orbital debris, as another example. Orbital debris is not just orbital debris, defunct objects whizzing around at terrific speeds that can harm human missions and space assets (Pekkanen, 2018). Instead, it brings together commercial, civilian, and military objectives in a package that can be sold as a lethal environmental hazard.

For the Japanese state, as for others, having the dual-use technologies to clean debris up can also serve military purposes (Pekkanen, 2015b). The same technology that captures or zaps or drags away the debris can do the same to a functioning spacecraft. These realities may lead to 'unintended consequences' for deterrence and stability (Miller, 2021: 1). More to the point for Japan, they lead to intended ambiguity for political redirections. Japan has historically downplayed the dual-use aspects of such space technologies, but it no longer shies away from doing just that. This is the biggest difference from the space pacifism Japan espoused for much of its postwar history. In other words, there is a clear recognition that

In the space domain military power is measured by the quantity and quality of a states' entire space infrastructure, from its launch capability to the number of satellites on orbit it can leverage to support military operations. It is more than a simple numerical comparison of explicitly flagged military satellites; it is a measure of how many space resources a nation leverages to support military operations. Since commercial capabilities in space can also be used for military purposes, more so than in any other domain, a degree of separation is necessary. Those space capabilities, explicitly military or nominally commercial, that a state uses in peacetime represent active military space power. Meanwhile, those non-military platforms that a nation could use for military purposes if it needed to represent readily available latent space power. With this differentiation in place, military space power can be measured based on total expenditures in space as well as on latent capabilities within a state's existing commercial architecture (Townsend, 2020: 31).

The national security space trends that we see emerging in Japan today are official, and sanctioned by the highest levels of political leadership. They are fueled by this fundamental reality. As it happens, economic and defense interests are also coinciding at a fortuitous time, when the Japanese state is proactively navigating its way through regional and global security concerns with its ally, the US.

## 2. Markers of collaboration

In this section, I use the geopolitical and geoeconomic framing above to discuss three observable ways that Japan is positioning its own interests under the rubric of the US–Japan alliance. Some of these are more visible than the rest, others have evolved over time, still others are works in progress. Together

they give an interlinked overview of how and where Japan has steadily aligned its official space policies and postures with the US, but also kept a watchful eye on its own progress in the new civilian, commercial, and military space activities.

### 2.1 Formal and informal initiatives

First, at the broadest level, Japan has a standing formal dialogue with the US. It is true that Japan has a number of space-related agreements and memorandum of understandings (MOUs) with other countries and regions, notably the UK, France, India, and the European Union (MOFA, 2021b). But Japan's long-winding collaboration with the US in the space domain stands out at an official level, and deepens prospects for the bipolarity of space alliances in the contemporary world order (MOFA, 2021a). In 2011, the Security Consultative Committee (SCC) pointed to existing regional security challenges along with 'evolving threats' to strategic domains like outer space. Building on what they saw as their shared values, the two allies proclaimed that the sure way to meet the old and new challenges was to 'strengthen Alliance capabilities by adapting our cooperation, modernizing our forces, enhancing interoperability, and cooperating in the development of new technologies' (MOFA, 2011: 2). These aspirations have slowly and steadily been put into practice.

Since its inauguration in Tokyo in March 2013, a Japan–US Comprehensive Dialogue on Space has been taking place to advance whole-of-government approaches of strategic interest to both sides (MOFA, 2013). Billing themselves as two of the most advanced spacefaring nations, the primary objective of the US and Japan in their first meeting was to set up a 'new initiative' of wide-ranging scope between them. As the two allies continued to exchange views on technologies and themes of interest as expressed in their joint statements, they kept pace with the changing priorities and policies of space developments in both countries. Importantly, comparing the joint statements from the first to the seventh meeting of the Comprehensive Dialogue, there is a much clearer emphasis on fortifying the US–Japan alliance, and of using that as a basis for closely working with the international community to ensure the safety and security of outer space for present and future generations (MOFA, 2020).

