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Quiet Acquisition: The Politics of Justification in Military Capability Trajectories

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Quiet Acquisition: The Politics of Justification in Military Capability Trajectories

By

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Committee in charge:

Professor Ron Hassner, Chair
Professor T.J. Pempel
Professor Michaela Mattes
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Abstract

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Why do states choose different military technology procurement strategies when attempting to develop their security capacity? In this dissertation I examine under what conditions middle-power states choose to develop capabilities indigenously, purchase from allies, or pursue "middle ground" strategies like production under license. How states choose to acquire capabilities, as well as *what* they choose to develop indigenously, sends important signals about the structure of domestic politics as well as decisionmaker perceptions of the alliance. I address these questions through a close case study of Japanese procurement strategies for key defense technologies acquired since the end of the Second War. Japanese military acquisition is constrained in ways no other middle powers face. Despite this, there is significant variation in how Japanese policymakers seek to procure defense technologies. Drawing on archival research, direct observation, and interviews, I discuss the process of negotiating acquisitions trajectories in cases including Japanese information-gathering satellites, the Patriot missile program, maritime patrol aircraft, and radar. I compare my findings in these cases to patterns in South Korea and Taiwan.

Two key takeaways emerge from this analysis. First, I argue that defense technology acquisition patterns reflect domestic political balancing between state and business actors. When government and business interests align, acquisition patterns are consistent over time. Second, I argue that in cases where Japanese business and government interests diverge, policymakers tend to opt for production under license as a procurement strategy. I claim that this is because a divergence in business and state interest in domestic production tends to be based on what I term the "justifiability" of capabilities.

Decisionmakers are concerned about their image, especially in democracies. Government actors want to be perceived as both effective and legitimate. When indigenous development of a capability is seen as "difficult to justify" because it is seen as ineffective or illegitimate, government actors are unlikely to support domestic development in the short term. However, "justifiability" is based on public understanding of the legitimacy of technology and is therefore mutable. For this reason, where Japanese business and government interests diverge due to concerns regarding whether indigenization of the capability can be justified, production under license is a likely procurement strategy. This approach offers a middle ground for businesses and government in which businesses are granted some, but not all, benefits of domestic production. This allows an implicit promise to businesses that when capabilities become "justifiable" domestic production will be sought. In cases where public understanding of capabilities changes over time, the shift is made to indigenize. When justifiability stays constant, so too does licensed production.

To my parents, Michael and Lucia, finally.

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Abbreviations

ABM	Anti-Ballistic Missile
AIDC	Aerospace Industrial Development Corporation
AMD	Air and Missile Defense
APA	Active Phased Array
ATLA	Acquisition, Technology, and Logistics Agency (Japan)
BMD	Ballistic Missile Defense
CSBC	China Shipbuilding Corporation
DOD	Department of Defense (U.S.)
DPC	Defense Production Committee (of Keidanren, Japan)
DPJ	Democratic Party of Japan
DPK	Democratic Party of Korea
DPRK	Democratic People's Republic of Korea (North)
ECS	Engagement Control Station
ELINT	Electronic Intelligence
EPAA	European Phased Adaptive Approach
FMS	Foreign Military Sales
GEM+	Guidance Enhanced Missile Plus
GSDF/JGSDF	(Japan) Ground Self Defense Force
IDF	Indigenous Fighter Aircraft
IFSEC	U.S.-Japan Industry Forum for Security Cooperation
IGS	Information Gathering Satellite
IHI	Ishikawajima Heavy Industries
ISAS	Institute of Space and Aeronautical Science (Japan)
JAXA	Japan Aerospace Exploration Agency
JDA	Japan Defense Agency
JRC	Japan Radio Company
JSDF	Japan Self Defense Force
JSP	Japan Socialist Party
J-TMDAS	Japan Theatre Missile Defense Architecture Study
KAMD	Korean Air and Missile Defense
KHI	Kawasaki Heavy Industries
KMT	Kuomintang
LDP	Liberal Democratic Party (Japan)
LRDR	Long Range Discrimination Radar
L-SAM	Long Range Surface-to-Air Missiles
MELCO	Mitsubishi Electric Corporation
METI	Ministry of Economy, Trade, and Industry (Japan)
MEXT	Ministry of Education, Culture, Sports, Science, and Technology
MHI	Mitsubishi Heavy Industries
MICOM	Missile Command (U.S. Army)
MITI	Ministry of International Trade and Industry (Japan)
MMA	Multi-Mission Maritime Aircraft
MND	Ministry of National Defense (Taiwan)

MOD	Ministry of Defense (Japan)
MOF	Ministry of Finance (Japan)
MOFA	Ministry of Foreign Affairs (Japan)
MOT	Ministry of Transportation (Japan)
MPA	Maritime Patrol Aircraft
MSDF/JMSDF	(Japan) Maritime Self Defense Force
NAL	National Aerospace Lab (Japan)
NASDA	National Space Development Agency (Japan)
NDPO	National Defense Policy/Program Outline
NCSIST	National Chung-Shan Institute of Science and Technology
NEC	Nippon Electric Company
NHK	Nippon Housou Kyoukai/Japan Broadcasting Corporation
NPT	Treaty on the Non-Proliferation of Nuclear Weapons
NTRI	Naval Technical Research Institute (Japan)
OPCON	Operational Control
PAC-2	Patriot Advanced Capability (version) 2
PAC-2 (UG)	PAC-2 (Upgraded)
PAC-3	Patriot Advanced Capability (version) 3
PARC	Policy Affairs Research Council (Japan)
PPP	People Power Party (South Korea)
PRC	People's Republic of China
RFP	Request for Proposal
RMA	Revolution in Military Affairs
ROC	Republic of China (Taiwan)
ROK	Republic of Korea (South)
ROKN	Republic of Korea Navy
SAR	Search and Rescue
SCAP	Supreme Commander of the Allied Powers
SDI	Strategic Defense Initiative
SIGINT	Signals Intelligence
SRBM	Short-Range Ballistic Missile
TDRI	Technical Research and Development Institute (Japan, Navy)
THAAD	Terminal High Altitude Area Defense
TMD	Theatre Missile Defense
TTRI	Tama Technology Research Institute
WESTPAC	Western Pacific Basic Architecture Study

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They say that it takes a village to raise a child. It has also taken a village to finish this dissertation. This project has been almost a decade in the making; it has survived a global pandemic, it has moved around the world with me, and it has grown with me. I could never have finished it without the support of innumerable people and institutions. I am limited by time, space, and my own memory in my ability to express my thanks to those people who have helped me. However, my appreciation for those who have given me support, both those listed here and otherwise, has no limits.

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1 Introduction

One of the first tasks the Supreme Commander of the Allied Powers (SCAP) undertook at the beginning of the Allied occupation of Japan was systematically dismantling Japanese military manufacturing and development facilities. For a short period, Japan was banned from not only foreign policy belligerence or the maintenance of military capacity but even participation in civilian development of capabilities that might have military implications, such as aircraft. This move to halt the pace of Japanese military development was short-lived, however. The outbreak of the Korean War in July 1950 led SCAP to order Japan to remilitarize, beginning with the formation of the National Police Reserve and the provision of U.S.-made Sherman and M24 Chaffee tanks.

In 1954 Japanese decision-makers were given the option of either acquiring their next generation of tanks from the United States or developing their own. Rather than choosing to continue purchasing capabilities from the United States, Japanese leaders chose indigenous development. Design work on the first Japanese-manufactured tank of the postwar period began under the direction of the Ground Armaments Directorate at the Technical Research and Development Headquarters of the Japanese Self Defense Force (JSDF). The Type 61 Main Battle Tank was completed in 1962 by Mitsubishi Heavy Industries. Although initial production was quite low, with only ten tanks produced in its first year, Japan has continued and even expanded the domestic development of tanks ever since.[1] This expansion of new tank technologies has continued since well past the end of the Cold War. The Type 10, the current model being used by the Japan Ground Self Defense Force (GSDF), entered service in 2012. This model is noteworthy in that it is the first Japanese-developed tank that can be deployed outside of Hokkaido, Japan's northernmost island. Earlier models were too heavy for mainland Japanese roads.[2]

Japanese domestic production of tanks, as well as the longevity of that production, represents an interesting empirical puzzle. It was never a given that Japan would switch from purchasing tank technologies from the United States to domestic development in the postwar. On one hand, American-made tanks were expensive, and the tank model available for purchase - the M47 Patton model - was designed with the goals of the American military in mind. They were criticized for not particularly meeting Japanese strategic needs. Beyond the high cost of purchase and the perceived mismatch between capabilities and goals, there was domestic interest in production among Japanese manufacturers. Several Japanese companies produced tanks in the lead-up to and during the Second World War. These interested businesses had strong lobbying access to politicians and bureaucrats likely to make acquisition decisions. In some ways, therefore,

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[1] Hayashi Iwao 林磐男. *Sengo nihon no sensha kaihatsushi – tokusha kara 90shiki sensha e* 戦後日本の戦車開発史—特車から９０式戦車へ [The History of the development of postwar tanks] (Tokyo: Kaya Shobou, 2002).

[2] Aratana jidai no anzen hoshou to boueiryoku ni kan suru kondankai 新たな時代の安全保障と防衛力に関する懇談会 [Discussion group regarding maintaining peace and defense power in the new era]. "Bouei seisan/gijutsu kiban" 「防衛生産・技術基盤」 ["The foundation of defense technology/production."] Nihon boueishou 日本防衛省 [Japan Ministry of Defense]. April 2010. http://www.kantei.go.jp/jp/singi/shin-ampobouei2010/dai5/siryou1.pdf, accessed June 20, 2021.

it is unsurprising that Japanese political planners had already turned their attention to the possibility of economic growth inherent in fostering defense manufacturing.

On the other hand, Japan faced many constraints on its domestic development of tanks. The years leading up to the completion of the Type 61 saw unprecedented levels of domestic protest focused on the impending renegotiation of the U.S.-Japan Security Treaty. Associated with these protests was renewed public support for Article Nine, the "no-war" clause of the Japanese constitution which has limited the role of the military in Japan's foreign affairs. Even setting aside the very real question of whether the production of tanks was technically legal, the political cost for policymakers and manufacturers of being seen as "merchants of death" was high. It is interesting, therefore, that despite all these political costs, Japanese decision-makers chose to produce tanks domestically rather than purchase them from abroad.

Japanese indigenous development of tank capability highlights a broader puzzle. Despite strong arguments both for and against domestic development, there has been significant variation in the circumstances under which Japan has developed security technologies indigenously versus when it has sought other avenues of acquisition. Throughout the postwar era, Japan has pursued various procurement acquisition strategies. In some cases, Japan has relied altogether on American capabilities. In others, it has eschewed existing American technologies in favor of pursuing domestic development, sometimes at a significant political and financial cost. These strategies have also sometimes remained stable and sometimes changed over time. In some cases, a program that initially relied on purchase from allies shifted with changing political priorities to domestic development. In other cases, initial domestic interest in indigenous development did not translate into policy, with Japanese R&D abandoned in favor of reliance on licensed production or purchase from the United States.

What causes states to choose to develop some military-use technologies domestically while relying on purchase or coproduction for others? For what reasons might a state change its approach to the procurement of a defense capability over time? More broadly, what determines states' acquisition strategies for security capabilities? Variation in procurement trajectories between different types of military technologies is not unique to Japan. Rather, it is a characteristic shared by almost all military "middle powers." Security programs vary widely, patterns of acquisition do not reliably adhere to predictable trends, and they often do not exclusively reflect pressing security threats. Furthermore, most developed industrial democracies face significant political and budgetary constraints when attempting to build up their security capabilities. While these states theoretically have the industrial and technical capacity, given infinite time and resources, to develop anything they want, they are unlikely to be able to develop *everything* that they want. Acquisition decisions have important implications for states' foreign policies and their relationships with their neighbors. They determine what types of military actions states can take. Different types of technologies can have a deterrent or inciting effect on balances of power in a region or in the international system. Most importantly, what technologies states seek and how they acquire them also provide clues regarding priorities, constraints, and intent.

In this project, I investigate variations in acquisition strategies middle powers adopt when attempting to develop their security capacity. There are several different approaches to this question, many of which have already been examined in the international relations literature. These include questions of size of military, the development of military strategy and dogma, the role of the state in the development of certain types of technology, and what types of weapons acquire to deal with strategic threats. In this project, I focus on under what conditions states choose to develop capabilities indigenously, purchase capabilities from allies, or pursue "middle ground" strategies

like production under license. What causes states to develop capabilities domestically when they are available for purchase from allies? Indigenous development of capabilities takes a long time and is often costly both fiscally and politically. Furthermore, most modern states capable of launching indigenous development programs have the option of purchasing comparable capabilities from allies. This is particularly puzzling in cases where the state is in a strong security alliance with a superpower like the United States. American defense contractors are on the cutting-edge of military technology production, and while it is rare that the United States is willing to sell its most cutting-edge capabilities, it has a long history of allowing other states to purchase older generations of its military technologies.

Purchasing technologies from the United States has several benefits. U.S. defense capabilities are extensively tested and comparatively reliable. The United States has an incentive to improve interoperability of forces between itself and its military partners. As a result, technologies tend to be sold at competitive prices, especially to allies. Compared to the long timelines of the technology R&D and production cycle, the turnaround time from contract negotiations to delivery tends to be relatively fast. This means that when a technology is necessary in order to address a pressing security threat, purchase may be the only realistic option.

Of course, there are benefits to indigenous development as well. States may seek domestic development to build their own military capacity and to provide money, research opportunities, and experience to their own businesses. States with strong industrial bases are more likely to have strong economies, and indigenous production of defense technologies provides an avenue through which to achieve this. States may also seek to increase their own security and self-reliance, eschewing purchases from abroad as they increase their vulnerability. However, the reality is that purchase from abroad is often faster, cheaper, and more immediately reliable. States' acquisition patterns are the result of strategic choices. Whether American allies choose to develop capabilities on their own or to acquire them from the United States, as well as *what*, specifically, they choose to develop indigenously, sends important signals about both domestic political factors and the relative perceived structure and reliability of the alliance.

I argue that defense technology acquisition patterns reflect domestic political balancing between state and business actors. First, government actors are concerned with political costs and business actors with market access. When government and business interests align, acquisition patterns are consistent over time. When states are interested in indigenous development and businesses also are interested in developing capabilities, states will likely choose to develop domestically. Further, when there is a pressing need for the acquisition of a capability, but states do not see the need for domestic development and business actors do not lobby for contracts, a decision to purchase is likely.

Second, I argue that when state and business interests diverge, states choose flexible trajectories like development under license. All else held equal, government actors would prefer to give lucrative military contracts to domestic producers. A divergence in interest in domestic production between business and government tends to be based on what I term the "justifiability" of capabilities. Decisionmakers are concerned about their public image, especially in democracies. Government actors in particular want to be perceived by the public as both effective and legitimate. When a capability is seen as completely illegitimate, as in the case of nuclear weapons in Japan, for example, states will not seek to acquire them at all. Often, however leaders seek to acquire capabilities which are "questionably legitimate" – for strategic or other reasons it is determined that the state must have the capability, and the issue becomes how and when the state acquires it. When acquisition of a capability is deemed necessary but indigenous development is seen as

"difficult to justify" either because it does not seem to address pressing security concerns or because it is seen as illegal or illegitimate, government actors are unlikely to support domestic development in the short term.

Policymakers understand, however, that the "justifiability" of a capability is socially constructed – that is, it is based on public understanding of the legitimacy of that technology. Because justification is a social concept, it is mutable. For this reason, in cases where business and government interests diverge due to concerns regarding whether indigenization of the capability can be justified to the public, policymakers tend to opt for production under license as a procurement strategy. Licensed production offers a middle ground for businesses and government in which one country holds intellectual property rights to a product and grants manufacturing rights to another.

I demonstrate this pattern through a close Japanese case study, examining under what conditions Japan chooses to develop its security capabilities domestically versus purchasing its capabilities from the United States, as well as under what conditions it changes this acquisition strategy. Japanese military acquisition is constrained politically and legally in ways no other middle powers face. Furthermore, the U.S. is Japan's strongest partner globally and has reliably provided Japanese security since the end of the Second World War. Japan is also constitutionally constrained in its ability to make security technology purchases. Japan should, therefore, be an obvious case in which technology necessary for national defense is often purchased from the U.S. Despite this, however, there are well-known cases in which Japanese policymakers ignore domestic and international pressures and choose indigenous development of capabilities at sometimes significant cost.

The remainder of this introduction proceeds in five parts. The first section describes the outcome of interest, variation in the strategies states may adopt when seeking to acquire specific technologies. I focus on three main possible approaches to procurement: states may choose to develop capabilities indigenously, to purchase capabilities from another country, or produce capabilities under license. In the second section, I discuss existing explanations for variation in how states build their military capacity. I describe the existing broad international relations literature on military acquisition policy, identifying a tendency to either essentialize or to over-segment the concept of military capabilities, as well as a general focus on development within either military superpowers or those states which are just beginning to expand their security capabilities. I argue that security acquisition trajectories are not predetermined but rather are the result of strategic choices made by state decision-makers and that therefore they reflect the priorities and interests of state leaders.

Japan is an ideal case study to highlight this relationship. It is relatively easy to access Japanese acquisition information, there are high levels of variation both between technologies and across time, and Japanese policymakers face notable constraints on justifying indigenous development of military technologies. These constraints are not necessarily *different* than those faced by other states, simply stronger. Japan is therefore a strong case in order to establish patterns and to build theories regarding the role of justification in balancing business and state interests. There is also robust literature on the business-government relationship in Japan, which provides arguments regarding the factors that determine when and how Japan seeks indigenous development versus purchase from the United States.

I use this existing literature to outline two major families or "types" of arguments about procurement in the third section. The first type is "state-centered." These tend to be externally focused arguments in which the primary actors are politicians and bureaucrats who seek to

maximize security. The second type is "civilian-centered" arguments in which the primary actors are businesses that lobby the government for indigenous development, either successfully or unsuccessfully, to seek to maximize profits and to participate more actively in markets of interest. Both approaches have explanatory value. I argue that rather than viewing these two approaches as in conflict with one another the best answer for variation in acquisition trajectories is a combination of these two approaches. Procurement strategies are best understood as the result of give-and-take between political and civilian actors.

In the fourth section I describe my argument in detail. I argue that while acquisition decisions are often described as "reactive," the historical and political record indicates that rather than external shocks determining outcomes, they tend to justify acquisition strategies that were already being sought domestically by business actors. I argue that defense technology acquisition patterns reflect domestic political balancing between state and business actors. When state and business interests align, acquisition patterns are consistent over time. In cases where business and government interests diverge due to concerns regarding whether indigenization of the capability can be justified to the public, policymakers tend to opt for production under license as a procurement strategy. Licensed production offers a middle ground for businesses and government in which one country holds intellectual property rights to a product and grants manufacturing rights to another. In the fifth section, I outline the cases presented in this manuscript.

1.1 Outcome of Interest: Procurement Strategies

What determines a state's security acquisition trajectories? Why do states choose indigenous development in some cases but not in others? In this section, I describe the outcome of interest to this project and discuss possible indicators of this outcome, particularly regarding the Japanese case on which this project primarily focuses. In general, I conceptualize four security capability acquisition strategies middle-power states with larger alliance partners may choose from. Of these four I focus on three, arguing that the first outcome results in different cost-benefit analysis than the others and is therefore theoretically distinct and beyond the scope of this project.

First, states may choose to entirely eschew the development of a capability. In some cases, these capabilities may be so outside the realm of conceivable security threats as to be ridiculous, i.e., a landlocked country developing a blue-water navy; in other cases, these capabilities may simply be reliably assured by allies, as in the case of most of nuclear-capable Northeast Asian states' strategic reliance on the American nuclear umbrella. This is of course not to say that there are no cases in which states pursue capabilities outside of those suited to address pressing security problems, or indeed that there is no observable variation in these cases; many landlocked countries seek expanded maritime forces, many underdeveloped states have "space programs" in name only, and many states guaranteed protection under alliances with the United States pursue capabilities domestically. The argument is instead that their reasons for doing so are likely to be significantly different from those that determine whether states develop capabilities domestically or indigenously. While the counterfactual puzzle – why states choose *not* to develop capabilities – is an interesting and important question in and of itself, the drivers of this approach – and the associated cost-benefit analyses – are arguably distinct from acquisition strategies; indeed, they are the *lack* of acquisition. This project, therefore, treats this strategy as theoretically distinct from the others listed below and does not examine it in depth.

Second, and more relevant to this project, states may choose to **purchase capabilities from allies**. These purchased capabilities will usually be one or more generations behind the cutting

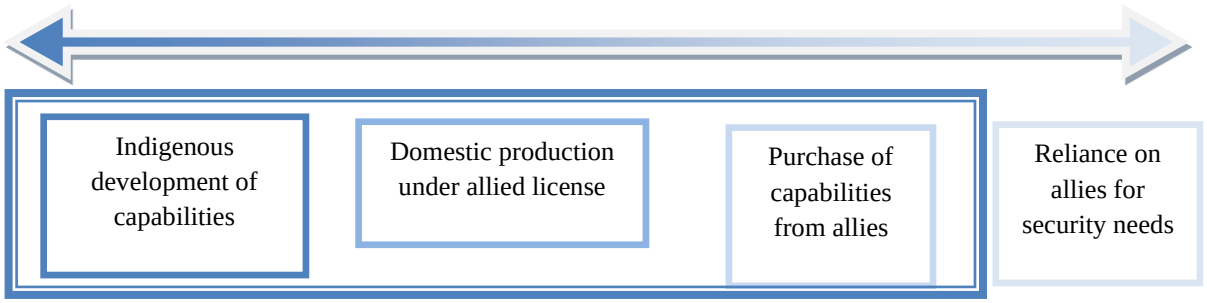
edge, but acquisition from abroad allows states to avoid the long and costly indigenous development process. Furthermore, responsibility for the development of this capability rests squarely on the shoulders of the ally in this case; when the JSDF purchases F-35B fighter jets from the United States, for example, they may not have access to the benefits of indigenous R&D, but neither are they accused of working to develop weapons capabilities. In Japan, foreign corporations are required to work with Japanese trading company partners when importing military/security technology. This is often seen as a "quieter" approach to defense buildup, as it is seen as being fundamentally constrained by the United States. It is also easier for government actors to frame these purchases to the public as concessions to American pressure, whether or not any actual political pressure from the United State drove acquisition decisions. Operationally, this outcome is present when a capability is being produced by an American firm working with a Japanese trading company.[3]

Third, states may **opt to develop capabilities under allied license**. Production under license is an agreement, usually between two states, which allows countries to bypass the costly research and development stage of acquiring products and refocus on domestic manufacture of preexisting overseas designs. In essence, companies can manufacture capabilities using technical information purchased from abroad rather than developed domestically. This approach offers firms some benefits; it allows them to learn about the capability as they develop, for example, effectively allowing many companies to reverse-engineer the technology. There are some costs, however; the license holder provides technologies including drawings, specifications, test equipment, etc., much of which must be built in the license holder's country. A famous example of the cost of development under license is how a Patriot Missile, if broken, had to be sent back to the United States for repairs despite its initial manufacture in Japan. In essence, this represents a middle-ground approach in which capabilities are developed at speed but domestic manufacturers are involved in on-the-ground production. As in the case of purchase of capabilities, policymakers are much more able with this option to frame acquisition as either cooperation with the United States or concession to American pressures to "buy American." Licensed production also offers the added benefit of allowing policymakers to frame production as development of domestic technological capabilities with aid from American companies.

Fourth, and finally, states may opt to **develop capabilities domestically from the beginning**. This generally means that states will shoulder the burden of heavy startup costs of new technologies but offers the benefit of allowing industries within that state access to R&D funds in support of that technology. In many cases, this allows those industries to develop their capacity for technological "spin-offs," related technologies which may then be applied to commercial technologies, or for "spin-ons," use of technologies the firms already possess for lucrative security contracts. Furthermore, if an industry succeeds in producing a capability indigenously it gains competitive access to that market. An example of this is Japan's space launch capability; although the path to development was rocky, Japan is now an active and competitive member of the launch community, offering its launch capabilities to others as well.

