



POLICY ROUNDTABLE:

The Future of Japanese Security and Defense

October 1, 2020

Table of Contents

1. “Introduction: A Bumpy Road to Normalcy” By Jonathan D. Caverley and Peter Dombrowski
2. “Flying Blind at Sea: Growing Japan’s Naval Aviation Capability” By Ryo Hinata-Yamaguchi
3. “Arming Without Aiming? Challenges for Japan’s Amphibious Capability” By Benjamin Schreer
4. “The Modality of Japan’s Long-Range Strike Options” By Masashi Murano
5. “Thank You for Your Service: The Security Implications of Japan’s Counterspace Capabilities” By Saadia M. Pekkanen

Summary

In this roundtable, which grew out of a conference on maritime strategy in the Indo-Pacific region sponsored jointly by the United States Naval War College, the Japan Maritime Self-Defense Forces Maritime Command and Staff College, and the Sasakawa Peace Foundation, our contributors examine growing Japanese defense capabilities and aspirations. The authors examine the impact of a more robust Japanese defense capability on Japan's defense and foreign policy, as well as regional stability and alliances.

1. A Bumpy Road to Normalcy

Jonathan D. Caverley and Peter Dombrowski

While geopolitical competition between China and the United States increasingly drives global politics, other countries continue to play essential roles.

Nonetheless, we sense that most American strategists and policymakers pay insufficient attention to both the contributions and preferences of smaller states caught up in this great-power competition. Even if this era's distribution of power becomes as bipolar as the Cold War (an unlikely outcome), non-superpowers will play key roles as threats, allies, proxies, and arenas of contestation. This is especially true with regard to pivotal states — actors “whose futures are posed at critical turning points, and whose fates would significantly affect regional and even international instability.”¹ In the ongoing Sino-American rivalry, Japan epitomizes the pivotal state.²

Security studies research has long regarded non-superpowers as consequential for both the conduct of great-power politics and the outbreak of major power war.³ Since the path-breaking work of Peter Katzenstein in the mid-1980s, international relations scholars have recognized the economic significance of smaller states as the relative size of great-power economies shrank and their

¹ Robert S. Chase, Emily Hill and Paul M. Kennedy, eds., *The Pivotal States: A Framework for a New American Policy in the Developing World* (New York, NY: W.W. Norton & Co., 2000), 4.

² Identifying Japan as a “pivotal state” stretches Chase, Hill, and Kennedy’s definition to include non-developing countries.

³ Robert O. Keohane, “Lilliputians’ Dilemmas: Small States in International Politics,” *International Organization* 23, no. 2 (Spring 1969): 291–310, <https://www.jstor.org/stable/2706027>.

“rule-making” ability diminished.⁴ Based on the still-globalized economy, U.S. power projection capability, and the geography surrounding China, we assess small states to be particularly important for this new era of great-power politics.

The most likely points of great-power friction will be at sea, in the air, and out in space — Barry Posen’s “global commons” — which together constitute the keys to both military predominance and economic exchange.⁵ The competition will largely be confined to the Indo-Pacific. China remains a regional power in terms of its military capability and near- and mid-term geostrategic ambitions. Even the much-vaunted Belt and Road Initiative is primarily oriented towards China’s immediate borders and sea lanes.⁶ Great-power competition will necessarily involve the sovereign states that ring China’s littoral, the much-discussed first island chain.

To date, U.S. military operational planning and wargaming has focused laser-like on strategic interactions between “Blue” — the United States — and “Red” — the adversary. Such plans and analyses rarely incorporate “Green” — third-party actors influencing Red-Blue interactions. Indeed, we find it telling that the very concept of “Green” — encompassing any country that is not the primary adversary or the United States itself — in a region like the Western Pacific would incorporate such disparate actors as South and North Korea, Taiwan, Australia,

⁴ Peter J. Katzenstein, *Small States in World Markets: Industrial Policy in Europe* (Ithaca, NY: Cornell University Press, 1985), 21–22.

⁵ Barry R. Posen, “Command of the Commons: The Military Foundation of U.S. Hegemony,” *International Security* 28, no. 1 (Summer 2003): 5–46, <https://doi.org/10.1162/016228803322427965>.

⁶ Benn Steil and Benjamin Della Rocca, “Belt and Road Tracker,” Council on Foreign Relations, updated May 18, 2019, <https://www.cfr.org/article/belt-and-road-tracker>.

Philippines, and Indonesia. Responding to this clear deficit, we asked several experts on the security of the region to participate in this roundtable and to concentrate on what we consider its most crucial Green actor: Japan.

In a major conflict with China in the Western Pacific, a forward-deployed United States will necessarily depend upon Japan as much as Japan will need to depend upon the United States. The Trump administration, though lacking subtlety, does not differ much from its predecessors in its attempts to cajole or coerce Japan to contribute more to the alliance's collective defense.⁷ Moreover, it is clear that, barring a massive mobilization, the United States cannot build sufficient power projection capability to unilaterally shape international politics in the Western Pacific. And of course, Japan is a large, sovereign state whose interests often do not align with those of its ally. Yet the goals and capabilities of Japan are insufficiently understood by U.S. strategic planners.⁸ Indeed, even within Japan, the country's interests remain deeply disputed.

In paying attention to Japanese security policy, this roundtable seeks to correct a second gap in strategic studies of the region: the fixation by both the U.S. and Japanese defense establishments on either the very short term — a “fight tonight”⁹ — or the extremely long-term — the advent of swarms of AI-controlled

⁷ Thomas J. Christensen, “China, the US.-Japan Alliance, and the Security Dilemma in East Asia,” *International Security* 23, no. 4 (Spring 1999): 49–80, <https://doi.org/10.1162/isec.23.4.49>.

⁸ Scholarships suggests far more subtle understandings of Japan's security concerns than is generally understood in the policy world. Peter J. Katzenstein, *Cultural Norms and National Security: Police and Military in Postwar Japan* (Ithaca, NY: Cornell University Press, 1996).

⁹ Harry B. Harris, Jr., “United States Pacific Command Guidance,” United States Pacific Command, Aug. 12, 2016. https://www.pacom.mil/Portals/55/Documents/pdf/guidance_12_august_2016.pdf?ver=2016-08-16-140701-960.

unmanned aerial vehicles, salvos of hypersonic missiles, and undersea transparency.¹⁰

Accordingly, we asked roundtable authors to each analyze a specific capability based on two criteria. First, can Japan plausibly acquire it within the next decade? Second, does it have the potential to transform the region's international politics? The roundtable considers four such capabilities: naval aviation, amphibious capability, ballistic and hypersonic strike missiles, and anti-satellite weapons.

The Importance of Japan

To introduce this roundtable, we first make the obvious claim that, while overshadowed by the Sino-American bilateral balance, Japan is a large and capable military power, with the potential to grow even more so with relatively little effort.

Japan possesses the world's third largest economy. Its high per-capita income relative to China leaves a lot of financial slack to devote to defense should it find the political will. It appears relatively unscathed by the novel coronavirus pandemic. Japan is a high-end manufacturing powerhouse with the capability to lead in such important fields with military applications as robotics,

¹⁰ Tate Nurkin and Ryo Hinata-Yamaguchi, *Emerging Technologies and the Future of US-Japan Defense Collaboration* (Washington DC: Atlantic Council, Scowcroft Center for Strategy and Security, 2020), <https://www.atlanticcouncil.org/wp-content/uploads/2020/04/Emerging-Technologies-and-the-Future-of-US-Japan-Defense-Collaboration.pdf>; Michael O'Hanlon, *Forecasting Change in Military Technology, 2020-2040* (Washington, DC: Brookings Institution, 2019), https://www.brookings.edu/wp-content/uploads/2018/09/FP_20181218_defense_advances_pt2.pdf.

semiconductors, exotic metals, and ceramics. Moreover, its defense industrial sector has long enjoyed a privileged relationship with American firms on co-development and component manufacturing of sophisticated (and expensive) warships, aircraft, space systems, and even missile defense.¹¹

While Japan famously devotes a relatively small portion of its gross domestic product (GDP) to defense, 1 percent of a giant economy is nonetheless enormous. Its military spending remains a fraction of China's, but it does not pay China's domestic security overhead.¹²

The Japan Ground Self Defense Force (JGSDF) is well-funded relative to Japan's other services (Heginbotham and Samuels describe it as a budgetary "stranglehold"), and remains surprisingly tank-based for an archipelagic nation.¹³ Nonetheless, Japan is gradually shifting the JGSDF to a missile-oriented denial strategy. Japan's air component will soon boast the world's largest number of fifth-generation F-35 fighters outside of the United States.¹⁴ It possesses the world's fourth largest navy by tonnage, including Aegis destroyers and a

¹¹ On space see for example, Saadia Pekkanen and Paul Kallender-Umezu, *In Defense of Japan: From the Market to the Military in Space Policy* (Palo Alto, CA: Stanford University Press, 2010).

¹² Michael Beckley, "China's Century? Why America's Edge Will Endure," *International Security* 36, no. 3 (2011): 41, https://doi.org/10.1162/ISEC_a_00066. However, see, Sheena Chestnut Greitens, "Rethinking China's Coercive Capacity: An Examination of PRC Domestic Security Spending, 1992-2012," *China Quarterly* 232 (2017): 1002-25, <http://doi.org/10.1017/S0305741017001023>.

¹³ Eric Heginbotham and Richard J. Samuels, "Active Denial: Redesigning Japan's Response to China's Military Challenge," *International Security* 42, no. 4 (2018): 164, https://doi.org/10.1162/isec_a_00313.

¹⁴ Mike Yeo, "Japan Highlights F-35 Acquisition, Military Ops Amid Pandemic in New Whitepaper," *Defense News*, Jul. 15, 2020, <https://www.defensenews.com/global/asia-pacific/2020/07/15/japan-highlights-f-35-acquisition-military-ops-amid-pandemic-in-new-whitepaper/>.

formidable submarine fleet combined with top-flight maritime patrol aircraft capability.

While efforts to make Japan more of a “normal” nation preceded him, recently retired prime minister Shinzo Abe — whose two stints in office make him Japan’s longest-serving prime minister — has increased pressure for Japan to raise defense spending, export weapons, and play a more active diplomatic role in countering rising Chinese influence. Pursuing what Hughes calls the “Abe doctrine,”¹⁵ in 2015 Japan expanded its definition of self-defense — allowing it to come to the defense of an ally being attacked and removing restrictions to “areas surrounding Japan.” These are both important changes. Japanese forces have deployed to the Persian Gulf to protect energy shipments and the East and South China Seas to enforce embargoes of North Korea.

Strategic Environment

While Japan is a formidable economy with a capable military, it faces enormous strategic challenges.¹⁶ Chinese power projection capability has increased, in the form of aircraft carriers, nuclear-powered submarines, and a burgeoning amphibious assault initiative, coupled with a clear bout of revisionism to several regional status quos. Combined with a formidable anti-access/area denial (A2/AD)

¹⁵ Christopher W. Hughes, “Japan’s Security Policy in the Context of the US-Japan Alliance. The Emergence of An ‘Abe Doctrine’,” in *Japan’s Foreign Relations in Asia*, eds. James D.J. Brown and Jeff Kingston (London: Routledge, 2018), 49–60.

¹⁶ We will not go over the growth in Chinese economic and military power more generally, as this is well-covered territory. For a recent and comprehensive account, see, M. Taylor Fravel, *Active Defense: China’s Military Strategy since 1949* (Princeton, NJ: Princeton University Press, 2019).

capability, this may enable China to pursue a more hegemonic strategy in the region.¹⁷

Despite the U.S. focus on Chinese island-building, long-range missiles, and naval construction that most directly threaten U.S. forces, Japan faces a potential threat an order of magnitude greater from numerous shorter-range missiles and aircraft based on the Chinese mainland. While the U.S. Navy plans contingencies around the 100 or so DF-26 and DF-21 “carrier killer” ballistic missiles, the Japanese mainland lies easily within the weapons engagement zones of thousands of ground-launched Chinese ballistic and cruise missiles. Any defense against these barrages is likely to be futile, particularly if China also deploys air-launched missiles. There are some twenty-nine People’s Liberation Army (PLA) Air Force and Navy air bases within unrefueled fighter range of the Senkaku Islands, but only four U.S. and Japanese bases within the same distance.¹⁸

As with any island nation, sea lanes are both a matter of national security and economic viability for Japan. First, as an island nation off the coast of a continental-sized power, the potential challenge posed by China to Japan is only comparable to that of Napoleonic France or Nazi Germany to Great Britain. Second, massive amounts of commerce, especially energy, flow through the South China Sea on the way to and from Japan and the rest of Northeast Asia. Both

¹⁷ Sam J. Tangredi, “Anti-Access Strategies in the Pacific: The United States and China,” *Parameters* 49, no. 1–2 (Spring–Summer 2019): 5–21, <https://publications.armywarcollege.edu/pubs/3701.pdf>; Ryan Martinson, and Katsuya Yamamoto, “How China’s Navy Is Preparing to Fight in the ‘Far Seas’,” *The National Interest*, July 28, 2017, <https://nationalinterest.org/feature/how-chinas-navy-preparing-fight-the-far-seas-21583?page=0%2C1>.

¹⁸ Heginbotham and Samuels, “Active Denial: Redesigning Japan’s Response to China’s Military Challenge,” 85.

Japan and China face the infamous “Malacca Dilemma,” due to seaborne vulnerability. Third, part of its own home territory, at least as understood by the Japanese government, is under direct challenge from China.¹⁹

Relatively distant from Japan’s major naval facilities, the Senkaku/Diaoyu islands are a bilateral and regional irritant. Both Japan and China have revised various elements of the disputed territory’s status quo. The Japanese government formally purchased three of the islands from a private owner in 2012. A year later, China established an air defense identification zone (ADIZ), covering them (and overlapping with Japan’s own ADIZ). Chinese coast guard vessels have attempted to establish a “new normal” of co-administration of the waters around the islands with over 1,000 incursions, an 80 percent increase from last year.²⁰ Responding to these incursion causes tremendous wear and tear on the Japan Self-Defense Force (JSDF) personnel and equipment. The United States has repeatedly reiterated that the Senkakus fall under the U.S.-Japanese Treaty of Mutual Cooperation and Security.

More generally, both Japan and the United States fear variations of salami slicing and *fait accompli*, where China accrues positional power and sea territory forcing the United States and Japan “to back down during a crisis because of an inability to respond in kind (and thus the need to escalate disproportionately) or an

¹⁹ Michael O’Hanlon, *The Senkaku Paradox: Risking Great Power War Over Small Stakes* (Washington, DC: The Brookings Institution, 2019).

²⁰ Michael Macarthur Bosack, “Looking Back On Japan’s Security In 2019,” *The Japan Times*, Dec. 19, 2019, <https://www.japantimes.co.jp/opinion/2019/12/19/commentary/japan-commentary/looking-back-japans-security-2019/> - .Xn5ikC2ZNBw.

unwillingness to incur major losses.”²¹

Beyond China, Japan also faces a nuclear-armed North Korea, which routinely threatens attacks on Japan. Relations with the other major military power in the region, South Korea, are at a nadir. Moreover, Japan faces a U.S. administration that, while clearly willing to compete with China, publicly evinces an inward turn and a deep suspicion of alliances and their value to the United States.

In the face of these challenges, the Japanese defense budget, while sizable, is unlikely to go up. While in 2017 the Liberal Democratic Party recommended eventually spending 2 percent of GDP, this level appears a pipe dream.

Philosophically and operationally, the JSDF as well as the Japanese body politic is likely to remain defensive. Its procurement budget is being devoured by spending on operations.²²

Roundtable Mandate and Contributions

In an important and comprehensive analysis of Japan’s security situation, Heginbotham and Samuels emphasize uncontroversial aspects of Japanese security reform like resilience and increased denial capability. Japan clearly needs

²¹ Benjamin Schreer, “After the INF: What Will US Indo-Pacific Allies Do?,” *The Washington Quarterly* 43, no. 1 (2020): 44, <https://doi.org/10.1080/0163660X.2020.1736885>. Elbridge Colby, “Against the Great Powers: Balancing Nuclear and Conventional Power,” *Texas National Security Review* 2, no. 1 (November 2018): 145–152, <https://tnsr.org/2018/11/against-the-great-powers-reflections-on-balancing-nuclear-and-conventional-power/>.

²² Heginbotham and Samuels, “Active Denial: Redesigning Japan’s Response to China’s Military Challenge,” 132.

to develop its own A2/AD capability, what Krepinevich and others call an “archipelagic defense” posture.²³ But Japan is contemplating, and in some cases actively building, more controversial (and expensive) capabilities.

We therefore solicited contributions intended for a largely American policymaking audience from experts in Japanese security. Our four authors speculate on plausible, mid-term shifts in Japanese defense capability. Each change builds at least in part on preexisting programs. Japan has not explicitly said it would develop some of these proposed capabilities, but certainly could if it decided to do so. The authors’ analyses take Japan’s strategic dilemmas and comparative advantages seriously. Each piece acknowledges that no additional capability can be achieved by Japan without financial and strategic sacrifices; it is certainly impossible for Japan to pursue all four. The first two capabilities are currently being pursued by Japan, albeit with insufficient funding. The second pair look at capabilities that outstrip current Japanese plans.

Ryo Hinata-Yamaguchi takes on the clearest change in capability by stressing the Japanese need for airpower as a vital part of its naval strategy. While Japan is acquiring a large number of F-35Bs and the flat-top ships to deploy them, Hinata-Yamaguchi argues that this material acquisition is outpacing the doctrinal development needed for its operation. Moreover, the amount of resources Japan is willing to spend may create an expensive force unable to have much strategic effect given the large bureaucratic and operational hurdles fielding a credible naval aviation component would require. He advocates sufficient development for

²³ Heginbotham and Samuels, “Active Denial: Redesigning Japan’s Response to China’s Military Challenge”; Andrew F. Krepinevich, Jr., “How to Deter China: The Case for Archipelagic Defense,” *Foreign Affairs* 94, no. 2 (March/April 2015), <https://www.foreignaffairs.com/articles/china/2015-02-16/how-deter-china>.

both sea control and denial missions but acknowledges that this will not come cheap.