The Comprehensive Dialogue also crisscrosses with other efforts, both those that preceded it formally and those that continue to interact with it informally. Between 2012 and 2018, for example, the US and Japan also carried out official exchanges related to the national security space field, involving high-level officials (MOFA, 2021a). The Comprehensive Dialogue is also fortified by the presence of informal networks and exchanges. Chief among them is the US–Japan Space Forum – a standing forum of space law and policy experts from the US and Japan – that has been running roughly parallel to the official Comprehensive Dialogue since 2014 under the auspices of the Maureen and Mike Mansfield Foundation (USJSF, 2022). It carries out informal academic and private sector exchanges on a consistent basis to foster and build understanding between the two countries.

Over time the broad initiative of the Comprehensive Dialogue has acquired specific depth and shape. Of significant note is the banner problem of orbital debris under which geostrategic and geoeconomic interests coincide as noted earlier. Already in their 2011 SCC joint statement, Japan and the US had pinpointed technology platforms for possible collaboration (MOFA, 2011: 9). These included a satellite navigation system, space-based maritime domain awareness, utilization of dual-use sensors, and of special relevance to orbital debris, space situational awareness (SSA). In 2013, Japan also signed an SSA Services and Informational Agreement with the USA (USDOS, 2013). Of note is the fact that the competent authority in the MOU is identified as the US Department of Defense, specifically US Strategic Command (USSTRATCOM) with the capabilities to provide SSA services and information in response to Japanese orbital data requests, including on-orbit information, such as conjunction assessments, collision avoidance, anomaly resolution, electromagnetic interference investigation, and so on (Article 2).

### 2.2 Domestic reconfiguration

Second, the SSA agreement draws attention to the far more specific ways Japan has steadily synchronized its civilian, commercial, and military uses of outer space, enabling further collaboration in the



context of the US–Japan alliance. One indication of this is the Japanese participants named on the agreement. Along with other players on the Japan side, including the Cabinet Secretariat, MOD, MEXT, and MLIT, the Japan Aerospace Exploration Agency (JAXA) was named prominently as a participant. Since its formation in 2003, JAXA has earned a well-deserved reputation as a civilian science and technology powerhouse in Japan’s space activities. Its expanding national security space collaboration with domestic and international partners is therefore quite remarkable, and has been enabled by a series of legal and policy shifts that have taken decades to come to fruition.

In 2008, Japan’s Basic Space Law went into effect (GOJ, 2008; Aoki, 2009; Pekkanen and Kallender-Umezu, 2010: 245–248, Table 2.1, Appendix II; Fukushima, 2017). The purpose of this law is simple, to expand and develop Japan’s autonomous space capabilities in the face of changing external and internal conditions. Its ethos is consistent with the pacifism of the Japanese constitution, and with the spirit of other international treaties and agreements. But with Article 2 of the Basic Space Law, Japan changed its legal interpretation of peaceful purposes in outer space from ‘non-military’ to ‘non-aggressive’ in line with international understanding. In other words, Japan could engage in the full spectrum of civilian, commercial, and military space projects so long as they were not deemed aggressive or offensive. This interpretive change was consequential for Japan’s space trajectories. Until then Japan had gone above and beyond international understandings to restrict Japanese space developments exclusively to peaceful purposes with a 1969 resolution (Aoki, 2008: 59–61; Suzuki, 2020). This resolution played well to the broader ‘culture of anti-militarism’ in postwar Japan (Berger, 1993), which helped to downplay the dual-use realities of one of the worlds’ most strategic sectors, and to keep debates about the militarization and weaponization of the basic space technologies out of sight.