[3] Empirically it may be the case that multiple producers of specific types of military technologies exist at the same time. This merits tracking and can be analyzed using quantitative measures, but for the sake of practicality in cases of a plurality of manufacturers, I focus on whichever model/capabilities have the largest number of units in use by the various services of the JSDF. Similarly, while this project endeavors to look at specific technologies, many military systems are modular; given that, purchase from allies assumes that the capability is at least 75% ally-produced. This holds across outcomes, not only cases in which capabilities are produced from abroad.

Fig. 1.1 - Range of Acquisition Strategies



While I have presented these outcomes as four discrete strategies, in reality, strategies exist on a spectrum. Figure 1.1, presented above, depicts the range of acquisition strategies, with the three outcomes of interest within the project highlighted. In addition to variation in acquisition strategies between technologies, there is often significant variation in the approaches states take in procuring similar or the same technologies over time. In 1950 Japan did not produce tanks domestically, while today Japan produces its own indigenously developed capabilities. Strategies can and do shift over time. What accounts for a shift from outright purchase of capabilities from allies to domestic production under license? Under what conditions might Japan change its strategy from development under license to wholly Japanese production?

Despite this interesting and important variation in acquisitions trajectories, the question of under what conditions and for what reasons states choose specific acquisition strategies has been under-theorized in the broader international relations literature. In the following section, I briefly discuss the state of the literature on military procurement, arguing that it does not offer a complete answer to the questions of why states might choose purchase or indigenization, as well as why these approaches may change over time.

1.2 Explaining Variation in Military Acquisition Strategies

The International Relations literature has often treated material military capabilities as interchangeable.[4] Even within the literature on disaggregating material capabilities, the tendency is to frame these capabilities in the aggregate. This subset of research offers extremely useful insight into how one might measure military capabilities effectively; however, its purpose is to

[4] The famous example of framing military power in broad material terms is of course Kenneth Waltz., who argued, "within-system changes take place all the time, some important, some not. […] Such changes occur at the unit level." Waltz claims that within international relations even the most important "unit-level" change, the development and proliferation of nuclear weapons, has not yet resulted in a fundamental change to the international system on a structural level. This disinterest in disaggregating types of military power is not a purely structural realist phenomenon, but also extends to liberal and even to some constructivist thinkers. Both Robert Keohane and Steven Krasner attempt to engage the debate on "different types" of power, but both ultimately only engage with military power in generalist material terms. See Kenneth N. Waltz "Structural Realism after the Cold War." *International Security*, Vol. 25, No. 1 (Summer 2000), p. 5; Kenneth N. Waltz. *Theory of international politics*, (Long Grove: Waveland Press, 2010); Stephen D. Krasner. "State power and the structure of international trade." *World Politics* Vol. 28, No.3 (1976): 317-347; Robert O. Keohane, *After hegemony: Cooperation and discord in the world political economy* (Princeton University Press, 2005).

determine what capabilities lead to the greatest military capacity. In other words, this work is predicated on understanding *how* a country can achieve maximum strength, not *why* a country builds its military in the way that it does. This literature is built on the presumption that there is one "ideal" way to militarize which, if identified, all rational states should pursue.[5]

The offense-defense balance literature delineates between "offensive" and "defensive" military technologies and claims that war is more likely when "offense" dominates and less when "defense" dominates. This literature examines variation in the types of technologies states acquire and acknowledges that international outcomes vary because of the character of technologies pursued.[6] However, the offense-defense balance literature seeks to answer a slightly different question, as it tends to focus on the effects of different types of technologies on relationships between states rather than on *how* those technologies are acquired. For offense-defense balance scholars, the character of the technology is the focus; how that technology was acquired is immaterial.[7]

There has been limited work done on variation within acquisition strategies, with the majority of this work centered in Washington D.C. and focused on American policies.[8] In particular, the focus tends to be on whether a type of capability will be pursued and/or how successful that pursuit was rather than on the source of development.[9]

There *is* a literature that takes into consideration whether technological capabilities are likely to be developed indigenously or to be purchased from abroad: on the business side, discussion of whether firms should invest in technologies tends to be rooted in questions regarding the expectation that governments may rely on the purchase of capabilities instead. This literature asks under what conditions businesses should be willing to compete with foreign firms, how they should position themselves to receive foreign technologies, what they can do to gain licensing

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[5] See David J. Singer. "Reconstructing the correlates of war dataset on material capabilities of states, 1816–1985." *International Interactions* 14, no. 2 (1988): 115-132; Ashley J. Tellis, Janice Bially, Christopher Layne, and Melissa McPherson. "Chapter Seven: Measuring Military Capability" in *Measuring National Power in the Postindustrial Age*. Product Page. RAND Corporation, January 1, 2000. http://www.rand.org/pubs/monograph_reports/MR1110.html; Phil Arena. "Phil Arena: Measuring Military Capabilities." *Phil Arena*, June 22, 2012, http://fparena.blogspot.com/2012/06/measuring-military-capabilities.html, accessed October 7, 2013.

[6] Robert Jervis, "Cooperation under the Security Dilemma," *World Politics*, Vol. 30, No. 2 (January 1978), pp. 167-214, is usually credited with launching this body of work.

[7] As a broad sample, see Stephen M. Walt, *The Origins of Alliances* (Ithaca, N.Y.: Cornell University Press, 1987); Thomas J. Christensen and Jack Snyder, "Chain Gangs and Passed Bucks: Predicting Alliance Patterns in Multipolarity," *International Organization*, Vol. 44, No. l (Spring 1990), pp. 137-168; George W. Downs, David M. Rocke, and Randolph L. Siverson, "Arms Races and Cooperation," in Kenneth A. Oye, ed., *Cooperation under Anarchy* (Princeton, N.J.: Princeton University Press, 1986): 118-146; Charles L. Glaser, "Political Consequences of Military Strategy: Expanding and Refining the Spiral and Deterrence Models," *World Politics*, Vol. 44, No. 4 (July 1992), pp. 497-538; and Shai Feldman. *Israeli Nuclear Deterrence: A Strategy for the 1980s* (New York: Columbia University Press, 1982).

[8] See Michael Rich, Edmund Dews, and C. L. Batten Jr. *Improving the military acquisition process: Lessons from RAND research*. No. RAND/R-3373-AF/RC (Santa Monica, CA: RAND Corp., 1986); Paul H. Richanbach, et al. *The Future of Military R&D: Towards a Flexible Acquisition Strategy*. No. IDA-P-2444 (Alexandria, VA: Institute for Defense Analyses, 1990).

[9] See Walter A. McDougall. *Heavens and the earth: a political history of the space age* (Baltimore & London: The Johns Hopkins University Press, 1997); Scott Sagan. "Why Do States Build Nuclear Weapons?: Three Models in Search of a Bomb" *International Security*, Vol. 21, No. 3 (Winter 1996-1997); Benjamin G. Bartlett. "Institutional Determinants of Cyber Security Promotion Policies: Lessons from Japan, the U.S., and South Korea." Doctoral dissertation, University of California, Berkeley, 2019. http://oskicat.berkeley.edu/record=b24911205~S1.

contracts, etc.[10] This literature, however, approaches the question from the business side exclusively and is relatively agnostic about the drivers of acquisition from the business side. While it offers *insight* into what conditions drive outcomes, it does not offer clear *explanations*.

The process of acquisition is under-theorized; this is an important issue, as the question of variation within states' military acquisition strategies is important for three major reasons. First, as previously stated, despite its limited reflection in the literature, the reality is that there is a high degree of variation in trajectories. This variation exists not only between states but in single states across time; acquisition strategies clearly and observably vary between military technologies, and these variations do not appear to be determined conclusively by strategic need, type of technology, etc. Second, states and in particular military leaders and policymakers seem to behave as if these distinctions matter. Japan has been careful to frame its buildup as purely defensive in nature, emphasizing terms like "proactive contributions to peace." While this may, to a degree, be simple lip service, there appear to be significant reputational implications to the development of some types of technologies. China, for example, has actively complained about deployment and development of Japanese fighter jets, while they have not said nearly as much about information gathering satellites or Japanese space launch capabilities. Whether a country purchases its capabilities from allies or develops them domestically has clear and observable implications for both foreign and domestic policy. Third, as technology expands and new types of warfare in space and cyberspace become increasingly feasible, the breadth of strategies available to states also expands, meaning that the issue is simultaneously becoming more important and more complicated. Ultimately, a framework through which IR scholars can approach these issues is necessary.

This project proposes not only a closer examination of the causes of variation in acquisition trajectories but also seeks to address the focus on "great powers" in general and the American military in particular. While the literature on American acquisition trajectories is well-developed, it is arguably not particularly generalizable to a wide variety of cases. The American military would be hard-pressed to find foreign producers of most military technologies that are available for purchase and represent a significant improvement on those capabilities developed domestically. Similarly, the United States is not constrained in its acquisitions in the way that other countries with smaller defense budgets might be. Although American military acquisition is the most studied case, therefore, it is not necessarily the most *illustrative*.

I focus on Japan as a guiding case study. Japanese military acquisition is constrained politically and legally in ways no other middle powers face; nevertheless, in the last twenty years, Japanese security programs have evolved significantly. A wide variety of capabilities have been acquired, military administration has been reformed, and laws regarding the military have been rewritten. In 2015 the Abe administration revised the rules regarding Japan's ability to exercise its right to collective self-defense, a move that required a reinterpretation of the Japanese constitution. In August 2019 the Japanese Defense Ministry released its ¥5.32 trillion ($50.3 billion) budget request for the 2020 fiscal year, marking the seventh consecutive year Japan's military spending has risen. A huge component of this buildup has been focused on the acquisition of security capabilities.

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[10] See Martin Hemmert. "The influence of institutional factors on the technology acquisition performance of high-tech firms: survey results from Germany and Japan." *Research Policy* 33.6-7 (2004): 1019-1039; Shiu-Wan Hung, and Ruei-Hung Tang. "Factors affecting the choice of technology acquisition mode: An empirical analysis of the electronic firms of Japan, Korea and Taiwan." *Technovation* 28.9 (2008): 551-563; Kozo Kiyota, and Tetsuji Okazaki. "Foreign technology acquisition policy and firm performance in Japan, 1957–1970: Micro-aspects of industrial policy." *International Journal of Industrial Organization* 23.7-8 (2005): 563-586.

The Japanese buildup of military capabilities has been well-documented and widely discussed in the literature on Japanese politics, and it has been remarked upon in the broader IR literature. To an extent this is the result of ease of access to information; the community of defense specialists is small, businesses that focus on security capabilities are few, and the nature of production is not only a matter of public record but is publicized and widely discussed. As a result, it is relatively simple to get information about security acquisitions in the postwar.

Some of this academic work on the development of capabilities has simply focused on documenting the expansion of Japanese military capabilities, while others question the causes of this expansion and their implications for foreign policy. Some have argued that the expansion of Japanese military capabilities has obvious ties to changes in the regional threats Japan faces.[11] Others have argued that military expansion has more to do with Japanese domestic factors like the search for "normal nation-hood" and a more equal relationship with the United States, and that acquisition under the current administration is just the reflection of gradual change which has been institutionally in place since the years of Nakasone and Reagan.[12] Others have claimed that changes in Japanese acquisition are driven not by politicians or even by bureaucrats but by businesses that have long been interested in participating in the security market and are finally able to take advantage of institutional changes to pursue these high-growth industrial opportunities.[13] Overall, most of the literature on the expansion of the Japanese military looks at *why* Japan has expanded its capabilities in the post-Cold War rather than examining *how* those capabilities have expanded.

How Japanese capabilities have expanded, however, is especially interesting, particularly compared to Japan's neighbors. In some ways Japan is an ideal case to examine in that it has such obvious and notable constraints on its ability to acquire capabilities; Article Nine, the no-war clause of the Japanese constitution, for example, is regularly cited as an explanation for why Japan must rely on purchase from the United States for certain capabilities. The U.S.-Japan alliance, as well as pressures to even out the trade imbalance through increased purchases from American corporations, is similarly given as a reason for the Japanese acquisition of American technologies. Despite this, however, there are well-known cases in which Japan develops capabilities that arguably are simultaneously both offensive and defensive, as well as cases in which Japan does not succumb to foreign pressure and indigenously develops at sometimes significant cost. This variation has obvious and important implications for the development of Japanese security capabilities, the U.S.-Japan alliance, and Japan's relationship with its neighbors.

The reasons for variation in military acquisition trajectories are relatively under-theorized within the broader IR literature and theories which do exist tend to focus specifically on the United States or recently developing countries rather than states like Japan. One of the best arguments for approaching this project using Japan as a case study, however, is that there is extensive literature on the relationships between Japanese military policy and business interests. This literature offers the skeleton of several possible explanations for variations in acquisition trajectories. In the following section, I briefly outline a few of these arguments.

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[11] Christopher W. Hughes. *Japan's remilitarisation*. Routledge, 2009.

[12] Adam P. Liff. "Japan's defense policy: Abe the evolutionary." *The Washington Quarterly* 38.2 (2015): 79-99; Richard J. Samuels. *Securing Japan: Tokyo's grand strategy and the future of East Asia* (Cornell University Press, 2008).

[13] Paul Kallender and Christopher W. Hughes. "Japan's Emerging Trajectory as a 'Cyber Power': From Securitization to Militarization of Cyberspace." *Journal of Strategic Studies*, 40.1-2 (2017): 118-145; Saadia Pekkanen and Paul Kallender-Umezu. *In Defense of Japan: From the Market to the Military in Space Policy* (Stanford University Press, 2010).

1.3 Types of Arguments About Japanese Acquisition Strategies

In the following section, I outline two major families or "types" of arguments about procurement: "state-centered" arguments, which focus on government actors who seek to maximize security, and "civilian-centered" arguments, which focus on the lobbying efforts of business actors. I argue that rather than viewing these two approaches as in conflict with one another the best answer for variation in acquisition trajectories is a *combination* of these two.

1.3.1 State-Centered Arguments

One common type of argument regarding the reasons that states choose different acquisitions trajectories comes out of the literature on military buildup within Japan. It is echoed in the broader literature on military buildups, particularly by realist and neorealist scholars. This argument focuses on political decision-makers as the primary actors; these actors, who are usually assumed to be politicians, bureaucrats, and occasionally military planners, are assumed to be relatively militarily knowledgeable and capable of making informed strategic choices. They seek to maximize national security and in particular the nation's capacity to respond to specific strategic threats it faces. In general, actors rely on allies to address strategic gaps but will seek to acquire capabilities in cases when long-term consensus on strategic priorities with allies is not guaranteed. As an example, Christopher Hughes' work has argued that Japanese military acquisition, and increased cooperation with the United States, reflects changing Japanese security concerns. Hughes claims that patterns of military acquisition are focused on dealing with developing security threats in the region.[14] This strategic focus, as well as the characterization of state decision-makers as rational and security-oriented, has also been reflected in Jennifer Lind's work on realist buck-passing strategies. This work claims that Japan prefers to rely on the security provided by American capabilities but will move to expand its domestic capabilities when it perceives a gap in American assurances and interest. This is reflected in increasing Japanese investment in the Japan Maritime Self-Defense Force (JMSDF) as a response to American disengagement in the region following the end of the Cold War.[15]

While there is a material bend to this argument, it also plays into Samuels and others' more ideational arguments about "technonationalism," or the deep ties between a state's civilian economic apparatus and its domestic security. The literature on technonationalism discusses the tendency of the state to specifically support and protect the development of industries that meet the strategic needs of the state and discusses how Japanese acquisition policy - and the development of Japanese heavy and high-tech industries - have been explicitly and consciously tied to the ideology that development of civilian industry and national security are deeply linked.[16] Finally, this argument type includes a subsection of scholars who argue that while the primary motivator for acquisition policy in Japan is external, it is not the presence or absence of threats.

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[14] Hughes, *Japan's Remilitarisation*, 2009.

[15] Jennifer M. Lind. "Pacifism or passing the buck? Testing theories of Japanese security policy." *International Security* 29.1 (2004): 92-121.

[16] Richard J. Samuels. *"Rich Nation, Strong Army": National Security and the Technological Transformation of Japan* (Cornell University Press, 1996); Eric Heginbotham and Richard J. Samuels. "Mercantile realism and Japanese foreign policy." *International Security* 22, no. 4 (1998): 171-203.

These scholars emphasize the determinative role played by pressure from the larger alliance partner. In other words, procurement of military-use technologies, either through purchase or domestic development, is not a reflection of the concerns of the middle power but instead the desires of the United States. This argument is linked to Lind's argument about realist buck-passing but focuses instead on external pressures to buy more foreign technology. In the Japanese studies literature this type of argument is often referred to as an argument about *gai-atsu*, external policy pressure exerted on Japan by the United States. The argument is that what capabilities Japan acquires are immaterial because the lion's share of Japanese security is provided by American military assurances. Acquisitions reflect American desires because they serve as a method of strengthening the alliance.[17] While external pressure certainly affects acquisitions *volume* it does not necessarily explain *what* Japan chooses to purchase from the U.S. versus indigenously develop.

The body of literature which focuses on strategy, security, and threat claims that rational political leaders make acquisition decisions based on the specific strategic concerns faced by Japan. It makes several predictions about the trajectory of acquisitions. If correct, this argument would predict that (1) in cases where ally technologies are already well-developed and/or reliable in the long term, Japan should be expected to purchase capabilities*;* and (2) in cases where long-term strategy is likely to deviate from allies or when the relationship with allies is perceived as weak, Japan should develop capabilities domestically. Notably, timelines matter in this approach; (3) if Japan faces immediate threats and does not already produce the technologies necessary to deal with them, they may purchase capabilities in the short term as a stop-gap, then switch to domestic production. Finally, (4) if strategic interests with the allies originally align but seem to deviate Japan may begin by purchasing from allies but then switch to domestic development when strategic interests diverge.

1.3.2 Civilian-Centered Arguments

The second category of argument explaining Japanese military acquisition strategies focuses not on the state as the actor of interest but the specific interests and relative lobbying power of industrial powers within the state. The claim being made is that acquisition decisions are reflective not strictly of organizational infrastructure or strategic cost-benefit analyses on the part of state decision-makers but instead of business interest in the development of capabilities. This argument has been particularly salient in the literature on Japanese development, but it also appears in the comparative literature in similar cases including not only Taiwan and South Korea but even India and France.

The literature focusing on the role powerful civilian political groups can play in the decision to acquire capabilities, as well as in the formulation of security policy more generally, comes from the broader neoliberal/organization literature. The strength of selected, high-growth industries in the creation of Japanese policy is long-standing, and the linkages between Japanese businesses and the government go back as far as the original books and articles about Japan as a developmental state. Similarly, there is a large literature that paints Japanese corporate interests as unusually perceptive, choosing to specialize in growth industries and ignore those industries in which they are unlikely to be successful.

[17] Leonard J. Schoppa. "Two-level games and bargaining outcomes: Why gaiatsu succeeds in Japan in some cases but not others." *International Organization* 47, no. 3 (1993): 353-386; Christopher W. Hughes. "Japan's emerging arms transfer strategy: diversifying to re-centre on the US-Japan alliance." *The Pacific Review* 31, no. 4 (2018): 424-440.

Japan is a particularly interesting and important case for this set of arguments, as it represents a strong but also relatively uncomplicated example of the role of societal interests in action. The close political and financial ties between state and business in Japan have been both exceptionally deep and relatively unchallenged in the postwar period. Early efforts to break up these ties by the Occupation forces proved ultimately unsuccessful, and in large part because of the early strength of these ties, businesses in Japan have not had to compete with other interest groups which might be relevant in other cases, such as civil society groups or labor unions. Equally important has been the relatively equal power dynamic between state and business in Japan. In other cases, particularly South Korea and Taiwan before democratization, the state had clear control over business. This has not been the case in Japan. The result is that these relationships between business and state interests are especially clear-cut in the Japanese case.

This literature has only expanded as Japan has developed more and more relevant security capabilities. Pekkanen and Kallender-Umezu, for example, argue that in essence the Japanese push for space capability was driven by industrial voices – Mitsubishi Heavy and Mitsubishi Electric, among others. The claim is that while strategic concerns may have ultimately determined the *need* for capabilities, the fact that those capabilities were developed domestically may be chalked up to Japanese industries' desire for access to "spin-off" technologies.[18] Steven Vogel additionally has argued that not only the potential for "spin-offs" but also "spin-ons" has been an important force in Japanese acquisition, claiming that many Japanese corporations already possess the technologies necessary to develop capabilities domestically and wish to gain access to lucrative defense contracts.[19] Kristi Govella has also written about the importance of corporate lobbying access to policymakers, claiming that because American defense contractors have to work through Japanese trading companies they have limited capacity to lobby for foreign development, allowing Japanese companies first pick of technologies they are interested in developing.[20]

This is an argument about the power of domestic political interests; it would predict that when Japanese corporations (1) are interested in the possibility of spin-off/spin-on technologies associated with developing a capability, (2) have more influence with policymakers than competitors, and/or (3) can only gain access to R&D communities if producing these capabilities domestically, they will develop indigenously. When access to R&D is guaranteed without domestic development, Japanese corporations do not think they would benefit significantly from domestic development, or in unusual cases where American lobbying power is strong, reliance on allied capabilities can be expected.

I have outlined two basic schools of thought which offer explanations for Japanese security acquisition trajectories. The fundamental point at which these two groups diverge is *which actors' interests drive outcomes* -- whether acquisition policy is driven by the state and strategy or by civilians and businesses. I argue, however, that this is ultimately a false dichotomy. In the following section, I introduce my argument, which claims that it is the *interaction between actor interests* that determines outcomes.

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[18] Pekkanen & Kallender-Umezu, *In Defense of Japan*, 2010.

[19] Steven Kent Vogel. *Japan remodeled: How government and industry are reforming Japanese capitalism*. Cornell University Press, 2006; Saadia M. Pekkanen. *Picking Winners?: From Technology Catch-up to the Space Race in Japan* (Stanford University Press, 2003).

[20] Kristi E. Govella. "Permeable Policymaking: Foreign Firms in the Japanese Political Economy." Doctoral dissertation, University of California, Berkeley, 2016. http://oskicat.berkeley.edu/record=b24741657~S1

1.4 State-Business Negotiation and "Justifying" Capabilities

This argument seeks to bridge the gap between political and civilian actors; it comes solidly from the literature on organizational theory and argues that explanations of foreign policy are found "in the ongoing struggle for influence among domestic social forces or political groups."[21] Bureaucrats and politicians are not passive recipients of policy, but instead, work to create conditions that favor their interests and the interests of their political allies. In other words, acquisitions strategy -- which straddles the nexus between security and economic policy -- is a result of political give and take between these two groups of actors.[22] Who determines the shape of buildup is ultimately a domestic political story; to an extent, outcomes are what Scott Sagan refers to as "solutions looking for a problem to which to attach themselves so as to justify their existence."[23]

1.4.1 Balancing State and Business Interests

This argument begins with the assumption that a strategic need for a given capability exists, has been identified by decision-makers, and that the decision to acquire this capability has been finalized. Given this, there are two sets of interest at work that collide to create acquisition outcomes. First, there is *state-side demand*; this considers the political costs and benefits of indigenous development. This addresses the percieved audience cost of indigenous development; it assumes specifically in the Japanese case that policymakers seek to be perceived as responding to strategic threats effectively while not violating Article Nine. This political cost is variable and depends on decision-makers' attempts to "sell" capabilities to the public. In normal situations, the cost of domestic development will be low when capabilities address long-term threats and are viewed as defensive, but costs increase either for more offensive capabilities or in cases where technology is needed but Japanese businesses do not have the existing base to develop immediately, leading to the possibility that Japanese reliance on indigenous development could be viewed as "ineffective."