Complementing Hinata-Yamaguchi, Benjamin Schreer assesses the other major ongoing capability development: Japan's expensive effort to build up its amphibious capability. While noting the several roles a modest amphibious arm can play in day-to-day and humanitarian operations, Schreer does not believe a capable force deployed on big-deck ships to be worth the cost. He points out that the U.S. Marine Corps — with its eye towards the Pacific theater — is forging amphibious assault as its core mission and wonders why the JSDF is shifting towards it. He concludes that a special operations capability may provide the most bang for the amphibious buck.

Masashi Murano makes the case for an offensive strike missile capability that could selectively reach the Chinese mainland to deter by denial rather than punishment. As with the previous two pieces, Murano identifies another ongoing Japanese acquisition effort that is both too small to be effective as planned and lacks any concept of operations. Murano attempts to distill a philosophy for the employment of an offensive missile capability by systematically going through its possible uses. He concludes by advocating a new class of larger warheads necessarily carried by ballistic, possibly hypersonic, missiles designed to “mission kill” a sufficient chunk of the Chinese air force and navy to deter by denial Chinese adventurism. Like so many of these other capabilities, however, the price may make such a capability impossible.

Finally, Saadia M. Pekkanen addresses the considerable but not widely recognized Japanese capability in space, arguing for Japan to drop the pretense and build

credible anti-satellite weapons. She makes a plausible if controversial argument that this might be the least escalatory of the four proposed changes, even as it has a potentially massive impact on the strategic balance in the region by holding much of China's reconnaissance strike complex at risk.

The Bumpy Road to Normalcy

Much intellectual work remains to be done on this topic. In their analysis of Japanese defense planning, Heginbotham and Samuels argue that since Japan Maritime Self-Defense Force (JMSDF) leaders might well find the unglamorous prospect of “conventional forms of defense” unappealing, “civilian experts and leaders” may be required to be these capabilities' principal advocates.²⁴ By this same logic, civilian strategist will also have to steer the military from potentially expensive missteps. This is especially the case because, as each author acknowledges, these capabilities are likely to inflame regional political tensions.

Three of these roundtable contributions originated from a Tokyo conference seeking to “bridge the straits” between regional security scholars and both Japanese and American policymakers on issues of maritime competition. The conference made clear that these straits remain wide. The field of strategic studies in Japan and the larger region is growing, but this research, especially that of less senior scholars, needs nurturing. And as we note in the introduction, we believe that the United States defense community needs to better understand both the capabilities and interests of its closest ally in the Pacific.

²⁴ Heginbotham and Samuels, “Active Denial: Redesigning Japan's Response to China's Military Challenge,”

166.

In purely realist terms, Japan remains the only significant regional counterweight to China. It is hard to imagine Chinese hegemony, akin to what the United States enjoys in the Western Hemisphere, in the face of concerted Japanese resistance. Further, for the geopolitically inclined, the old saw about Japan being the “world’s largest aircraft carrier” remains fundamentally correct from the perspective of the United States. Given time and distance realities, both from the United States to the Western Pacific and within the region — a geographical reality often unrecognized by armchair strategists — there are no ready substitutes to Japan if the United States intends to remain a power in the Pacific.

The roundtable contributors all note that their proposed capability shifts will have major effects on the division of labor within the U.S.-Japanese security pact. But understanding the implications of these changes will require more than describing the material and operational qualities of the tool itself. The potential advent of any of these capabilities must be viewed through the complex political dynamics of the U.S.-Japanese alliance. Even the closest of allies will fear both chain-ganging and buck-passing.²⁵ During the Cold War, Japan fretted about being pulled into a superpower conflict, but it is now far more concerned the United States will not come to its assistance. American planners must understand that Japan’s acquisition of any additional offensive capability will probably duplicate U.S. assets and provide a new potential road to crisis instability.²⁶

Finally, we conclude this introduction with a sobering thought. All of these capabilities mooted by the authors will be very expensive. There exists an even

²⁵ Thomas J Christensen and Jack L Snyder, “Chain Gangs and Passed Bucks: Predicting Alliance Patterns in Multipolarity,” *International Organization* 44, no. 2 (1990): 137–68, <https://www.jstor.org/stable/2706792>.

²⁶ Jonathan D. Caverley and Peter Dombrowski, “Cruising for a Bruising,” *Security Studies*, forthcoming.

cheaper means for Japan to improve its security: nuclear weapons. We predict that as the balance continues to shift unfavorably for Japan, especially if the U.S.-Japanese alliance frays further, the question of whether Japan ought to obtain its own nuclear deterrent will grow increasingly less hypothetical.

Jonathan D. Caverley (Twitter: [@jcaverley](#)) is professor of strategy at the United States Naval War College and research scientist at the Massachusetts Institute of Technology.

Peter Dombrowski (Twitter: [@PeterDombrowski6](#)) is professor of strategy at the United States Naval War College.

This special issue was made possible through the generous support of the Sasakawa Peace Foundation. Caverley and Dombrowski wish to thank Yukiko Bito, Junko Chano, Jim Hartman, Narushige Machushita, Risa Nobe, Kunio Ogawa, Terry Roehrig, and Rachael Shaeffer. Much of this research was presented at the 2019 Bridging the Straits Conference, sponsored by the U.S. Naval War College, the Japan Maritime Command and Staff College, and the Sasakawa Peace Foundation. The statements made and views expressed are solely the responsibility of the author(s).



2. Flying Blind at Sea: Growing Japan's Naval Aviation Capability

Ryo Hinata-Yamaguchi

In recent years, Japan has sought to enhance both the force structure and operational readiness of the Japan Maritime Self-Defense Force (JMSDF) to defend not only the nation's territorial, contiguous, and exclusive economic zones but also vital sea lines of communication. Together with enhancements in surface combatants and submarines, there have been notable developments in the JMSDF's aviation capabilities. On top of upgrading assets for maritime patrol, minesweeping, and humanitarian assistance and disaster relief, Japan is now pursuing shipborne tactical capabilities with the conversion of the Izumo-class helicopter destroyers to launch the F-35B. The developments in Japan's naval airpower are evolutionary and potentially revolutionary, marking a shift from deterrence by denial to deterrence by punishment. Still, there are questions concerning the future of Japan's naval airpower as the new assets have been framed as multirole platforms without solid conceptual and doctrinal foundations.

As an archipelagic nation, air-sea supremacy is vital for Japan. While the developments in the readiness of the Japan Self-Defense Force (JSDF) are encouraging, expanding Japan's strategic frontiers without adequate offensive capabilities will only create more vulnerabilities. To fill the gaps, Japan should build an expanded and multidimensional form of naval airpower for sea control and denial by combining its existing capabilities with enhanced shipborne aviation assets.

Developments in Japan's Naval Airpower

Since its inception in 1954, the JMSDF inherited some of the institutional traditions of the Imperial Japanese Navy but with a fundamental shift toward more defensive strategies and capabilities.²⁷ Naturally, Japan's naval airpower developed in a mission-based framework with minimal offensive aspects, focusing on maritime patrol and search and rescue. Although the JSDF's naval aviation capabilities did not have the offensive caliber of the Imperial Japanese Navy, they were blessed with technologies that were previously unavailable, such as fixed- and rotary-winged aircraft equipped with advanced magnetic anomaly detectors, sonar, sonar buoy, and radar systems. The new technologies suited the JMSDF's priorities, leading to the proactive modernization of naval aviation assets from the United States and construction licenses that facilitated developments in Japan's indigenous defense industry.

The JSDF's naval aviation capabilities were initially shore-based, relying on both the fixed- and rotary-winged aircraft of the JMSDF and multirole/support jets of the Japan Air Self-Defense Force (JASDF). Developments in the JSDF during the Cold War were relatively modest, designed to work in conformity with U.S.-led operation plans.²⁸ Yet from the outset, the JMSDF harbored strong interest in acquiring helicopter carriers for anti-submarine warfare, starting with discussions

²⁷ For more on the inherited traditions, see, Alessio Patalano, *Post-War Japan as a Sea Power: Imperial Legacy, Wartime Experience and the Making of a Navy* (London: Bloomsbury, 2015).

²⁸ Narushige Michishita, Peter Swartz Swartz, and David Winkler, *Lessons of the Cold War in the Pacific: U.S. Maritime Strategy, Crisis Prevention, and Japan's Role* (Washington, DC: Woodrow Wilson Center, 2016), https://www.wilsoncenter.org/sites/default/files/media/documents/publication/lessons_of_the_cold_war_in_the_pacific.pdf.

in the early 1950s on acquiring and converting the U.S. Navy's Commencement Bay-class escort carriers for anti-submarine warfare, which then led to further proposals from the late 1950s until the early 1970s focusing on indigenously constructing new helicopter carriers.²⁹ Then, in the 1980s, Japan mulled over the acquisition of the AV-8B Harrier II to expand its naval airpower to include more tactical combat operations. Nevertheless, the acquisitions never materialized, due to not only political and fiscal headwinds but also prioritization of surface combatants and attack submarines. Instead, Japan settled for destroyers capable of launching multiple anti-submarine helicopters, such as the 4950-ton Haruna and 5200-ton Shirane-class destroyers. Many of the JMSDF's destroyers since the 1980s were built to launch at least one rotary-winged aircraft for anti-submarine warfare.

The post-Cold War security environment has presented new challenges for Japan: China's rapid military modernization and increasingly assertive actions, North Korea's continued diversification of military readiness for hybrid warfare and the development of strategic weapons, and Russia's periodical air and naval maneuvers in areas neighboring Japan. Moreover, issues in the Middle East, including threats from nonstate actors, are of grave concern to Japan's economic security. For Japan, the post-Cold War era challenges have become catalysts to reconfigure its defense posture by revising the National Defense Program Guidelines in 1995, 2004, 2010, and 2013. The shortened intervals between

²⁹ See, Tetsuo Kotani, "Herikuubo 'Izumo' Dounyuuno Imi: Nihonnno Anzenhosyou Senryakuniokeru Jyuuyousei [The Significance of the Helicopter Carrier 'Izumo': Significance for Japan's Security Strategy]," *Wedge Infinity*, Aug. 20, 2013, <http://wedge.ismedia.jp/articles/-/3084>; Yukikazu Okada, "Maboroshi Ni Owatta Kaijoujietaino Herikuubo [Never Completed Helicopter Carriers of JMSDF]," *Sekai no Kansen* [Ships of the World], December 1994.

revisions reflect Japan's renewed attempts to sharpen the JSDF's readiness amid a fluid security environment.³⁰

Although the four revisions to the National Defense Program Guidelines within 25 years brought many changes, they were consistent in five areas: shift in strategic focus to the southwestern regions; priority on air and maritime supremacy; ballistic missile defense; amphibious operations; and interbranch coordination. For the JMSDF, this meant the pursuit of firepower, power projection, and speed for sea control and denial.

The developments in Japan's security strategies coincided with the generational changes in the JMSDF's aviation assets. From the 2000s, the workhorses of the JMSDF — the P-3C, SH-60J, and MH-53E — were gradually replaced by the P-1, SH-60K, and MCH-101. Significant developments were also seen in the vessels that launch the JMSDF's aircraft, with the commissioning of the 13,950-ton Hyuga-class in 2009 and the 19,500-ton Izumo-class in 2013 to replace the Haruna and Shirane-class helicopter destroyers. While the new hardware did not fundamentally change JMSDF strategies, it nevertheless significantly enhanced the JMSDF's capacity in maritime patrol, logistics, and search and rescue.

Although the developments in strategies and capabilities were undoubtedly

³⁰ Japan Defense Agency, *Defense of Japan 2005* (Tokyo: Japan Defense Agency, 2005), https://www.mod.go.jp/e/publ/w_paper/2005.html; Japan Ministry of Defense, *National Defense Program Guidelines for FY 2011 and Beyond* (Tokyo: Japan Ministry of Defense, 2010), https://www.mod.go.jp/e/d_act/d_policy/pdf/guidelinesFY2011.pdf; Japan Ministry of Defense, *National Defense Program Guidelines for FY 2014 and Beyond* (Tokyo: Japan Ministry of Defense, 2013), https://www.mod.go.jp/j/approach/agenda/guideline/2014/pdf/20131217_e2.pdf.

important, issues remain. Over time, the JMSDF became competent in denial and control but remained limited in power projection,³¹ which consequently created new issues for Japan. Under the revised National Defense Program Guidelines, Japan expanded its strategic frontiers to proactively defend its territory while also ensuring “good order at sea” under the auspices of the “Free and Open Indo-Pacific Strategy.” Yet Japan’s new defensive zone is well within China’s anti-access/area-denial (A2/AD) coverage, meaning that the expansion of Japan’s strategic frontiers without adequate offensive capabilities would not only undermine its ability to effectively defend and deter threats but would even create new vulnerabilities.

While Japan has been saved from wars and direct attacks since 1945, it has nevertheless been exposed to assertive and provocative actions. At sea, Chinese, North Korean, and Russian government vessels have skirted and at times entered Japanese waters. In the air, there has been an exponential increase in scrambles (fighter intercepts) since 2010, peaking at 1,168 interceptions in 2016, 74 percent against Chinese aircraft and 26 percent against Russian aircraft.³² While the incursions and close encounters within the country’s proximity have not led to direct conflict, the increase in “gray-zone” situations clearly indicates that the deterrence measures to date have failed.

Despite the growing demands to deal with “gray-zone” situations, there is a severe shortage of airbases in the southwestern areas. Although the JMSDF and JASDF operate 33 airbases, including 7 in Kyushu and Okinawa, they are

³¹ Keitaro Ushirogata, *Kaiyousenryakuron (Theories of Naval Strategy)* (Tokyo: Keiso Shobo, 2019), 135.

³² Japan Ministry of Defense, *Statistics on Scrambles Through FY2016: Joint Staff Press Release* (Tokyo: Japan Ministry of Defense, 2017).

nevertheless distant from the hotspots in the East China Sea. The Naha Air Base that houses the JMSDF 5th Air Fleet Squadron and the JASDF 9th Air Wing and 603rd Squadron is still 420 km from the Senkaku Islands. Discussions on the prospects of constructing new airbases or the rotational operations at Shimojishima Airport have been proposed but incited controversies. The shortage of airbases in the southwest is already problematic during “gray-zone” situations and would present even greater problems if the facilities are damaged during contingencies.

Japan took steps to fill the gaps by giving greater attention to sea-based airpower. After the Abe administration stated its intentions to fundamentally revise the National Defense Program Guidelines in early 2018, the ruling Liberal Democratic Party pitched a proposal for “cross-domain defense” that included the operation of “multi-purpose aircraft carriers” to launch short takeoff and vertical landing aircraft for defense of remote islands and search and rescue. While the party’s proposal triggered much debate, the actual National Defense Program Guidelines and Mid-Term Defense Program announced in December 2018 simply stated that the Izumo- class would be converted to launch short takeoff and vertical landing tactical aircraft.³³ Elaborate plans began to materialize, with the 2020 budget allocating US\$290 million to retrofit the Izumo-class and US\$725 million to purchase six F-35B stealth fighters.³⁴

The enhancements in shipborne aviation capabilities indicate a shift toward

³³ Japan Ministry of Defense, *Medium Term Defense Program (FY2019-FY2023)* (Tokyo: Japan Ministry of Defense, 2018), 13, 44, https://www.mod.go.jp/j/approach/agenda/guideline/2019/pdf/chuki_seibi31-35_e.pdf.

³⁴ Japan Ministry of Defense, *Defense Programs and Budget of Japan - Overview of FY2020 Budget* (Tokyo: Japan Ministry of Defense, 2019), 8, 13, https://www.mod.go.jp/e/d_act/d_budget/pdf/200330a.pdf.

deterrence by punishment to protect and keep the adversary out of Japan's territorial, contiguous, and exclusive economic zones as well as sea lines of communication. Yet the developments in the JSDF's naval aviation capabilities have generated more questions than answers, particularly in how Japan tailors its deterrence by punishment and how naval airpower fits into its overall strategy.

A New Phase in Japan's Naval Aviation

The transition in Japan's naval airpower toward greater focus on deterrence by punishment involves major reconfigurations. Above all, considering Japan's geostrategic characteristics as well as the nature of the threats and vulnerabilities, an indigenous air-sea battle doctrine and readiness for air and maritime supremacy is vital.³⁵ In this context, the acquisition of the F-35B and the refurbishment of the Izumo-class helicopter destroyer would add new dimensions to Japan's naval airpower. However, the conversion of capabilities to actual readiness remains nascent as the new assets have been framed as multirole platforms without solid conceptual and doctrinal foundations.

The F-35B has attractive features as a stealthy, multirole platform with the ability to take off and land in areas with limited space. Yet Japan's intended applications for the aircraft remain unknown — fleet defense, fire support for amphibious operations, and air-to-air defense are all under consideration. The ambiguity stems from the fact that the F-35B will be operated as a multirole aircraft by the JASDF rather than the JMSDF. Indeed, the JASDF option was cost-effective and

³⁵ Ryo Hinata-Yamaguchi, "Japan's Defense Readiness: Prospects and Issues in Operationalizing Air and Maritime Supremacy," *Naval War College Review* 71, no. 3 (Summer 2018): 41-60,

<https://www.jstor.org/stable/26607066>.

efficient in the short-term, as it would be cheaper and quicker to make the JASDF adapt to shipborne operations rather than the JMSDF adapt to tactical fighter operations. Yet the JASDF identifies the F-35B as a next-generation multirole platform, where shipborne missions would form only a part of the many missions served by the aircraft. Hence, the F-35Bs would only operate on the Izumo-class helicopter destroyers on an on-demand basis, making their reliability for the JMSDF somewhat inconsistent.