The Basic Space Law soon reverberated across all of Japan’s space policy establishment. In 2012, JAXA’s basic law was explicitly revised so that the agency could engage in national security projects with, for example, the Ministry of Defense and other players (GOJ, 2012; Kyodo, 2012). Until then, JAXA too had been restricted to carrying out its academic, scientific, and technology activities only for peaceful purposes. With a small amendment to Article 4 of the JAXA law, the agency was henceforth required to bring its activities into conformity with the peaceful uses of outer space as stipulated by the Basic Space Law. Along with its other programs, this meant that JAXA could now also pursue national security space projects. In practice, no issue has been as central to legitimating JAXA’s new national security orientations and partnerships as orbital debris. Earlier in 2009, Japan’s MOD had identified a range of space-related capabilities of interest, and flagged the importance of coordinated national capabilities for SSA in order to monitor the space environment for all kinds of hazards, including space debris. It was forthright in how this would come about:

For space situational awareness and observation, a comprehensive and systematic initiative must be considered by the government as a whole, in a way that will also encompass the effective use of various capabilities possessed by the Ministry of Defense and the SDF, the Japan Aerospace Exploration Agency (JAXA), and other institutions, in order to ensure the safe and stable development and use of space in both the public and private sectors...the Ministry has been proactively promoting exchanges with other institutions in Japan that possess advanced technology in the civil and academic fields (MOD, 2009: 6–7).

A decade on, that coordination is becoming a reality. JAXA’s leadership is on board with the agency’s legal and cultural transformations, and is forthright about its new orientations as the ‘core implementing agency to support with its technology the entire governmental and development and utilization of space’ (Yamakawa, 2019b: 2). JAXA retains its focus on science and technology, and core technologies to be sure, all of which continue to enable autonomy, access to space, and next-generation technologies for Japan. But its new missions also include national security, with an emphasis on SSA, emergency monitoring, and early warning. The SSA framework, in particular, allows JAXA to cooperate with the Ministry of Defense, other ‘National Bodies’ of national security,

as well as the US, by bringing its own technical prowess into the mix of national and allied capabilities (Yamakawa, 2019a: 2, 6). For space developments or activities, a safe, sustainable, and secure space environment is a prerequisite for any kind of civilian and military operations. A technological infrastructure that helps to bring it about connects back to the long-brewing SSA focus in the US–Japan alliance, dating back to the joint statement of the SCC in 2011 and continuing on in the Comprehensive Dialogues. Orbital debris, and the growing number of actors and assets, is also a way for Japan to engage in a growing policy concern for all spacefaring nations in the international community (Kobata, 2019).

Fortuitously, in Japan's domestic political marketplace, the new narrative of supporting safe and stable uses of space by countering threats such as space debris softens military space postures. It helps to deflect concerns about the deployment of dual-use space technologies, and about the expanding role of the Ministry of Defense in outer space activities in lockstep with other domestic players like JAXA and international allies like the US. After all, the new trends are only made possible with Japan's persistent indigenization of dual-use space technologies over the postwar period (Pekkanen and Kallender-Umezu, 2010; Kallender, 2016; Kallender and Hughes, 2019; Fatton, 2020). Japan already has long-standing cooperation with the US on BMD, with its potential for offensive anti-satellite (ASAT) operations (Pekkanen and Kallender-Umezu, 2010: 180–194; Grego, 2011; Hughes, 2013; Pekkanen, 2015a). Japan has acquired and tested significant counterspace capabilities that double over from its civilian and scientific exploration missions, such as the Hayabusas, which can be an asset to its allies (Pekkanen, 2020a). Most recently, in answering calls for hosted payloads on allied satellites by US military leadership, Japan will be launching US sensors on Japan's QZSS satellites (Hitchens, 2020).

Without much political backlash, the complicated tapestry of orbital debris has led to the normalization of Japan's military postures in outer space. It also frames other aspects of MOD's activities that link to space. In 2018, for example, the National Defense Program Guidelines stressed the importance of cross-domain operations between the traditional (land, sea, and air) and new (space, cyber, and electromagnetic) domains; it also made it clear that Japan sought to 'ensure superiority in use of space at all stages from peacetime to armed contingencies [and that the] SDF will also work to strengthen capabilities including mission assurance capability and capability to disrupt opponent's command, control, communications and information' (MOD, 2018: 19). MOD has also stepped up cooperation with Keidanren to 'maintain and strengthen' Japan's defense capabilities, which will likely include space technologies (Kyodo, 2020).