There is also business-side demand for indigenous development. These demands reflect the interests of Japanese businesses and ask whether dominant firms within Japan are interested in the development of capabilities in the first place. This includes whether the capabilities in question have the potential for technological spin-offs and spin-ons, whether development provides Japanese corporations with access to research and development funds toward technologies important to the overarching technonational plan, and whether participation in domestic development would provide businesses with access to international research communities they might otherwise have been excluded from. This also includes cases in which Japan does not have an existing base capable of developing these capabilities or those industries and technologies in which Japanese firms simply are not capable of competing internationally. Notably, this covers a variety of possible outcomes: (1) industry might be interested in domestic development and already have the base capacity for development, (2) they might be interested and not have the capacity to

[21] Andrew Moravscik. "Taking Preferences Seriously: A Liberal Theory of International Politics." *International Organization* Vol. 51, No. 4 (1997).
[22] Graham Allison. "Conceptual Models and the Cuban Missile Crisis" *American Political Science Review*, September 1969; Morton H. Halperin and Priscilla Clapp. *Bureaucratic politics and foreign policy* (Brookings Institution Press, 2007).
[23] Sagan, "Why Do States Build Nuclear Weapons?", 1996.

develop, (3) they might be uninterested but have the capacity for development, or (4) they might be both uninterested and lack capacity. Simply put, this could be summarized as dealing with whether industrial planners are interested in the development of domestic capability.

One important benefit of this approach is that there is robust literature on the Japanese economic-security nexus, and a wide literature exists on how Japan has traditionally squared the contradiction between its relatively cold security relationships with its neighbors with economic cooperation and high levels of integration.[24] The idea that policy outcomes are a result of balancing between state-side and business-side interests is not in and of itself a controversial claim; a wide range of research has been conducted on how Japanese business interests regularly balance against political planners.[25] I argue, however, that political costs both domestically and abroad are amplified in the case of security development, and that because of these costs state-side actors, in particular, are likely to be averse to acquisitions that are difficult to "justify" to the public.

As with the other arguments given above, this generates a series of hypotheses regarding expected outcomes for acquisition strategies.

> *H1. When the state-side political cost of indigenous development is low and the business-side demand to develop is high, capabilities should be developed indigenously.*

These cases are those in which the technologies are understood to be defensive and the threats which they deal with are long-term. This should be the case regardless of whether indigenous development will cost significantly more and/or take longer.

> *H2. When the state-side political cost of indigenous development is high and business-side demand to develop is low, capabilities should be purchased from allies.*

In general, these are cases in which Japan is unlikely to be competitive in the development of technologies or research on these capabilities (and funding for that research) is available through other means; furthermore, this deals with technologies that are perceived as offensive or which deal with problems of immediate importance.

The above hypotheses are relatively straightforward; they represent cases in which there is a consensus between state and business actors regarding whether the development of capabilities should be indigenized. More interesting are cases in which these two incentive sets are at odds with one another.

> *H3. When the state-side political cost of indigenous development of high but business-side demand is also high, states will develop capabilities under license initially until state-side political cost decreases (**i.e., domestic development becomes easier to justify to the public**).*

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[24] June Teufel Dreyer. "China and Japan: 'Hot economics, cold politics.'" *Orbis* 58.3 (2014): 326-341; Keisuke Iida. *Japan's Security and Economic Dependence on China and the United States: Cool Politics, Lukewarm Economics* (Routledge, 2017); Avery Goldstein and Edward D. Mansfield, eds. *The nexus of economics, security, and international relations in East Asia* (Stanford University Press, 2012).

[25] Chalmers Johnson. *MITI and the Japanese miracle: the growth of industrial policy, 1925-1975* (Stanford University Press, 1982); T.J. Pempel. *Regime shift: Comparative dynamics of the Japanese political economy* (Cornell University Press, 1998); Steven Kent Vogel. *Japan remodeled: How government and industry are reforming Japanese capitalism* (Cornell University Press, 2006); Marie Anchordoguy. *Reprogramming Japan: The high tech crisis under communitarian capitalism* (Cornell University Press, 2008).

In these cases, Japanese businesses would like to develop capabilities domestically due to perceived spin-on/spin-off possibilities or an interest in developing the industry. However, policymakers face high costs of allowing indigenous capabilities at the time of initial procurement, either because the capabilities are perceived as in violation of Article Nine or because they deal with an immediate and pressing security threat and delaying acquisition for the five-to-ten-year period development would take indigenously might be perceived as irresponsible. In these cases, in the short-term purchase from the United States or reliance on U.S. capabilities should be expected, but in the long term, a concerted effort to develop domestic versions should be observed, as should an attempt to justify indigenization either through the reframing of the capabilities as "defensive" or through the reframing of need.

> *H4. When the state-side political cost of indigenous development is low but business-side demand is also low, states should push for indigenous development initially, but floundering production will lead to eventual reliance on allies.*

This describes cases in which there are relatively low political costs of indigenous development (and demand for capabilities strategically) but also Japanese businesses do not think they are likely to become competitive in these industries and so do not actively pursue indigenous development. In this case, there is a case to be made politically for indigenous development (gets to be perceived as "doing something", perhaps "contributing more" to the U.S.-Japan Alliance), so there should be some initial movement toward development domestically, but ultimately capabilities will flounder, and the state will purchase necessary technologies from allies.

1.4.2 Justification

My argument makes two claims that diverge from the existing literature on Japanese security. The first, as described in depth above, is that the balance between business and state interests drives outcomes. The second, mentioned above, is that justification plays an important role in explaining when states are likely to change their approaches over time. There has been much discussion in both the literature and the news media of the Japanese public's perceived military "allergy"; common knowledge is that, overall, Japanese voters wish to avoid military entanglements and do not support the expansion of capabilities.

It is not clear whether this perception is true or not; in fact, the public when polled tends to be relatively agnostic about security and foreign policy issues, and their most reliable characteristic appears to be that their opinions tend to reflect the status quo.[26] They do tend to be relatively against actions that might lead to foreign entanglements, and in general, the act of selling weapons abroad does seem to invoke a negative image.[27] Still, whether or not this belief in the pacifism of the Japanese postwar holds is somewhat beside the point; the point is that Japanese policymakers

[26] For example, until the second half of the 1980s, the majority of voters thought "it is undesirable for [the SDF] ever to go abroad," but from 1990 until 1993 acceptance of dispatch overtook rejection. More recently, according to an *Asahi Shimbun* poll, the proportion of people supporting the Japanese military legislation enacted in 2015 increased 10% in the span of just a year from March 2016 to 2017 (Sakaiya 2018.)

[27] Kyodo. "Two-thirds of public against easing weapons export curbs: poll," *The Japan Times*, February 23, 2014, https://www.japantimes.co.jp/news/2014/02/23/national/politics-diplomacy/two-thirds-of-public-against-easing-weapons-export-curbs-poll/.

speak and act as if they believe that justification of capabilities matters. “No one wants to be seen as a warmonger,” one expert explained in an interview. “So dual-use and all of that - it doesn’t matter. The only thing that matters is if people think that you’ve given the okay to technologies that might hurt people.”[28]

What, then, does it mean to say that justification matters in determining outcomes? Justification, in this case, is shorthand for the ability of the state-side actor to explain indigenous development which lowers its political cost. In practice, this usually takes one of two forms in the Japanese case. The first is that over time the threat landscape is redefined, and the state can make a more compelling argument that indigenous development is necessary - perhaps that the capabilities provided by the United States no longer meet Japan’s strategic needs, and so to best protect the country Japan must begin domestic development. The second possible form this justification may take is that in some cases, capabilities that had once been understood as deeply offensive will be reinterpreted as defensive over time. “Fundamentally, it has to do with the commercial market,” the expert quoted above explained. “As long as it’s seen as commercial, it’s defensive and no one complains about it.”[29] In the case of Japanese security technology, what matters is not the actual capabilities but how well they are understood and how defensive they appear.

[28] M-WH. Interview by Deirdre Martin. Personal Interview. Tokyo, Japan, July 25, 2019.
[29] A-MS. Interview by Deirdre Martin. Personal Interview. Tokyo, Japan, August 23, 2019.

Fig. 1.2 - Acquisition Outcomes

		Business: Desire to participate in market: High	*Business:* Desire to participate in market: Low
Government: Political desire for indigenous development (based on concern regarding justification)	Low	Indigenous development [*Information Gathering Satellites*]	Licensed production; initial efforts will be made to develop capability but ultimately allies and licensed production will be relied on *[Patriot Missile System]*
	High	In the short term capabilities will be licensed, but in the long term Japanese development will occur WHERE JUSTIFIABLE. [*Maritime Patrol Aircraft*]	Purchase from allies *[Aegis Ashore (radar)]*

In this section, I have outlined my argument and provided predicted outcomes given the assumptions of this argument. The argument and its predicted outcomes are displayed visually in the figure above. In the final section, I discuss how to go about testing these predictions, laying out the scope conditions of the technologies being examined, and offering an outline for the project as a whole.

1.5 Project Outline

Acquisition outcomes are a result of balancing interests between private and public actors. When industry actors are interested in indigenous development and the political costs are low, indigenous development is likely. When industry actors are uninterested in participating in the development of the capability and the cost of indigenous development is high, purchase from abroad is expected. The most interesting cases, however, are those in which there is tension between these interests; in these cases, whether a country will produce domestically or under license will have to do with the "justifiability" of domestic development.

In this section, I propose testing for the project. I begin by briefly outlining the scope conditions, both discussing the timeline of types of capabilities I am interested in and the specific characteristics of technologies I am looking for in a test case. I then propose three case studies featuring the Japanese decision to acquire certain capabilities to evaluate possible explanations. Finally, I discuss the selection of South Korea and Taiwan for comparative case studies. Security programs are extremely varied, and it is challenging to draw comparisons between capabilities that

are not particularly like one another. To simplify the project and to narrow possible explanatory variables down, I propose several scope conditions.

First, the cases examined must be military technologies; while most military capabilities are dual use, the technologies in question are those used by the JSDF for security purposes. Second, the cases examined will be limited to technologies that are available for purchase from allies and about which information is publicly available. Third, this project examines cases in which physical technologies are acquired rather than personnel or training based. In many cases, expansion of military capabilities comes down to training and hiring rather than overt acquisition. While this is an interesting and important facet of the expansion of security capability, it involves different cost-benefit analyses than simply whether to purchase or develop the technology. As a result, cases like the expansion of human intelligence capability or wider cybersecurity training, while interesting and important, are fundamentally separate from the goals of this dissertation. Finally, this project focuses on cases that involve "high" technology and/or are relatively new types of security capabilities. Because the fundamental logic of the research question is based around a cost-benefit calculus, there must be relatively high startup costs for developing capabilities indigenously. If there is a strategic need for a capability and that capability is easily developed or purchased, it is not puzzling that a country will acquire it. It is not puzzling why Japan might indigenously develop its commercial-grade trucks like the Isuzu Forward, for example, but it is more puzzling that they are willing to pay the high start-up costs of development for capabilities like maritime patrol aircraft or satellites when cheaper alternatives are available.

The main body chapters of this manuscript apply this argument in several distinct cases. These cases draw on approximately seventeen months of fieldwork in the Tokyo area through an affiliation with the University of Tokyo's Institute of Social Science and funded by the U.S. Department of Education's Fulbright-Hays Doctoral Dissertation Research Abroad Fellowship and by the UC Berkeley Center for Japanese Studies. This fieldwork included archival research conducted at the National Diet Library and 50+ long-form interviews with Japanese elites, including politicians, businesspeople, bureaucrats, and military personnel, as well as American businesspeople and U.S. military coordinators in Japan. These chapters demonstrate the concrete ways in which acquisition trajectories tend to stay constant when state and business interests coincide and change over time when those interests diverge.

In Chapter 2, I examine the decision to develop Japanese intelligence-gathering satellite capabilities. Business and state interests easily converged; Japanese businesses, particularly Mitsubishi Electric, had long pushed for the development of these capabilities, and bureaucrats and policymakers justified them as both necessary for national security and fundamentally defensive. Unsurprisingly the decision was made to develop IGS capabilities indigenously rather than purchasing similar systems from the United States.

In Chapter 3 I examine a more nuanced case: the Japanese decision to produce PAC-3 missiles under U.S. license. While Japanese businesses were initially interested in joint production, the inability of the state to justify domestic production of "offensive" missiles blocked indigenous development. Even the purchase of these capabilities was initially controversial, and only after a North Korean Taepodong missile was launched over the main Japanese island - an obvious justification for the acquisition of antiballistic missile capabilities - was the decision to acquire the missiles officially finalized.

In Chapter 4 I outline the development trajectory of Japanese maritime patrol aircraft (MPA); these were initially purchased from the U.S., but over time as American MPA technology became less reflective of Japanese strategic needs Japan switched to production of their own

indigenously developed capabilities. This reflects an initial tension between business-side interests, who sought domestic entry into the technology market associated with the aircraft industry, and state-side interests, who sought immediate acquisition rather than the long-term development of indigenous capabilities. Once Japanese businesses completed the necessary R&D and American capabilities no longer matched perceived Japanese security needs, state-side interests were more able to *justify* development and domestic production began.

In Chapter 5 I discuss the decision to purchase radar technology for Aegis Ashore from Lockheed Martin as opposed to pursuing direct Japanese production. Aegis Ashore is still a controversial system, and most Japanese companies have expressed little interest in direct participation; however, state-side leaders deemed the technology to be critical for national security. This has led Japan to purchase capabilities from the U.S.

In the penultimate chapter, I compare the predictions of these arguments against comparative cases in South Korea and Taiwan. I discuss the South Korean case, comparing Terminal High Altitude Area Defense (THAAD) with naval shipbuilding. I discuss Taiwan's program of purchasing tanks from the United States, as well as its recent moves to develop domestic submarine capabilities with help from US defense contractors. I conclude with a discussion of how and whether the politics of justification may be relevant in other political areas.

2 Indigenous Development: Japanese Information Gathering Satellites

On August 31, 1998, around noon Japan time, North Korea launched a two-stage ballistic missile. The first stage of the rocket fell into the sea before it reached Japan, but the rest of the missile flew over the main Japanese island and landed in the Pacific Ocean. This missile, later identified as a Taepodong-1, represented a fundamental change in Japanese understanding of the North Korean threat. The Nodong class of missiles which preceded the Taepondong-1 could only reach parts of Japan, but with this new medium-range missile capability policymakers were concerned that for the first time all of Japan might be in North Korean missile range. This was an obvious and immediate issue. While Japan had always known that conflict on the Korean peninsula would necessarily involve them in some way, until this point it had always been an abstract threat. In 1998 Japanese leaders suddenly found themselves and the rest of their country held hostage, directly entangled in the ongoing conflict between the United States and North Korea.[30]

Almost immediately following the Taepodong-1 launch the topic of indigenous development of intelligence gathering satellite (IGS) was broached as a possible avenue through which Japan might take proactive steps to address the growing threat posed by an increasingly belligerent North Korea. This discussion within the Diet has ultimately grown into a network of domestically produced and deployed IGSs touted as the "biggest evolution in Japan's intelligence capability" in the post-Cold War period due to the sizable financial and technological commitments it represents.[31] The purchase of IGS technology from the United States would have been notable in and of itself as Japan had not launched military-use space capabilities since the Diet had passed a resolution banning doing so in the late 1960s. The overwhelmingly indigenous nature of the development of IGS technologies, however, complicated the narrative even further. From the beginning, it was announced that the proposed four satellites in development – two optical and two radar – would be "jointly developed by major Japanese electronics companies."[32]

The decision to rely on the indigenous development of IGS technology is puzzling for several reasons. First, indigenous production of satellites came at a high comparative cost. In 1998 the United States actively sought to sell IGSs to the Japan Defense Agency (JDA) which were not only significantly cheaper than the $150 billion projected costs of domestically developed and produced technologies but which would also function significantly better.[33] This is a clear example of a case in which more effective capabilities were available for cheaper through purchase by the Americans, but Japanese leaders chose instead to give contracts to Japanese companies.

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[30] Sheryl Wudunn. "North Korea Fires Missile Over Japanese Territory." *The New York Times*. September 1, 1998, https://www.nytimes.com/1998/09/01/world/north-korea-fires-missile-over-japanese-territory.html, accessed June 13, 2021.

[31] Andrew Oros. "Japan's growing intelligence capability." *International Journal of Intelligence and Counterintelligence* 15, no. 1 (2002): 1-25. p. 16.

[32] "Japanese hawks get their spy satellites." *The Japan Times*, December 22, 1998.

[33] Asako Saegusa. "Japan split over US aid for spy satellites." *Nature* 396, no. 6710 (1998): 401.

Second, the costs which this decision threatened to incur were not only financial but also political. Japan until the early 2008s not only had strong norms against the military use of space but also significant laws codifying these norms, including a long-standing law passed in 1969 which explicitly banned the use of space for any military purposes. To indigenously develop and launch IGSs, those rules had to be officially replaced. Japanese leaders had reason to fear public pushback against domestic IGS production.

Third, while Japan has been surprisingly committed to the development of space capabilities at home rather than from abroad, wholly indigenous development of defense technologies is not necessarily the norm for Japan. As outlined in the following chapters, many Japanese technologies, both for defense and for commercial use, followed a long pattern of initial purchase from the United States leading to the negotiation of U.S. licensing deals. In fact, for numerous other models of non-military satellites, this was the pattern Japan followed.

Even in the extraordinary circumstances presented by the rise of a belligerent and missile-capable North Korea, the indigenous development of information gathering satellites was never a foregone conclusion. The same 1998 Taepodong missile launch which influenced Japanese policymakers to push for domestically developed IGS technologies motivated those same policymakers to strengthen the development of anti-ballistic missile defense capabilities under U.S. license, arguing that the threat of North Korean attack was too pressing to wait for long R&D cycles to conclude. The fact that policymakers were willing to concede these timelines and to wait for domestic development IGSs represents an interesting and important puzzle.

Despite these issues, Japanese policymakers chose to eschew purchase from the United States and licensed production and instead to develop information-gathering satellites domestically. What accounts for this decision? While the timeline might suggest that the increased threat posed by an increasingly aggressive North Korea caused Japanese policymakers to acquire IGS technology, this cannot account for the decision to develop domestically instead of seeking American products. Instead, the answer lies, at least in large part, with Japanese business interest and pressure.

Japanese corporations have long been aware of the economic benefits of satellite technology and development. Japanese industry, led by Mitsubishi Electric (MELCO), Mitsubishi Heavy Industries (MHI), and the Nippon Electric Company (NEC), used their ties with Keidanren (the Japan Business Federation, often considered the voice of big business in Japan) and their strong personal and political ties with the bureaucracy, particularly the Ministry of International Trade and Industry (MITI, now METI) to lobby for domestic involvement in space. Japanese industry actors were particularly concerned about potentially being locked out of important technical spillovers associated with the space market due to the difficulty of disentangling military and non-military technologies. Japanese industry has a long history and deep involvement in space. Japan had been actively researching the rockets that would allow them to build space launch vehicles since the 1950s and had successfully launched its first domestically produced satellite, the Ohsumi, into space in 1970. Before the development of Japanese IGSs there already existed a constellation of Japanese-developed and produced earth observation, communication, and positioning satellites in orbit.

In general, the benefits of indigenous development of capabilities for Japanese industry were straightforward: participation in the research and development necessary to produce IGSs offered Japanese businesses access to important research communities as well as to the possibility of technological “spin-offs,” technologies originally developed for military uses but which could be applied to commercial products. Equally relevant was Japanese business’s long history and

deep involvement in space and the subsequent possibility for "spin-ons," applications of commercial technologies for defense contracts. Japanese industry had been producing satellites either domestically or under American license since the 1970s. Japanese researchers had similarly confirmed their ability to launch satellites into orbit domestically in the 1970s.[34] Japanese companies were able and willing to produce information-gathering satellites for the government by the 1980s.

The question of indigenous development of satellite technology is slightly more complicated on the government side; first, the development of these capabilities tends to be costly, and the timeframe in which these capabilities can be rolled out is longer than it would be for the purchase of comparable capabilities from allies. In the Japanese case, domestically developed IGSs would cost substantially more than the purchase of similar IGS technologies from allies. This cost was compounded by other important logistical costs that face any government acquiring new technologies, including training, hiring, and startup costs for personnel tasked with managing the new capabilities. Additionally, domestic development of information gathering satellites ran counter to existing laws regarding peaceful uses of space; as a result, while many mid-and-upper-level military planners acknowledged the importance of procurement of satellite intelligence, policymakers were concerned about the optics of "striking out alone," especially when American capabilities were available.[35] On the other hand, however, policymakers in retrospect have discussed the "quiet" nature of spy satellites, emphasizing the public perception of the capabilities as passive and defensive when discussing Japan's eventual development.

In this chapter, I argue that the decision to develop Japanese information gathering satellite capabilities was the result of the relatively easy convergence of business and state interests. Japanese businesses, particularly MELCO, had long pushed for the development of these capabilities. Policymakers, including politicians, bureaucrats, and military planners, were easily able to justify the technologies as both necessary for national security and fundamentally defensive. Furthermore, there was an easy case to be made that Japan *needed* indigenous capabilities to decrease reliance on the United States. Unsurprisingly the decision was made to develop IGS capabilities indigenously rather than purchasing similar systems from the United States. However, as I discuss, even this relatively "easy" case demonstrates the importance of "justifiability" for policymakers, as state-side actors maintained existing legal provisions against the military uses of space which barred the development of spy satellites until the growing North Korean threat changed the public understanding of what was necessary to protect the Japanese homeland.

I begin this chapter with a brief description of the path of development for Japan's information gathering satellite (IGS) capability, outlining Japan's tortured course to space capabilities beginning in the early 1950s. I also discuss the legalities of IGS development for Japan, not just in terms of constraints posed by Article Nine but also by the Basic Space Law of 1969, which outlawed the use of space for military purposes and was understood by most policymakers throughout the Cold War period as limiting Japanese capacity for IGS development. I additionally briefly outline Japan's long history of space research and exploration. I then discuss the process of acquisition and development of IGS capabilities following the North Korean Taepodong missile

[34] The seminal work on the close relationship between Japanese business interests and domestic development of space technologies at sometimes prohibitive cost is Saadia Pekkanen and Paul Kallender-Umezu. *In Defense of Japan: From the Market to the Military in Space Policy* (Stanford University Press, 2010).

[35] Even following the Taepodong Missile launch in 1998, some Liberal Democratic Party policymakers pushed for increased American involvement in the Japanese spy satellite network, citing American technical expertise and concerns about the R&D timeline for domestic development. Saegusa, "Japan split over U.S. aid for spy satellites," 1998.

launch in 1998, arguing that while discussions regarding domestic development of Japanese IGS technology had been underway since the mid-1980s, it was this launch that ultimately triggered a revision of the Basic Space Law and the development of indigenous IGS capabilities through MELCO, among other Japanese companies. I outline the current state of the Japanese IGS fleet, including the official goals of the program and the other cutting-edge technologies likely to affect capabilities moving forward.

Throughout the chapter I discuss the convergence of business and government interest in the domestic development of IGS capabilities, noting that although early difficulty justifying even possession of information-gathering satellites led to Japanese reliance on American intelligence products, once it was determined that capabilities were necessary, businesses' desires to develop these capabilities overlapped with politician interest in appearing proactive and self-reliant. The politics of justification played an important role in the decision to develop these capabilities. Japanese possession of *any* space capabilities was constrained by legal requirements regarding the peaceful use of space until a reasonable threat was identified. Once this threat was identified in 1998, it happened to coincide with changes in public engagement with surveillance satellites at large, leading IGS technology to be easily justified to the public.