Uncertainty abounds regarding the vessel that will host the F-35B. Converting the Izumo-class was indeed the cheapest and quickest option to enhance Japan's shipborne aviation capabilities compared to the massive costs associated with constructing and operating new purpose-built vessels and flotillas; still, the actual effectiveness is questionable. Although there were considerations about potentially launching the F-35B from the outset, the Izumo was mainly designed to enable, and was more suited for, maritime patrol. Even with refurbishment, the capacity for tactical operations may only be sufficient for self-defense and small-scale fire support. Consequently, the limited capacity creates a zero-sum balance where the vessel's original functions for anti-submarine warfare are sacrificed by limited tactical capabilities and vice versa.

The major question is what Japan should do if strategic and operational demands exceed the capacity of the converted Izumo. The foremost task would be to determine the doctrinal functions of the vessel and shipborne aviation. On the one hand, if the priority is sea control and denial, then purpose-built carriers for tactical aircraft would be the best option. The primary benefit is that the vessel would have the capacity to launch a sizeable number and variety of aircraft that are forward deployed with faster responsiveness for more effective fleet air

defense, fire support, and deep strike. On the other hand, if the focus is amphibious operations, then amphibious assault ships would be a plausible option to deploy the JGSDF's amphibious units and launch the F-35B for close-air support. The caveat is that the capacity and functions of amphibious assault ships make naval aviation more for self-defense and fire support as opposed to sea control and denial.

Alternatively, Japan could opt for a multirole vessel that converges the recent developments in capabilities for naval aviation and amphibious operations. Yet the flexibility would still inevitably create a zero-sum balance between air and amphibious capabilities, where the vessel would become a "jack of all trades but master of none." Despite the caveats, the converted Izumo could serve as a transitional platform to test and determine the JSDF's future demands and applications of shipborne aviation.

While new gadgets such as the F-35B and new vessels significantly enhance capabilities for deterrence by punishment, they are designed to augment, and not replace, the JMSDF's current capabilities. Regardless of developments, maritime patrol will remain a key mission and will be of greater importance for the JMSDF as it enhances capabilities to deal with the adversary's countermeasures. Challenges in maritime patrol remain real, particularly with developments in nuclear attack and ballistic missile submarines by China, North Korea, and Russia. There will be greater interest in next-generation capabilities to qualitatively and quantitatively enhance capabilities for maritime patrol.

Considerations must also be made for long-term future technological developments. In particular, unmanned aircraft systems present numerous

advantages in circumventing the physiological and technical constraints of manned systems. Looking ahead, the developments in and application of artificial intelligence (AI) will significantly boost the utility of unmanned aircraft. Shipborne, unmanned aircraft would be of great interest to Japan not only for maritime patrol but potentially for fire support, refueling and strikes.

Defense-Planning Dilemmas

Japan's naval airpower is currently at a turning point. While further developments are needed to sharpen Japan's readiness in naval aviation, Tokyo's defense planning remains severely constrained by politics, bureaucracy, and resources.

The political constraints stem from Article 9 of the constitution and periodic controversies over defense-related issues. Indeed, the political barriers are less formidable today than in the past, with the challenging security environment lending credence to the need to enhance Japan's defense measures. Still, political and legal factors will continue to shape the boundaries of Japan's offensive strategies and capabilities. Although the Japanese government could creatively justify offensive capabilities for defensive purposes, anything strategically offensive, such as strategic strikes, would be viewed as going beyond the boundaries of "self-defense" and the "use of force to the minimum extent necessary."³⁶

There are budgetary constraints blocking significant advancements in the

³⁶ Japan Ministry of Defense, *Defense of Japan 2020* (Tokyo: Japan Ministry of Defense, 2020), 200–201,

https://www.mod.go.jp/e/publ/w_paper/wp2020/pdf/index.html.

JMSDF's naval airpower. Naval aviation capabilities are capital-intensive. Japan already faces major budgetary challenges, and the difficulties will only increase if Tokyo opts to build aircraft carriers or amphibious assault ships, given the investment and operations and maintenance costs for the vessels, the aircraft, and the combat and replenishment vessels needed to form the escort group. Budgetary problems are compounded by the expensive nature of Japan's indigenous defense procurement system. Although one could argue for off-the-shelf purchases from abroad, such purchases would provoke severe pushback from the domestic defense industry. Alternatively, Japan could construct a vessel through a joint development program with a carrier power, yet there are issues both in technological sovereignty and planning.

Whether Japan can afford the costs requires context. If the question is whether the Ministry of Defense can afford purpose-built vessels for naval aviation within the current budgetary framework with the self-imposed 1 percent of the nation's GDP cap, the answer is no — unless major tradeoffs are made with other capabilities and priorities of the JSDF. However, if the question is whether Japan has the fiscal capacity, then the answer is yes. The defense budget could be increased beyond the cap on an incremental demand basis, as long as the project is deemed necessary.

The other major resource constraint concerns human resources. Of the 250,000 men and women serving in the JSDF, 150,000 are in the JGSDF while only 46,000 are in the JASDF and JMSDF. Major acquisitions and expansions in new capabilities for air and naval supremacy would inevitably require a significant number of personnel to operate and maintain the new platforms. Although efforts are being made to boost the JMSDF personnel size, the issues in recruitment and

retention will constrain significant improvements in readiness.

Considering the constraints, expanding Japan's naval airpower would create major defense-planning dilemmas. When facing an array of "gray-zone" situations, defense planners need to consider a diverse collection of factors, which could lead to vague proposals. Thus, discussions for the expansion of the JMSDF's naval airpower must focus on cost-effectiveness and stay clear of hardware-centric fantasies focused on prestige that would only undermine the JSDF's defense planning and readiness.

One vital question is whether shipborne aviation capabilities actually deliver the right effects. While the strengths of shipborne aviation rest in its constant coverage, speed, and flexibility, both the aircraft and vessels are more exposed to the opponent's A2/AD, facing threats ranging from antiair and anti-ship systems to electromagnetic capabilities. Against this backdrop, it is important to examine how the costs and benefits of enhancing shipborne aviation capabilities weigh up against alternatives.³⁷ If Japan is justifying the acquisition of aircraft carriers simply to enhance its capabilities for A2/AD, then it may be more plausible to enhance shore-based anti-air and anti-ship missiles, tactical air-to-air fighters and aerial refueling aircraft, attack submarines, and sea mines. Even for strikes, many may vouch for land-attack cruise missiles against adversarial units and installations. If such alternatives prove to be more cost-effective, then the worthiness of shipborne aviation capabilities would ebb.

³⁷ For example, Till argues that, "[The] costs of performing functions have to be compared either with the cost of not performing the function or with that of other ways of doing so." See, Geoffrey Till, *Seapower: A Guide for the Twenty-First Century* (New York, NY: Routledge, 2013), 127.

Despite the defense-planning dilemmas, shipborne aviation capabilities will be vital to sharpen Japan's defense and deterrence strategies. Given the expanding naval agendas that focus on defense of territorial, contiguous, and exclusive economic zones and sea lines of communication, Japan's shipborne aviation capabilities should focus on sea control and denial. Although amphibious assault ships are certainly appealing, such vessels are more suited for expeditionary forces that are strategically offensive and may not be necessary for Japan, whose amphibious missions are strategically defensive to guard its own remote islands. Hence purpose-built carriers for naval aviation are more suitable for Japan, allowing it to launch the F-35B for fleet defense and fire support as well as rotary-winged aircraft for maritime patrol and minesweeping. Combined with ground-based aircraft such as the P-3C and P-1, Japan can take on a more immediate, multidimensional form of naval airpower for sea control and denial.

Japan's enhancement of naval airpower would invite negative reactions from its East Asian neighbors even if Tokyo's intentions are strategically defensive. China, North Korea, and Russia would view any enhancements in the JSDF's naval airpower as a threat for their potentially offensive applications and the unfavorable changes to the military balance. While new developments in Japan's naval airpower may trigger new security dilemmas, the consequences of not enhancing Japan's naval airpower would be much worse. Given the threats Japan already faces, smart measures would fill vulnerabilities and improve Japan's ability to deter and defend against threats.

Steps Toward Readiness

Systemizing Japan's naval airpower requires elaborate steps to convert

capabilities into readiness. The process is far from straightforward as it demands various bold measures to ensure that the assets can effectively execute their missions.

First, it is critical to develop elaborate doctrines that effectively use and also protect capabilities. Devising doctrines is challenging, particularly with shipborne aviation capabilities that are often the first to the scene in various contingencies. The caveat is that in the Indo-Pacific context, A2/AD has been formulated in a number of states of various shapes and sizes that require full mission readiness to deliver combat effect deep into A2/AD zones with significant levels of flexibility. Moreover, there are challenges in formulating doctrines given the political, legal, and resource constraints that compel the JSDF to exercise its naval airpower under specific conditions. Thus, Japan's naval airpower is much more suited to be tactically offensive but strategically defensive, centering on speed and precision to respond to threats rather than strategic strikes.

Second, developing an effective and efficient readiness kill chain is dependent on how the JSDF's capabilities are coordinated and integrated — particularly as Japan moves to establish “multidomain defense” including ground, maritime, air, space, cyberspace, and electromagnetic spectrum. Japan's naval aviation is part of the network of capabilities for air and sea supremacy, making it essential to coordinate with the other assets of the JSDF to not only effectively carry out missions but also be guarded against threats. Here, the vital piece would be command, control, communications, computers, intelligence, surveillance, target acquisition, and reconnaissance including the cooperative engagement capability system to facilitate more effective and efficient multidomain means of dealing with threats.

Third, there needs to be a discussion regarding whether to conduct shipborne aviation operations as a joint JASDF-JMSDF effort or to place it under the full command of the JMSDF. While a JASDF-JMSDF combination is more resource-efficient and exploits the expertise of the JASDF, it could follow the misfortunes of the United Kingdom's Joint Force Harrier formation, disbanded in 2011. If the demand to deal with threats in the naval domain increases, it would be more apt to task the JMSDF. Doing so will also allow both the JMSDF and JASDF to sharpen and refine readiness in their respective domains that would be more effective and efficient in gaining and sustaining air and naval supremacy. Still, the transition to task the JMSDF with fighters for naval applications may raise questions regarding the impact on the other naval operations as well as require major reconfigurations in both the Air Training Command and the Fleet Air Force.

Fourth, modernization and expansion of readiness would increase operational tempo and consumption of supplies, consequently upping the demands for maintenance, repairs, and overhaul. Naval aviation is arguably one of the most resource-intensive capability sets due to its missions and the effects from the maritime environment. Hence, the expansion of Japan's naval airpower would first require significant enhancement in maintenance, repairs, and overhaul capacity at key airbases.

Fifth, it is vital to consider how enhancements in Japan's naval airpower fit into Japan's security cooperation. Above all, Japan will need to work with the United States to formulate new strategies and improve interoperability to enhance effectiveness. Moreover, developments are also needed in multilateral partnerships with likeminded states such as Australia, Canada, India, the

Republic of Korea, the United Kingdom, select states in the Association of Southeast Asian Nations (ASEAN), and potentially Taiwan to deal with the array of security risks in the Indo-Pacific and beyond. Yet multilateral cooperation is far from easy. Despite Japan's more proactive and diverse efforts in regional security and strengthening defense ties, Tokyo's pursuit of more offensive capabilities and postures could cause hesitation among states who prefer to take a more neutral, hedging approach to China. Thus, Japan would need to ensure the right combination of defense and diplomacy that balances both its national security agendas and provision of assurances by working closely with likeminded states in the region.

Conclusion

While remaining on the strategic defensive, Japan has significantly expanded its frontiers and diversified the JSDF's missions in the post-Cold War era. Still, insufficiencies in offensive capabilities weaken Japan's ability to effectively execute deterrence by punishment and have created further vulnerabilities for the JSDF. To effectively defend Japan's territory and sea lines of communication and guard the other vital assets of JSDF, the JMSDF's and JASDF's readiness for air and sea supremacy is critical. A central piece to fill the gaps would be a multidimensional form of naval airpower that combines the current capabilities of the JMSDF Fleet Air Force and shipborne aerial combatants. Greater naval aviation capabilities together with surface combatants and submarines would significantly enhance the JMSDF's readiness for sea control and denial. Nevertheless, Japanese defense planners would need to ensure optimal readiness in the most cost-effective manner.

Ryo Hinata-Yamaguchi (Twitter: [@tigerrhy](https://twitter.com/tigerrhy)) is visiting professor at the Pusan National University, College of Economics and International Trade, Department of Global Studies, and an adjunct fellow at the Pacific Forum.



3. Arming Without Aiming?

Challenges for Japan's Amphibious Capability

Benjamin Schreer

A centerpiece in Japan's defense modernization efforts designed to deter a resurgent China is the development of an amphibious warfare capability. The Japanese Self-Defense Force (JSDF) is building up an Amphibious Rapid Deployment Brigade (ARDB). Its primary mission is to "conduct full-fledged amphibious operations for swift landing, recapturing, and securing in the case of illegal occupation of remote islands."³⁸ This is a direct reference to China's growing power projection and assertiveness around Japan's southwestern Nansei Islands. Deterring China has evolved into a key task for the JSDF and amphibious forces are considered to play an essential role in this strategy.³⁹ This focus is hardly surprising since Japan is a "frontline" state within the "first island chain" straddling the Western Pacific, and it lies directly within the People's Liberation Army's (PLA) inner threat ring of precision strike and other systems.

Japan's rationale for investing significant resources in an amphibious warfighting capability seems obvious. China poses a major strategic and military challenge to Japan. While the PLA does not yet have the capacity to invade the four main Japanese islands, the occupation of "islands at the southwestern end of the

³⁸ "Remarks by State Minister of Defense Yamamoto at the Activation Ceremony of the ARDB," *Japan Ministry of Defense*, April 7, 2018.

³⁹ Japan Ministry of Defense, "National Defense Program Guidelines for FY2019 and Beyond," Dec. 18, 2018, https://www.mod.go.jp/j/approach/agenda/guideline/2019/pdf/20181218_e.pdf.

archipelago is becoming a realistic possibility.”⁴⁰ Moreover, Japanese ARDB advocates stress the opportunity for enhanced U.S.-Japanese amphibious cooperation.⁴¹ Some U.S. experts also welcome the emergence of a “Marine-like” JSDF capability as a means for Japan to become a more useful ally for the United States by alleviating critical U.S. amphibious shipping shortfalls and by contributing to an “amphibious architecture” to counter China’s “grey-zone” activities across the Western Pacific.⁴²

However, this paper argues that Japan’s amphibious capability faces major strategic and operational challenges. The central question is which strategic-operational objectives the ARDB is supposed to serve and whether those goals are achievable in a rapidly changing operating environment for amphibious forces. Posing this question delivers a less convincing picture of the strategic utility of the ARDB in its present focus and configuration.

While Japan’s ARDB can certainly play a useful role in humanitarian assistance/disaster relief and noncombatant evacuation operations, there has been little rethinking inside the JSDF about the implications of a rapidly shifting operating environment for amphibious forces in high-end scenarios. Indeed, the continued utility of amphibious forces in highly contested environments is not a

⁴⁰ Eric Heginbotham and Richard J. Samuels, “Active Denial: Redesigning Japan’s Response to China’s Military Challenge,” *International Security* 42, no. 4 (Spring 2018): 145, https://doi.org/10.1162/isec_a_00313.

⁴¹ Koichiro Bansho, “Japan’s New Defense Strategy in the Southwest Islands and Development of Amphibious Operations Capability,” *U.S.-Japan Alliance Conference: Meeting the Challenges of Amphibious Operations* (Santa Monica: RAND, 2018), 15, https://www.rand.org/content/dam/rand/pubs/conf_proceedings/CF300/CF387/RAND_CF387.pdf.

⁴² Grant Newsham, “Rethinking ‘Amphibiosity’ in the Asia-Pacific,” *U.S. Naval Institute Proceedings* 141 (Nov. 2015): 32–37, <https://www.usni.org/magazines/proceedings/2015/november/amphibiosity-asia-pacific>.

given.

The ARDB's current narrow strategic focus on amphibious warfighting operations to "retake islands" neglects China's increased ability to target high-signature military targets such as big amphibious ships and support elements. In addition, Japan's amphibious capability remains nested in a risky, potentially outdated defense strategy for deterring China's growing military power. Moreover, operationally the ARDB is too small and vulnerable in high-end scenarios involving China. There remain unresolved JSDF issues regarding jointness and sustainability for such highly complex operations.

If these issues remain unaddressed, Japanese strategic decision-makers run a serious risk of the amphibious force becoming strategically obsolete in the event of a shooting war with China. Japanese defense planners should consider working toward an "ARDB 2.0" that has a lesser focus on "retaking islands" and applies a more flexible approach and structure as part of a maritime denial strategy. Rather than simply assuming that amphibious forces are the optimal solution for defending Japan's many islands, the JSDF should rigorously wargame those assumptions and consider alternative options. After all, developing amphibious capability is neither institutionally nor financially cheap, and those investments might be better made elsewhere.

Moreover, Japanese defense policymakers need to carefully consider the alliance dimension of the amphibious capability. While the ARDB might see a rationale for aligning itself closely with the U.S. Marine Corps (USMC) for reasons of interoperability and defense budget allocations, mimicking the USMC in operational planning and structure has limitations given Japan's specific focus on

“island defense.” Japan and the United States should cooperate closely on adjusting their respective amphibious forces for operations in contested environments through trade of comparative advantages that would serve both Japan’s future ARDB as well as potential joint amphibious operations.