The narrative of safety and security in the face of orbital debris gives concrete shape to calls from the US–Japan defense guidelines about the importance of ensuring the resiliency of space systems and building SSA cooperation (MOD, 2015: 21). New organizational pathways have also opened up fronts for collaboration between the US and Japan both in the context of space debris and space security more generally. They give a sense for how MOD will be proceeding. Japan stood up the Space Operations Squadron (SOS) in 2020, its own dedicated space force as part of the Air Self-Defense Force (JIII, 2020; Pekkanen, 2022: 777). In 2022, Japan is poised to launch a new space unit to monitor electromagnetic threats to its satellites (Kyodo, 2021). All this is still a work in progress, especially in the context of the alliance. But it is clear that the United States Space Force (USSF), the SOS, and presumably the new unit will, over time, help develop the allies' technical and human expertise to operate together and align their strategies. While it may not be joining the Five Eyes, Japan will be part of a new Multinational Space Collaboration Office at Vandenberg air force base with the goal of aligning policies and TTPs (tactics, techniques, and procedures) (Hitchens, 2021a). A Japanese liaison officer will also be part of the US Space Command, contributing to operational discussions (Erwin, 2021).

### 2.3 Civilian and commercial pathways

Finally, Japan has also aligned itself with US-led civilian and commercial lunar projects under the broader rubric of the US–Japan alliance. There are numerous building blocks going into place that



will affect Japanese capabilities and presence from Low Earth Orbit (LEO) to outposts on celestial bodies like the moon and asteroids. As with other ventures, Japan's latest efforts build on a long solid history of collaboration with the US NASA in this case. This too has become an important asset for Japan in the politics of the unfolding space alliances.

In tracing the history of the International Space Station (ISS) project that kicked off in the early 1980s, the Japanese government deemed it necessary to participate; it set up a Task Force under the Space Development Committee, then a consultative body of the Prime Minister (JAXA, 1999). As Japan interacted with its counterparts in Europe, Canada, and the US in the conceptualization, design, and development of the project over roughly a 15 year period, the discussions helped flag a number of items of interest, such as material and life sciences experiment and especially satellite repair that can also play a role today in dealing with orbital debris. At that time as well there was a geopolitical context. Japan participated in the official decision to invite Russia to the ISS program as the cold war came to an end. At the final technical shape of the ISS project concluded, 15 partners including Japan signed the 1998 Intergovernmental Agreement (USDOS, 1998). Its overarching purpose was to 'establish a long-term international cooperative framework among the Partners, on the basis of genuine partnership, for the detailed design, development, operation, and utilization of a permanently inhabited civil international space station for peaceful purposes, in accordance with international law' (Article 1). In the annex to the Agreement, the partner countries identified the elements to be provided. Japan obligated itself to provide a user element (the Japanese Experiment Module with internal and external functions), flight elements to supply the space station, and ground elements uniquely for the space station. Japan delivered on all elements.

As of 2022, JAXA proclaims that Japan has the largest size of any of the modular components that make up the ISS, namely the *Kibo* (*JEM*) module that is used to carry out experiments in the unique microgravity environment for space; it is also Japan's first manned facility (JAXA, n.d.). Utilizing *Kibo* is an important drive for JAXA, and is demonstrated through experiments involving new drugs, aging, and space medicine that can be of benefit to Japanese society and humankind in general. Among the most notable utilization activities is the deployment of 276 small satellites as of April 2021. Another of Japan's contribution has been the *Kounotori* (*HTV*) cargo supply ships, which successfully carried out nine supply missions to the crews at ISS between 2009 and 2020. Over that time, it has also given Japan the foundations to build a more advanced cargo transfer spacecraft, the HTV-X, that is currently in development and is aimed at what will come after the ISS, both physically and politically (Bartels, 2020).