In this case, the timing was key. In the early years of satellite development, when concerns were higher regarding possible military uses, Japan relied on licensed production of American technologies, gradually switching to domestically produced models over time. By the time Japanese IGSs were required, however, commercial satellites had normalized public attitudes about satellite technology, causing them to be seen as less offensive. Even though indigenous development of spy satellites was a significant enough break with previous norms regarding legitimate uses of space as to require legislative change, those norms were no longer robust enough to lead to significant political cost. Government actors were, therefore, more than willing to acquiesce to business pressures

I conclude with a discussion of the role of ease of justification in this case; this is a relatively easy case in which indigenous development was both sought by Japanese businesses and was deemed both politically necessary and "justifiable" by state actors, leading to an acquisition trajectory which has remained determinedly indigenous from the start of development until the present day.

2.1 Japan Pushes Toward Space

Japanese industrialization of space began formally in 1969. Scientific research into the development of space technologies had been going on in Japan since the early 1950s. The Japanese space industry as it exists today lies arguably with a single man, Professor Itokawa Hideo, who established an aviation group at the Institute of Industrial Science at the University of Tokyo. The stated purpose of this group was to make up the gap in technical and industrial abilities caused by the seven-year stagnation of Japan's aerospace industry during the American occupation of Japan. By 1955 the group had succeeded in launching a pencil-sized rocket (23 cm in length, 1.8 cm in diameter.) Eventually, the pencil rocket grew in dimensions such that it was deemed no longer safe for city development and the project was moved to a rural beach in Akita prefecture at the northernmost tip of the main Japanese islands.[36]

[36] JAXA. "Prof. Itokawa, 'Father of Japanese Rocketry.'" *ISAS: History of Japanese Space Research*. Last updated 2008, https://www.isas.jaxa.jp/e/japan_s_history/profito.shtml, accessed June 15, 2019.

At the beginning of this program, attention was focused on the development of rocket aircraft rather than space, but after Japanese experts participated in the International Geophysical Year the focus on the project shifted to space engineering.[37] By the 1960s the primary focus was on the development of satellites. Eventually, the official research budget for this project was "deemed too large for just the University of Tokyo to keep," and was expanded into a multi-institution organization known as the Institute of Space and Astronautical Science (ISAS).[38] In 1963 the Science and Technology Agency of the Ministry of Education, Culture, Sports, Science, and Technology (MEXT) established the National Aerospace Laboratory (NAL) through which government actors entered the business of space research. Even in these early stages, a pattern that would characterize the Japanese space industry for years to come had emerged: Japanese space development would be primarily led by civilian researchers but would be motivated not simply by profit or scientific curiosity but instead by technonationalist concerns.[39] Professor Itokawa, the father of Japanese rockets, acknowledged the importance of aerospace development precisely because of the promise of technological development and spin-offs; the faster the aerospace industry developed, he argued, the more quickly Japan's economy as a whole would recover.[40]

Two separate events took place in 1969 which shaped the arc of space development in Japan for decades to come. The first was the Diet Resolution on the Peaceful Development and Use of Space promulgated by the parliament. This basic space law declared Japan's commitment to the use of outer space "only for peaceful purposes." At that time the Diet stipulated that space policy should be controlled as tightly as nuclear policy and that the space industry should be controlled by civilians, not the military.[41] This Basic Space Law was in many ways specifically *designed* to keep Japan out of the Space Race. It also mirrored the attitudes of many Japanese policymakers at the time that Japan should seek to avoid foreign entanglements by eschewing military technology when possible; the Peaceful Purposes Resolution mirrors the language of the Atomic Energy Basic Act, which was promulgated in 1955 and which requires that the Japan Self Defense Forces (JSDF) should have no involvement with nuclear power, as well as the Three Non-Nuclear Principles established in 1967.[42] The effects of this were clear and immediate: Japan was allowed and even encouraged to continue expanding its space capability to develop domestic

[37] The International Geophysical Year took place from July 1, 1957, to December 31, 1958, and represented the largest set of coordinated experiments and field expeditions to be undertaken during the Cold War. The IGY encompassed eleven earth sciences, and scholars in charge of organizing the IGY selected rocket observation of the upper atmosphere as its special project. Both the U.S. and the Soviet Union launched artificial satellites during this time; *Sputnik 1*, the first successful artificial satellite, was launched on October 4, 1957, just a few months into the project. The extent of Japanese participation was limited, but Japan served as a host for some of the scientific data that was collected and the IGY motivated the establishment of Showa Station, the first Japanese base in Antarctica. The archival and anecdotal record indicates, however, that the experience of Japanese researchers during this year motivated the switch to satellites as a motivating interest. For more information see Fae L. Korsmo. "The genesis of the international geophysical year." *Physics Today* 60, no. 7 (2007): 38.

[38] B-YY. Interview by Deirdre Martin. Personal Interview. Tokyo, Japan, July 30, 2018.

[39] Yasushi Sato. "Managing the Interface between Politics and Technology: Itokawa Hideo, Shima Hideo, and the Early Japanese Space Programs." *Historia Scientiarum (International Journal of the History of Science Society of Japan)*, Vol.21, No. 3, March 31, 2012: 193-210.

[40] B-YY. Interview by Deirdre Martin. Personal Interview. Tokyo, Japan, July 30, 2018.

[41] Japan House of Representatives. *Wagakuni ni okeru uchuu no kaihatsu oyobi riyou no kihon ni kansuru ketsugi.* 「我が国における宇宙野開発及び利用の基本に関する決議」 [Resolution related to the basics of our country's development and use of space]. May 1969.

[42] Japan House of Representatives. *Genshiryoku kihonhou*「原子力基本法」 [Atomic Energy Basic Act]. Act No. 186, December 19,1955; Ayako Kusunoki. "The Satō Cabinet and the Making of Japan's Non-Nuclear Policy." *The Journal of American-East Asian Relations* 15 (2008): 25-50.

industries and foster international cooperation, but military uses of space were out of the question for the time being.

The second important event was the establishment of the National Space Development Agency (NASDA) of Japan, which was designed to bring coherence to space development policy by coordinating between state-side and business-side interests, represented at this time by ISAS and NAL.[43] Before the establishment of this organization, agencies were developing their rockets independently and had different focuses, some more scientific and some more focused on direct commercial applications. This merger led to increased success, at least in terms of scientific productivity. In February 1970 Japan's first satellite, the Ōsumi 5, was launched. Japan was the fourth nation in the world to successfully launch an artificial satellite into orbit on its own, following the USSR, the U.S., and France.[44]

From the launch of the Ōsumi 5 in 1970 until 31 December 1997 Japan saw hundreds of space launches, including 83 attempted satellite launches. The goals of these satellites were varied; for example, Tansei (MS-T1), which was the second satellite launched after Ōsumi 5, was primarily designed to measure satellite flight environment and to conduct a series of engineering tests. Himawari, the first geostationary meteorological satellite, was launched in July of 1977 and was designed to carry out weather observation. KYOKKO (EXOS-A), launched in February of 1978, was specifically tasked with "aurora observation," while the SAKIGAKE (MS-T5), launched in 1985 and initially earmarked to observe Halley's comet, was Japan's first interplanetary spacecraft.

The primary manufacturers and launch locations of these satellites shifted over time, as well; the Ōsumi 5 was Japanese produced, was launched at the Kagoshima space center by Japanese launch technologies, while the Himawari, the geostationary meteorological satellite named above, was initially launched from the Kennedy Space Center in the United States via a U.S. Delta Launch Vehicle. These approaches seem to have changed over time, particularly as Japanese launch capabilities expanded and became more able to handle larger payloads; subsequent iterations of the Himawari satellites in 1981, 1984, and 1989, respectively, were all launched from Tanegashima Space Center in Japan using Japanese-manufactured N-II Launch vehicles.

This does not, however, appear to be a story in which indigenous development of satellites was inevitable, with American capabilities serving as a simple stopgap until Japanese companies were able to reverse-engineer the technology; in some cases, satellites which had initially been Japanese-produced were switched out for American capabilities. Yuri 1, for example, was an experimental communications technology satellite launched in 1978 by Japan's NASDA. By the launch of the Yuri 2A in 1984, however, the manufacturing contract had been given to Lockheed, an American company, and this pattern of American manufacture continued through the final iteration of the Yuri, the Yuri 3N, which was launched in July of 1994. This switch appears to have been motivated by the superiority of American technologies when it came to transmission problems in areas with poor reception.[45]

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[43] JAXA. "NASDA History." Last updated 2003, https://global.jaxa.jp/about/history/nasda/index_e.html, accessed June 15, 2019; B-YY. Interview by Deirdre Martin. Personal Interview. Tokyo, Japan, July 30, 2018.

[44] Louis de Gouyon Matingnon. "Ohsumi, The First Japanese Satellite." *Space Legal Issues*. April 17, 2019. https://www.spacelegalissues.com/ohsumi-the-first-japanese-satellite/, accessed April 21, 2019.

[45] Information on these satellites, as well as virtually all space capabilities maintained and/or launched by the Japanese government, can be found publicly on JAXA. "Past Projects – Satellites and Spacecraft." https://global.jaxa.jp/projects/past_project/sat.html; Encyclopedia Aeronautica. "Japan." http://www.astronautix.com/j/japan.html.

Japanese development of satellite capabilities throughout the Cold War was expansive. Although *surveillance* satellites were still not in production by the end of 1997 (with some notable exceptions, described below), Japanese research communities and businesses were active and important producers of satellite capabilities, as well as in space development and exploration. In analyzing the development of Japanese satellite capabilities several themes emerge. The first of these was a preference, with some exceptions, for domestic development of capabilities. Japanese launch capabilities were spearheaded by researchers who were in turn funded by major corporations, notably Mitsubishi Electric MELCO) and Nippon Electric Company (NEC.) The earliest of these were developed through contracts with and technology transfers from the United States, but even in the 1970s, Japan was primarily producing domestically.

A second was Japanese corporate interest in the development of satellite capabilities domestically. Before information-gathering satellites, geostationary meteorological satellites were developed by Japanese companies through American license - even though, again, better-quality weather satellites were available for outright purchase from American companies at the time.[46] Mitsubishi Heavy Industries (MHI), MELCO, and NEC began lobbying outright for contracts to produce surveillance satellite capabilities by the early 1980s. They already possessed the technical know-how to produce almost the entire satellite and sought control of the domestic market.

Third, however, these requests were routinely rejected by policymakers, particularly within the Diet. The argument against domestic development of satellite capabilities was in essence that Japan was already spending too much of its budget on military technology - launch capability had been successfully developed domestically, and by the early 1990s, Japan had begun working with the Americans on the Patriot missile program. This does not mean, of course, that the Japanese did not consume intelligence products. In 1985 the Maritime Self Defense Force (MSDF) bought receiving equipment to obtain information provided by the U.S. Navy FLEETSAT satellite.[47] But domestic development of IGSs, particularly those which were clearly for security use, simply was considered to be "too against the rules" - after all, the Peaceful Purposes Resolution stated that space was not to be used for military purposes, and common interpretation of the resolution was taken to mean not only that Japan should refrain from developing an independent space system with military potential but that it was also banned from possessing and operating such systems.

However, with changing technologies it became increasingly difficult to maintain this red line against military uses of space. GPS, broadcasting, and even imaging satellites developed by the Japanese or under American license also play a major role in Japanese and alliance military systems. Furthermore, over time Japanese businesses began to claim that how this strict adherence to the Peaceful Purposes Resolution to the point of eschewing technologies with military potential was locking Japanese companies out of access to important international research communities, was hobbling business' ability to compete in high-tech, and overall no longer reflected technological realities. This unwillingness to develop Japanese-manufactured imaging and radar

[46] This mirrored Japan's similarly fraught path to the development of Japanese launch capabilities; despite the existence of reliable and powerful launch capabilities from the Americans, Japanese policymakers supported the development of indigenous launch capability, often despite repeated failures and at significant cost. For a more detailed history of issues surrounding the development of launch capability, see Pekkanen, *Picking Winners*, 2002; Pekkanen and Kallender-Umezu, *In Defense of Japan* 2010.

[47] Scott Pace. "US-Japan Space Security Cooperation." in Kai-Uwe Schrogl, Peter L. Hays, Jana Robinson, Denis Moura, and Christina Giannopapa, Eds. *Handbook of Space Security Policies, Applications and Programs*. Springer Reference, 2015: 337-354.

satellites become more and more counterintuitive as satellite technology, in general, became increasingly commercialized.[48]

It was clear that a sea-change was coming regarding the production of intelligence gathering capabilities as Japanese companies became more and more capable of manufacturing competitive technologies. An exception to the rule had already been made in the 1980s, allowing the use of commercial satellites for military data and communications. Until 1998, however, Japan maintained its position eschewing the development of information gathering satellites.

2.2 Japan Develops Indigenously

The Taepodong missile incident was not the first major incident to catalyze Japan into thinking about its security position in East Asia. It was not even the first major North Korean missile launch. The DPRK began launching SCUD missiles in 1985 and in the period between 1990 and 1993 had attempted three launches of Nodong midrange ballistic missiles.[49] Japanese involvement in missile defense, outlined in detail in chapter 3 of this dissertation, dates back as far as the late 1970s. By the mid-1980s and early 1990s, Japanese companies were actively, if somewhat reluctantly, involved in the U.S. missile defense architecture. The Taepodong incident is notable, however, for two reasons. First, it had a significant effect on concrete security acquisition policies from 1998 onward. Second, it is important because of the existential effect of this specific launch on Japanese policymaker discussion not only of micro-level defense policies but also of Japan's priorities and role in East Asia broadly. In interviews with practitioners involved with acquisition debates throughout the late 1990s and early 2000s, a consensus appeared early on that the aftershocks of the Taepodong situation can be felt throughout almost all Japanese security policies following the launch. Even when asked about seemingly unrelated technologies and policies many Japanese security experts will bring this incident up as foundational in shaping the trajectory of post-Cold War thinking about Japanese security policy, planning, and acquisition. Indeed, in interviews for all four of the major technology types surveyed in this project – satellites, missiles, aircraft, and radar – subjects brought up 1998, unprompted, as a turning point.

The most obvious and immediate effect of the 1998 missile launch on Japanese satellite development was the rapid erosion of state-side restraint regarding military uses of space. Discussions began in the Diet surrounding revision of the Peaceful Purposes Resolution almost immediately, culminating in its ultimate replacement with the New Basic Space Law in 2008. This new legislation, which in many ways mirrors the original Peaceful Purposes Resolution, nevertheless represents a fundamental break in previous approaches to space; it bases its rules on "reinforcing Japan's security through the development of space," as well as on promoting research and development and developing the domestic Japanese space industry. It adopts a policy of "non-aggressiveness," emphasizing "intelligence and warning" in successful defense.[50] Notably, although the timing seems to indicate that state actors were probably motivated by the Taepodong missile launch, the New Basic Space Law does not mention changes in Japan's security structure, instead citing the rising importance of space use and development, the need to consider the

[48] B-YY. Interview by Deirdre Martin. Personal Interview. Tokyo, Japan, July 30, 2018.
[49] The CNS North Korea Missile Test Database. *The Nuclear Threat Initiative*. Last updated March 31, 2021. https://www.nti.org/analysis/articles/cns-north-korea-missile-test-database/.
[50] Japan House of Representatives. *Uchuu kihonhou honbun.* 「宇宙基本法本文」 [The New Basic Space Law: Full Text.] May 13, 2008; Myoken, Yumiko. "The Bill of Basic Space Law." *Science and Innovation Section British Embassy* 4 (2008): 4.

environment, and the pacifist roots of the Japanese constitution. The stated goal of the New Basic Space Law is to expand Japan's role in space.[51]

Although revision of the official rules blocking development went into talks extremely quickly, an official plan to develop IGSs domestically was announced even before they were legal, on 1 April 1999, the first day of the new fiscal year. On the same day, NASDA upgraded its "Preparatory Office" to a "Research Office." It also transferred 13 people from its ALOS office – ALOS, or the Advanced Land Observation Satellite, was a JAXA-developed and Mitsubishi-produced earth imaging satellite already well under development.[52] This quick diversion of funds and personnel from ALOS to the new reconnaissance satellite program caused significant delays in ALOS construction, causing many to wonder if perhaps the program had always been intended as a workaround through which Japanese companies could begin development of surveillance satellite technologies earlier than strictly permitted by the existing legal framework.

American companies, sensing renewed Japanese interest in information gathering satellites, began lobbying immediately to develop them. When the Diet announcement came, however, it was with the stipulation that Japan would import parts from the US but manufacture the main body domestically. Concerns were expressed regarding the significant cost differential between domestically developed satellites and those imported from the United States - a difference estimated at approximately ¥80 billion - but the decision was ultimately made to develop the technology within Japan. Development was fraught; two of the initial four satellites, the IGS-2A and IGS-2B, failed at launch and both of the remaining two were incapacitated by 2007. Even so, domestic development continued. As of 2008, the year in which legal reform was passed allowing for the military use of space, there had already been five IGS launches and the satellite network consisted of three working IGSs; most of these were described at launch as "designed to monitor North Korean military activities."[53]

This programmatic expansion of IGS capabilities began in the late 1990s, with launches beginning in 2003 but it has maintained the same fast pace throughout the current Abe administration, which has continued to pursue IGS technologies. The stated goal of the satellite program is to ensure that a photograph can be taken of any location on Earth once a day regardless of conditions. In June 2018 the Japanese government launched the IGS Radar 6. This launch came on the heels of IGS Radar 5, which had been launched merely a year earlier. As of that launch, the Japanese government maintained a total of six working IGSs – three optical satellites for daytime surveillance and three radar satellites for use during nighttime or low visibility. Most notably, all Japanese IGSs developed to date have been indigenous projects spearheaded by Japanese companies.

This expansion beyond "traditional" optical and radar IGSs is inevitable; Japanese business and science communities have been in space since as early as the 1960s, and there has been a boom of high-tech experimental launches in recent years. The Small Advanced Satellite for Knowledge of Earth (SASKE), otherwise known as ASNARO, is of particular interest for those tracking Japanese satellite-based surveillance capabilities. First introduced conceptually in 2008, this

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[51] Experts are somewhat cagey in their responses when asked whether the New Basic Space Law was motivated by the Taepodong missile launch. Most interview subjects agreed that the Resolution on the Peaceful Uses of Space was considered to be somewhat out of date and no longer reflective of technological or strategic realities facing Japan, but also described the missile launch as a catalyst which forced politicians to take action on that necessary revision.

[52] William W. Radcliffe. "Origins and Current State of Japan's Reconnaissance Satellite Program." *Studies in Intelligence* 54, no. 3 (2010): 9-21.

[53] "Japan successfully launches new optical spy satellite," *Mainichi Shimbun*. November 28, 2009, http://mdn.mainichi.jp/mdnnews/news/20091128p2a00m0na014000c.html, accessed December 4, 2017.

satellite represents an improvement on Japan's previous satellites on virtually every level. The resolution of the photos taken by this satellite is 0.5 square meters – a fourfold improvement in picture quality and precision.[54] Further, the satellite possesses multispectral capabilities, indicating that it uses a variety of different filters and sensors; beyond a panchromatic resolution of fewer than 0.5 meters and a multispectral resolution of fewer than 2.0 meters, these satellites almost certainly also include infrared and ultraviolet capabilities, as well as normal visible light capabilities. This will make it possible for the satellites to determine differences not normally visible.

The ASNARO was launched in August 2014 with a series of other cutting-edge, experimental information-gathering satellites, including the QSAT-EOS (Tsukushi), Hodoyoshi 1, and Tsubame. Hodoyoshi 1 is an experimental earth-observing micro-satellite built by the University of Tokyo. This satellite has a 6.8 m ground resolution and is equipped with CCD sensors with spectral bands of blue, green, red, and near-infrared. Near-infrared data will enable the satellite to track plants' growth patterns, something undetectable with visible bands. The Tsubame is a small satellite mission built by the Tokyo Institute of Technology, Tokyo University of Science, and JAXA to measure the polarization of hard X-ray photons. Like the Hodoyoshi 1, the QSAT-EOS is an experimental micro surveillance satellite developed by an organization of scholars and students associated with various universities in Kyushu. It has a ground resolution of approximately 7 m and can capture visible and infrared information.[55] All of these satellites have been developed indigenously, and the technologies they represent have important implications for Japanese intelligence-gathering capabilities. The existence and launch of these experimental civilian surveillance satellites indicate that Japan has access to significantly wider and deeper surveillance capabilities than even the official "three optical, three radar" narrative.

Japan's information gathering satellite program has only expanded over time. Since the beginning of 1998, there have been over one hundred Japanese satellites launched; in fact, there had been 100 launches just in the span from 1997 until mid-2014.[56] This represents a suite of information gathering satellites representing a host of cutting-edge technologies developed by Japanese companies for the Japanese government. Mitsubishi Heavy Industries successfully launched yet another government optical information gathering satellite in February of 2020.

2.3 Justifying Indigenous Development of IGS Technologies

What accounts for this relatively smooth acquisition trajectory? Japan has a long history of government and business interaction when it comes to space development. There was an existing precedent for indigenous development of satellite capabilities; Japanese businesses already possessed the capability to produce the technology, although perhaps not on the level of American production, and another important technology, space launch capability, had been developed indigenously at significant cost. Furthermore, once the decision was made to develop IGSs on a programmatic level, from the beginning the understanding on both business and government sides was that this would ultimately be an indigenous project.

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[54] Norihiko Saeki. "SASKE R&D Program". Presentation given March 4, 2009. http://usgif.org/system/uploads/1008/original/Norihiko_Saeki.pdf, accessed May 27, 2018.

[55] The project page for the QSAT-EOS project is still accessible at http://www.qsat-eos.com/satellite/missions/eo-mission [as of access 25 October 2017].

[56] JAXA, "Past Projects – Satellites and Spacecraft"; *Encyclopedia Aeronautica*.

There is relatively little debate regarding the degree of business interest in the indigenous development of intelligence gathering capabilities. Satellites represent billion-dollar defense contracts; the development of these technologies allows these businesses access to research and development funds as well as access to scientific communities they might otherwise not have had. Additionally, while defense makes up only a small portion of MELCO or Mitsubishi Heavy Industries' overall profit, the JSDF and the Ministry of Defense are some of their primary customers, and they have managed to successfully control the market.[57]

As established above, private interests, particularly big businesses, have been at the forefront of the Japanese development of IGS technology. The primary drive for the space program had always, in theory, been at least partially military; development of space capabilities was deeply tied to the possibility of technological spin-offs, and traditionally Japanese businesses had been deeply invested in the technonational program of strengthening the country through profit maximization. How interested business actors were in the domestic development of capabilities is clear from speaking to business people and researchers who were involved in the development of those capabilities. One ex-JAXA member complained, "The problem is that the government wants [JAXA and businesses] to develop things ourselves because then they don't have to put it into the budget. But then they always want to include riders." He joked, "The different ministries should develop the satellites they want so all of this money doesn't have to come out of JAXA's budget!"[58]

There were some major blocks to domestic interest in the development of IGS capability; one of the most notable was the 1967 Three Principles of Arms Export (TPAE) forbidding Japan from exporting arms to a variety of types of actors, followed by a resolution in 1976 strengthening the TPAE which made arms exports practically impossible. Even with the introduction of a loophole in 1983 which loosened these rules, allowing for the sale of dual-use technologies with commercial uses and in particular sale to the United States. Most importantly, there was a clause that indicated that if Japan improved upon and modified technologies of U.S. origin, or *derived technologies*, those technologies would be available to America free of charge. Japanese-developed technologies, or *nonderived* technologies, on the other hand, would be available for a fee.

Indigenous production would benefit domestic interests. Japanese companies already had a background in launching satellites; their first weather satellite, which is similar in many ways to reconnaissance satellites, was launched in the 1970s. The most telling evidence of this is the timeline of the development of the Japanese IGS program; the announcement was made that the program would be pursued in 1999 and launch was ready by 2003, indicating that the technology existed already and simply had to be adjusted for the security concerns implied by an intelligence program.