What’s It For? Considering the Strategic Utility of Japan’s Amphibious Force

It seems odd to question Japan’s amphibious force development. After all, Japan is an archipelagic island nation and has many islands to defend. Moreover, the Indo-Pacific is in the midst of an “amphibious renaissance” with many other nations including China, South Korea, Australia, India, and several Southeast Asian countries investing in amphibious capabilities.⁴³ Advocates point to the diverse operational spectrum for amphibious forces in what is primarily a maritime theatre, ranging from humanitarian assistance/disaster relief to noncombatant evacuation operations, countering “grey-zone” activities, and high-intensity warfighting.⁴⁴ Still, it is critical to examine Japan’s specific strategic context and question the strategic rationale for investing significant financial and personal resources in a highly complex military capability.

Undoubtedly, some amphibious capability makes sense for Japan, particularly given the country’s vulnerability to natural disasters such as the Great Tohoku Earthquake of March 2011. But optimizing amphibious forces for high-intensity

⁴³ “The Future of Amphibious Operations,” *IISS Strategic Comment* 26, no. 2 (Feb. 2020),

<https://doi.org/10.1080/13567888.2020.1727696>.

⁴⁴ Albert Palazzo, *Pre-Landing Operations: Getting Old Tasks Done in an Age of Transparency: Australian Army Occasional Paper, Operational Development* 001 (Canberra: Australian Army Research Centre, 2019).

operations, including major financial investments in large amphibious ships and the specialized soldiers required to operate them, is a different equation given the considerable strategic and economic trade-offs. In Australia's case, for instance, critics have questioned the rationale for the Australian Defense Force's current ambitions for amphibious warfare in tandem with its the U.S. ally in the absence of realistic operational scenarios. Australia's amphibious force is very small and might be better off conducting humanitarian assistance/disaster relief and noncombatant evacuation operations with smaller, much less expensive platforms.⁴⁵ While Japan's strategic environment is different given its geostrategic proximity to China, similar questions can be raised. In fact, precisely because the need to directly deter (and potentially fight) Chinese forces is much higher for the JSDF, the strategic rationale for building amphibious forces for that purpose deserves greater scrutiny.

The starting points for assessing Japan's current amphibious warfare plans and structure are assumptions about the future utility of amphibious operations in highly contested environments. In Japan's case, this means considering the impact of China's increasingly sophisticated and expanding anti-access/area-denial (A2/AD) capabilities, which pose serious strategic and operational challenges to Japanese and forward-deployed U.S. forces. This is not to argue that Japan and its American ally have no means of countering China's A2/AD posture. Quite the contrary: Opportunities exist to "turn the tables" against the PLA and develop allied A2/AD structures that negate PLA advantages of geography and

⁴⁵ Andrew Davies, "Amphibious Operations: More Than Meets the Eye," *The Strategist*, May 28, 2013,

<https://www.aspistrategist.org.au/amphibious-operations-more-than-meets-the-eye/>.

precision missile strikes.⁴⁶ Amphibious forces will have a role in such a posture. But as the new USMC Planning Guidance by Commandant Gen. David Berger makes clear, the USMC risks losing relevance in U.S. strategy unless it rethinks and reshapes its role and structure to reflect the changing operating environment of the Pacific region.⁴⁷

Japan's defense planners also need to reassess the strategic utility of amphibious forces. To be sure, the ARDB does not share the USMC's broad mission spectrum within the context of U.S. expeditionary naval warfare. Japanese experts are at pains to emphasize that the emerging amphibious force is "not expeditionary" and that its purpose is only "to strengthen the ability of the JSDF to deter Japan's adversaries, and, if necessary, defend and secure Japan's islands."⁴⁸ Major General Takanori Hirata, the current commander of the ARDB, stated that "island defense" was "more and more key" to Japan's strategic planning and the role of

⁴⁶ See for example, Andrew F. Krepinevich, Jr., "How to Deter China: The Case for Archipelagic Defense," *Foreign Affairs* 94 (2015), <https://www.foreignaffairs.com/articles/china/2015-02-16/how-deter-china>; James Holmes, "Time to Use China's A2/AD Military Strategy Against Them," *National Interest*, Jan. 20, 2019, <https://nationalinterest.org/blog/buzz/time-use-chinas-a2ad-military-strategy-against-them-42012>; Stephen Biddle and Ivan Oelrich, "Future Warfare in the Western Pacific: Chinese Antiaccess/Area Denial, U.S. AirSea Battle, and Commands of the Commons in East Asia," *International Security* 41, no. 1 (Summer 2016): 7-48, https://www.mitpressjournals.org/doi/pdf/10.1162/ISEC_a_00249.

⁴⁷ U.S. Marine Corps, *Commandant's Planning Guidance, 38th Commandant of the Marine Corps* (Washington, DC: U.S. Marine Corps, 2019), https://www.hqmc.marines.mil/Portals/142/Docs/%2038th%20Commandant%27s%20Planning%20Guidance_2019.pdf?ver=2019-07-16-200152-700.

⁴⁸ Bansho, "Japan's New Defense Strategy," 13.

the amphibious force.⁴⁹

However, this focus on “island retaking” could exacerbate existing problems, particularly if Japan’s amphibious force remains centered around relatively large signature ships operating within the PLA’s inner “threat ring” of precision strike systems — an area which includes the Nansei Islands. The PLA’s investment in submarines, anti-ship cruise and ballistic missiles, tactical combat aircraft, and maritime domain awareness will enable it to detect and target formations of Japanese (and U.S.) ships operating around the island chain. In contested A2/AD environments, opposed beach landings using amphibious assault could become too risky and even untenable.⁵⁰

This new operating environment for amphibious forces operating in close vicinity to China has strategic ramifications for Japan. Chief among those is the very ability of the ARDB to achieve the desired strategic effect: deterring and defending the many islands in the Nansei Island chain against PLA aggression. Critically, the ARDB is nested within a defense strategy that appears in need of adjustment. In the early 2000s, Japanese defense planners identified the defense of remote islands as the amphibious force’s main mission.⁵¹ As analysts have pointed out,

⁴⁹ Quoted in Gidget Fuentes, “Iron Fist Teaching Japanese Amphib Forces to Synch with U.S. Marines,” *USNI News*, Feb. 19, 2020, <https://news.usni.org/2020/02/19/iron-fist-teaching-japanese-amphib-force-to-synch-with-u-s-marines>.

⁵⁰ USMC, *Commandant’s Planning Guidance*; Bradley Martin, “Amphibious Operations in Contested Environments: Insights from Analytical Work,” testimony prepared before the House of Armed Services Committee, Subcommittee on Seapower and Projection Forces, May 18, 2017, <https://docs.house.gov/meetings/AS/AS28/20170518/105981/HHRG-115-AS28-Wstate-MartinB-20170518.pdf>.

⁵¹ Koichi Isobe, “An Insider’s View of the History, Evolution, and Prospects of Japan’s Amphibious Rapid Deployment Brigade,” *U.S.-Japan Alliance Conference: Meeting the Challenges of Amphibious Operations*

the JSDF remains postured for a “forward defense” strategy, centered on the objective to defeat PLA forces “quickly and thoroughly before they can gain entry into the country — or, failing that, shortly thereafter.”⁵² In this forward-oriented defense posture, the ARDB would spearhead an “early counterattack to retake islands occupied in a potential Chinese fait accompli.”⁵³

However, this strategy is predicated on the JSDF’s capacity to deploy and sustain forces superior to the PLA — an increasingly problematic assumption given China’s growing ability to project significant power in these areas at the start of a major conflict. As Eric Heginbotham and Richard Samuels point out, while in a conflict with the PLA, the JSDF would “ultimately have to retake lost ground[;] a premature Japanese counterattack against Chinese forces on the Senkaku Islands — or on small islands at the southwestern end of the Ryukyu chain — would court military disaster.”⁵⁴ Such operations would be a major military undertaking requiring key naval, air, and amphibious assets to operate jointly across stretched supply lines and within the highest A2/AD threat rings presented by PLA weapons systems. Opposed landings by the ARDB would require not just the “finely orchestrated application of force, but also protracted maintenance of air and sea control in the immediate vicinity — turning mobile assets into fixed or semi-fixed targets for the adversary’s submarines, aircraft, and ground-launched missiles.”⁵⁵

(Santa Monica: RAND, 2018), 17-18,

https://www.rand.org/content/dam/rand/pubs/conf_proceedings/CF300/CF387/RAND_CF387.pdf.

⁵² Heginbotham and Samuels, “Active Denial,” 138.

⁵³ Heginbotham and Samuels, “Active Denial,” 156.

⁵⁴ Heginbotham and Samuels, “Active Denial,” 156.

⁵⁵ Heginbotham and Samuels, “Active Denial,” 157.

Developing this level of JSDF operational art would require a significant investment of time and money. Currently, the ARDB faces significant capability shortfalls to realize its operational objectives to “retake” islands in the Nansei Island chain. Its amphibious capability is centered around only a few large and vulnerable principal amphibious ships: Only three Osumi-class amphibious landing ships and six landing craft air cushion vehicles are dedicated amphibious ships. While they could be supported by two Hyuga-class and two Izumo-class helicopter destroyers, those vessels were not specifically designed for amphibious operations.⁵⁶ To be sure, the planned conversion of the Izumo-class helicopter destroyer into small aircraft carriers to operate a number of short takeoff and vertical landing F-35B Joint Strike Fighters could theoretically enhance the JSDF’s capability to provide greater air mobility and close air support for its landing force — although the conversion would be very costly and reduce the vessel’s utility for other critical missions such as anti-submarine operations.⁵⁷ Similarly, the acquisition of Osprey tilt-rotor aircraft could facilitate the ship-to-objective movement of amphibious troops onto those islands. Japan has announced it will extend the range of its land-based anti-ship missiles and deploy those systems on its key islands across the chain.⁵⁸

Still, the JSDF’s amphibious posture would remain focused on a few large,

⁵⁶ Jeffrey W. Hornung, “Japan’s Amphibious Joint Plan”, *U.S.-Japan Alliance Conference: Meeting the Challenges of Amphibious Operations* (Santa Monica: RAND, 2018),

https://www.rand.org/content/dam/rand/pubs/conf_proceedings/CF300/CF387/RAND_CF387.pdf.

⁵⁷ On the financial and operational challenges of modifying a DDH/LHD for STOVL-operations, see the Australian case discussed in Richard Brabin-Smith and Benjamin Schreer, “Jump Jets for the ADF?” *ASPI Insights* 78 (November 2014), <https://www.jstor.org/stable/resrepo4068>.

⁵⁸ Shinichi Fujiwara, “Japan Deploying Longer-Range Missiles to Counter China,” *Asahi Shimbun*, April 30, 2019, <http://www.asahi.com/ajw/articles/AJ201904300006.html>.

signature platforms. The JSDF would struggle to muster the levels of jointness required to conduct complex amphibious operations in highly contested environments. One shortcoming is the lack of effective mechanisms to enable true jointness and command and control between the different arms of the Japanese military. It is far from clear, for instance, that the Japan Maritime Self-Defense Force (JMSDF) and Air Self-Defense Force (ASDF) would be comfortable allowing the Ground Self-Defense Force (GSDF) to command their units in a supporting role. In fact, no joint doctrine for such operations exists at present, and there is looming suspicion among senior JMSDF officers that the ARDB is predominantly the result of GSDF lobbying rather than an operational necessity.⁵⁹

True or not, interservice mistrust over the true purpose of the amphibious capability will be hard to overcome. It will also make addressing the challenge of coordinating joint fires, specifically close air support for a future landing operation, difficult. The ASDF's mission has remained concentrated on air defense tasks and has not been conceptually integrated into GSDF and JMSDF thinking and planning for amphibious operations.⁶⁰ Significant trust issues between the GSDF and the ASDF in regard to close air support would need to be resolved, and some Japanese defense experts believe F-35B jump jets should be assigned to the JMSDF rather than the ASDF to minimize this problem.⁶¹ A heavily scripted exercise culture within the JSDF is also not conducive in this

⁵⁹ Observation by a senior JSDF officer, speaking on condition of anonymity, Tokyo, December 2019.

⁶⁰ Jeffrey W. Hornung, "Japan's Amphibious Joint Plan," *U.S.-Japan Alliance Conference: Meeting the Challenges of Amphibious Operations* (Santa Monica: RAND, 2018), 38-39, https://www.rand.org/content/dam/rand/pubs/conf_proceedings/CF300/CF387/RAND_CF387.pdf.

⁶¹ Interview with Japanese defense analyst, Tokyo, July 2019.

context, nor is the lack of large-scale joint exercises for amphibious operations.⁶²

Finally, a RAND study identified significant equipment shortfalls in Japan's nascent amphibious force for "island retaking" missions. For instance, both the Hyuga and Izumo helicopter destroyers are limited in numbers and lack floodable well decks to operate amphibious assault vehicles and landing craft air cushion vehicles. The three Osumi landing ships also have limited utility as main ship-to-shore connectors in high-intensity environments given their lack of storage, fitting only two landing craft air cushion vehicles, and because they are not optimized for the JSDF's amphibious assault vehicles. The deeply entrenched individual culture of the three services has contributed to a limited willingness to invest in smaller and faster ships designed for rapid deployment of ground forces. For instance, the JMSDF remains wedded to its traditional focus of assisting the U.S. Navy and a desire to invest in major surface combatants and submarines.⁶³ As a result, in its current configuration, the JSDF seems ill-prepared to conduct complex amphibious operations in defense of its many islands.

Toward "ARDB 2.0"?

Tokyo needs to plan for greater defense self-sufficiency, not least since the Trump administration's policies have left all of America's Pacific allies wondering just how steadfast U.S. defense commitments really are in the age of "America first." Incrementally, the JSDF is taking steps for operating in a very different future environment, although Japan's political strategy remains centered around the expectation that the U.S.-Japanese alliance will remain the cornerstone of the

⁶² Hornung, "Japan's Amphibious Joint Plan," 32-34.

⁶³ Hornung, "Japan's Amphibious Joint Plan," 41-42.

country's defense.⁶⁴ But the experience with the Trump administration has left the Japanese government more concerned than ever about the future of this alliance.⁶⁵

In this context, the development of the amphibious capability is being presented by parts of the JSDF, strategic policymakers, and the expert community as a stepping stone to enabling greater independent defense capability and enhanced opportunity for U.S.-Japanese (and possibly Australian) amphibious cooperation. However, it is doubtful whether the ARDB and its supporting elements are “fit for purpose” given a changing operating environment for amphibious forces. The ARDB's focus on “island retaking” disregards China's ability to pose a major and increasing threat to large amphibious formations and supporting elements. Indeed, it is remarkable how little debate there is in the Japanese strategic community about the future utility of the ARDB in a high-risk environment.

To avoid the associated risks of strategic obsolescence, Japan should rethink the future of “amphibiosity” in its evolving defense strategy. Unless Japanese defense planners can demonstrate through sophisticated, unscripted joint exercises and simulations how the ARDB and JSDF could realistically achieve the desired strategic-operational objectives under conditions of advanced PLA A2/AD threats — and without the support of U.S. forces — Tokyo should consider launching “ARDB 2.0.” This approach would start from the premise that amphibious forces

⁶⁴ Sheila A. Smith, *Japan Rearmed: The Politics of Military Power* (Cambridge, MA: Harvard University Press, 2019).

⁶⁵ Hiroyuki Akita, “Fear of Crumbling US-Japan Pact Drove Abe's Defense Expansion,” *Nikkei Asian Review*, Sept. 6, 2020, <https://asia.nikkei.com/Spotlight/Comment/Fear-of-crumbling-US-Japan-pact-drove-Abe-s-defense-expansion>.

can indeed play a role in the defense of Japan but that in order to do so a less static focus on “island retaking” centered around a few large, signature platforms is needed. Amphibious force employment should be conceived as part of an “active denial” defense strategy that emphasizes a buildup of a more resilient Japanese capability to frustrate PLA power projection in a prolonged campaign rather than seeking its early, swift defeat in the inner A2/AD threat ring.⁶⁶

Instead of wargaming how to “storm the beach,” the JMSDF should focus on how to utilize the amphibious force as part of a strategy to exploit PLA weaknesses. Not only could the JSDF (in combination with U.S. forces) pose formidable maritime and air denial threats to advancing PLA forces, PLA forces would also find it very difficult to sustain their presence on even smaller occupied Japanese islands in the Nansei Island chain. Japan’s amphibious force might be better placed to operate as part of a fully integrated naval strategy, designed to pose multiple maritime A2/AD threats to the PLA across its island chain. Such a focus might also mean the ARDB becomes an arm of the JMSDF, rather than the JGSDF, to reduce friction and grow jointness organically. The ARDB would also need to reduce its reliance on large, vulnerable ships and instead experiment with more and smaller platforms (including commercial ships). Just like the USMC, Japanese amphibious forces need to become more resilient, flexible, and dispersed in order to deny the PLA maritime operating space. This would include a greater focus on smaller, more expendable, and less expensive platforms, as well as the introduction of new innovative technologies.⁶⁷

⁶⁶ On such an alternative defense strategy for Japan, see, Heginbotham and Samuels, “Active Denial.”

⁶⁷ On the requirements for amphibious forces operating in highly contested environments, see, Mike Pietrucha, “Avoiding the Charge of the Light Brigade Against China,” *War On the Rocks*, June 15, 2016, <https://warontherocks.com/2016/06/avoiding-the-charge-of-the-light-brigade-against-china/>; Gary Lehmann,

Conceptually, rather than seeking to mimic the USMC on a smaller scale, Japan's amphibious forces should conceive of themselves as elite amphibious commando units or "marine raiders." They would then be charged with alternative amphibious missions in a broadened concept of "island defense." For instance, operating in faster and smaller vessels, they could be used to deploy highly mobile anti-ship or anti-air weapons systems on island features and floating platforms, including commercial vessels, to present additional challenges for the PLA as part of an overall JSDF maritime denial campaign. Moreover, as a specialized amphibious light infantry, an "ARDB 2.0" could be employed in a strategy to isolate and erode PLA forces after they have landed on Japanese islands. Such forces would be more akin to special operations forces instead of the current figuration as a medium-weight amphibious force.