The search for a post-ISS strategy means that stakeholders have their eyes on the politics of developments in LEO and on the lunar surface. The emphasis on utilization, which is so prominent on JAXA's official website, draws attention to other provisions in the Basic Space Law that are of interest to the Japanese state and businesses (GOJ, 2008; Pekkanen and Kallender-Umezumi, 2010: Appendix II). Article 3 calls for space development and utilization to improve the economic lives of the citizenry, and to safeguard them from threats to their survival such as from natural disasters. Further it also explicitly calls for contributions to international peace and security, along with national security. Read in conjunction with Article 4, this emphasis on economic-security linkages mandates that space development and utilization be carried out actively and systematically, and should also promote the technology and international competitiveness of Japanese industry.

This legality is manifesting in the way JAXA is out to assiduously position its technologies and astronauts in the emerging LEO and lunar competition of interest to governments and businesses (Foust, 2021). Many companies are lured by the possibility of commercial frontiers, and some like Lockheed Martin and General Motors are thinking to transpose their Earthly capabilities into other-worldly ventures. Among them, there are also a range of well-known deep-pocketed Japanese automobile companies – such as Toyota out to conquer the 'sixth continent' of the moon – that have begun to focus on possibilities for transportation on the lunar surface in partnership with JAXA (Obe, 2019). Relatively newer companies such as ispace also foresee settlements on the moon, and prospects for mining resources that can enable deep space exploration – a vision shared by JAXA scientists.

The result of long-duration collaborative enterprises with NASA and other international partners, and the backdrop of the US–Japan alliance, mean that JAXA has also made inroads into the new civilian–commercial landscape being set in motion by the US. In the new space realities, NASA has trumpeted the importance of launching American rockets from American soil (NASA, 2021a, 2021b). Of note is the fact that Japanese astronauts have been part of the first two commercial – and successful – crew missions by the private company SpaceX to the ISS. Japan has also signed up as a founding member to the US-led Artemis accords in 2020, designed to enhance civil exploration of the Moon, Mars, Comets, and asteroids for peaceful purposes through guidelines and best practices (Foust, 2020). Japan and NASA have also concluded an agreement about Gateway, an outpost orbiting the moon to facilitate long-term human presence on the moon (Foust, 2021). Notably, JAXA’s budget will increase to about \$500 million to support such missions (Park, 2021a).

There is little question that Japan has an eye on future Artemis and Gateway missions led by the USA, with their promise of economic prosperity. But how they unfold is shaped also by Japanese interest in space development and utilization as expressed in the Basic Space Law. Less well known but equally important is the fact that all this is playing out in a regional context. Here, Japan may further leverage its leadership of the long-standing Asia-Pacific Regional Space Agency Forum (APRSAF) to pursue allied interests with a wider set of partners, all of whom seek space technologies to advance socioeconomic development (Pekkanen, 2021a: 51–53). APRSAF is undoubtedly also energized by Japan’s collaborative momentum with the US. Deftly, at the end of 2021, Japan’s new prime minister proclaimed Japan’s grand plan to not just embed the Japanese private sector in the lunar industrial landscape but to also put Japanese astronaut boots on the moon (Park, 2021b). As the prime minister put it, with an eye on audiences in both the US and beyond, Japan ‘will promote the Artemis project to perform manned activities on the moon, and in the late 2020s, we will try to realize the lunar landing of Japanese astronauts;’ and the country’s revised space policy roadmap plans for Japan to land the first non-American astronaut on the moon by the late 2020s.

### 3. Cautionary caveats

Japan has come a long way from the era of ritualized conflict in the 1980s during which its foreign minister could be forced to resign for even calling the US–Japan relation an alliance (Pharr, 1993: 251). Today, it equates its national defense with a strong US–Japan alliance, including collaboration in new domains like space marked by both geopolitical and geoeconomic realities (Hayashi, 2020). It is true that Japan is forging a common policy with the USA in the space domain, aligning its space policy and postures with the USA in significant ways. That collaboration manifests in a range of formal and informal initiatives that lead to shared understanding among principal stakeholders in both countries. It is rooted in the domestic reconfiguration of newer laws, policies, and organizations that enable Japan’s unabashed proactivism in a dual-use industry. It is also evident in shared visions for prosperous lunar outposts and bases that are driving Japan to openly position for advantage.