Most notably and arguably the most important, the commercial satellite market is only expected to grow in the coming century; one report allegedly estimated possible space-related business revenues at up to $100 billion in 1998 (a majority of which was from government contracts), and the amount of investment in space-related ventures was estimated to have passed $40 billion by 2010. Government funding for the development of domestic high-technology capabilities with eventual dual-use possibilities is certainly attractive to Japanese businesses. Also important is the unusual relationship between business and government when it comes to the development of capabilities; because of government concerns regarding strengthening business, interoperability, and information security, they are guaranteed access to the Japanese government,

[57] B-NJ. Interview by Deirdre Martin. Personal Interview. Tokyo, Japan, March 28, 2019.
[58] B-YY. Interview by Deirdre Martin. Personal Interview. Tokyo, Japan, July 30, 2018.

making concerns about whether or not businesses can sell technologies to foreign governments somewhat beyond the point.

Japanese businesses have been reliably committed to domestic development and the sale of information-gathering satellites. This commitment is likely to deepen even further in the coming years, as in November 2016 Japan's Space Activities Act was promulgated, establishing a system for licensing and supervising the launching of rockets and the operation of satellites by private-sector companies. This act also provides for government compensation to augment liability insurance coverage against accidents. The aim is to promote broad private sector participation in the space business. It is clear in this case that business actors had a vested interest in the development of IGS technology, seeking lucrative contracts, access to R&D communities, and the ever-present possibility of technological spin-offs.

The Japanese government has always had a more ambivalent relationship with IGS technology than the unreserved enthusiasm of Japanese businesses. In the last twenty years, there has been a fundamental change in the relationship between the Japanese intelligence community and the targets of that intelligence. Since the early 1990s Japanese policymakers have expressed positive opinions on the important role of intelligence gathering in Japanese foreign policy, and from the second Abe administration onward this interest has been actively pursued, both through concrete legal reforms and through policy changes emphasizing proactive Japanese intelligence.

The most notable legislative reform of the period post-Taepodong Missile but pre-Abe is arguably the proposal and ultimate passage of the New Basic Space Law mentioned above. This revised space law marked a departure from the long-standing postwar Japanese policy of using space only for peaceful purposes and represents a breakdown in long-held Japanese norms regarding the priority placed on intelligence and the acceptable uses of space. Perhaps the most interesting thing about the intelligence reforms from the years 1990-2012, however, is how universally supported they were. Japan's 1995 National Defense Policy Outline (NDPO) stressed the importance of intelligence gathering capabilities, arguing:

> "Japan's defense structure must be capable of conducting warning and surveillance on a continuous basis to detect any changes in circumstances as soon as possible, so as to utilize this information for quick decision-making. It must be capable of high-level intelligence gathering and analysis, including strategic intelligence, through possession of diversified information gathering means and mechanisms, and highly able intelligence specialists."[59]

This outline underscored that Japanese defense capabilities should match the country's international standing, and in 1996 the Japan-U.S. Joint Declaration on Security underscored the need for increased alliance cooperation in which Japan would be expected to take a more active role in security activities.[60]

Beyond the pressure exerted by the U.S for more global military participation, there was also a distinct shift in *Japanese* policymaker interest in expanding Japanese intelligence capabilities. Public recommendations for the development of Japan's intelligence capabilities, particularly its satellites, can be found in the Council on Security and Defense Capabilities Report

[59] Japanese Ministry of Foreign Affairs. "IV. Contents of Japan's Defense Capability." National Defense Program Outline in and After FY 1996. December 1996. https://www.mofa.go.jp/policy/security/defense96/contents.html, accessed December 18, 2019.

[60] Japan Ministry of Foreign Affairs. "Japan-U.S. Joint Declaration on Security: Alliance for the 21st Century." April 17, 1996. https://www.mofa.go.jp/region/n-america/us/security/security.html, accessed 21 June 2021.

presented to then-Prime Minister Koizumi in October 2004, in the three-party agreement made in 2004 toward the establishment of an emergency basic law, and in a September 2005 Ministry of Foreign Affairs report entitled *Roundtable on Strengthening Foreign Information Gathering*, as well as in other agreements, declarations, and public statements. Particularly from the Koizumi era onward, politicians and bureaucrats alike produced a barrage of official recommendations for developing Japan's intelligence structure. [61]

The rise of the Democratic Party of Japan in 2009 caused little change in trajectory. Ozawa Ichiro, then a leading member of the DPJ, noted that for Japan to become a "normal nation" capable of "willingly shoulder[ing] those responsibilities regarded as natural in the international community," Japan must confront the extreme level of information diffusion within its intelligence community. Ozawa stressed that "Japan needs …to strengthen existing information networks and better manage the inflow of information."[62] Intelligence issues were rated important enough to be given a separate section of the Ministry of Foreign Affairs' Blue Papers for both 2008 and 2009; although the two papers reflect two sides of a period of political upheaval, the acceptance of the need for intelligence as a foreign policy tool remained constant.[63]

Agreement on the importance of intelligence buildup has, largely, united across party lines. Unlike traditional military buildup, which has been characterized by significant contention about how far and for what purposes it should extend, there appears to have been virtually *no* political controversy regarding the development of autonomous Japanese intelligence-gathering capabilities. In contrast with the ongoing buildup of traditional military capabilities, which faced (and continues to face) staunch opposition within the Japanese government from pacifists and middle-power internationalists, the development of Japanese spy satellite capabilities was seen as something of a non-issue and proceeded largely unimpeded.

Particularly startling is the *wide range* of politicians expressing interest in Japanese acquisition of intelligence capability, particularly through the use of surveillance satellites; this is hardly an issue harped on by the hawkish elements of the conservative elite to the detriment of the more dovish politicians. Even ex-cabinet secretary Gotoda Masaharu, a staunch Article Nine supporter, explained the need for greater Japanese intelligence capabilities and especially autonomy by saying that Japan should be more like a rabbit, claiming, "Rabbits don't depend on other animals because they have long ears."[64]

Beginning in the mid-1980s and throughout recent history, Japanese leaders have faced important concerns that have made the development of indigenous intelligence capabilities, particularly technological capabilities like information gathering satellites, more important in

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[61] Ken Kotani. 小谷賢. "Waga kuni ni okeru interijensu no genjou to kadai." 「わが国におけるインテリジェンス現状と課題」 ["Current state of intelligence and intelligence issues in Japan."] *Bouei kenkyuujou news* [*The National Institute for Defense Studies News]* 100 (2006). p. 1; Sato, Heigo. "Japan-US Security Relations under the Koizumi Administration: Implications for Bush's Second Term." *National Institute for Defense Studies*, 2004.

[62] Robert D'A. Henderson, Kenneth G. Robertson, Ralph Erskine, James J. Wirtz, and Peter Charles Unsinger. "Reviews and commentary." *International Journal of Intelligence and CounterIntelligence*, 10:2 (1997). 227-255. p. 231.

[63] Nihon gaimushō 日本外務省 [Japan Ministry of Foreign Affairs]. 「平成２０年版 外交青書」(２００８年版第５１号)　第５章第２節 『外交力強化』["Chapter 5, Section 2: Enhancing Diplomatic Capacity", in *Diplomatic Blue Book 2008*, No. 51 (April 2008)]; Nihon gaimushō 日本外務省 [Japan Ministry of Foreign Affairs]. 「平成２１年版　外交青書」（２００９年版第５２号）　第５章第２節『外交力強化（２．情報収集）』　平成２１年４月　["Chapter 5, Section 2: Enhancing Diplomatic Capacity: (2) Intelligence Collection," in *Diplomatic Blue Book 2009,* No. 52 (April 2009).]

[64] Samuels, *Securing Japan*, 2010.

recent years. Both China and North Korea – neighboring countries that represent possible security threats to the Japanese mainland and for which internal politics and military movements are shrouded in secrecy – are concerns for Japanese leadership. Chinese military modernization has shaped much of Japan's security policy in the last decade; Chinese assertiveness in the East China Sea has notably been tracked closely by Japanese military planners. Even more than China, the threat of a North Korean attack has had a clear, lasting, and direct influence on the trajectory of the last decade's development of Japanese IGS capabilities.[65] Notably, however, these threats, at least during the period during which IGS technology was being developed, were largely considered to be long-term rather than short-term; Japan had the time, therefore, to develop domestically - until an overt threat like the North Korean Taepodong missile was identified. "During the Taepodong incident," one high-ranking Lockheed-Martin employee argued, "the government needed to be seen as doing something.[66]"

Growing concerns over U.S. abandonment are also often cited as a major reason for the development of domestic IGS capability; during the period where these were under development the Cold War was winding down and ultimately ended, and with it, the U.S.-Japan alliance entered a tense period where the United States was seen as leaving Asia behind. The intelligence failures of the Second Gulf War seem to have added to these Japanese concerns regarding the need for capabilities that could check American information; American intelligence and the reassurances of the U.S. intelligence community was a primary motivator of Japanese involvement in both Iraq and Afghanistan, and some politicians noted that perhaps they wouldn't have gotten involved at all if they had had independent verification capabilities. One Raytheon employee, when asked why the Japanese had sought development of indigenous IGS capability, argued, "Japanese leaders are trying not to be reliant on foreign capabilities; in terms of national security, intelligence is one of the most important things to remain unfiltered and to have immediate access to."[67]

Finally, in recent years state-side officials have increasingly pushed for further indigenous development of spy satellite capabilities. The new 2016 Japan Space Activities Act, outlined above, represents an increasing push on the part of state planners encouraging private interests to expand into space. Concretely, a system has been established by the government which clarifies to which government agency license applications should be submitted, as well as the application procedures in general. Further, as mentioned before, the new law provides government support in providing financial guarantees required by commercial launch operators. Finally, the Act provides that the launch operator bears liability for accident damages. Aoki Setsuko argues that this can be expected to "enhance the competitive position of the Japanese companies providing this service."[68]

On the state side, interests aligned with indigenous development. Leaders determined that IGSs in general and domestic development particularly were necessary given the current security landscape and that development through MELCO and NEC was likely to be relatively low-cost politically; it allowed them to appear to be addressing pressing security concerns while not investing in anything particularly offensive. In this case, business and state interests aligned and

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[65] AFP-Jiji, "Japan Launches New Spy Satellite to Keep an Eye on North Korea." *The Japan Times*, March 17, 2017. https://www.japantimes.co.jp/news/2017/03/17/national/japan-launches-new-spy-satellite-keep-eye-north-korea/, accessed 25 October 2017; Sung-jae Choi. "The North Korean factor in the improvement of Japanese intelligence capability." *The Pacific Review* 17, no. 3 (2004): 369-397.

[66] L-AC. Interview by Deirdre Martin. Personal Interview. Tokyo, Japan, August 2, 2018.

[67] R-HM. Interview by Deirdre Martin. Personal Interview. Tokyo, Japan, July 31, 2018.

[68] Setsuko Aoki. "New Law Aims to Expand Japan's Space Business," *Nippon.com*. March 3, 2017. https://www.nippon.com/en/currents/d00294/new-law-aims-to-expand-japan%E2%80%99s-space-business.html, accessed December 10, 2019.

indigenous development of IGSs was pursued. Most interestingly, however, this state-side concern with the "defensiveness" of capabilities indicates that even in this relatively "easy" case the question of whether capabilities were "justifiable" to the public was a driving factor in acquisition outcomes.

When speaking with business people, experts, and practitioners about the puzzle of Japanese indigenous development of IGS capabilities, I received the same argument over and over again: that IGS capabilities were perceived as defensive, as clearly in line with Article Nine, and that they were therefore very easy to invest in, politically speaking. One interview subject reiterated throughout the interview that the problem throughout the discussion of how and whether to develop militarized space capabilities was "justification of capabilities."[69] He was quick to indicate when pressed that this concern was not about obscuring intent, but just that there is a sense within the space research community those *semantics* were particularly important legally in Japan. He also noted that this concern about justification was particularly important when it came to receiving politician and policymaker support for indigenous development, both in terms of permission and funding.

This categorization of information-gathering satellites as "inherently defensive," although often presented today as common sense, has not always been a given. From the 1960s through to the late 1990s Japanese businesses had been held back from participating in vibrant and important technological markets precisely because *any* use of space for military purposes was seen as inherently offensive. The discussion surrounding information-gathering satellites mimicked the same language as the Three Non-Nuclear Principles. This shift in the narrative surrounding these capabilities - the move from "offensive" to "obviously defensive" - sits at the heart of the domestic development of IGSs.

Central to this transformation in the understanding of IGS capabilities was the argument that over time satellite capabilities - reconnaissance or otherwise - had become ubiquitous and therefore "less threatening" to the general public. Justification of capabilities in space had been important long before the discussion of indigenous spy satellites was even on the table. When the MSDF bought receiving equipment in 1985 to engage with American intelligence products, the Japanese government made a point of excusing the violation under so-called "generalization theory" which allows the SDF to use commonly used satellites, i.e., those used in the civilian sector. This emphasis on civilian technologies was echoed throughout interviews.

The same expert mentioned above, who has been affiliated with both JAXA and MELCO throughout his career, argued that by the late 1990s commercial satellites had become so strong that they were not seen as "military" anymore; that anyone could purchase these capabilities with enough money. "I think that erased people's allergy to satellites," he said, and then quipped: "Production of data is by definition not aggressive." When asked why he thought indigenous development of IGS capabilities was widely accepted by the public and policymakers while other types of security technologies were not, he said,

> "Regarding the discussion in parliament -- people were very nervous about being perceived as developing offensive capabilities. People weren't talking about satellites at first [...] debates weren't even about satellites so much as 'what is the definition of peaceful.' For a very long time the answer to that question was simply 'non-military'; as a result of this for a long time what JAXA could talk about developing on the security side was very limited. Because the subject was so touchy no one wanted to talk about it until the 1998 Taepodong

[69] B-YY. Interview by Deirdre Martin. Personal Interview. Tokyo, Japan, July 30, 2018.

incident. But after that incident when a need was identified, the definition was changed to accommodate that need."

He concluded the interview by saying, "I think if we were to launch weapons with H2A vehicles, then people would be angry about them."[70]

The important point of note is therefore not just that businesses wanted to develop IGS technology and lobbied the Japanese state for indigenous development. Neither is it a simple cut and dry case in which state interests were constantly in support of indigenous development. Rather, a perceived need by state actors for Japanese information-gathering capabilities, sparked by concerns regarding an increasingly complex and frightening international system, coincided with both business-side interests *and* a fundamental and gradual shift in how IGS technologies specifically and military uses of space more generally have been understood to allow for consistent and long-term domestic development of Japanese IGS capabilities.

Overall, therefore, even in this very clear-cut case in which both state and business preferences were in favor of domestic development of IGS capabilities, the ability of state actors to justify capabilities - the view of IGS technology as normal, as commercial, and as fundamentally defensive on one hand while addressing pressing security needs on the other - fundamentally shaped acquisition outcomes.

Almost as soon as the decision was made in the late 1990s that Japan should and would have spy satellite capabilities it was announced that those satellite capabilities would be developed by Japanese businesses. This decision was arguably the result of the relatively easy convergence of business and state interests. Japanese businesses, particularly MELCO, had long pushed for the development of these capabilities, and bureaucrats and policymakers justified them as both necessary for national security and fundamentally defensive. Unsurprisingly the decision was made to develop IGS capabilities indigenously rather than purchasing similar systems from the United States. However, even this relatively "easy" case demonstrates the importance of justifiability for policymakers, as state-side actors maintained existing legal provisions against the military uses of space which barred the development of spy satellites until the growing North Korean threat changed the public understanding of what was necessary to protect the Japanese homeland. When this public understanding shifted, it was relatively easy to justify the domestic development of spy satellites, as their omnipresence in civilian technology and their perceived "passivity" led them to be easily portrayed as a purely defensive capability which posed no significant challenge to Article Nine.

In the case of information gathering satellites presented in this chapter, both business interests and state interests converged in favor of domestic development. Businesses were already confident in their ability to compete in the market and sought access to important technological spin-offs, while state actors were able to justify the capabilities as fundamentally necessary for Japanese national security while also primarily defensive. This was, in large part, due to timing. By the time these satellites were deemed necessary for Japan to possess, a variety of changes in public understanding had taken place which caused domestic development to be seen as not only acceptable but indeed legitimate. The public had become used to the idea of satellites as primarily commercial, rather than military, technologies, allowing them to be framed as defensive. Additionally, a series of incidents in which the Japanese, reliant on American intelligence products, were caught unaware, led to an increased emphasis on self-reliance when it came to intelligence. This coincided in turn with the buildup both of Japanese military spending in general and

[70] B-YY. Interview by Deirdre Martin. Personal Interview. Tokyo, Japan, July 30, 2018.

intelligence spending in particular. This led most observers to view investment in information gathering satellites as simply one of many programs being pursued by the Japanese government to deal with the rising threat of a belligerent and possibly nuclear North Korea. In summary, the image of information-gathering satellites had changed. They were now seen as both legitimate and necessary for the maintenance of Japanese national security.

In this case, Japanese businesses and government actors agreed regarding the appropriateness of the domestic development of information-gathering satellites. This was, in large part, due to the successful justification of indigenous development of capabilities from the time that the decision was made to acquire IGSs at all. The result was indigenous development. What, then, happens when there is not this initial agreement that domestic development is legitimate or necessary? In the following chapter, I discuss the process of Japanese development of missile technology, particularly focusing on Patriot missiles. In this case, as with information gathering satellites, Japanese businesses were extremely interested in domestic production. Japanese government actors, however, were unable initially to justify indigenous development, citing the fundamentally offensive nature of missile technologies. Policymakers knew that public understanding of technologies changes over time, as they did in the case of satellites. As a strategic hedge, therefore, they chose production under U.S. license, an arrangement that allowed Japanese industry access to many, but not all, benefits of domestic production. Unlike with satellites, however, the domestic development of missiles has remained difficult to justify within Japan. The result has been an extended pattern of production of Patriot missiles by Japanese companies under American license.

3 Licensed Production: Ballistic Missile Defense from Patriot to Aegis

The previous chapter on information gathering satellites opened with a discussion of the 1998 North Korean Taepodong-1 missile launch over the Japanese islands. This incident was a turning point for any number of Japanese defense technologies, both covered and not covered within this project. While the threat presented by the 1998 launch in many ways catalyzed the beginning of the Japanese Information Gathering Satellite (IGS) program, its effect on the development of Japan's missile defense program was less straightforward.

Japanese involvement in missile defense began in the late 1960s. This involvement, always under American leadership, continued through the Cold War and even included measured participation in President Ronald Reagan's Strategic Defense Initiative (SDI). By 1994, the U.S. and Japan were studying what a Japanese missile defense system would look like. While the 1998 Taepodong launch convinced policymakers of the need for IGS capabilities, it also served as a reaffirmation of the importance of missile defense for Japanese interests. This reassessment took place during a period when policymakers knew these capabilities were strategically necessary but struggled to justify acquiring them. The Taepodong shock opened funding which had previously been denied to military planners seeking to strengthen missile defense, allowing Japan to continue down its incremental path toward a robust missile defense program operated in cooperation with the United States.

The 1998 Taepodong missile shock did not jumpstart Japanese missile development as it did IGS development. Instead, it merely underscored the importance of missile defense, rehabilitating its image. That is only one of the differences between the acquisition trajectories of IGSs and missile technology. Unlike IGS production, Japanese production of Patriot missiles was already well underway in the late 1990s thanks in large part to the decision on the part of Japanese policymakers to push for coproduction, or licensed production, of missile technologies.[71] This arrangement allowed Japanese companies, in this case primarily Mitsubishi Heavy Industries, to domestically manufacture and produce Patriot missiles and related capabilities based on technical information and guidance provided by American defense companies. This licensed production may be understood as a middle ground between total domestic production, and outright purchase. In this chapter, I argue that the decision to develop Japan's Patriot Missile Program under license was motivated by a mismatch between Japanese industry and Japanese government interests. Production under license avoided public perception that Japan was developing new weapons

[71] Coproduction and production under license are often used interchangeably as terms - U.S. planners usually use the term coproduction, while Japanese policymakers and industry officials use "licensed production." Both refer to a partnership between two actors - one of which holds the intellectual property rights to a product and the other of which is granted manufacturing rights. In this arrangement, the licensee generally does not gain access to the research and development cycle of the product. In this manuscript I use the two terms interchangeably; the meanings are functionally the same, although one rhetorically does seem to frame the relationship between the two actors in question as more equal than the other. Coproduction is, however, significantly different from "cooperative development," which includes not just training, testing, and manufacturing the technology but cooperation between the involved actors from the research and development stage.

systems but allowed for acquisition of necessary capabilities from the United States while also offering reassurances to Japanese businesses. The implicit and sometimes explicit promise was that industry would gain access to many of the benefits of indigenous development immediately with licensed production. Furthermore, this compromise allowed for the possibility of change to indigenous production in the future if that domestic production became more easily justifiable to a broader audience.

Japan's Patriot Missile Program has been central to the broader Japanese missile defense program. While the Patriot program is far from the only missile program in Japanese history, it is the first of its kind to launch in the postwar. As a result, Patriot missiles have been central to the debates regarding constitutionality, acquisition, and development more broadly. Notably, PAC-2 (Patriot Advanced Capability [version] 2) and PAC-3 missiles occupy an important place at the center of Japan's ongoing cooperative Ballistic Missile Defense (BMD) system. In fact, Patriot is central to the point that it is arguably impossible to divorce discussions of the politics of early debates on BMD from Japanese production of Patriot missiles under American license.

The development of the Patriot Program from the early 1970s and into the 1990s reflected both external and internal conflicts. On one hand, Japanese high-tech industrial actors were concerned about American corporate espionage but interested in entry into growth markets. These businesses clashed with Japanese bureaucrats, self-defense force planners, and politicians who sought both to appease American allies and to avoid what were perceived as offensive capabilities. Japanese corporations initially operated under the understanding that they would be developing the capability in tandem with American manufacturers. Indeed, there was a stated and pressing concern that if development exclusively under license continued indefinitely then Japanese companies would be locked out of the market entirely. Even more concerning was the fear that too much collaboration production would offer an opportunity for American companies to learn from cutting edge Japanese technologies while profiting from markets in which Japanese industry was unable to participate.

While business actors faced anxiety that American tech firms might leverage the development of missile defense to surpass Japanese production capabilities, government actors faced their own sets of constraints and concerns. On one hand, missile development and acquisition in Japan, while arguably initially fueled by Cold War concerns over the possibility of attack, largely came in the period of detente. By the time that the Reagan administration began to increase pressure on Japanese policymakers to participate more actively in security measures the shape of the international system had fundamentally shifted. Those changes were heavily reflected in the alliance itself. The Cold War was winding down, and Japan's rise to economic and technological prominence had complicated America's industrial and security relationship with its ally in Asia. Japanese policymakers did their best to balance American external pressure to buy more American capabilities - and to fund more American-led security initiatives - with an ongoing domestic commitment to keeping a low profile when it came to security. Ultimately, the result has been that there has been no significant action taken seeking replacement of Patriot missiles with comparable, indigenously developed Japanese capabilities. Instead, Japanese production of Patriot missiles and similar capabilities under American license has continued since it was announced in the mid-1980s.

In this chapter, I argue that the decision to develop Japan's Patriot Missile Program under license was motivated by an initial mismatch between Japanese industry and Japanese government interests. Drawing from archival research and personal interviews with actors involved in the debates that shaped the trajectory of domestic development, I claim that production under license allowed Japanese policymakers to acquire necessary capabilities from the United States while also

offering implicit and sometimes explicit reassurances to Japanese businesses that they would be allowed access to at least some of the benefits of indigenous development immediately, with the possibility for a changeover in the future if domestic development became more easily justifiable to a broader audience.