Crucially, the JSDF could utilize its close ties with the United States (and the USMC in particular) to rethink and reconfigure its amphibious force for operations in contested environments. As mentioned before, the USMC is going through a process of fundamental review of its modes of operations in the face of China's challenge.⁶⁸ And there is an expectation that U.S. and Japanese Marines would fight in separate battle spaces but in synchronized fashion.⁶⁹ Arguably, a lighter but more versatile JSDF amphibious force could provide a comparative

"Fight Inside an Adversary's Weapons Engagement Zone," *U.S. Naval Institute Proceedings* 145 (April 2019), <https://www.usni.org/magazines/proceedings/2019/april/fight-inside-adversarys-weapons-engagement-zone>.

⁶⁸ See also, David Barno and Nora Bensahel, "A Striking New Vision for the Marines, and a Wake-up Call for the Other Services," *War on the Rocks*, Oct. 1, 2019, <https://warontherocks.com/2019/10/a-striking-new-vision-for-the-marines-and-a-wakeup-call-for-the-other-services/>.

⁶⁹ Fuentes, "Iron Fist Teaching Japanese Amphib Forces to Synch with U.S. Marines."

advantage for alliance operations. It could also be more effective in a stand-alone Japanese defense strategy against the PLA.

As with Gen. Berger's directive, it is far from certain whether the JSDF will muster the cultural shift required to fundamentally rethink and adjust its amphibious capability. Indeed, because of the substantial lack of JSDF joint capability development and the influential role of the GSDF in defense capability decisions, there is a high probability that the ARDB will not change much in terms of conceptual focus and configuration. While a "sunk cost" approach to Japan's amphibious capability would be neither surprising nor unprecedented,⁷⁰ the ARDB would risk obsolescence in contingencies involving the defense of the Nansei Island chain against serious threats posed by the PLA.

Benjamin Schreer is professor and head of the Department of Security Studies and Criminology at Macquarie University, Sydney, Australia.



⁷⁰ On the "sunk cost" problem in defense capability development see for instance, Andrew Davies, "Don't Look Back: The Fallacy of Sunk Costs," *The Strategist*, Nov. 14, 2013, <https://www.aspistrategist.org.au/dont-look-back-the-fallacy-of-sunk-costs/>.

4. The Modality of Japan's Long-Range Strike Options

Masashi Murano

A gradual and persistent challenge to security in the Indo-Pacific region is looming. The U.S.-Japanese alliance and its partners in the Indo-Pacific region are facing serious long-term strategic challenges as potential adversaries improve their capabilities in quantity and quality.

Of particular concern is the growing "strike gap" in the region.⁷¹ This is partly due to Japan's restrictive defense policy, which has restrained the possession of long-range strike capabilities. In recent years, the balance between strike and defense has become increasingly advantageous for Japan's adversaries. If this situation continues, Japan, as the status quo power, will find it difficult to deter China and North Korea, the primary challengers to regional order.

This article will discuss the need for Japan to possess medium-range ballistic missiles and cruise missiles for deterrence by denial, taking into account various factors such as strategic and tactical objectives, the order of priority of the weapon system, and cooperation with the United States.

Japan's Current Force Posture and Domestic Constraints

The "exclusively defense-oriented policy" or *senshu-boēi* (専守防衛) is the basis

⁷¹ During the Cold War, the "missile gap" was regarded as a problem. Since China's A2/AD platform has diversified beyond missiles to include bombers and naval vessels, it would be more appropriate to call it "strike gap." Sugio Takahashi and Eric Sayers, "America and Japan in A Post-INF World," *War on the Rocks*, March 8, 2019. <https://warontherocks.com/2019/03/america-and-japan-in-a-post-inf-world/>.

of Japan's defense strategy. It is not unusual for military authorities to adopt a defensive stance as a declaratory policy. However, one characteristic of Japan's defense policy is that it has imposed self-regulation not only on the declaratory policy but also on the force posture of the Japan Self-Defense Forces (JSDF).

The design of the JSDF significantly limits Japan's power projection capability. For example, the Air Self-Defense Force (JASDF) F-2 can be equipped with guided munitions. However, it does not have escort jammers such as the EA-18G required for deep-airstrike campaigns. Additionally, the number of aerial refueling tankers is limited. Similarly, the Ground Self-Defense Force (JGSDF) does not have land-based long-range missiles. Its longest-range land-based missile, the Type 12 surface-to-ship missile, has a range of only about 150 to 200 kilometers, leaving it notably outmatched against adversaries like the People's Liberation Army (PLA) Rocket Force.

The reasons why the JSDF has not had long-range strike capabilities is sometimes explained by referring to Japan's pacifist constitution. Indeed, it is true that the constitution has restrained politicians from discussing drastic changes in defense strategies. But it is not appropriate to link them directly. In February 1956, Director-General of the Defense Agency Naka Funada testified on behalf of Prime Minister Ichiro Hatoyama at the National Diet, stating that:

It is hard to believe that the Constitution stipulates that a country should sit and wait for death if imminent and unlawful acts of aggression are committed against our country and missiles are launched against the country as a means of such aggression. In such a case, the government could take the minimum measures necessary

to prevent from adversary's missile attack — for example, striking missile bases only when there is no other appropriate means to defend the attack, such as a missile, is legally included in self-defense and is possible.⁷²

This sentiment was echoed in a testimony given by director generals of the defense agency in 1959 and in 1999.⁷³ It is possible for Japan to conduct offensive operations within certain parameters even under the current constitution.

However, given that the JSDF does not have and has never had long-range strike capabilities, it is safe to say the concept of an “exclusively defense-oriented policy” has been interpreted in an overly restrained manner and has restricted flexible thought for the development of Japan's defense capability. For a long time, Japan restricted the weapons systems that the JSDF could possess. According to past Diet statements, the JSDF was not allowed to possess intercontinental ballistic missiles, strategic bombers, or attack aircraft carriers.⁷⁴

In addition, under the Japan-United States Security Treaty, U.S. forces are required to conduct offensive operations using strike power under necessary

⁷² 第 24 回国会衆議院内閣委員会会議録第 15 号、Feb.29, 1956,

<https://kokkai.ndl.go.jp/#/detail?minId=102404889X01519560229&spkNum=0¤t=1>.

⁷³ 第 31 回国会衆議院内閣委員会会議録第 21 号、March 19, 1959

<https://kokkai.ndl.go.jp/#/detail?minId=103104889X02119590319¤t=1>; 第 145 回国会衆議院安全保障委員会会議録第 2 号、Feb 9, 1999, <https://kokkai.ndl.go.jp/#/detail?minId=114503815X00219990209¤t=1>.

⁷⁴ Ministry of Defense, *Defense of Japan* 2019, 198, https://www.mod.go.jp/e/publ/w_paper/wp_2019.html.

circumstances.⁷⁵ In other words, U.S. forces' strike capability is regarded as the "other appropriate means." This reflects the division of roles in the U.S.-Japanese alliance: Japan plays the role of a "shield" and the United States plays the role of a "spear."

However, in complex multi-domain modern warfare where offense and defense are integrated, it is becoming increasingly difficult to distinguish between what is a shield and what is a spear. As discussed below, defensive strike operations do exist. The threat against Japan has become so serious in both quality and quantity that it warrants Japan's need for its own long-range strike capability.

In June 2020, with the virtual cancellation of the planned deployment of Aegis Ashore (the land-based version of the sea-based ballistic missile defense system) for a variety of political reasons, the Japanese government began comprehensively reviewing its policy for dealing with the missile threat.⁷⁶ The expression "missile defeat" is increasingly being used to describe its efforts.

Japan's Current Missile Defense Architecture and Growing Regional Threats

Until now, Japan has focused on improving its defense capabilities by intentionally distinguishing between offensive and defensive weapons. A typical

⁷⁵ Ministry of Foreign Affairs of Japan, "The Guidelines for US-Japan Defense Cooperation," April 27, 2015. <https://www.mofa.go.jp/region/n-america/us/security/guideline2.html>.

⁷⁶ In the statement released before leaving the prime minister's office, Shinzo Abe also stressed the need for the Japanese government to consider a broader range of options to better address the missile threat. 「内閣総理大臣の談話」 Sept. 11, 2020, https://www.kantei.go.jp/jp/98_abe/discourse/20200911danwa.html.

example is ballistic missile defense. Since the launch of North Korea's first ballistic missile in 1998, Japan has been developing ballistic missile defense architecture. Specifically, Japan possesses Patriot Advanced Capability-3 (PAC-3) interceptors for terminal defense and Standard Missile-3 (SM-3) intermediate missiles for mid-course defense. As ground-based early warning and tracking sensors, the J/FPS air defense radar system is deployed nationwide. There is also a Japanese version of a command and control, battle management, and communications system called JADGE (Japan Air Defense Ground Environment).

As a result of these efforts, Japan's missile defense system is very sophisticated. However, Japan's security challenges are beyond the scope of the missile defense alone. Japan's interceptor capacity is extremely limited. The missile defense system was built to specifically counter North Korea. However, North Korea's theater-range ballistic missiles have significantly upgraded in quality and quantity over the past 10 years. As of 2017, North Korea had up to 150 short- and medium-range ballistic missile launchers.⁷⁷ It is likely that by March 2020, North Korea began producing new solid-fuel ballistic missiles, further upgrading its simultaneous launch capability. North Korea's increase in medium-range ballistic missiles will place a heavy burden on Japan's missile defense capacity.

Furthermore, SM-3 is a very expensive interceptor that costs more than \$20

⁷⁷ National Air and Space Intelligence Center, Defense Intelligence Ballistic Missile Analysis Committee, 2017 *Ballistic and Cruise Missile Threat*, June 30, 2017.

https://www.nasic.af.mil/Portals/19/images/Fact%20Sheet%20Images/2017%20Ballistic%20and%20Cruise%20Missile%20Threat_Final_small.pdf?ver=2017-07-21-083234-343.

million per Block1B missile.⁷⁸ The Block2A, the latest variant with the widest interception range, costs \$40 million per missile.⁷⁹ Therefore, introducing enough interceptors capable of preventing all of North Korea's medium-range ballistic missiles would impose an extremely heavy cost on Japan.

If Japan tries to build air and missile defense architecture that relies solely on defensive capabilities to counter China, it will face a greater shortage of interceptor capacities. According to the U.S. Department of Defense, China has more than 1,250 ground-launched ballistic missiles (GLBMs) and ground-launched cruise missiles (GLCMs) with ranges between 500 and 5,500 kilometers.⁸⁰ In addition, it is expected that they also have more than 700 road-mobile missile launchers.⁸¹ Furthermore, a burgeoning number of Chinese bombers and destroyers are also capable of launching cruise missiles.

Unlike ballistic missiles, which need to be aligned in the direction they are to be

⁷⁸ According to the Defense Security Cooperation Agency, the U.S. State Department has made a determination approving a possible foreign military sale to Japan of up to 56 SM-3Block IB missiles for an estimated cost of \$1.15 billion. See, Defense Security Cooperation Agency, "Japan – Standard Missile (SM)-3 Block IB," Aug. 27, 2019. https://www.dsca.mil/sites/default/files/mas/japan_19-13.pdf.

⁷⁹ According to Defense Security Cooperation Agency, the U.S. State Department has made a determination approving a possible foreign military sale to Japan of up to 73 SM-3 BlockIIA with support for an estimated cost of \$3.295 billion. See, Defense Security Cooperation Agency, "Japan – Standard Missile-3 (SM-3) Block IIA Missiles," Aug. 27, 2019, <https://thedefensepost.com/2019/08/28/us-japan-sm-3-ballistic-missile-interceptors/>.

⁸⁰ U.S. Department of Defense, *Military and Security Developments Involving The People's Republic of China* 2020, Sept. 1, 2020. <https://media.defense.gov/2020/Sep/01/2002488689/-1/-1/1/2020-DOD-CHINA-MILITARY-POWER-REPORT-FINAL.PDF>.

⁸¹ U.S. Department of Defense, *Military and Security Developments*,166.

launched, cruise missiles can change direction mid-flight, so early warning for all directions is necessary. This imposes significant costs on defenders. If the missiles are fired repeatedly, Japan (and forward-deployed U.S. forces) would soon exhaust interceptors' magazine capacities.

Moreover, theater-range hypersonic weapons that China has recently begun to possess — both hypersonic glide vehicles or hypersonic cruise missiles — shorten warning and reaction times for defenders. These weapons impose significant costs on the defender and dramatically tip the scales of the offense-defense balance to favor the offense.

Given the recent security environment in Japan, maintaining an exclusively defense-oriented policy is equal to narrowing one's options and waiting for one's position to become disadvantaged. Moreover, it is not enough to establish counter-attack capabilities targeting only North Korea.

These points do not deny the effectiveness of missile defense. However, it should be remembered that effective comprehensive air and missile defense operations work only when several key elements — early warning, deterrence by denial through missile defense, civil defense, counterforce, and deterrence by punishment through retaliation — combine in a balanced manner. Of these elements, deterrence by punishment is currently provided by the American "nuclear umbrella," which would ensure a retaliatory response to any state that launched a nuclear attack on Japan.⁸²

⁸² Masashi Murano, "What the New U.S. Nuclear Posture Means for Northeast Asia," *The Diplomat*, Aug. 29, 2018. <https://thediplomat.com/2018/08/what-the-new-us-nuclear-posture-means-for-northeast-asia/>.

However, it is unlikely that China would suddenly launch a nuclear attack against Japan in the early stages of an armed conflict in the western Pacific. The most likely scenario is for the PLA to carry out a conventional missile salvo in conjunction with other disruptive attacks in domains such as cyber, space, and electromagnetic. Furthermore, China's anti-access/area denial (A2/AD) capabilities outpower the United States' conventional regional strike capabilities, which consist of tactical aircraft based on air bases or aircraft carriers.⁸³ Therefore, if Japan seeks to possess long-range strike capabilities, it is necessary to consider not only optimization of Japan's defense resources but also how to bridge the strike gap between the U.S.-Japanese alliance and China.

Solving the Strike Gap in the Western Pacific: Exploring Solutions

If Japan reconsiders its exclusively defense-oriented policy and seeks to possess long-range strike capabilities, the design of its capabilities and the overall operational concept are crucial. Any revision to the Japanese defense policy should not include a return to the strategy of the Empire of Japan before World War II. The principle of Japan's defense strategy should uphold the prohibition on wars of aggression. Therefore, the essence of "strategically defensive" policy should be maintained.

⁸³ This is not unrelated to the fact that in the past, the United States was bound by the Intermediate-Range Nuclear Forces (INF) Treaty and was restricted in its ground-based rapid strike options. See, Takahashi and Sayers, "America and Japan in A Post-INF World," *War on the Rocks*, March 8, 2019, <https://warontherocks.com/2019/03/america-and-japan-in-a-post-inf-world/>; Masashi Murano, "The Japan-US Alliance in a Post-INF World: Building an Effective Deterrent in the Western Pacific," *nippon.com*, Dec. 18, 2019, <https://www.nippon.com/en/in-depth/do0526/the-japan-us-alliance-in-a-post-inf-world-building-an-effective-deterrent-in-the-western-p.html>.

However, denying preventive war doesn't mean denying "tactically offensive" options. The counterforce option, which attacks the adversary's territory and defeats their military power to prevent the adversary from attacking, is part of the defensive military strategy known as "active defense."

What exactly is Japan's strike capability? In 2018, the JSDF introduced a category of relatively long-range cruise missiles called "stand-off missiles."⁸⁴ These include the Joint Strike Missile (JSM), which has a range of approximately 500 kilometers and will be equipped on F-35s, and Joint Air-to-Surface Standoff Missile (JASSM) and Long-Range Anti-Ship Missile (LRASM), which have a range of approximately 900 km and will be equipped on F-15s.

However, the introduction of these missiles does not directly mean Japan possesses a long-range strike capability. In order to operate these missiles effectively, it is necessary to further refine the structure and operational concepts of the JSDF. These concepts are illustrated in a series of scenarios described below, with two desirable and substitute options followed by two less-desirable alternatives.

Desirable Option: Deterrence by Denial — Counterforce Capability Against Ground Fixed Targets

In a worst-case scenario — such as a Chinese attack on Taiwan or on Japan's

⁸⁴ Japan Ministry of Defense, *Medium Term Defense Program (FY2019 - FY2023)*, Dec. 18, 2018.

https://www.mod.go.jp/j/approach/agenda/guideline/2019/pdf/chuki_seibi31-35_e.pdf.

southwest islands, which includes Okinawa — China could be expected to begin the offensive with a massive effort to degrade the power-projection capability of the United States and the support capabilities of Japan. This would involve a missile salvo, in addition to cyberspace, counterspace, and electromagnetic attacks. China would then attempt to use its air power to control air and maritime access around the “first island chain” (including Japan and Taiwan) and prevent the United States’ defense commitment.⁸⁵

In light of this threat, Japan needs to fully consider the possibility that some of its air-based tactical fighters will be neutralized early in the conflict. Japan needs to consider a long-range strike option with another attack platform that utilizes the existing intelligence, surveillance, and reconnaissance (ISR) capabilities and has high survivability. The best option are ground-based missiles to attack enemy fixed targets on the ground.

The specific tactical objective here is to mission-kill and degrade some of China’s offensive counterair capability. As mentioned earlier, China will attempt to degrade the defensive counterair capabilities of Japan and the United States using a variety of missiles. However, China would need more than missiles to secure air and maritime superiority over the first island chain. Ultimately, that would require continuous deployment of air and naval power.

The PLA would be hard-pressed to maintain air and sea superiority in the region even after a preemptive strike. With escalation likely, and the outlook for victory dim, the argument for a preemptive strike weakens, and the threshold for armed conflict rises.

⁸⁵ Murano, “The Japan-US Alliance in a Post-INF World.”