Today we can meaningfully speak about a US–Japan space alliance going into place as Russia and especially China reshape competitive prospects in outer space (Davenport, 2021; Jones, 2022). Beyond the alliance, the alignment of the USSF and the SOS may affect the possibilities of SSA collaboration with other QUAD members, Australia and India (Rajagopalan, 2021). As SSA morphs into Space Domain Awareness, reflecting a shift away from space as a benign environment to a domain of warfare, the US–Japan alliance will likely keep pace (Erwin, 2019). The issue is not just attribution about aggression or instability in outer space, but also about national and allied responses. This means also paying attention to the enabling mechanisms that will allow Japan to respond. In 2014, the same Cabinet Decision that reinterpreted collective self-defense pointed also to potential impediments in utilizing and freely accessing outer space, cracking open the door to debates about the extension of collective self-defense to the space domain (GOJ, 2014). Mirroring affirmations about the scope of Article 5 of their security treat to cyberattacks, there may be a parallel explicit affirmation in the space domain in the future (JJI, 2019).

All these markers bode well for the two long-standing allies amid great power competition that extends to dominance over cutting-edge technologies (Nye, 2021). They help to build a picture of how the Japanese state is strategizing and adjusting in the face of incentives and threats in the space domain both in the short and foreseeable medium terms (Ripsman *et al.*, 2016: 80–90). But going beyond the prism of here and now what can we say about the gradual, accumulated, and less apparent systemic consequences of Japan's strategies and adjustments in the long run? I maintain that there are reasons to be cautious about thinking Japan is forever caught in the US orbit, which complicate any rosy and straightforward predictions about the alliance in shaping prospects for stability in the international system.

First, Japan, along with other US allies, has cause for concerns about the domestic polarization and external reliability of the USA (Pempel, 2020). It has to keep a wary eye on the political evolution and standing of its formal ally. Given the uncertain fate of US domestic politics that bears on great power competition, Japan is also prudently positioning for how the status of its ally may evolve in world politics (Solis, 2020). There is much uncertainty about the policy positions of successive US administrations, including the importance of international allies and alliances in the fluid new space race. Given this context, Japan knows full well it must prudently watch out and position its own interests beyond the moment. Second, seeing Japan only as a stalwart ally of the US and a rival of China is problematic. Japan is economically integrated with China, has signed an economic pact with China, and has MOUs in place with China to potentially facilitate space infrastructure investment projects in the name of economic development and poverty reduction across Asia (Pekkanen, 2021b). If Japan can build a working alliance with a former foe from the past like the US, it can also do the same with other rivals in its own interests in the future. Finally, dependence on space assets in an offense-dominant environment is America's Achilles heel; its rivals know it and so do its allies like Japan (Griggs, 2018). Japan is nowhere near as space-dependent and this may affect its calculus in the year ahead about aligning with US threat narratives in space. Over time, this may also build fissures in finding consensus or building common policy positions across international forums.

All these uncertainties mean we should also keep an eye on other underpinnings of US–Japan alliance collaboration in and through space, including one emphasizing the net gains from necessary exchanges of resources in a domain where no actor is self-sufficient (Izumikawa, 2020: 15–16). Japan is not a junior partner to the USA in the space, and its quest for parity is unmistakable. It will matter how the two allies link economic gains in and through space to their broader security cooperation, and how this plays out in the contextual nuances of both domestic constraints and international politics (Davis, 2008/09). All the way through, its friends and rivals would do well to remember that 'Japan has its own strategy, and it won't necessarily be completely in line with the U.S.' (Sakaguchi, 2021). In other words, whether responding geopolitically or positioning geoeconomically in the new space race, the Japanese state will give primacy to its own interests.

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