I begin my analysis by outlining the shape of American missile defense in Asia during the Cold War. I focus on the co-development of the Nike-J missile, the precursor to the Patriot program. While the Patriot program is the most well-known Japanese missile program, the shape of its trajectory was fundamentally a reflection of its technological precursors. I then outline the early years of Patriot missile defense production in Japan. While Japanese businesses lobbied for indigenous development or at least co-development, the difficulty of justifying missiles as defensive was coupled with increasing pressure from the United States to "buy American." This led to the decision to develop under license, with Mitsubishi Heavy Industries manufacturing the Raytheon PAC-2. I discuss the costs and benefits of this strategy, highlighting the care taken by policymakers to reassure Japanese industrial actors that production under license would allow access to epistemic communities and research opportunities.

I then describe the incremental expansion of the Patriot program. With each development, the government took pains to reiterate that the missile program was justifiable. I highlight shifts within the U.S.-Japan alliance, arguing that in the early stages of the Patriot program missile defense was seen by some policymakers as an alliance question rather than a necessary step for Japanese security. I discuss the shocks represented by the first Gulf War, the Taiwan Straits Crisis, and finally the Taepodong Missile crisis, arguing that each played an important and amplifying role in expanding Japanese production of Patriot missiles. I then outline the current place occupied by Patriot missile systems in the sprawling and expanding constellation of Japanese anti-ballistic missile capabilities today.

Throughout, I describe the relationship between government and business interests in negotiating outcomes in the Patriot program. I highlight the initial mismatch between businesses interested in active and indigenous Japanese development and government officials faced with an unsympathetic public and an increasingly impatient alliance partner. I discuss the role played by government concerns regarding the justifiability of Japanese-manufactured Patriot-equivalent missiles in the decision to develop under license. The historical record reflects a conscious hedge on the part of state officials, who sought to avoid indigenous development in the short term while allowing Japanese industry actors access to as many of the benefits of development as possible. Data collected in personal interviews reflects an attitude on the part of business leaders that although the door had purposefully been left open for Japanese indigenous development of missile capabilities, over time, industry interest in developing a "Japanese Patriot Missile" had waned. This led to the long-term continuation of licensed production.

I conclude the chapter by briefly contrasting this case with the content of the previous chapter on information gathering satellites. The indigenous development of IGS capability was an easy case in which government and business interests matched up. The Patriot program, on the other hand, is a case where there existed significant tension early on between business interest and government concerns regarding justifiability. The Patriot program reflects what happens when government leaders are unable even at later stages of acquisition and production to justify the development of domestic capabilities, as well as what happens when business interest in indigenous development wanes. Inevitably licensed production continues indefinitely, carried on by the legacies of initial contract agreements.

3.1 Patriot Missiles and Missile Defense

The debate surrounding the Patriot program in Japan centers on the actual capabilities of the system – what it can and cannot do determines whether it is considered justifiable to the general public as both necessary for national security and fundamentally defensive in nature. Any discussion of how and why Patriot capabilities were acquired must therefore include a description of what the actual system capabilities look like and what development and production entails. What follows is a brief introduction to the shape of the Patriot program in Japan, as well as what the technologies involved are designed to accomplish.

The Patriot system was the first "lower-tier" Theatre Missile Defense (TMD) capability and for several years was the only U.S. BMD with an actual deployment record. These lower-tier systems are designed to counter short-range threats including short-range ballistic missiles (SRBMs), cruise missiles, and aircraft. Because Patriot missiles are not designed to engage with a target above the earth's atmosphere, this means that the system is designed to defend against missile attacks in their *terminal* stage. These work in tandem with upper-tier systems like the Army's Theater High-altitude Air Defense (THAAD) which are designed to intercept medium and intermediate-range threats by intercepting them outside of the Earth's atmosphere. BMD and Anti-Ballistic Missile (ABM) capabilities are often discussed as if they are a singular entity, but they are made up of a constellation of different technological capabilities. Patriot technology, for example, is composed of a "battery" based either on the ground or in the air. A typical battery includes five components: the missiles themselves, the missile launcher, a radar antenna to detect incoming missiles, equipment called an Engagement Control Station (ECS) which houses computers and consoles needed to control the battery, and some sort of power source to provide power for the radar and the ECS.

Patriot is a relatively straightforward system; its usage begins with the radar component, which sweeps the sky for threats. If any incoming objects are detected the system determines what type of object it is. This system is monitored from the ECS, which is generally mobile; operators can monitor threats and prioritize targets, but theoretically the system can also work autonomously. If a threat is identified the launcher component fires a Patriot missile, which is shipped "ready to launch" in four canisters of four missiles each. The missile is tracked by the radar, guided to the target through a combination of its homing sensors and the ECS computer. The exact mechanism through which the missile destroys the target varies somewhat. For example, the PAC-3 missile destroys the targets by physically ramming into them, while the Guidance Enhanced Missile Plus (GEM+) used in support to PAC-3 missiles explodes near the target, making it harder for the target to shoot the PAC-3 missile as well as providing auxiliary damage.[72]

While Patriot batteries are generally sold as a set, theoretically any of these capabilities could be sourced or manufactured elsewhere. This chapter focuses primarily on the development and acquisition of the missiles specifically, although often support capabilities are included in negotiations and purchasing/co-development decisions. Missiles are an interesting and important capability. Of all the components of a comprehensive missile defense system, they are the most obviously "offensive." At the same time, access to research regarding the development of missile technology offers important possibilities for technological spin-ons. Notably, in recent years Japan has begun contributing more proactively to the manufacture and development of certain parts of

[72] Raytheon. "Missile Defense." *Raytheon Missiles and Defense.* https://www.raytheonmissilesanddefense.com/capabilities/missile-defense, accessed February 26, 2021.

ABM batteries.[73] This represents a shift in the types of participation in BMD production undertaken by Japanese industry away from only producing domestically those capabilities which are clearly and undeniably for "defensive defense." Instead, within the umbrella of BMD Japan has gradually been participating more actively even in production of capabilities which fall into a gray zone between defense and offense.

3.2 The Nike-J and Missile Production Under License

High tech, expensive capabilities like Patriot missiles are inevitably influenced by the technologies that precede them. Similarly, the agreements and contracts negotiated for those early precursor capabilities often provide the framework for agreements written later. To understand why licensed production was chosen for Japan's Patriot program it is necessary to understand Japan's engagement with missile production before that.

Japan has been at least passively involved in American missile defense programs since the 1950s, but it was only in the mid-1980s that Japanese defense planners began openly and publicly debating how and whether they would actively participate in those programs. U.S. interest in missile defense dates back far before Japanese interest. Since the early 1950s the American military through research and development actively sought the ability to protect the entire country with a so-called "impenetrable shield": a guarantee that American military capabilities would be able to actively repel any attacks from the sky.[74] In 1955 the U.S. Army requested permission from the Eisenhower administration to work on the Nike Zeus and Nike Ajax systems. The importance of this project was underscored by the Soviet launch of Sputnik-1, and the Nike program continued to grow into the 1960s. Eventually, however, political rationales for Ballistic Missile Defense (BMD) began to erode as negotiations over the Treaty Between The United States of America and The Union of Soviet Socialist Republics on The Limitation of Anti-Ballistic Missile (ABM) Systems concluded. U.S. R&D regarding missile programs continued at a slow and steady pace into the 1970s. Missile defense only reentered the center of American defense planning when the Reagan administration introduced the Strategic Defense Initiative (SDI), a massive effort to develop a BMD system that would protect the United States from a full-scale Soviet attack.[75]

Most popular discussion of Japan's entry into missile defense began in the 1980s when American policymakers began to exert significant pressure on Japanese leadership to participate in SDI. However, in my interviews with Japanese businesspeople and policymakers, most of whom had been involved in negotiating initial Patriot contracts, subjects were quick to clarify that Japan had been entangled in missile defense from a much earlier stage. Additionally, interviewees who

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[73] As an example of the ways in which different technologies within a Patriot battery may see different acquisition strategies, Chapter 5 of this manuscript examines the Japanese decision to purchase the radar for Aegis Ashore from the Americans rather than co-develop or seek indigenous development.

[74] Steven Hildreth. "Ballistic Missile Defense: Historical Overview," *CRS Report for Congress* (Congressional Research Service, July 9, 2007). p. 7.

[75] For a comprehensive overview of American engagement with missile defense and in particular BMD, refer to Thad Cochran. *Stubborn Things: A Decade of Facts about Ballistic Missile Defense*. Committee on Governmental Affairs, Subcommittee on International Security, Proliferation, and Federation Services, September 2000. https://www.hsdl.org/?view&did=437971, accessed November 11, 2019; Joseph Cirincione. "Brief History of Ballistic Missile Defense and Current Programs in the United States." *Carnegie Endowment for International Peace [online]* (2000). https://carnegieendowment.org/2000/02/01/brief-history-of-ballistic-missile-defense-and-current-programs-in-united-states-pub-133, accessed October 5, 2020; Peter Rodman. *Shield Embattled: Missile Defense as a Foreign Policy Problem* (The Nixon Center, October 2001).

participated in this early missile defense program indicated that Japanese industry actors played a more active role than might initially be thought. Indeed, most business actors involved in these negotiations characterized themselves in interviews as the architects of early Japanese security policy, pushing for entry into defense markets well before the Japanese government could support it. As one subject who worked for Mitsubishi Heavy Industries for many decades put it, "It wasn't like [co-development of Japanese missile capabilities with U.S. industry] was something the Americans made us do, either - when I entered MHI I was working on developing missiles, and if anything, when it came to the Nike-J we began discussions with the understanding and hope that we would be co-producing."[76]

The Douglas Aircraft Company, supported by the U.S. Department of Defense, had been actively pursuing coproduction of Nike equipment with Japanese industry actors since 1959. In July of 1965, a joint Hawk/Hercules team supporting the U.S. Army Missile Command (MICOM) visited Tokyo to formally discuss coproduction. Industry-to-industry level talks progressed much more smoothly and rapidly than government-to-government. There was already robust business interest in development of missile technologies within Japan, and many of the involved corporations had already worked to develop access to American expertise. Additionally, there was no existing governmental guidance or policy on the American side regarding how coproduction of technologies as technical and sophisticated as the Hawk and Hercules would be accomplished. Up until this point manufacture of Hercules and Hawk Weapons Systems had been limited only to U.S. manufacturers but had experienced "thousands of problems." This led the then-Commanding General of MICOM to emphasize that if manufacturing were to happen on a coproduction basis it would need to be established in the negotiation stage which actors would shoulder the responsibility for ensuring the resulting capability was up to standard.[77]

In May 1966, MICOM and the Japan Defense Agency (JDA) completed preliminary talks regarding coproduction of the Hercules Missile. This resulted in the purchase of required ground equipment from the United States. The missile itself, which was designated the Nike-J, was manufactured by Mitsubishi Heavy Industries (MHI) under license from the McDonnell Douglas Corporation. The agreement stipulated that the Japanese-produced version of the missile would be converted to only carry conventional warheads.[78] Japanese and American policymakers sought final approval in July 1966, but this was heavily delayed due to domestic political concerns within Japan.

Throughout the 1960s Japan saw large-scale anti-military protest movements across the country. These protests, which began in 1960 when then-prime minister Kishi Nobusuke sought to revise the U.S.-Japan Security Treaty to allow Japan a more active role in the alliance, focused on the maintenance of Article 9. These anti-military protests colored the political landscape of 1960s Japan. They ultimately led to the downfall of the Kishi administration and demonstrated to other LDP politicians the dangers of appearing too keen on participation in military activity.[79] The year policymakers sought approval for the Nike-J was a particularly difficult year as a militant anti-war

[76] B-NJ. Interview by Deirdre Martin. Personal Interview. Tokyo, Japan, March 28, 2019.

[77] SS-HE-P-26, HERC Proj OFc, B Sep 65, subj:Co-Pdn Fley, w Ltr, CG, MICON, to MC Selwn D. Smith, Jr., CoS, AMC, 8 Sep 65, n.s. Hist Div File in Mary T. Cagle. *Historical Monograph Project Number: AMC 75 M - History of the Nike Hercules Weapon System* (Redstone Arsenal, AL: U.S. Army Missile Command, April 19, 1973).

[78] The Douglas Aircraft Company, which was the original producer of the Hercules Missile and which had initiated coproduction talks with Japanese businesses, merged with the McDonnell Aircraft Company in 1967. "Mitsubishi To Build Missiles." *Technology Week*, June 5, 1967, p. 19.

[79] For a comprehensive overview of these anti-military protests, see Nikhil Paul Kapur. *The 1960 US-Japan Security Treaty Crisis and the Origins of Contemporary Japan* (Harvard University, 2011).

student group, the All-Campus Joint Struggle Committee (*Zengaku kyouto kaigi*, or Zenkyoto), gained political prominence following a series of student protests across Japan. While the stated goals of the Zenkyoto had very little to do with national defense policy, the ties of these protests with the anti-military student protests of the early 1960s caused Japanese policymakers to be particularly concerned about appearing too pro-military at this time. The result was active JDA insistence that missile production must be business-led, with government intervention limited to only a handful of circumstances. The memorandum of understanding for coproduction of Hercules and Hawk missiles was delayed and could not be finalized until October 1967, a full year behind schedule. The following month the U.S. Department of Defense (DOD) authorized the formation of a liaison office in Japan under the umbrella of the MICOM field office in April 1968.

On the government side, the Americans faced significant restrictions due both to passive Japanese ambivalence and active constraints placed on their organization. The MICOM Field Office immediately faced a series of setbacks as their lack of personnel severely hampered their ability to coordinate action. Approval for the office had been contingent on the agreement that Japan would pay for the costs associated with the office. Upon American arrival, however, the JDA refused to pay. The JDA signed the major sales contracts for Hercules Ground equipment on June 28th, 1968, totaling $38.9 million. The field office staffing problems had only worsened over time, leading to the consolidation of one sales contract to cover all MICOM projects. While the Americans sought to sell bundled support services at a fixed price, the Japanese Defense Agency argued that reimbursement for *all* support "would not be proper." Instead, they were only willing to pay for those limited services which they directly requested. When the first shipment of classified hardware left Japan in March 1969 it was accompanied by a military escort at contractor expense. [80] Despite these setbacks, production of Hercules Missiles in Japan continued as scheduled. Fifteen missiles were produced in 1970 and 108 in 1971.

While the Patriot Missile Program itself did not begin until the mid-1970s and did not hit Japan until the 1980s, the process through which the Nike-J was acquired reflects several important themes which shaped outcomes for decades to come. First and foremost was the pivotal and even driving role played by industry in the development of missile defense from the beginning. Prior even to talks regarding the coproduction of the Nike-J, Mitsubishi Heavy Industries and Mitsubishi Electric had been in the process of developing air-to-air missile capabilities, with Mitsubishi Heavy focusing on the development of the missile and Mitsubishi Electric on the supporting radar system. The first was similar to the U.S. Sidewinder missile series, with later models more similar to the American Falcon missile series.[81] Second, because of this enduring and ongoing interest in missile development and access to American expertise on the part of Japanese industry actors, when it came time to negotiate sales cases and contracts business-to-business level ties were much more robust and developed than official government ties. Regardless, the negotiations around the coproduction of the Nike-J were the first example of government-to-government negotiations over coproduction. This represents a notable push on the part of Japanese industry to convince the Japanese government to allow businesses to enter both the international research community and also the market. [82]

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[80] Hist Rept, NE PM, FY 1969, n.p. Hist Div File. in Cagle, *Historical Monograph Project Number: AMC 75 M*, 1973.

[81] B-NJ. Interview by Deirdre Martin. Personal Interview. Tokyo, Japan, March 28, 2019.

[82] While this pattern of Japanese business-government coordination is particularly clear in the missile development case, it characterized much of the broad Japanese national strategy throughout the Cold War. From the 1960s through the 1990s Japanese government focused on close ties with "growth" industries to bolster the national economy, arguing that rapid industrial development represented the road to national security and stability in the long

This is not to imply that production under license was a completely new concept at this point; Japanese licensed production of American military technology began with the manufacture of the F-86, a subsonic fighter jet, in the 1950s.[83] However, the negotiations over the production of the Nike-J represented an important step in the development of government-to-government cooperation over coproduction. These initial difficulties also reflected a third major theme of early missile development: an ongoing pattern of behavior in which, when faced with strong business-to-business ties and notable industry-level interest in production on both sides, government actors concerned with the optics of security continued to demonstrate resistance against spending government funds on any part of the acquisition process, even logistical.

Japanese industry, particularly MHI, was at the forefront of even the earliest discussion of the coproduction of missiles with the Americans. There were numerous reasons for Japanese industry to accept production under license. In terms of defense technologies specifically, Japanese industry capability at the time was around ten years behind the United States. Japanese producers at the time sought access to American research and development in the hopes that it would lead to technological "spin-offs." There are a variety of practical downsides to production under license. For example, systems developed under license cannot be repaired or maintained at home but must be sent back to the United States, increasing costs and time required for both emergency and system maintenance. These concerns do not just extend to the technologies themselves but everything surrounding them. Test equipment for the capabilities must be purchased from the original manufacturer, and training is generally conducted in the United States by original producers as well. This training extends to subcontractors involved in the production cycle and can take months or years to fully complete.[84]

An additional consideration, however, is how and whether coproduction will allow access to the development process. Access to the development cycle will not be a priority for industry actors who already possess most of the technologies necessary to produce the capability and are seeking to apply those capabilities militarily; therefore, if the concern is "spin-ons," the benefit of domestic manufacture is relatively limited. In cases where the concern is "spin-offs," however, access to development cycles is often necessary for gaining access to these additional technologies; therefore, while indigenous development (with government funding or contracts) is *preferred* in these cases, coproduction still offers a venue for firms to gain experience with the technology. This was the case in missile negotiations. Given the choice between being completely blocked from both R&D and the market, MHI chose R&D and production under license.

The 1970 beginning of licensed production of the Patriot predecessor, the Nike-J, had immediate and obvious benefits for the company. It began developing indigenous missiles very shortly after, including air-to-surface and surface-to-surface missiles. The first of these, the ASM-1 (Type 80) began development in 1973 and entered production in 1980. It is still in use today. The Type 80 has a 50 km range, a speed of approximately Mach 1, and uses active radar homing in its terminal phase. At the time MHI was praised for finishing the project on time and under budget, and the missile has had an excellent service record overall, with a reportedly high hit rate. In 1979 MHI began development on a surface-to-surface missile, the SSM-1 (Type 88), which is based on the Type 80. The missile was designed to the specifications of the Japanese Ground Self-Defense Force (GSDF), with a range that theoretically allowed it to be launched from points as far as 100 km inland and still hit enemy ships. The Type 88 began production in 1988 and is still in

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[83] Cagle, *Historical Monograph*, 1973.

[84] Ibid.

service, although its upgrade, the Type 12, became operational in 2015. Based on the success of these missiles, MHI began work on numerous other missile projects, some of which ultimately were deployed and others of which were not. [85] The lesson was clear - participation in production under license had obvious benefits for Japanese industrial development writ large.

Overall, how missile coproduction or production under license proceeded for the Patriot system was very much determined by the logistical, political, and constitutional precedent set in the negotiations over the Nike-J. Perhaps most importantly, both businesses and politicians learned the important lesson from this process that when it becomes difficult to explain or to justify capability developments, production under license represented an efficient middle ground. Given that there were always going to be difficulties with indigenous development of Japanese missiles in the 1960s, this represented a method of getting *most* of the benefits - American-led training, access to research and development, and the actual capabilities necessary for the maintenance of the U.S.-Japan alliance and protection of the Japanese homeland.

3.3 Theater Missile Defense: SDI and Japan's Patriot Program

By the time Japan began producing missiles under American license in 1970, the international system looked very different than it had when the Douglas Aircraft Company first began courting Japanese industry for coproduction in 1959. The signing of the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) in July 1968 coupled with the normalization of both U.S. and Japanese relations with China in the 1970s became emblematic of the slow and steady progression of political detente. Importantly, the Anti-Ballistic Missile (ABM) Treaty, signed in 1972, stalled progress on missile development as both the United States and the Soviet Union voluntarily put limits on development and testing, agreeing "that the effective measures to limit anti-ballistic missile systems would be a substantial factor in curbing the race in strategic offensive arms and would lead to a decrease in the risk of outbreak of war involving nuclear weapons."[86]

Given that international interest in missile defense was declining, it came as a surprise when the Reagan administration announced a huge and costly missile defense program known as the Strategic Defense Initiative (SDI). Despite significant controversy regarding the feasibility of many technical aspects of the initiative, particularly the proposed space-based missile interceptors, the American Congress responded enthusiastically, appropriating more than $44 billion to SDI from 1983-1993.

The Japanese relationship with missile defense during the 1970s and 1980s was slightly more complicated than that of the U.S. On the one hand, the detente between the Americans and the Soviets made armed conflict less likely and caused the swift development of missile defense technologies to have less priority overall. It was not necessarily the case that the importance of deterrence had diminished, but simply that the acceptable timeline necessary for developing or acquiring these capabilities had lengthened significantly as the threat became less pressing. On the other hand, Japanese relations with the Soviet Union seriously deteriorated during this time due to a cascade of events. The Sino-Japanese Treaty of 1978 and the Soviet invasion of Afghanistan were two inciting events, but it was the buildup of Soviet military capabilities in East Asia, including the construction of military bases in the southern Kurile Islands, deployment of 135 SS-20 IRBMs in Siberia, and the shooting down of a Korean Airlines flight in the Sea of Japan in

[85] Vogel, *The Power Behind "Spin-Ons"*, 1991. p. 68.

[86] *Treaty between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Anti-Ballistic Missile Systems.* May 26, 1972.

1983, which gave Japanese military planners pause.[87]

When Nakasone Yasuhiro became Prime Minister in 1982, he pursued an unusually proactive foreign policy strategy, adopting an active role in strategic affairs and seeking to normalize Japan's membership in the Western international community. To this end he sought a closer alliance with the United States, supporting Reagan's position on countering Soviet expansionism through the active deployment of technologies to counter Soviet missile threats. However, there was no domestic consensus regarding how to interpret the nature of the Soviet "threat." While Japan faced a significant and undeniable threat from the Soviets, by the mid-1980s the flagging Soviet economy caused many in Tokyo to argue that they should maintain their "low risk, low profile" stance rather than risk a military confrontation unnecessarily.[88] As a result, production of the Nike-J continued as before and business interest in development maintained stable, but the declining American interest in and commitment to missile defense in the 1970s was in turn reflected in Japan. Without the excuse of external American pressure, or *gai-atsu*, Japanese leaders struggled to justify and were generally uninterested in the active development of missile capabilities.

When the Americans began pushing their allies to offer their support for SDI Nakasone expressed interest in Japanese engagement. Japan was the first American ally to officially state its enthusiasm for the initiative in January 1985.[89] Nakasone viewed Japanese engagement with SDI as one avenue through which Japan could simultaneously strengthen Japan's strategic position vis-a-vis the Soviet Union while also bolstering the U.S.-Japan alliance. However, he faced domestic ambivalence. By January of 1983, he had already spent a significant amount of his political energy and capital seeking cabinet approval for modification of the arms export ban to expedite military technology transfers to the U.S. The modification of the ban was widely hailed by policymakers within the U.S. but received negative political responses from Japanese bureaucrats, politicians, and business leaders, who feared that their country would be pressured to participate in SDI and to transfer industrial and technological secrets to the Americans in the name of cooperation.

Concurrently with this debate regarding how and whether Japan should participate in SDI and its related technologies, Japanese businesses sought the next phase in their own development of ground-to-air missile capabilities. Following the success of the Nike-J, insiders within MHI began to debate if it would be possible to develop their own missiles for use by the Japan Air Self Defense Force. When it became clear that the Nike-J would need to be replaced to meet growing threats, MHI sought permission to develop an indigenous replacement, citing their earlier push to develop air-to-air missiles. However, the decision was ultimately made that the replacement for the Nike-J missile would be the American-made Patriot System, once again to be produced under license by MHI.

There were several factors at play that accounted for this switch. First and foremost,

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[87] Japan Defense Agency. *Defense White Paper 1984*. Japan Defense Agency, 1984.