In other words, even if the United States and Japan's air operations and air defense capabilities are damaged, if China's offensive counterair capability is also damaged, its "theory of victory" will collapse. Specific targets include runways, aircraft and bomber hangars and bunkers, ammunition depots, fuel storage, radar facilities, communications facilities, and command and control system nodes.

Again, assuming that North Korea has at least 150 mobile missile launchers, it might be possible to destroy some of them in advance if Japan coordinates with the United States and South Korea. In China, however, preemptively destroying over 700 mobile missile launchers is not practical. Attacking a fixed target is much less difficult. The best option is to use both cruise missiles and ballistic missiles.

Ground-launched cruise missiles (GLCMs) offer several advantages: shorter time to deployment, better accuracy, lower cost, and the ability to launch multidirectional, synchronous, saturated attacks in combination with sea- and air-based missiles. Given their slow flight speed and limited lethality per missile, they would best be deployed at relatively close range against more exposed above-ground radar and fuel-storage facilities. A good option for this purpose might be forward deployment in southwest islands of a certain number of GLCMs with a range of roughly 750–1,000 kilometers.

The advantages of the ballistic-missile option are as follows: speed of delivery, the capability to penetrate outer air-defense systems, high terminal velocity and high angle of approach, long range and increased payload capacity made possible by ground-based deployment, and relative ease of development compared with such

systems as hypersonic glide vehicles. In this sense, ballistic missiles could offset the weaknesses of the cruise missiles and enable long-range sniping of important fixed targets, such as sensors, command and control systems, runways, and munitions depots, even in relatively small numbers.⁸⁶

Substitute Option: Deterrence by Denial — Counterforce Capability Against Maritime Mobile Targets

Many of China's and North Korea's missile platforms are ground-based mobile launchers. However, in the case of a crisis scenario with China, it is also necessary to assume a response to the threat of anti-ship cruise missiles launched from Chinese naval vessels or carrier-based aircraft.

Compared to finding a small mobile missile in a remote location, there are relatively few operational obstacles to attacking ships in the ocean. The JSDF is already trying to possess these stand-off capabilities, but it requires more than the air-launched variant. The latest version Tomahawk Block 5A, which the U.S. Marine Corps (USMC) is acquiring, is ship-attack capable. If the JGSDF introduces them, it will be possible to carry out multidimensional long-range anti-ship attacks in coordination with the JASDF and USMC. It requires manned and unmanned aerial sensors and high-speed data links for anti-ship missions that enable the JGSDF to acquire targeting data from the U.S. force and the JASDF in real time. However, these systems are cost-effective than having a fighter-based

⁸⁶ Jacob L. Heim, "Missiles for Asia?: The Need for Operational Analysis of U.S. Theater Ballistic Missiles in the Pacific," RAND, 2016,

https://www.rand.org/content/dam/rand/pubs/research_reports/RR900/RR945/RAND_RR945.pdf.

strike package.⁸⁷

Alternative Option #1: Deterrence by Punishment

Discussions in Japan sometimes focus on possession of strike capabilities to fulfill a deterrence by punishment purpose.⁸⁸ However, Japan's capability for deterrence by punishment is impractical and unnecessary. The targeting doctrine required for deterrence by punishment is called "countervalue" and implies the threat of unacceptable damaged retaliation against the adversary's urban and densely populated areas.

The most typical option for countervalue is use of nuclear weapons. Possession of nuclear weapons intended for massive strikes against populated areas would carry an unsustainable domestic and international political burden. Also, given the U.S.-Japanese alliance and America's nuclear extended deterrence, Japan does not need its own nuclear deterrent. Theoretically, the possibility of achieving limited deterrence by punishment through the use of conventional weapons may be possible. However, its effectiveness is limited. Similarly, even if effective

⁸⁷ The ground-launched Tomahawk costs approximately \$1.4 to \$2 million. If Japan reduced the number of SM-3 Block2A by one, it could procure about 20 to 28 Tomahawks. See, Office of The Under Secretary of Defense (Comptroller), *Program Acquisition Cost By Weapons System, FY2021 Budget Request*, February 2020, https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2021/fy2021_Weapons.pdf; Jacob Cohn, Timothy A. Walton, Adam Lemon, and Toshi Yoshihara, "Leveling the Playing Field: Reintroducing U.S. Theater-Range Missiles in a Post-INF World," *Center of Strategic and Budgetary Assessments*, 2019, 38, https://csbaonline.org/uploads/documents/Leveling_the_Playing_Field_web_Final_1.pdf.

⁸⁸ Isabel Reynolds and Emi Nobuhiro, "Japan Needs Ability to Strike North Korea, Ex-Defense Chief Says," *Bloomberg*, Dec. 20, 2017, <https://www.bloombergquint.com/politics/japan-needs-ability-to-strike-north-korea-ex-defense-chief-says>.

countervalue with conventional weapons is possible, when Japan strikes strategic facilities at Beijing or Pyongyang, it may bring a nuclear response from China or North Korea, which are both nuclear-armed states.

Alternative Option #2: Deterrence by Denial — Counterforce Capability Against Ground Mobile Targets

Most of the missiles in North Korea and China which threaten Japan are operated by road-mobile missile launchers. However, in order to effectively execute conventional counterforce operations to destroy these mobile missiles, various conditions should be met.

First, the effectiveness of subsonic cruise missiles to strike mobile targets on the ground will be very limited. With the exception of preemptive surprise attacks, subsonic cruise missiles, which takes one hour to reach a target 800 kilometers away, is of little help in attacking time-sensitive targets. Low-speed cruise missiles will also have difficulty breaking through advanced air defense systems without multidimensional simultaneous attacks.

Second, if cruise missiles are an inappropriate option for a mobile target, the surest way is to combine an intrusive attack aircraft with precision guided munitions. However, it's important to note that when such strike packages were used in Operation Desert Storm in 1991 or Operation Iraqi Freedom in 2003, the United States had absolute air superiority in its offensive operations against mobile missiles.

If cooperation with the United States is not assumed, the JSDF would have to

spend an enormous amount of money to build a strike package on its own. The strike package consists of three components: (1) dynamic intelligence, surveillance and reconnaissance (ISR) for detecting and tracking mobile targets on the ground, (2) suppression of enemy air defense networks, and (3) close and precision strike capability. Japan already has some of these capabilities. For example, information-gathering satellites owned by the Cabinet Office are useful for identifying and approximating the location of mobile missiles and initial targeting. However, even if a system of 10 satellites is established, images required for strike operations against time-sensitive targets could not be obtained in real time.⁸⁹

Unmanned aerial vehicles are an essential option for keeping track of mobile targets in real time, 24 hours a day. The JASDF is in the process of acquiring three Global Hawks (Block 30), but it does not have the video relay capability that is essential for dynamic targeting.

To carry out operations to suppress enemy air defense networks, the JSDF would need weapons that Japan has never had before, such as anti-radiation missiles. In order to protect the squadron carrying out these operations, support by electronic warfare aircrafts like EA-18G is also necessary. As for a stand-in attack, it is possible to use a combination of F-35 and precision-guided munitions. However, given that the F-35A has a combat radius of less than about 700 miles, conducting a deep strike against China will require additional procurement due to

⁸⁹ Cabinet Satellite Intelligence Center, 「今後の情報収集衛星の整備に係る検討状況」, June, 2015.

<https://www8.cao.go.jp/space/committee/27-minsei/minsei-dai5/siryoushugi2.pdf>.

a shortage of aerial refueling tankers.⁹⁰

Thus, in order for Japan to have the capability to strike mobile missiles on the ground, it would first have to incur enormous cost and undertake allocation of substantial resources. This is a high political and economic hurdle. It would also be impractical to build these capabilities in the short term. Therefore, having strike capability for ground mobile targets should not be a high priority option.

Searching for the Appropriate Mix of Offense and Defense

If the sharing of new roles, missions, and capabilities of the U.S.-Japanese alliance is to be rigorously examined, it is necessary to conduct detailed operations research, including operational planning, stockpiles of ammunition, and other classified information. Here, there will be sort out the basic conditions for that and consider possible criticisms.

First, unlike the PLA Rocket Force, the JSDF's mobile missiles have limited mobility. This is true. However, relying on air- and sea-based assets is also limited by operational costs. In addition, unlike U.S. forces, the JSDF cannot and should not move away from Japan. Therefore, the JSDF's land-based missiles have no choice but to use tactical dispersion to increase survivability and impose cost to adversary for long-range ISR. Ironically, Japan should imitate North Korean operational posture, which emphasizes the concealment of mobile missiles. Taiwan conducts training to take off fighter jets from highways during a crisis, but Japan needs to consider the use of highway tunnels to conceal mobile missile

⁹⁰ U.S. Department of Defense, *Selected Acquisition Report: F-35 Lightning II Joint Strike Fighter (JSF) Program (F-35)*, As of FY 2018 President's Budget, 2018, 18, <https://fas.org/man/eprint/F-35-SAR-2018.pdf>.

launchers. These operations require high readiness, but Japan's advanced solid fuel manufacturing technology is suitable for manufacturing rocket motors.

Second, Japan needs to prioritize the development and deployment of various weapon systems. Modifying existing cruise missiles is an option. For example, compared to developing a GLBM, the cost of developing a GLCM is approximately one-eighth to one-sixth, and the cost per one shot is approximately one-tenth to one-sixth.⁹¹

However, conventional cruise missiles are not powerful enough to destroy hard targets.⁹² On the other hand, ballistic missiles (or hypersonic glide vehicle) are effective for mission-killing against hard targets, even with conventional warheads. For example, if the PLA Air Force's 3,000-meter class runways are attacked with ballistic missiles at equal intervals, the runways will be rendered inoperable, weakening China's air operation capabilities. In this regard, Japan's Acquisition, Technology, and Logistics Agency has been researching hyper velocity gliding projectiles (HVGPs) as new weapons that can provide better remote island defense. The problem is that a HVGP has too short a range to target mainland China, and it still takes time to develop and deploy in the field.⁹³

⁹¹ Cohn et al., "Leveling the Playing Field," 38.

⁹² For example, in April 2017 the United States attacked a Syrian Air Force Base with 59 Tomahawks. The base was restored to operational use in only two days. Reuters staff, "Syrian Governor Confirms Air Base Operating Again," *Reuters*, April 8, 2017, <https://www.reuters.com/article/us-mideast-crisis-syria-airbase/syrian-governor-confirms-air-base-operating-again-idUSKBN17AoSO>.

⁹³ Joseph Trevithick, "Japan Is Taking A Two-Step Approach To Fielding Its First Operational Hypersonic Weapons," *The Drive*, Oct. 18, 2018, <https://www.thedrive.com/the-war-zone/24314/japan-is-taking-a-two-step-approach-to-fielding-its-first-operational-hypersonic-weapons>.

However, China does not yet possess a missile defense system as sophisticated as those in Japan or the United States. At the moment, their air defense system is vulnerable even to conventional ballistic missiles. Therefore, even if the unit costs are 10 times higher than those of ground-launched cruise missiles, if the operational objective is to mission-kill part of China's air force, Japan should give priority to the road-mobile medium-range ballistic missile units.

Alliance “Software” Update

Development of these new defense capabilities will involve overcoming significant hurdles, not merely in terms of hardware factors like weapons development but also with respect to such “software” factors as operational plans, the planning process, command and control, and political risk.

First, to build the striking power needed to negate China's “theory of victory” and prevent escalation of the conflict, it is critically important that Japan and the United States work together to accurately gauge the threat, assess their joint capability (with respect to targets, launch methods, deployment sites, logistical support, and so forth), identify any capability gaps that need to be filled, and optimize the allocation of roles, missions, and capabilities.

The second challenge is to establish a common operational picture and a joint targeting coordination board. Developing JSDF's own long-range strike capability and accepting the forward deployment of U.S. missiles in Japan is bound to intensify suspicion and produce alarm in neighboring countries. To manage this risk, Japan should be an active and responsible partner in the drafting and implementation of an operational plan detailing when, how, and for what targets

the various missiles deployed are to be used. The JSDF's active involvement in U.S. operational planning should also reduce the political risks of missile deployment.

This brings us to the third challenge: a politically sustainable missile deployment plan. By deploying a judiciously balanced mix of defensive and offensive systems, the U.S.-Japanese alliance can deter the use of force by China or North Korea and head off conflicts before they occur. One of the keys to long-term strategic competition is maximizing the cost to one's adversary while minimizing one's own costs, in peacetime as well as during crises or contingencies. From this perspective, Japan should make every effort to organize ground-based missile deployment without fueling the kind of political mayhem that could jeopardize the alliance.

Basing options are an important issue when considering this discussion. The situation is slightly different when Japan accepts a U.S. missile and when Japan has ground-based long-range missiles. The deployment of missiles by the United States can be interpreted as a demonstration of its defense commitment. The temporary deployment of U.S. ground-based missiles would have an effect similar to the U.S. deployment of strategic bombers: They would be deployed as a flexible deterrent option, offsetting the rise in regional tensions. But Japan and the United States should be alert to the risk of information warfare — of China or Russia spreading misinformation designed to manipulate public opinion and fuel local opposition to deployment.⁹⁴

⁹⁴ In fact, the major Okinawan newspaper has quoted a source in Russia warning that the United States had plans to deploy large numbers of missiles “which can be equipped with a nuclear warhead” in Okinawa. Tsuyoshi Arakaki, “U.S. Informs Russia of Plans to Deploy Intermediate-Range Missiles to Okinawa in the

But as mentioned, Japan can't choose where to fight. In addition, deploying a large number of missiles rapidly in response to the growing crisis may be difficult, and may even increase crisis instability. Therefore, JSDF ground-based missiles should be deployed in advance in a location where they can reach potential targets.

Finally, both Japan and the United States need to address the potential impact of intermediate-range missile deployment on arms control and join in the conversation on this subject. Some argue that Japan's long-range strike capability may undermine regional stability. If China and North Korea do not have such capabilities, this argument is correct. However, because they now have the capability to attack Japan unilaterally, a "window of opportunity" is already open to them. Japan's long-range strike capability would not destabilize the region but would rather serve to restore stability and close this window of opportunity for North Korea and China.

Conclusion

Adopting a long-range strike capability is not about abandoning a strategically defensive policy or adopting preventive war. Rather, it's about strengthening operational flexibility by adopting tactical offensive options.

Japan's strike capability should be part of a deterrence by denial strategy, not a deterrence by punishment one. Given the cost-effectiveness of strike and defense

Next Two Years, Worrying Some That the Base Burden Will Increase Significantly," *Ryukyu Shimpo*, Oct. 3, 2019, <http://english.ryukyushimpo.jp/2019/10/09/31109/>.

systems, it is impractical to build JSDF strike packages that can attack time-sensitive targets.

The most desirable option for Japan is to prioritize acquiring medium-range ballistic missiles and ground-launched cruise missiles. Ship-attack capable long-range missiles would also be able to restrict the maneuver of PLA naval vessels. As a result, even if Japan and the United States cannot prevent the first salvo attack, the alliance can reduce the number of the adversary's remaining missile platforms or suppress its launch activities before the next wave.

Even if Japan has its own long-range strike capabilities, it will function within the close dynamic coordination framework of the U.S.-Japanese alliance. To achieve this, command and control and coordination of operational plans are essential. The adoption of a long-range strike capability will not end the U.S.-Japanese alliance. Rather, the transformation of Japan's defensive posture will illustrate the continued evolution of this alliance, reflecting the changing circumstances of the Indo-Pacific region.

Masashi Murano (Twitter: @showmurano) is a Japan Chair fellow at Hudson Institute.



5. Thank You for Your Service:

The Security Implications of Japan's Counterspace Capabilities

Saadia M. Pekkanen

Unfettered access and freedom to operate in space are vital interests for civilian, commercial, and military stakeholders.⁹⁵ In practice, protecting these interests is difficult because of the ambiguities of dual-use space technologies, which can complicate decision-makers' abilities to distinguish a space asset from a weapon.⁹⁶ They also make it challenging to determine whether space control operations are defensive or offensive. Decision-making is even more challenging because outer space affairs today are marked by the deeply intertwined trends of democratization, commercialization, and militarization.⁹⁷ Many actors can develop a wide spectrum of military capabilities while professing to pursue worthy civilian and commercial goals such as servicing satellites, de-orbiting orbital debris, or flying solid-fuel rockets.

Japan is in an excellent position to leverage these kinds of ambiguities. It has already amassed and tested significant space capabilities. But given perceptions of its pacifist and constitutional constraints, Japan may be one of the most

⁹⁵ The White House, *The National Security Strategy of the United States*, December 2017, <https://www.whitehouse.gov/wp-content/uploads/2017/12/NSS-Final-12-18-2017-0905.pdf>.

⁹⁶ Joan Johnson-Freese, *Space as a Strategic Asset* (New York: Columbia University Press, 2007), 6–7; and James Clay Moltz, *The Politics of Space Security: Strategic Restraint and the Pursuit of National Interests* (Stanford, CA: Stanford University Press, 2008), 42–43.

⁹⁷ Saadia M. Pekkanen, "Governing the New Space Race," *American Journal of International Law Unbound* 113 (2019): 92–97, <https://www.cambridge.org/core/journals/american-journal-of-international-law/article/governing-the-new-space-race/14BD9B37A7A15A8E225A5355BB29E51B>.

underestimated military space powers around.⁹⁸

First, Japan has solid independent technological foundations that can be morphed into both kinetic and non-kinetic counterspace capabilities.⁹⁹ Importantly, these technologies have been tested in plain sight over the postwar period, and will be supplemented by those in the cyber and the electromagnetic domains.¹⁰⁰ Second, Japan’s political leadership is supportive of a national security space paradigm, irrespective of who is in or out of power.¹⁰¹ The leadership is now unambiguous about its intentions to counter and acquire offensive counterspace capabilities in response to moves by China and Russia.¹⁰² Finally, Japan’s contentious security environment serves to legitimize and reinforce these technical and political trends. It ensures that the leadership is shielded from significant blowback from domestic and foreign audiences as Japan

⁹⁸ See, for example, two recent comparative reports on counterspace capabilities. Brian Weeden and Victoria Samson ed., *Global Counterspace Capabilities: An Open Source Assessment* (Broomfield, CO and Washington, DC: Secure World Foundation, 2019); and Todd Harrison, Kaitlyn Johnson, Thomas G. Roberts, Madison Bergethon, Alexandra Coultrou, *Space Threat Assessment 2019* (Washington DC: Center for Strategic and International Studies, 2019).

⁹⁹ Saadia M. Pekkanen, “All Eyes on China, But Japan May Be the Space Power to Watch,” *Forbes*, May 30, 2015, <https://www.forbes.com/sites/saadiampekkanen/2015/05/30/all-eyes-on-china-but-japan-may-be-the-space-power-to-watch/#2aea44734a8f>.

¹⁰⁰ “Uchū, Saibaa, Denjiha no Ryōiki ni okeru Nōryoku no Kakutoku.Kyōka [Acquire and Strengthen Capabilities in the Space, Cyber, and Electromagnetic Domains],” Ministry of Defense, Japan Air Self-Defense Force, 2020, <https://www.mod.go.jp/asdf/about/role/roleo4/pageo5/index.html>.

¹⁰¹ Shinichi Kitaoka, “‘Sekkyokuteki Heiwa Shugi’ ni Tenkan Suru Nihon no Anzen Hoshō Seisaku [Japan’s Changing National Security Policy Towards ‘Proactive Pacifism’],” *Nippon.com*, Feb. 5, 2014, <https://www.nippon.com/ja/currents/doc108/>.

¹⁰² “‘Kokū Uchū Jieitai’ ni Kaishō Chōsei [Regulation for Renaming to ‘Aerospace Self-Defense Force’],” *Kyodo*, Jan. 5, 2020, <https://rd.kyodo-d.info/np/2020010501000796?c=39546741839462401>.

moves its posture away from security isolationism towards internationalism.¹⁰³

These three reasons — technologies, leadership, and environment — mean that it is unlikely that Japan will reverse course in the pursuit of counterspace capabilities. Nor will other states, keen on harnessing space in their own national interests, reduce their own counterspace investments. In the midst of the current geopolitical flux, a focus on technology alone will not ensure security or stability. Military space diplomacy is needed to forge new normative trajectories.

Japan is in an ideal position to take the lead here, and the U.S.-Japanese alliance is not the only avenue open to it for shaping the geography of allies, partners, and coalitions in a shifting world order. It can also capitalize on its accumulated stewardship, experiences, and networks in a regional institution, the Asia-Pacific Regional Space Agency Forum, dating back to 1993.¹⁰⁴

The Security Dilemmas of the Counterspace Race

All the top space powers — including Japan — are officially moving towards capabilities, doctrines, and strategies that reflect a conceptual shift in thinking about space as a warfighting domain.¹⁰⁵ Their independent national quests

¹⁰³ Narushige Michishita, “Myths and Realities of Japan’s Security Policy,” *Asian Dispatches*, Wilson Center, Feb. 18, 2020, <https://www.wilsoncenter.org/blog-post/myths-and-realities-japans-security-policy>.

¹⁰⁴ Saadia M. Pekkanen, “China, Japan, and the Governance of Space: Prospects for Competition and Cooperation,” *International Relations of the Asia-Pacific* (2020): 1–28, <https://doi.org/10.1093/irap/lcaa007>.

¹⁰⁵ Mary Beth Griggs, “Trump’s Space Force Aims to Create ‘American Dominance in Space’ by 2020,” *Popular Science*, Aug. 9, 2018, <https://www.popsci.com/space-force-2020/>.

reinforce a *counterspace race*,¹⁰⁶ which reflects great-power security competition extended to the militarization — and increasingly weaponization — of outer space assets.¹⁰⁷ For the United States and its allies the race is to ensure that “Counterspace [remains] a mission that integrates offensive and defensive operations to attain and maintain the desired level of control and protection in and through space.”¹⁰⁸ Their actions are spurred by the belief that their adversaries are racing to degrade or negate those desired outcomes.

At the heart of this race is a range of counterspace technologies— kinetic and non-kinetic physical assets, as well as electronic and cyberspace weapons — that can pose threats to satellite systems.¹⁰⁹ By degrading or destroying satellites, those with counterspace capabilities can wipe out their rivals’ military leads and cripple their civilian and commercial advantages on Earth. There is no doubt that the aggressor will also lose in such scenarios — but collateral damage may be worthwhile if the more heavily space-dependent rival is dealt a more crippling

¹⁰⁶ Saadia M. Pekkanen, “The New Race to Dominate Outer Space: All Face ‘Serious Growing Foreign Threat,’” *Forbes*, Nov. 27, 2015, <https://www.forbes.com/sites/saadiampekkannen/2015/11/27/the-new-race-to-dominate-outer-space-all-face-serious-growing-foreign-threat/#39cbf8f7207c>.

¹⁰⁷ Brad Townsend, *Security and Stability in the New Space Age: The Orbital Security Dilemma* (New York: Routledge, 2020).

¹⁰⁸ United States Air Force, “U.S. Air Force Doctrine: Annex 3-14 Counterspace Operations,” Aug. 27, 2018: 2-3, <https://www.doctrine.af.mil/Doctrine-Annexes/Annex-3-14-Counterspace-Ops/>.

¹⁰⁹ David Webb, “Space Weapons: Dream, Nightmare or Reality?,” in *Securing Outer Space*, ed. Natalie Bormann, (New York: Routledge, 2009), esp. Table 2.1; Michael Sheehan, “Defining Space Security,” *Handbook of Space Security: Policies, Applications and Programs (Volume 1)*, ed. Kai-Uwe Schrogl, Peter L. Hays, Jana Robinson, Denis Moura, and Christina Giannopapa (New York: Springer Reference, 2015), esp. Tables 2.1 and 2.2 (intentional and unintentional threats); and United States Air Force, “U.S. Air Force Doctrine: Annex 3-14 Counterspace Operations,” Aug. 27, 2018: 4-5, <https://www.doctrine.af.mil/Doctrine-Annexes/Annex-3-14-Counterspace-Ops/>.

blow.

The counterspace race matters most for the United States, the world's most space-dependent power, with close to 50 percent of the known functioning space assets.¹¹⁰ It created the United States Space Force (USSF) specifically to “protect U.S. and allied interests in space and to provide space capabilities to the joint force.”¹¹¹ American pronouncements are no longer unique. The high talk of guarding space assets and ensuring superiority to deter adversaries has gone global.¹¹² Both established and rising space powers are openly racing to develop means to counter potential attacks on and harmful interference with their space assets. The kinetic assets are the most visible manifestation of the race, as demonstrated in anti-satellite tests by China (2007), the United States (2008), and India (2019). Japan certainly possesses hit-to-kill anti-satellite capabilities. But to date, it has taken a different route to counterspace capabilities, one that is characterized by an emphasis on developing technologies to clean up and service orbital debris and reduce hazards in space, rather than kinetic tools aimed at targeting potential adversaries' space assets.

¹¹⁰ “UCS Satellite Database,” *Union of Concerned Scientists*, updated April 1, 2020, <https://www.ucsusa.org/resources/satellite-database>. New U.S.-led commercial mega-constellations going into place will likely increase this percentage, even with other states like China contributing their own satellites.

¹¹¹ “U.S. Space Force Fact Sheet,” United States Space Force, Dec. 20, 2019, <https://www.spaceforce.mil/About-Us/Fact-Sheet>.

¹¹² Brian G. Chow and Henry Sokolski, “The United States Should Follow France’s Lead in Space,” *Spacenews*, Sept. 9, 2019, <https://spacenews.com/the-united-states-should-follow-frances-lead-in-space/>.

Rendezvous Proximity Operations

A variety of counterspace capabilities lie within the scope of anti-satellite systems and are less visible than direct-ascent missiles.¹¹³ Japan has demonstrated capabilities on this front that have been tested in plain sight, but they need to be put in their comparative global context to be truly appreciated. One capability, long of interest to military strategists, involves the protection of communication, meteorology, and national security services that are dependent on satellites in the geosynchronous orbit (about 36,000 kilometers above Earth).¹¹⁴ Accounting for about twenty percent of all orbiting satellites, those in geosynchronous orbit are difficult to inspect, diagnose, upgrade or repair, owing to their remote location.¹¹⁵

But on Feb. 25, 2020, Northrop Grumman-owned SpaceLogistics LLC, performed a feat that signals a new era for commercial servicing for aging satellites and spacecraft in geosynchronous orbit.¹¹⁶ The company's Mission Extension Vehicle (MEV-1) docked with a nineteen-year old Intelsat satellite and conducted repairs

¹¹³ Laura Grego, "A History of Anti-Satellite Programs," Union of Concerned Scientists, January 2012, 8, https://www.ucsusa.org/sites/default/files/2019-09/a-history-of-ASAT-programs_lo-res.pdf.

¹¹⁴ Joseph Parrish, "Robotic Servicing of Geosynchronous Satellites (RSGS)," DARPA, <https://www.darpa.mil/program/robotic-servicing-of-geosynchronous-satellites>.

¹¹⁵ "UCS Satellite Database," *Union of Concerned Scientists*, updated April 1, 2020 <https://www.ucsusa.org/resources/satellite-database>.

¹¹⁶ See, "Space Logistics Services," Northrop Grumman, <https://www.northropgrumman.com/space/space-logistics-services/>; Henry Caleb, "Northrop Grumman's MEV-1 Servicer Docks with Intelsat Satellite," *Spacenews*, Feb. 26, 2020, <https://spacenews.com/northrop-grummans-mev-1-servicer-docks-with-intelsat-satellite/>; and Kenneth Chang, "An Orbital Rendezvous Demonstrates a Space Junk Solution," *New York Times*, Feb. 26, 2020, <https://www.nytimes.com/2020/02/26/science/mev-1-northrop-grumman-space-junk.html>.

that will allow the satellite to continue functioning for another five years. Northrup Grumman has contracted to build more MEVs. The company is also interested in innovating beyond them to Mission Robotic Vehicle motherships, complete with little baby Mission Extension Pods that can be attached to older satellites, presumably to service or move them. The names of all these tested or projected vehicles speak to the noble servicing objective — mission extension for paying customers, whether companies or governments.

These technical advances in spacecraft and robotics — including new assets like the MEVs, which can rendezvous with satellites and carry out all kinds of proximity operations¹¹⁷ — can prove equally vital for military strategies and counterspace operations. A SpaceLogistics fleet of vehicles could serve a future commercial market (still in the making) but its military use is clear and present. It can be transposed in the service of militaries seeking the protection and extension of their national assets. It could also give actors capabilities to degrade, or even terminate, enemy (or “client”) spacecraft. This is not far-fetched. MEV’s makers colorfully described the spacecraft’s capture mechanism as going “through the throat”¹¹⁸ of the apogee engine of its target satellite. It is also possible that future satellites, big and small, will incorporate some minimal MEV-type precautionary systems to inspect, alert, and zap suspicious unidentified objects or actors around them.

¹¹⁷ Brian Weeden, “International Perspectives on Rendezvous and Proximity Operations in Space and Space Sustainability,” United Nations COPUOUS STSC, Feb. 13, 2014, esp. slides 2-5,

<https://www.unoosa.org/pdf/pres/stsc2014/tech-21E.pdf>.

¹¹⁸ Henry Caleb, “Northrop Grumman’s MEV-1 Servicer Docks with Intelsat Satellite,” *Spacenews*, Feb. 26, 2020, <https://spacenews.com/northrop-grummans-mev-1-servicer-docks-with-intelsat-satellite/>.

Advanced anti-satellite systems today look more like MEVs: Their missions are understandable; they seem necessary, useful; and, if things stay the course, will soon be commercially available to paying customers. The extent of their commercial market, of course, remains to be seen. In the meantime, their worth for counterspace operations by militaries and other nonstate actors is notable. The dual-use ambiguities of these space technologies — and their increasing production and testing by emerging and commercial players outside the United States — complicate prospects for the peaceful use of outer space.¹¹⁹ Spacecraft ostensibly intended for orbital servicing can also degrade, damage, disable, or destroy other satellites and spacecraft. This can affect civilian, commercial, and military assets in a non-discriminatory manner, with grave consequences for a target country's society, economy, and defense. Given these realities, it is not a surprise to find the U.S. Department of Defense is interested both in satellite servicing generally and the future of the MEV in particular.¹²⁰ Looking ahead, such spacecraft could be transformative for military space architectures and affecting balances of power in space.

Japan in the Counterspace Race

Like all prominent space powers today, Japan is not just a taker but a shaper of trends in the counterspace race. Ten years ago, Japan was already an independent and advanced space power. It had amassed indigenous full-spectrum capabilities over the postwar period in both liquid- and solid-fuel rockets, as well

¹¹⁹Brian G. Chow and Henry Sokolski, "The United States Should Follow France's Lead in Space," *Spacenews*, Sept. 9, 2019, <https://spacenews.com/the-united-states-should-follow-frances-lead-in-space/>.

¹²⁰ Theresa Hitchens, "DARPA in Talks with New Robot Sat Servicing Company," *Breaking Defense*, Oct. 3, 2019, <https://breakingdefense.com/2019/10/darpa-in-talks-with-new-robot-sat-servicing-company/>.

as cutting-edge satellites and spacecraft.¹²¹ All the while, Japan dodged global and domestic scrutiny even as it acquired advanced military space capabilities relative to other players in Asia that have received far more negative attention.

Japan has protested vociferously against the rockets launched by its neighbor, North Korea.¹²² When North Korea claimed to launch a scientific satellite, Japan argued it was actually advancing or testing intercontinental ballistic missile technologies. This complaint was reasonable: The same ballistic missile threat applies whether the underlying technology is deemed a projectile or a rocket. However, Japan's own rockets drew no similar criticism or comparison to those of North Korea. This includes the remarkably advanced and operational new solid-fuel rocket Epsilon. Debuted in 2013, Epsilon incorporates artificial intelligence to simplify launch processes and improve speed and mobility.¹²³

Epsilon has been successfully launched four times: Japan's official stance is that

¹²¹ Saadia M. Pekkanen and Paul Kallender-Umezū, *In Defense of Japan: From the Market to the Military in Space Policy* (Stanford, CA: Stanford University Press, 2010); and Paul Kallender and Christopher W. Hughes, "Hiding in Plain Sight? Japan's Militarization of Space and Challenges to the Yoshida Doctrine," *Asian Security* 15, no. 2 (2018): 1–25, <https://doi.org/10.1080/14799855.2018.1439017>.

¹²² Sang-Hun Choe and David E. Sanger, "North Koreans Launch Rocket over the Pacific," *New York Times*, April 4, 2009, <https://www.nytimes.com/2009/04/05/world/asia/05korea.html>; and "'Hishōtai' Jya Kikikan Nai? Nihon Seifu, Hyōgen Kaemashita' [No Sense of Danger from 'Projectile'? Japanese Government Changed Expression]," *Asahi Shinbun*, Mar. 2, 2020, <https://www.asahi.com/articles/ASN3272NTN32UTFK029.html>.

¹²³ Morita Yasuhiro, "Shingata Roketto de Jitsugen Suru Sekaihatsu no Mobairu Kansei [A New Type of Launch Vehicle: A Rocket with Artificial Intelligence]," Nov. 26, 2010, https://www.jaxa.jp/article/interview/vol58/index_j.html.

the rocket will boost private space business at lower costs.¹²⁴ But what is noteworthy is Epsilon's long technological trajectory. The rocket is partly built on earlier technology, the M-V, which was heralded as a premier solid-fuel rocket. It was also marked for its potential adaptability into an intercontinental ballistic missile comparable to the U.S. Peacekeeper.¹²⁵ If need be, Epsilon could be re-configured into an asset with counterspace potential.

Japan has not hinted at developing and testing hit-to-kill anti-satellite capabilities, especially given the dangerous orbital debris that can result. It does not need to, because of its involvement in technology platforms with its formal ally. The country's long ballistic missile defense cooperation with the United States is an important capability in the counterspace race because missile defense systems can double as anti-satellite weapons.¹²⁶ In particular, Japan has co-developed the Standard Missile 3 (SM-3) Block IIA interceptor, which can reach the vast majority of satellites in low-Earth orbit from 1,450 to 2,350 kilometers. In 2008, the United States used a modified SM-3 to bring down one of its own defunct satellites, demonstrating the ability to turn a defensive missile interceptor for

¹²⁴ Masamichi Hoshi, Ryotaro Yamada, and Sayuka Nakajima, "Japan Rocket Launch Gives Crucial Lift to Private Space Business," *Nikkei Asian Review*, Jan. 19, 2019, <https://asia.nikkei.com/Business/Business-trends/Japan-rocket-launch-gives-crucial-lift-to-private-space-business>.

¹²⁵ Pekkanen and Kallender-Umezu, *In Defense of Japan*, 112, noting Selig S. Harrison, "Missile Capabilities in Northeast Asia: Japan, South Korea, and North Korea," in *The Report of the Commission to Assess the Ballistic Missile Threat to the United States*, Appendix III, July 15, 1998, <https://fas.org/irp/threat/bm-threat.htm>.

¹²⁶ Laura Grego, "The Anti-Satellite Capability of the Phased Adaptive Approach Missile Defense System," *Public Interest Report*, Federation of American Scientists (Winter 2011): 1-6, esp. Table 2, <https://fas.org/pubs/pir/2011winter/2011Winter-Anti-Satellite.pdf>; and also Joan Johnson-Freese, *Space as a Strategic Asset*, 114-116.

countering an incoming projectile into an offensive weapon for taking out satellites normally in their more predictable repeated orbits.