[88] Tsuneo Akaha. "Japan's Nonnuclear policy." *Asian Survey* 24.8 (1984): 852-877. p. 868; Chalmers Johnson. "Reflections on the dilemma of Japanese defense." *Asian Survey* 26.5 (1986): 557-572. p. 565.

[89] "Japanese eager to work on Star Wars," *The Guardian*, March 23, 1985. Although personally enthusiastic about the initiative, Nakasone was unable to use the word "support" to describe the Japanese stance on SDI; while privately he expressed that he would have preferred to use the term to express his positive attitude toward SDI, he was blocked from doing so by the Ministry of Foreign Affairs, who cautioned that because Margaret Thatcher had stated she supported research but not the deployment of SDI, using the word support might cause onlookers to interpret Japanese support as stronger than that of the U.K. After much deliberation in Kasumigaseki, Nakasone was advised that using terms like "appreciate" and "understand" would be acceptable. Kaori Urayama. "Missile Defense, US-Japan Alliance and Sino-Japanese Relations, 1983--2007." Doctoral dissertation, Boston University, 2008.

Japanese policymakers cited American political pressure. U.S. industry had anticipated that the Japanese would need an upgrade to the Nike-J and were likely to attempt to enter the market themselves. American businesses therefore applied pressure to policymakers, urging them to consider the benefits of cooperative production. In addition to pressure applied from the American side, Japanese business actors privately admitted that the Americans had a technological edge, as American Patriot capabilities were very long-range and capable of engagement with multiple targets. Japanese industry uncertainty regarding domestic development hinged on whether Japanese businesses would be able to develop comparable capabilities on a timeline that was acceptable to policy planners. Business actors were also extremely interested in the commercial applications of these applications and therefore sought joint R&D with the Americans, arguing that there was still much to be learned when it came to missile development. In 1985, the same year that Nakasone announced that Japan "understood" SDI, Japan signed a license agreement to produce the Patriot PAC-2 (MIM-104C), a surface-to-air missile which was notably the first of its kind to be optimized for ballistic missile engagements. It was also not yet complete. The missile was still very much under development by Raytheon at the time. Regardless. Japan promised to deploy 26 PAC-2 missiles between the years 1985-1995. [90]

This agreement, which allowed Japanese businesspeople access to the research and development at Raytheon, did not cause a decline in interest in indigenous development on the business side. In 1989 there were rumors that Japan planned to abandon the Patriot project entirely in favor of an indigenous alternative.[91] The PAC-2 was a controversial missile; first deployed in the first Gulf War, there remains serious debate about whether and how effective they were during that conflict.[92] While it was not necessarily designed only for BMD, it was clear that it would be an invaluable technology when and if Japan agreed to participate in SDI and broader TMD programs. Overall, however, the agreement to co-develop the PAC-2 represented an important commitment that eased Japan further into cooperation with the Americans not only on "traditional" missile defense but also on SDI and BMD.

As production under license proceeded for the PAC-2, debate raged within Japan regarding whether Japan would continue with SDI and BMD. There were two points on which this discussion pivoted. The first of these was political, as policymakers asked whether BMD as a technology could be justified as purely defensive. The second was financial, as industrial actors in Japan debated the pros and cons of participating in such a controversial initiative. In June of 1985, a delegation of U.S. missile defense specialists traveled to Japan to brief the Japanese government, who in turn sent a delegation back to the U.S. This resulted in a flurry of delegations ping-ponging back and forth between the years of 1985-1986. In February of 1986, the LDP's Policy Affairs Research Council (PARC) urged the government not to officially join SDI but to instead approve a tie-up between private U.S. and Japanese businesses.[93] While this approach was modeled after the way West Germany handled the SDI issue, it also echoed the historical reticence of government officials to bankroll the development of missile technology, first evidenced in the Nike-J case.

There were certainly voices within Japan speaking out against Japanese involvement in SDI for constitutional reasons. The Japan Socialist Party (JSP) questioned the constitutionality of

[90] "Japan Considers Building Missile," *The Christian Science Monitor*, April 24, 1989. https://www.csmonitor.com/1989/0424/oconsid.html, accessed November 18, 2020.
[91] Ibid.
[92] Sherman, J. Daniel. "Patriot PAC-2 Development and Deployment in the Gulf War." *Acquisition Review Quarterly* (Winter 2003). https://www.dau.edu/library/arj/ARJ/arq2003/ShermanWT3.pdf, accessed November 16, 2020.
[93] "Government to mull West German-style SDI participation." *Jiji Press*, February 14, 1986.

support for SDI, as well as whether participation would violate the 1969 Diet Resolution on the Peaceful Development and Use of Space, for example. However, most of the debate centered around economic and industrial questions. In the early years of SDI Japanese firms expressed interest, viewing it both as a natural outgrowth of existing defense technology programs as well as offering the possibility for other economic benefits. The Vice President of Daiichi Bank was quoted as saying, "People seem to have the impression that SDI is just space weapons, but it's actually a grand high-tech development project."[94]

While some corporations were skeptical, citing resistance to the development of military technologies and concerns about industrial espionage, many were extremely interested. Some viewed SDI as a gateway to more and better space technology, which industrial actors saw as the industry most likely to shape the economy of the 21st century. Others sought to work with American defense contractors, who they viewed as "more creative and less constrained by budgetary restrictions."[95] Enthusiasm cooled, however, when it became clear that because of the proprietary nature of much of the technology in question it very possible that Japan might contribute to the development of capabilities only to be blocked from possessing or profiting off them. Japanese businesses expressed concern that SDI patent rights would be claimed by the Pentagon and that commercial spin-offs would be banned.[96] These fears were exacerbated by the December 1985 addition of a rider to a U.S. Congress defense bill proposing a "buy American" policy for SDI.

Mitsubishi Heavy Industries, however, was one commercial actor that was not dissuaded by these concerns. It was Japan's primary manufacturer of air-to-air and surface-to-air missiles and held the contract to manufacture PAC-2 missiles under license. It had sent an independent fact-finding mission to the United States in the mid-1980s, conducted a host of feasibility studies, and submitted numerous proposals to the Japanese government expressing enthusiasm for an expanded role in American missile and space defense. MHI had also actively lobbied among other defense and manufacturing companies within Japan, hoping to drum up political capital to pressure politicians and bureaucrats into taking SDI participation more seriously. These efforts eventually bore fruit, including the J-TMDAS (Japan Theatre Missile Defense Architecture Study), which pushed for greater Japanese defense industrial cooperation with their American counterparts in the development of BMD.[97]

In September of 1986, the Japanese government announced that it had decided "in principle" to join the SDI.[98] This was a deeply controversial move, earning Nakasone criticism not only from the JSP but also from within his own party. Abe Shintaro, a former foreign minister who was seen at the time as one of Nakasone's primary political rivals for leadership of the Liberal Democratic Party, criticized it in strong terms as a "hasty decision."[99] The bureaucracy also did not respond warmly. Two days after the official announcement the Ministry of International Trade and Industry (MITI) stated that it would be difficult to expect revolutionary innovation from SDI, noting that SDI was unlikely to reactivate U.S. industry, that the Americans had taken significant steps to

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[94] Kibino Yasushi 気比野 靖. *Nichi-bei haitekku masatsu: SDI to Nihon no mirai.* 「日米ハイテク摩擦 : SDI と日本の未来」 [U.S.-Japan High Tech Tension: SDI and Japan's Future] (Gijutsu to Ningen, October 1, 1987).
[95] Urayama, "Missile Defense," 2008. p.63
[96] "Japan wants star without wars." *The Economist* 200: 69-70, August 2, 1986.
[97] A-JK. Interview by Deirdre Martin. Personal Interview. Tokyo, Japan, July 13, 2018.
[98] Burgess, John. "Japan Decides to Join SDI Conditionally." *The Washington Post*, September 8, 1986. https://www.washingtonpost.com/archive/politics/1986/09/08/japan-decides-to-join-sdi-conditionally/f9281c82-7764-475e-a675-8363eaf9f455/, accessed February 23, 2020.
[99] Urayama, "Missile Defense," 2008. p. 74.

ensure that Japanese companies would be hindered by stringent secret preservation policies, and that the process of technology transfer remained unclear. Overall, MITI's position was that "SDI is based on a purely strategic approach" and that industry should expect relatively low benefits based on the SDI agreement as it currently existed.[100]

In February of 1987, the United States decided to move forward unilaterally with the early deployment of SDI. This decision came, by design, as a surprise to nearly everyone. Reagan was reported in a leaked NSC memo as having said, "Don't ask the Soviets, tell them. The U.S. can move ahead."[101] This move embarrassed the Japanese, who had offered limited support with the understanding that all actions would conform with the ABM Treaty and after "negotiating with Moscow in consultation with allies."[102] They, like many American allies, had been surprised by the decision to move forward ahead of schedule, and many policy planners worried that this might destabilize the region. Beyond these geopolitical concerns, Japanese bureaucrats and industry actors expressed concern that this did not bode well for the future of cooperation under SDI. Finally, there were questions about how this new vision of SDI played into Japanese domestic constitutional issues. Then-Director General of the Science and Technology Agency Kono Yohei brought up the questions of whether SDI could feasibly be believed to be a non-nuclear program or if Japanese participation would be unnecessarily helping U.S. military technological development. If so, he argued, this would represent a fundamental divergence from Japan's scientific development policy which had up until this point emphasized commercial over dual use.

Despite these concerns, official Japanese participation began in 1987. This was mostly industry-led with exceptionally limited government participation. Discussion between industrial actors began with the industry Western Pacific Basin Architecture Study (WESTPAC), an extension of the research conducted under J-TMDAS which sought to study the role of missile defense in the Northeast Asian region.[103] WESTPAC was comprised of 14 defense industry companies from the U.S. and Japan, and because of the central role played by corporations, the Japanese government was able to keep its distance from the project. Mitsubishi Heavy Industries, as Japan's producer of PAC-2 missiles, took a leadership role in the process of rolling out Japanese SDI, and after a formal bidding process, they were awarded Pentagon contracts in cooperation with General Dynamics (now Lockheed) in December of 1988.[104] While the final form of these agreements ultimately allowed the Pentagon to classify or keep any products of Japanese SDI research, access to this research was deemed important enough that MHI and other actors continued regardless. The Patriot system was introduced in Japan in 1989. By the end of the 1980s, Japanese industrial actors had acquired not only the rights to manufacture the PAC-2 Patriot missile under license but also its first expanded Patriot battery.

While BMD and the Patriot Program would only expand beyond this point, an examination of these early years of the program indicate once again two prominent themes. First, the importance of industry interest, without which Japanese participation in SDI would have been functionally impossible, and second, the push and pull between strategic, industrial, and political debates in shaping how and why Japan would develop its Patriot missile program. Nakasone, arguably one of the most hawkish Prime Ministers in decades, was privately enthusiastic about participation in

[100] Kibino, *Nichi-bei haitekku masatsu*, 1987. p. 186.
[101] "Reagan set to speed up Star Wars," *The Guardian*, February 7, 1987.
[102] "U.S. debate on early deployment of SDI puts Tokyo in a bind," *Christian Science Monitor*, February 18, 1987.
[103] David Fouse. "Japan gets serious about missile defense: North Korean crisis pushes debate." *Asia-Pacific Security Studies* 2.4 (2003).
[104] Urayama, "Missile Defense," 2008. p. 77.

missile defense but was regularly blocked from more active participation by minority parties, the bureaucracy, and even members of his own party. Despite interest on the part of Japanese business, a consensus was arrived at early on that it would be a constitutional impossibility for Japan to develop indigenously - in fact, it was heavily debated whether any Japanese involvement at all was constitutional. The result was once again production under license, with Japanese companies gaining access to manufacturing contracts and American expertise while being blocked from access to the actual development process.

While Japanese business interest remained strong during this period, with MHI leading the push for an indigenously developed replacement for the Nike-J, Japanese politicians have not been supportive of the domestic development of Japanese missile capabilities. Nakasone stands as an exception to this rule. As prime minister, he pushed actively not just for missile development and participation in SDI but in an expansion of Japanese security programs broadly. His administration sought to rebalance the U.S.-Japan alliance and introduce Japan as an active and engaged participant in the alliance and the international system. Even Nakasone, however, had no significant interest in making sure that missiles acquired were indigenously developed. Labeled the "accidental Prime Minister," Nakasone's popularity within American circles did not reflect particular domestic popularity among the public or in his own party.[105] His political power base was relatively fragile. When he came to power in 1982 his tenure in office depended on the support of the Tanaka faction, which was fundamentally shaken in 1983 when the head of the faction, one-time Prime Minister and political powerhouse Tanaka Kakuei, was convicted on a variety of charges in 1983. As a result, Nakasone traditionally had trouble with follow-through on his promises in the security arena, depriving Japanese industry actors of an important political ally.

Japanese politicians were not the only government actors ambivalent toward a move away from licensed production. There was significant disagreement within the bureaucracy regarding the importance or unimportance of missile development. While the JDA touted the benefits of the possibility for both spin-on and spin-off technologies, MITI was mixed, with enthusiasm for coproduction relatively low in the late 1980s when the Patriot program was beginning to get underway. This ambivalence in combination with the relative weakness of the JDA in this period arguably denied MHI and similar interested corporations the political ally they needed to lobby politicians and the Ministry of Finance (MOF) for indigenous development contracts. As for the Ministry of Finance, one interview subject affiliated with the Ministry of Defense argued, "There are many people in the Ministry of Finance who don't understand why things are necessary. There aren't real security specialists there, by design. So, they need a clear explanation for why things need to be included in the budget."[106] Without a champion in MITI, the JDA and industrial actors were unable to convince politicians and MOF that Japanese indigenous development of missile defense technologies was necessary.

The question of justification played an important role in these discussions of how and whether to get involved in BMD. During a discussion of Japanese participation in SDI, Urayama Kaori writes,

> "[...] the fact that a U.S. government official admitted in January 1986 that some of Reagan's statements regarding SDI being 'defensive defense' or a 'practical means of deterrence' without resorting to offensive weapons were 'somewhat careless and lacked accuracy' did not fare well with the Japanese government. The U.S. government's initial

[105] Kenneth Pyle. *Japan rising: The resurgence of Japanese power and purpose* (PublicAffairs, 2009).
[106] A-IT. Interview by Deirdre Martin. Personal Interview. Tokyo, Japan, July 24, 2019.

> insistence that SDI would supplant nuclear deterrence (and ultimately lead to the abolishment of nuclear weapons) was one reason the Japanese government decided to support SDI in the first place (or at least was a politically convenient reason in justifying Japanese support and assuaging public concerns about being affiliated with a strategic weapons system)."[107]

The decision to seek a "West-Germany"-like system without formal governmental involvement was also attributed to the sense that this would make "justifying" SDI easier in the domestic political context. It is important to note that it is not immediately clear whether the public *would* have been actively incensed by Japanese development of missiles; after all, MHI had been developing non-Patriot missiles since very shortly after coproduction began on the Nike-J and had received relatively little backlash. This confluence of factors – Japanese companies' difficulty finding government allies willing to support domestic missile production, political concerns regarding justifiability, and the overwhelming benefits of coproduction – led to the continuation of licensed production of Patriot missiles through the end of the Cold War. Mitsubishi Heavy Industries had negotiated contracts to develop Patriot missiles in 1985 and the Patriot missile system in 1988. Japan would not see significant movement on the Patriot missile project, however, until the late 1990s. What ultimately slowed the Patriot project was not industrial dissatisfaction with the terms of the agreement or even debates about constitutionality but instead something much less predictable: the fall of the SDI itself.

3.4 Ballistic Missile Defense and the Expansion of Japan's Patriot Program

Even as Japan became actively engaged in SDI, the American scientific community began to cast doubt on the actual feasibility of the more radical cornerstones of the initiative, arguing that many of the technologies were decades away from being ready to use.[108] The true death knell of SDI was the fall of the Berlin Wall and then the end of the Cold War. The loss of a strategic enemy made the exceptional cost and potential for international destabilization posed by SDI prohibitively costly, and its funding was slowly cut until the initiative was eventually ended by the Bill Clinton administration in 1993. This of course did not spell the end for BMD in general. The Clinton administration simply refocused its energy towards TMD, and improvements of the Army's Patriot and Hawk systems were touted as a primary goal of the new program. The end of Cold War did, however, slow the progression of Japan's Patriot program by almost a decade.

From 1988 until the late-1990s, Japanese policymakers actively sought to disentangle from the Patriot program, citing difficulty in justification and constitutional concerns. Concerns surrounded how the Patriot program threatened to extend defense spending beyond the norm of 1% of GDP which had been in place with only one exception since the 1970s. Japanese businesses had also soured somewhat on co-development. In 1987 they had sought to design and build an indigenous fighter jet but had been blocked from doing so as policymakers had faced enormous pressure to purchase an American model. Eventually, the U.S. and Japan agreed to lightly modify the U.S. F-16 to meet Japanese needs. The result, however, was extraordinarily bad blood between the Japanese and American defense industries, with Japanese companies much more skeptical of

[107] Urayama, "Missile Defense," 2008. p. 69.
[108] Nico Bloembergen et al. "Report to The American Physical Society of the study group on science and technology of directed energy weapons." *Reviews of Modern Physics* 59.3 (1987): S1.

production under license as a tool.[109] For Japanese companies, this incident served as a demonstration that their worst fears about co-production of BMD were true: that ultimately licensed production had turned into a tool through which American companies could steal Japanese technical expertise. This bad blood was matched on the American side, as ongoing trade friction complicated the dynamics of the U.S.-Japan alliance. American discussions of Japanese cooperation in TMD were initially bundled with the ongoing trade war between the two countries, with a highly adversarial and heavy-handed approach to demanding technological reciprocity.[110]

The tipping point of this conflict over what role Japan could and should play in international defense came with the first Gulf Crisis. When Iraq invaded Kuwait in August of 1990 Japan quickly imposed sanctions, but when asked for military support for the U.S.-led international intervention efforts Prime Minister Kaifu was unable to negotiate JSDF support or participation. While Japan ultimately pledged $18.3 billion in support of the Gulf War, it was roundly criticized for what was seen as "checkbook diplomacy," and it was pointedly left out of the official statement of thanks from Kuwait to the international community following the end of the conflict. There were two overarching lessons Japanese policymakers took away from the Gulf War incident. The first was that constitutional constraints were fundamentally hampering the ability of Japanese leadership to participate in the international community. The second was that Japan could no longer rely solely on economic solutions to foreign policy problems. Despite the trauma of the Gulf War incident, Japanese leaders remained exceptionally constrained by their perception of public anti-war sentiment. Japanese defense industry entered a period in which the demonstrable need for change conflicted with deeply held government-side perceptions about what was and was not justifiable to the public.

Concurrent with these tensions, the industry-led WESTPAC submitted its final report in 1993. The report, which focused on analyzing military trends and mapping out the technological capabilities necessary to address possible scenarios predicted to emerge from those trends, made several recommendations. The most notable was the judgment that the Patriot program by itself was not enough to counter a nuclear attack from North Korea or China. The report concluded, therefore, that THAAD would need to be deployed. It also recommended the use of an Aegis-equipped defense system. This report was followed up on by a Japanese government-led report, the results of which were scheduled to be released in late 1998.[111] This Japanese-led report was reportedly motivated in large part by concerns that land-based Patriot capabilities would not be enough on their own. These concerns did not manifest as specific policies, however. Instead, the report ultimately determined that Japan should continue to follow the U.S.'s lead on BMD while avoiding financial entanglements. That Tokyo was willing to spend an additional four years on this secondary report, however, is indicative of the government's reluctance regarding fully committing itself to TMD.

In the mid-1990s, several major events shifted Japanese policymakers' thinking in favor of missile defense, pushing Patriot back into public discussion. The first of these was North Korea's abrupt exit from the NPT in March 1993, followed in late May 1993 by four test-launches of North Korean missiles, two of which were judged to be Nodong Missiles capable of targeting parts of Japan. As tensions on the Korean peninsula escalated into 1994, Japan found itself once again

[109] Chapter 4 of this manuscript goes into depth about the F-2/F-16/F-SX program, as well as how the trauma of this experience fundamentally changed Japanese industrial approaches to coproduction. For more detail on this case, see also Mark A. Lorell. *Troubled partnership: A history of US-Japan collaboration on the FS-X Fighter*. RAND, 1996.
[110] Urayama, "Missile Defense," 2008. p. 82.
[111] Ibid. p. 95.

constrained by existing interpretations of its constitution, unable even to offer its American allies logistical support in the event of a military crisis. While the North Korean incident was taken less seriously by Japanese military planners than American, this underscored the importance of missile defense to Japanese security planning and re-emphasized the findings of the WESTPAC report. As a result of this event, the Japanese government formally stepped in, starting consultations with the United States on BMD in December 1993.[112]

This slow approach to TMD on the part of the Japanese government encouraged industrial actors. Japanese industry had watched large-scale military restructuring which led to massive budget cuts for defense contracts in America and Europe. In July of 1995, Keidanren went so far as to bypass politicians and civilian bureaucrats entirely, submitting a formal letter to the director-general of the Japan Defense Agency (JDA) which sought to lobby for relaxed arms exports controls.[113] The JDA was seen as a sympathetic partner in large part because it had already begun working to strengthen TMD. For example, it had created the Office of Ballistic Missile Defense Research in April 1995 and contracted with Nissan Motors and Kawasaki Heavy Industries to develop a side thruster-controlled interceptor missile in June 1995.[114]

Despite industry pressure, in December of 1995, the Ministry of Foreign Affairs of Japan released a new National Defense Program Outline (NDPO) which called for a streamlined and more compact military. This NDPO argued in favor of further slashing defense budgets and slowing new acquisition projects.[115] This caused a significant sense of crisis within the defense industry but reflected ongoing concerns within the Japanese bureaucracy regarding Japan's declining economy. Given the demonstrated lack of domestic political will for any indigenous development of missile capabilities, Japanese industry officials who still viewed TMD as the key for the survival of Japanese high-tech manufacturing pinned their hopes on continued co-development with the Americans.

In March of 1996, the Taiwan Strait crisis erupted. This event shook Japanese policymakers' faith in the stability of the relationship with China and reaffirmed the importance of a robust missile defense capability and the U.S.-Japan alliance in general. While the North Korean problem had demonstrated that missile defense was something that Japan should probably take seriously, the Taiwan Strait crisis was a clear illustration of how precarious Japan's security position was in the region, especially if the relationship with the United States remained fraught. In August of 1996, the U.S. and Japan established a new security framework that strengthened the alliance and committed Japan to greater burden-sharing. The U.S.-Japan Industry Forum for Security Cooperation (IFSEC), the first industry-wide forum for collaboration and dialogue, was set up to promote cooperation on BMD and related technologies. The Patriot program remained as it had been, even as debate swirled around whether an expansion of missile defense was in the national interest. PAC-2 missiles had fallen out of favor in the Gulf War as there were some debates about their performance. In 1996 Mitsubishi Heavy upgraded its PAC-2 capabilities to the Patriot PAC-

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[112] Japan Ministry of Defense. "Japan's BMD." *Japan Ministry of Defense.* April 17, 2012. http://www.mod.go.jp:80/e/d_act/bmd/bmd.pdf , accessed April 18, 2018.

[113] Keidanren 経済団体連合会. "Shinjidai ni taioushita boueiryoku seibi keikan no seiseku wo nozomu." 『新時代に対応した防衛力整備計画の策定を望む』 [Calling for a defense force structure plan in accordance with the new era]. Keidanren. May 11, 1995. https://www.keidanren.or.jp/japanese/policy/pol042.html, accessed November 4, 2020.

[114] Japan Ministry of Defense, "Japan's BMD," 2012.

[115] Japan Ministry of Foreign Affairs. "National Defense Program Outline in and after FY 1996." *Ministry of Foreign Affairs of Japan*, December 1995. https://www.mofa.go.jp/policy/security/defense96/, accessed December 25, 2020.