Japan's Rendezvous Proximity Operations Trajectories

If the line between defensive and offensive space control blurs in the case of rockets and ballistic missile defense, they are even murkier in the case of spacecraft capable of rendezvous proximity operations. Japan has a history of staying engaged at the forefront of space technologies geared toward on-orbit servicing and has demonstrated capabilities that can be used for counterspace operations.¹²⁷

The idea of orbital maintenance in Japan first began to emerge publicly in the mid-1990s and gained public policy credence after major satellite technology platforms were lost to malfunctions. Among the best known case was the Advanced Earth Observing Satellite (ADEOS), which stopped working and was abandoned in June 1997.¹²⁸ Although there were some rumors regarding a collision with orbital debris, the malfunction was eventually attributed to a power loss in the satellite's solar paddle.¹²⁹ A sensible case could be made that a budget-conscious government space agency ought to possess on-orbit commercial

¹²⁷ Pekkanen and Kallender-Umezu, *In Defense of Japan*, 163-168.

¹²⁸ "Chikyū Kansoku Purattofoomu Gijitsū Eisei 'Midori' (ADEOS) [Advanced Earth Observing Satellite 'Midori' (ADEOS)]," JAXA, Aug. 17, 1996, http://www.jaxa.jp/projects/sat/adeos/index_j.htm.

¹²⁹ Robert Triendel, "Loss of Japanese Satellite Deals Blow to Remote Sensing Efforts," *Nature* 388 (Jul. 10, 1997): 105-106, <https://www.nature.com/articles/40460.pdf?proof=trueIn>.

services to inspect and repair malfunctioning \$1 billion satellites.¹³⁰

Japan was concretely engaged in that kind of testing, through the Engineering Test Satellite VII (Kiku 7), with chaser and target satellites.¹³¹ Aimed at future activities in outer space, the stated ambition of this test mission was to acquire rendezvous and docking as well as robotics capabilities that could prove indispensable to the inspection and repair of orbiting satellites. The first of the tests took place on July 7, 1998, demonstrating autonomous separation, approach, and docking in a variety of combinations. The tele-operated space robotics arm experiments showcased the value for satellite servicing, including visual inspection, equipment change-outs, fuel supply, and autonomous satellite capture. One important avenue for technology developments was identified as developing the rendezvous and capture of non-cooperative targets, which could be important for space security. Although the mission had some problems and involved troubleshooting, Japan could claim that the experiments were a technological success. Twenty years later, it can be assumed that Japan has the technological foundations to protect its own space assets and those of like-minded allies. Other high-profile ventures and assets showcase the continued efforts at acquiring counterspace capabilities.

¹³⁰ Science News Staff, “Adios, ADEOS: Japanese Satellite Lost,” *Science*, Jul. 1, 1997,

<https://www.sciencemag.org/news/1997/07/adios-adeos-japanese-satellite-lost>.

¹³¹ “Gijutsu Shiken Eisei VII Gata ‘Kiku7 (ETS-VII)’ Orihime.Hikoboshi [Engineering Test Satellite 7 ‘Kiku 7 (ETS-VII) Orihime.Hikoboshi],” JAXA, Nov. 28, 1997, http://www.jaxa.jp/projects/sat/ets7/index_j.htm; and Mitsushige Oda, “ETS-VII: Achievements, Troubles and Future,” Proceeding of the 6th International Symposium on Artificial Intelligence and Robotics & Automation in Space: i-SAIRAS 2001, Canadian Space Agency, St-Huber, Quebec, Canada, Jun. 18–22, 2001, https://robotics.estec.esa.int/i-SAIRAS/isairas2001/papers/Paper_ASoo3.pdf.

The successful Micro-Labsat 1 experiment in 2002 again stressed the importance of acquiring the basic capability to inspect, image, and repair malfunctioning and moving satellites in orbit.¹³² Others, such as the SmartSat program that would have demonstrated the country's first anti-satellite experiment, were sidelined and restructured. Assets such as those in the high-profile Hayabusa asteroid sample-return missions, conceptualized in 1994, thrill audiences with advanced mastery of innovative and integrated technologies. But judged by their components, they also signify a wide range of autonomous rendezvous proximity operations and other capabilities capable of long-duration missions.

Launched in 2003, Hayabusa 1 managed to make a seven-year and near-disaster proof round trip mission to an asteroid about 300 million kilometers from Earth, testing an ion engine, autonomous navigation and guidance, sample return, and capsule reentry in 2010.¹³³ This mission proved what the country could see, do, and endure over huge distances.¹³⁴ Hayabusa 2, launched in 2014 and now headed back to earth with another planned capsule reentry test, built on this knowledge to achieve what its predecessor could not: It shot a copper projectile — akin to a 5g metal “bullet” fired into the surface at 300 meters per second¹³⁵ — to create an artificial crater that would allow subsoil asteroid samples to be collected.¹³⁶

¹³² “Microrabusatto 1 Goki [Microlabsat 1],” JAXA, Dec. 14, 2002,

<https://global.jaxa.jp/activity/pr/brochure/files/sat13.pdf>.

¹³³ “Shōwakusei Tansaki ‘Hayabusa,’” JAXA, <http://www.isas.jaxa.jp/missions/spacecraft/past/hayabusa.html>.

¹³⁴ “25143 Itokawa,” *NASA Science: Solar System Exploration*, Dec. 19, 2019,

<https://solarsystem.nasa.gov/asteroids-comets-and-meteors/asteroids/25143-itokawa/in-depth/>.

¹³⁵ Paul Rincon, “Hayabusa-2: Japan Spacecraft Touches Down on Asteroid,” *BBC News*, Feb. 22, 2019,

<https://www.bbc.com/news/science-environment-47293317>.

¹³⁶ “Shōwakusei Tansaki ‘Hayabusa 2,’” JAXA,

<http://www.isas.jaxa.jp/missions/spacecraft/current/hayabusaz.html>.

Science and exploration missions focus on peaceful objectives. But it is sobering to imagine what a fleet of spacecraft, drawing on the foundational and accumulated technologies and lessons from ETS-VIIs or Hayabusas, could do to adversarial targets in orbits and on celestial bodies near and far from Earth.

Political and Policy Directions

Like many aspects of Japanese security, the country's counterspace capabilities were limited by political rather than technical considerations. That is no longer the case. Japan has come a long way since 1969, when it deliberately set up hurdles to the military uses of space with its Peaceful Purposes Resolution.¹³⁷ In 2008, Japan's Basic Space Law brought the country's long-standing interpretation of the peaceful uses of outer space into conformity with the international norm, defining it as "non-aggressive" as opposed to "non-military."¹³⁸ This legal basis paved the way for stakeholders to engage in national security uses of outer space in line with the right to defense.

In 2012, the basic law governing the Japan Aerospace Exploration Agency (JAXA) was amended to allow it to participate in defense-related projects.¹³⁹ In February

¹³⁷ Pekkanen and Kallender-Umezu, *In Defense of Japan*, 24–53, 223–252.

¹³⁸ Setsuko Aoki, "Current Status and Recent Developments in Japan's National Space Law and Its Relevance to Pacific Rim Space Law and Activities," *Journal of Space Law*, 35, no. 2 (2009): 367, <https://spacelaw.sfc.keio.ac.jp/sitedev/archive/current.pdf>.

¹³⁹ Kyodo, "JAXA to Get National Security Role...," *The Japan Times*, Jan. 15, 2012, <https://www.japantimes.co.jp/news/2012/01/15/national/jaxa-to-get-national-security-role-nasa-password-leaked/>.

2012, Japan notified the Scientific and Technical Subcommittee of the UN Committee on the Peaceful Uses of Outer Space about its national research on space debris-related activities.¹⁴⁰ In the name of mission safety, Japan's submission went beyond work focusing on seeing, avoiding, and mitigating space debris. It is also focused on the promotion of research to improve the "orbital environment by removing existing large debris from orbit." In Japan's view, active debris removal is necessary, including rendezvous proximity operations that could capture non-cooperative debris. It specifically identified electrodynamic tethers to de-orbit debris in low Earth orbit as a promising avenue. This is technology which Japan had already been developing and testing since at least 2005.¹⁴¹

The Ministry of Defense is moving beyond its 40-odd years of experience with a range of satellite uses for national security purposes.¹⁴² Unsurprisingly, the themes of defense and orbital debris resonate in Japan's military space

¹⁴⁰ Government of Japan, "National Research on Space Debris, Safety of Space Objects with Nuclear Power Sources on Board and Problems Relating to their Collision with Space Debris," United Nations, Feb. 2, 2012, 2, 6-7, https://www.unoosa.org/pdf/limited/c1/AC105_C1_2012_CRP11E.pdf.

¹⁴¹ M. Nohmi, "Development of Space Tethered Autonomous Robotic Satellite," *IEEE 3rd International Conference on Recent Advances in Space Technologies*, June 14-16, 2007, <https://ieeexplore.ieee.org/document/4284034>; and "STARS-2 (Space Tethered Autonomous Robotic Satellite-2)," *European Space Agency*, <https://directory.eoportal.org/web/eoportal/satellite-missions/s/stars-2#overview>.

¹⁴² Yasuhito Fukushima, "Nihon no Bōei Uchū Riyō: Uchū Kihon Hō Seiritsu Zengo Keizokuse to Henka [Japan's Use of Space for Defense: Continuity and Change Before and After the Enactment of the Basic Space Law]," Briefing Memo, National Institute of Defense Studies, March 2017, 1-6, <http://www.nids.mod.go.jp/publication/briefing/pdf/2017/201703.pdf>.

endeavors.¹⁴³ In 2014, reports emerged that the ministry, together with JAXA and the Ministry of Education, Culture, Sports, Science and Technology would jointly acquire facilities to better observe space debris threatening reconnaissance or communications satellites.¹⁴⁴ Today, the Ministry of Defense continues to look to JAXA for joint cooperation focusing especially on safeguarding Japanese assets from orbital debris¹⁴⁵ It also aims to expand on that role with the establishment of its first dedicated military unit for outer space in May 2020 — the Space Operations Squadron.¹⁴⁶

One consequential achievement of the administration of prime minister Shinzo Abe was that he changed the general tenor of Japan's security trajectories.¹⁴⁷ He prioritized the importance of both space and cyberspace for defense purposes,¹⁴⁸

¹⁴³ Saadia M. Pekkanen, "Space Debris Provides Convenient Cover for Japan's Military Space Ambitions," *Forbes*, Jul. 28, 2015, <https://www.forbes.com/sites/saadiampekkannen/2015/07/28/space-debris-provides-convenient-cover-for-japans-military-space-ambitions/#2a37e1c84521>.

¹⁴⁴ Kyodo, "Japan to Create SDF Space Monitoring Division by 2019," *The Japan Times*, Aug. 3, 2014, <https://www.japantimes.co.jp/news/2014/08/03/national/japan-create-sdf-space-monitoring-division-2019/>.

¹⁴⁵ Shinichi Akiyama, "Onodera Bōeishō- JAXA Shisatsu 'Anpo Mokuteki no Uchū Riyō Shinka' [Defense Minister Onodera: - JAXA Inspection: Deepening Space Utilization for Security Purposes]," *Mainichi Shinbun*, Jul. 3, 2018, <https://mainichi.jp/articles/20180703/ddm/005/010/075000c>.

¹⁴⁶ "Japan Launches New Squadron to Step Up Defense in Outer Space," *The Japan Times*, May 18, 2020, <https://www.japantimes.co.jp/news/2020/05/18/national/sdf-launches-space-operations-unit/>.

¹⁴⁷ Christopher W. Hughes, *Japan's Foreign and Security Policy Under the 'Abe Doctrine': New Dynamism or New Dead End?* (New York, NY: Palgrave Macmillan, 2015); and Andrew L. Oros, *Japan's Security Renaissance: New Policies and Politics for the Twenty-First Century*, (New York: Columbia University Press, 2017).

¹⁴⁸ Kyodo, "Japan Defense Budget Hits New High With Focus on Space, Cyberspace," *Kyodo News*, Dec. 20, 2019, <https://english.kyodonews.net/news/2019/12/c26eceaafobde-japan-defense-budget-hits-new-high-with-focus-on-space-cyberspace.html?phrase=outer%20space&words=space,outer>.

and with little blowback normalized Japan in the outer space domain. Today, Japan's stance is on par with those of other major powers: Defense and offense are both on the table. This is reflected in the defense ministry's recent statement: As it hopes to leverage the advantages the space domain offers, it wants to acquire capabilities to "disrupt" adversaries' command, control, communication, and intelligence systems if necessary. The ministry also seeks to strengthen capabilities to ensure space "superiority" for continued use of the domain.¹⁴⁹ How far all this will go in practice, no one knows. But the official policy context is worth noting, as it suggests a decisive shift in how Japan views counterspace capabilities.

Looking Ahead

A focus on the underlying technologies suggests that the counterspace race is headed towards an accidental or deliberate conflict. Because its formal ally the United States stands to lose the most across the civilian, commercial, and military domains in a potential great-power competition over space, the race is relevant to Japan.¹⁵⁰ Japan's concern is amplified at a time when the United States is seen as overextended globally and unpredictable regionally.¹⁵¹ As outer space affairs are

¹⁴⁹ Bōeishō.Jietai [Ministry of Defense], 2019 *Bōei Hakusho: Nihon no Bōei* [Defense of Japan 2019] (Tokyo: Nikkei Insatsu Kabushiki Gaisha), 30–31, 289–297.

¹⁵⁰ Charles Pope, "Shanahan, Wilson, Goldfein Offer Views for Ensuring U.S. Superiority in Space," U.S. Air Force News, Apr. 9, 2019, <https://www.af.mil/News/Article-Display/Article/1810124/shanahan-wilson-goldfein-offer-views-for-ensuring-us-superiority-in-space/>.

¹⁵¹ Stephen M. Walt, "America Has a Commitment Problem," *Foreign Policy*, Jan. 29, 2019, <https://foreignpolicy.com/2019/01/29/america-has-a-commitment-problem/>; Yoichi Funabashi, "An Unnatural Intimacy," *The Japan Times*, Jun. 11, 2019,

rooted in the geopolitics on Earth, a technology-centric focus alone is unlikely to stabilize matters among states. Strengthening military space diplomacy — figuring out *who* is developing *what*, *where* and especially *why* and then legitimating the military uses of space technologies on a principled basis in concert with allies — is going to be critical.

Japan has, of course, made cooperative moves in the context of the U.S.-Japanese alliance.¹⁵² In 2011, a joint statement showed it shared U.S. interests in the protection of and access to space, pinpointing space situational awareness as one area of importance. Given the advanced U.S. competence in this area, Japan moved towards an information and services agreement in 2013, the year they also convened their first Comprehensive Dialogue on Space. And in 2015, the two countries affirmed the U.S.-Japan Defense Guidelines, stressing the importance of generally cooperating on space systems critical for mission assurance. Today, Japan continues to see the alliance as a cornerstone of its space security efforts on technology, training, and missions.¹⁵³ But Japan has decentered from the United States in terms of its security partnerships.¹⁵⁴ While characterizing this general trend as alliance-distancing at this stage would be an exaggeration, some caution is warranted about relying solely on bilateral trajectories in the space

https://www.japantimes.co.jp/opinion/2019/06/11/commentary/japan-commentary/an-unnatural-intimacy/#.Xn_kbCzZP_Q.

¹⁵² Saadia M. Pekkanen, “U.S.-Japan Military Space Alliance Promises To Grow In ‘New Ways,’” *Forbes*, Oct. 27, 2015, <https://www.forbes.com/sites/saadiamekkanen/2015/10/27/u-s-japan-military-space-alliance-promises-to-grow-in-new-ways/#1708792b7d5d>.

¹⁵³ Bōeishō.Jietai [Ministry of Defense], 2019 *Bōei Hakusho: Nihon no Bōei*, (Tokyo: Nikkei Insatsu Kabushiki Gaisha) 304-320, esp. Table 2-1-2.

¹⁵⁴ Wilhelm Vosse, and Paul Midford, eds., *Japan’s New Security Partnerships: Beyond the Security Alliance*. (Manchester, UK: Manchester University Press, 2018).

domain going forward.

There is widespread recognition that for space deterrence to be sustainable in the long term, many nations will need to share technology and intelligence regarding threats.¹⁵⁵ Japan's space power goes beyond mere technology: It encompasses governance frameworks involving a significant number of countries. In this respect, it has an institutional edge over the United States, and can bring its more than a quarter-century old Asia-Pacific Regional Space Agency Forum to also help spread and shape norms about responsible behavior in space.¹⁵⁶ Over time, this forum can be pivotal in raising awareness of space security and expanding the technical and normative basis for the SSA agreements that the United States is forging.¹⁵⁷ At a time of constraints for all powers,¹⁵⁸ this would be a service for which stakeholders in space will be thankful.

¹⁵⁵ Sandra Erwin, "Air Force Chief Goldfein: To Win in Space, U.S. Must Work Closer with Allies," *Spacenews*, April 13, 2019, <https://spacenews.com/air-force-chief-goldfein-to-win-in-space-u-s-must-work-closer-with-allies/>.

¹⁵⁶ "About APRSAF," Asia-Pacific Regional Space Agency Forum, <https://www.aprsaf.org>.

¹⁵⁷ "USSPACECOM, Finnish Air Force Sign Memorandum of Understanding Between Finland, US on Space Situational Awareness," U.S. Space Command Public Affairs, Nov. 4, 2019, <https://www.spacecom.mil/MEDIA/NEWS-ARTICLES/Article/2007988/usspacecom-finnish-air-force-sign-memorandum-of-understanding-between-finland-u/>.

¹⁵⁸ Jennifer Lind, and Daryl G. Press, "American Power in an Age of Constraints," *Foreign Affairs* 99, no. 2 (March/April 2020): 41-48.

Saadia M. Pekkanen is the founding co-director of the Space Policy and Research Center (SPARC), the founding co-chair of the U.S.-Japan Space Forum, and the Job and Gertrud Tamaki Endowed Professor at the University of Washington.