2 (UG), a version of the PAC-2 which included a software upgrade necessary to intercept ballistic missiles.[116]

Still, domestic political constraints against missile defense expansion persisted. In August of 1997, the JDA announced that it had decided to give up its plans to request more funding for TMD in the 1999 fiscal year. This was in large part a response to pressure from then-Prime Minister Hashimoto, who had indicated to policy planners during the budget drafting process that the revision of the 1996 U.S.-Japan Security Guidelines including the possibility for security cooperation had been politically costly enough and that it would not be possible to pursue missile defense because "it was too much to ask for two things in such a short period."[117] Japanese military planners had not given up on acquiring the budget for TMD through other methods; one ex-Ground Self Defense Force member involved with drafting the fiscal year 1999 budget proposal admitted that they had sought to scatter the budget for Patriot expansion throughout the budget rather than asking outright.[118]

The Gulf War, Japanese industry trauma over the F-SX, the WESTPAC final report, the 1994 North Korean missile tests, the ongoing trade dispute with the U.S., the Taiwan Strait Crisis, and the 1996 renegotiation of the U.S.-Japan security guidelines all represented incremental steps through which Japanese missile defense capabilities slowly expanded. The August 1998 North Korean Taepodong missile launch over the Japanese mainland represented a key critical juncture in government attitudes toward missile defense. "Ironically, the day they announced the launch had happened was the day that our budget proposal was due," the aforementioned ex-GSDF member laughed as he described the ensuing panic. "Within days we were told to find the money in the budget for missile defense. We'd already put it into the budget proposal, but we had to keep a straight face and agree that we'd work hard to find room for it somewhere."[119] In December of 1998 the beginning of the Japan-U.S. Cooperative Research Project was approved by the Security Council of Japan and the Cabinet, with a Memorandum of understanding signed in August of 1999.

In August of 2003, the JDA requested a BMD-related budget for fiscal year 2004 for the first time, and on December 19, 2003, the Government of Japan announced its decision on the introduction of a BMD system. This multi-layered defense system would be composed of an Aegis BMD system and Patriot PAC-3 batteries, and the statement of the Chief Cabinet Secretary stated, "[The] BMD system is the only and purely defensive measure, without alternatives, to protect life and property of the citizens of Japan against ballistic missile attacks, and meets the principle of

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[116] The Japanese Ministry of Defense notes that this version of the Patriot missile, while an upgrade from the original Patriot system, only possessed "limited capacity" to intercept ballistic missiles. Japan Ministry of Defense, "Japan's BMD," 2012.

[117] M-YN. Interview by Deirdre Martin. Personal Interview. Tokyo, Japan, July 12, 2018. This was not entirely untrue; the new U.S.-Japan Defense Guidelines had included not only discussion of Japanese participation in BMD but also the possibility for Japan to participate in noncombatant evacuations through the Acquisition and Cross-Servicing Agreement (ACSA), which had introduced the possibility that JSDF personnel might find themselves participating in logistical support for hypothetical combat situations in Northeast Asia. "Nipponkoku no jieitai to Amerika Gasshuukoku guntai to no aida ni okeru kouhou shien,buppin mata wa ekimu no sougou no teikyou n ikan suru Nipponkoku seifu to Amerika Gasshuukoku seifu to no aida no kyoutei wo kaiseisuru kyoutei."『日本国の自衛隊とアメリカ合衆国軍隊との間における後方支援、物品又は役務の相互の提供に関する日本国政府とアメリカ合衆国政府との間の協定を改正する協定』[Agreement Between the Government of Japan and the Government of the United States of America Concerning Reciprocal Provision of Logistic Support, Supplies and Services Between the Self Defense Forces of Japan and the Armed Forces of the United States of America.] April 15, 1996, https://www.mofa.go.jp/mofaj/gaiko/treaty/pdfs/treaty159_10a.pdf, accessed October 10, 2020.

[118] M-YN. Interview by Deirdre Martin. Personal Interview. Tokyo, Japan, July 12, 2018.

[119] Ibid.

exclusively defense-oriented national defense policy."[120] Japan's National Defense Program Guidelines and Midterm Defense Program (December 2004) both emphasized the centrality of Patriot systems in Japanese BMD.

These claims about the "defensiveness" of the new BMD systems, however, are difficult to take seriously when contrasted with the significant offensive improvements in hardware between the PAC-3 and the PAC-2 (UG). The PAC-3 missile, which has formed the cornerstone of Japanese BMD, is the same length as the PAC-2 but only weighs a third as much and is only 10 inches in diameter. This means that while only 4 PAC-2 missiles could fit in a launcher, 16 PAC-3 missiles can fit on their launcher. While the PAC-2 was meant to fly straight toward an incoming missile and explode at the nearest point of approach with the goal of either destroying or knocking the missile off target with the force of the explosion, a PAC-3 missile is designed to actually hit the incoming target. This makes it a much more effective tool against chemical and biological warheads because they are destroyed significantly away from the missile's initial target. The PAC-3 can do this because it has a built-in radar transmitter and guidance computer within the missile itself. The PAC-3 was reported as having performed well in Operation Iraqi Freedom. Kan Naoto, then the leader of Japan's largest opposition party, the Democratic Party of Japan, had formerly opposed missile defense but announced that having observed the PAC-3 during the Iraq conflict he no longer doubted its feasibility.

Despite its battlefield pedigree and in contrast with the Aegis system, which was fiercely debated, there was very little debate regarding the constitutionality of the PAC-3. When asked why there was so little debate, most practitioners involved at the time argued it was due to the PAC-3's relative closeness to the PAC-2. Some 27 PAC-2 batteries were deployed across the country in 2003, leading then-Secretary General of the LDP Yamasaki Taku to argue, "The PAC-3 can be dealt with as an improvement on the model already in place."[121] Unsurprisingly given its background in the production of the PAC-2 and PAC-2 (UG), MHI was awarded the license to produce these missiles under license from Lockheed-Martin in 2007.[122] The Patriot PAC-3 was deployed to Iruma Air Base in March 2007, marking Japan's first BMD interceptor. This was followed by deployments to the ADM Training Group and 2nd Technical School in Hamamatsu in 2008, to Gifu in 2009, and finally in April 2010 to Ashiya Air Base at Kasuga. The United States has also deployed its own PAC-3 battery to Kadena Air Force Base in Okinawa in October 2006. Japan also currently still has deployed over twenty PAC-2 batteries. In December 2017 Lockheed Martin was awarded a $944 million contract for the provision of upgraded PAC-3 MSE missiles by the 2020 Olympics, a date which has now passed. These upgraded Patriot missiles use hit-to-kill technologies to engage threats including ballistic missiles, cruise missiles, and aircraft.[123] As of June 2020, Japan's Self Defense Forces have a total of 120 Patriot missiles of various types.

What accounts for the decision to upgrade the PAC-2 and to continue with licensed production? Industry interest in the development of missile technology remained high. In fact, incentives to lobby for indigenous development were higher than ever as their most important area

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[120] Japan Ministry of Defense, "Japan's BMD," 2012.
[121] Fouse, "Japan gets serious," 2003. pp. 3-4.
[122] "MHI to get license to produce PAC-3 interceptor missiles." *The Japan Times*. July 20, 2005. https://www.japantimes.co.jp/news/2005/07/20/national/mhi-to-get-license-to-produce-pac-3-interceptor-missiles-2/, accessed February 28, 2021.
[123] Tim Kelly and Nobuhiro Kubo. "Exclusive: Japan to Upgrade Patriot batteries for Olympics as North Korean missile threat grows." *Reuters*. July 28, 2016. https://www.reuters.com/article/us-japan-northkorea-patriot-exclusive/exclusive-japan-to-upgrade-patriot-batteries-for-olympics-as-north-korean-missile-threat-grows-sources-idUSKCN1082W1, accessed March 1, 2021.

of technological strength, electronics, became increasingly critical to defense systems. In the U.S. Department of Defense's Critical Technologies Plan published 15 March 1990 Japan was rated as being "significantly ahead [of the United States] in some niches of technology" in five of twenty technology types rated as critical for defense, including semiconductors and microelectronic circuits, machine intelligence, photonics, superconductivity, and biotechnology. Japan was notably the only country other than the USSR to achieve this rating, and the USSR achieved it in only one of the twenty technologies.[124]

Japanese industry was no longer reliant on American expertise. In fact, they were arguably capable of overtaking U.S. industry. What, then, motivated the decision to maintain licensed production over domestic development? First and foremost, the decision to remain with licensed production reflects the considerable reticence of Japanese political actors to engage with missile development. When asked in an interview why he thought MHI and similar industry actors did not choose to push harder to replace the PAC-2 or even the PAC-3 with indigenously developed missiles, one Ministry of Defense official replied, "Indigenization of missiles to be used in BMD was not even really debated. This is probably because everyone, including the businesses, realized it was ultimately impossible." When asked, he clarified that it was primarily impossible for legal and political reasons, citing what he considered to be obvious conflicts with Article Nine. Unlike satellite technology, the uses of which could be debated as "defensive" or "offensive" but which have increasingly been accepted as primarily defensive in nature, missile development and defense programs have a much more clearly defined offensive image. The Japanese Socialist Party was a staunch bastion against indigenous development of missile capabilities from the 1950s, arguing that even beyond questions of BMD and whether it violates the Peaceful Uses of Space principle, the obvious offensive nature of missiles themselves precluded their development on a constitutional basis.[125] Missiles were a key issue brought up by the JSP in the 1986 election, for example, and were used as a political tool to encourage voter defection from the LDP. Even within the LDP there was agreement that indigenous development was a step too far. A key example of this was Prime Minister Hashimoto rejecting budget requests for BMD in the 1990s because the defense industry had already asked for one exception that year and any more would have been inappropriate.

These concerns regarding justifiability were coupled with the pressure faced by Japanese politicians from their American counterparts to purchase more American technologies and to allow for more free Japanese-to-American technology transfers. These requests began in the mid-1980s and continued through the mid-1990s, as the trade deficit between Japan and the United States caused many American politicians to decry "unfair" Japanese business practices. The ongoing trade war made it difficult for Japanese leaders to allow Japanese defense companies to switch from licensed production to indigenization, arguing that defense was one of the areas where it was easiest politically to rely on the United States.

Government-side attitudes changed about BMD significantly following a series of crises in the 1990s. In particular, the Taepodong missile launch in 1998 can be seen as a tipping point at which discourse fundamentally changed. When asked why people accepted missile defense in the late 1990s when they had previously been opposed, one official associated with the ministry of

[124] U.S. Department of Defense. *Critical Technologies Plan*. March15, 1990. https://apps.dtic.mil/dtic/tr/fulltext/u2/a219300.pdf, accessed March 1, 2021. p. 11.

[125] This did not help the JSP in this particular case – the LDP won a significant number of seats in this election – but it was considered a concern by many LDP politicians in the lead-up to the election and explains policymaker reticence. Urayama, "Missile Defense," 2008. p. 62.

defense replied, “At that point, it was clearly necessary and met the needs of an immediate threat, so it was easy to explain. Most people were also angry about the abductee issue, as well,” referring to a domestic political scandal in which it had come out that Japanese citizens had been kidnapped and were being held prisoner in North Korea, “so the anger over that issue helped to convince anyone who might disagree.”[126] The importance of North Korea as a narrative justification for the expansion of missile defense has remained since 1998, driving expansion from traditional BMD to the recently-failed Aegis Ashore and even limited discussion of deployment of THAAD in the region.

Government actors were historically concerned regarding the legality and even constitutionality of developing missiles with ever-growing ranges, citing concerns that there was no feasible way to interpret these capabilities as anything except for offensive. Now they faced pressure from Japanese industry actors who sought entry into markets offered by the development and production of missiles. While Mitsubishi Electric and Mitsubishi Heavy in particular have always been interested in missile defense, pressure from industry ramped up in the late 1980s as Japanese businesses with a technological edge feared losing access to markets they might otherwise be competitive in. The compromise that government and business actors arrived at was development under license, with the understanding that if the justifiability of missile development were to change significantly it would be possible in the future for Japanese companies to seek contracts. To a degree, this is what occurred - as BMD has become normalized in the Japanese national consciousness, Japanese development of capabilities has expanded. Notably, one of the non-Patriot missiles involved in the Japanese BMD apparatus, the standard Missile-3 Block IIA which is generally found on Aegis Destroyers was the result of cooperative development between Japan and the United States.

Additionally, by the 1980s most Japanese industrial actors had embraced the huge amount of development that was possible even under licensed production. The success of MHI’s licensed production in leading to the development of other Japanese missiles demonstrated that there were plentiful opportunities for spin-offs in coproduction. Japanese industries faced increasing pressure from the ongoing trade conflict with the United States and had to make strategic decisions regarding on which technologies they should focus their lobbying energies. Because of this it was determined that Japanese missile development could continue indigenously but that indigenously developed Japanese *ballistic missile defense* was simply too politically costly. Many Japanese industry actors expressed concern that the possible spin-ons they might have access to from SDI would be useless because of American secrecy legislation, increasing the sense that the benefits of participation beyond manufacture under license vastly outweighed the costs.

Given that Japan has developed numerous missiles since the 1970s and especially given the loosening of government-side constraints based around the justifiability of the system, what accounts for continuing production of the Patriot system under license? While justifiability drove government considerations, it had an important effect on the calculus for business actors as well. When asked why Japanese businesses had not pushed more for domestic development following changes in politician attitudes around missile production, one official answered, “Japanese companies want to participate in the development cycle, but their main business is commercial, so they care very much about their reputations. They can’t just seek out these contracts on their own, especially not anymore. They want the government to *direct* them to develop security capabilities. The problem isn’t technological, it’s reputational.”[127]

[126] A-IT. Interview by Deirdre Martin. Personal Interview. Tokyo, Japan, July 24, 2019.
[127] M-WH. Interview by Deirdre Martin. Personal Interview. Tokyo, Japan, July 25, 2019.

Increasingly, many Japanese industries have expressed concern regarding their image. Industry interview subjects expressed distress at the possibility of being labeled "merchants of war." As Professor Sato Seizaburo, an advisor to Nakasone on security affairs, argued, "A lot of Japanese companies which have technology related to SDI have a deep interest in joining, but they fear that if they express this openly, they will be criticized."[128] This concern does not seem to have been unfounded. Even before the debate on SDI began Kyocera corporation found itself embroiled in controversy when its U.S. subsidiary's participation in cruise missile production was discovered by the Japanese media, leading to a substantial drop in its stock value. Faced with government opposition, business actors seeking entry into the missile market had to choose where to focus their political pressure. As politicians have become *more* capable of justifying missile development to the public, businesses feel *less* confident in doing so.

Unlike satellites, which gradually became understood to be increasingly defensive, missiles have always been difficult to justify as anything other than offensive. Many firms chose not to participate in production at all - Mitsubishi Heavy Industries has been a primary producer of Japanese missiles simply because the reputational costs of entry for other firms are nearly as high as the financial costs. Those firms which did participate weighed the benefits of licensed production against the costs of pushing for indigenization and decided some participation was better than no participation. The result has been a long-term trajectory of production under license.

3.5 Justifying the Patriot Program

While initially politically controversial, the Patriot program now represents a fundamental cornerstone of Japanese national defense planning. As missile defense has increasingly become the reality of modern warfare, Japan has found itself in a somewhat precarious position vis-à-vis its neighbors. The threat posed by a ballistic missile attack first from the Soviet Union and then from the Russians was one of the primary concerns of Japanese security planners and policymakers throughout the Cold War, and the deployment of Japanese missile defense capabilities outlined in this chapter was primarily motivated by a desire to deter and possibly to counter attacks from the Soviets. The problem of Russian missile deployment continues today; as recently as December 2020 Japan faced the deployment of S-300V4 missile defense systems for combat duty on the disputed Kurile island chain.[129] Despite this alarming return to Cold War tensions, in practice, Russian missiles are the least of Japan's strategic concerns. Instead, the lion's share of defense focus has been placed on China's rapidly expanding and relatively opaque missile program, as well as the ongoing security threat posed by North Korean missile capabilities both separate from and in combination with their nuclear program.

In this case, business and government interests initially diverged regarding whether and how Japan would participate in the production of missile technologies. While businesses were interested in access to technological spin-offs and entry into the market, government actors were concerned with reputational factors and in particular the legality/constitutionality of production of a capability as obviously offensive as a missile. The compromise which resulted was licensed production, in which MHI manufactured American-owned Patriot missile capabilities. Japanese

[128] Daniel Sneider. "Japan agonizes over joining 'star wars' program. Issue sparks debate in parliament on Japanese role in East-West confrontation." *Christian Science Monitor*, December 18, 1985.
[129]Chris Gallagher. "Japan Protests Against Russian Missile Deployment on Disputed Islands." *Reuters*, December 2, 2020, https://www.reuters.com/article/us-russia-japan-missiles/japan-protests-against-russian-missile-deployment-on-disputed-islands-idUSKBN28C0WP, accessed December 21, 2020.

industrial actors were able to learn from participation in manufacturing, which led to a constellation of Japanese-manufactured missile technologies outside of the Patriot wheelhouse, while Japanese political actors were able to frame the Patriot program primarily as responsive to specific crises or, even more commonly, as a concession to the demands of the Americans under the U.S.-Japan security alliance.

Interestingly, as missile defense has increasingly been reframed as "defensive defense" rather than offensive, it has become easier for Japan to discuss acquisition outside of the context of the alliance. During the Trump administration, the Japanese government began actively debating an expansion of BMD missile development and acquisition, introducing the idea of purchasing from other allies. This discussion has included capabilities that even today are difficult to justify as defensive - for example, standoff missiles that can attack targets from outside the ranges of enemy missiles.[130] Notably, in this context the idea of a domestically developed Japanese Patriot equivalent has even been reintroduced into public discussion, raising the question of if the justifiability of these capabilities has finally reached the threshold necessary to allow a switch over to domestic production.[131]

In the case presented in this chapter, a mismatch of business and government interests centered around the justifiability of Patriot missiles to the Japanese public caused a compromise: the decision to produce the capability under license. It has only been very recently that the optics of BMD have shifted such that it seems possible that Japan may begin developing its own Patriot-equivalent missiles. In the following chapter, I outline a case in which this hypothetical outcome did, in fact, occur: maritime patrol aircraft, which began with licensed production but which ultimately switched to domestic development and production.

[130] Jiji. "Japan to acquire long-range standoff missiles by 2022." *The Japan Times*. September 7, 2020. https://www.japantimes.co.jp/news/2020/09/07/national/japan-long-range-missiles-2022/, accessed September 8, 2020.

[131] Chieko Tsuneoka. "Japan Plans Its Own Missiles Able to Hit North Korea." *The Wall Street Journal*. December 9, 2020, https://www.wsj.com/articles/japan-plans-its-own-missiles-able-to-hit-north-korea-11607510528, accessed December 11, 2020.

4 Changing Trajectories: Maritime Patrol Aircraft and the Switch from Licensed to Domestic Production

In the summer of 2017 Japan announced its intention to send its Kawasaki P-1 maritime patrol aircraft (MPA) to the 2017 Paris Air Show. This show is the largest air show and aerospace-industry exhibition event in the world and is often the site of major announcements regarding key contracts within the aviation world. It is a combination trade fair and air show with four "professional days" followed by three days open to the public and is attended by aircraft manufacturers and militaries from all over the world. The Kawasaki P-1 was a relatively new MPA produced by Kawasaki Heavy Industries (KHI) and deployed by the Japan Maritime Self Defense Force (JMSDF). It was billed as a replacement for the American-developed Lockheed P-3C, putting it in direct competition with the United States' newly developed MPA, the Boeing P-8 Poseidon. Its presence at the Paris Air Show was interpreted by aviation experts as a clear signal that Japanese business and political leaders had a strong interest in the sale of these aircraft, either in whole or in part, to international markets.[132] Unsurprisingly, in the years following Japan has sought to sell the P-1, its licensing, or its components to the U.K., France, Germany, New Zealand, Thailand, and Vietnam, among others.

In the previous chapter I argued that although Japanese businesses have historically been interested in participation in missile development state officials have been unable to justify their indigenous development to domestic audiences. I used the ongoing production of Patriot missiles under U.S. license as an example of this situation. While Patriot missiles continue to be produced under license, I closed the chapter with a discussion of the increasing possibility that due to changes in perceptions regarding missile defense Japan might move to indigenous development in the foreseeable future.

Japan's trajectory in the development and acquisition of MPA capability offers a concrete example of what this change might look like. The international debut of the Kawasaki P-1 maritime patrol aircraft was the result of a long and winding acquisition trajectory spanning back even to the American Occupation of Japan. In the immediate postwar period there was an explicit ban on Japanese aircraft manufacturing, with production under license only beginning in 1966 with the Lockheed P-2 Neptune produced under license by KHI. In the early 1980s these aircraft began to be replaced with an upgraded platform, the Lockheed P3-C Orion, which were once again produced under license, again headed by KHI. By the early 2000s, the P-3C fleet was beginning to age. When discussions opened regarding how and whether Japan should upgrade its capabilities, Japanese military planners chose to eschew reliance on American licenses in favor of a domestically produced upgrade, the Kawasaki P-1. The trajectory of Japanese MPA acquisition, therefore, demonstrates what happens when an initial mismatch between Japanese business and

[132] Tony Osborne. "Double First for Kawasaki P-1 at Paris Air Show." *Aviation Week*. June 21, 2017. https://aviationweek.com/shownews/paris-airshow/double-first-kawasaki-p-1-paris-air-show, accessed May 11, 2021.

strategic interests resolves itself over time. Businesses will accept licensed production of capabilities they themselves are strategically interested in producing in cases where they know political actors cannot or will not support domestic development. There are two strong arguments in favor of the pursuit of licensed production. First, while licensed production does not confer all benefits provided by indigenous development it does confer some of them. Second, an early strategy of development under license can easily be changed to a strategy of indigenization when justification of this switch is seen as possible by policymakers. Licensed production is a strategic hedge by businesses which are interested in domestic production and can foresee a future in which it is possible.

The particulars of the development cycle of an aircraft also make it an ideal case for examining how and under what conditions acquisitions trajectories change - unlike missiles, which are expected to eventually be fired, aircraft are designed to last for long periods. Turnover for new technologies, therefore, generally is a matter of decades, and acquisition decisions cannot truly be thought of as reactive policies simply seeking to respond to whatever the most recent strategic national concern might be. Historically, Japanese companies have been invested in the indigenous development of military-use aircraft capability since the World Wars. The period of the Occupation during which they were forbidden from participating in domestic development was seen by many business leaders as something of a handicap preventing Japanese economic recovery in the postwar period.[133] The return to development of military-use aircraft has been a clear example of how Japanese businesses have been able to leverage production under license to overcome constraints imposed by export bans, constitutional concerns, and minority party opposition. Aircraft development and acquisition trajectories are reasonably expected to represent decisions that will last decades and cannot be reversed easily. This, in combination with the high asking price of technologies, made incentives high for Japanese industrial actors to exert pressure on decision-makers to develop indigenously.

Government actors, on the other hand, were initially concerned with challenges regarding indigenous development of military aircraft. While they faced domestic pressure from business actors interested in reentry into the market, they also faced significant constraints from both their American allies and domestic audiences. Even setting aside political debates centering on whether military-use aircraft could realistically be defined as "defensive" for constitutional purposes, the ambivalence felt by policymakers regarding whether to emphasize domestic development was in large part a reflection of mixed messaging within the bureaucracy. The early years of the development of the postwar Japanese aircraft industry represent a significant bureaucratic conflict between the Ministry of International Trade and Industry (MITI, now redesignated METI) and the Ministry of Finance (MOF), as well as other bureaucratic actors seeking to maintain jurisdiction and political power.

In this chapter, I argue that changes in Japanese acquisition strategies when it came to maritime patrol aircraft reflected shifting "justifiability" of these capabilities in the eyes of government actors faced with business pressure to produce domestically. As in the Patriot missile case, domestic Japanese businesses have maintained a persistent interest in participation in the aircraft market. Industry actors view military-use aircraft development and production as a source of technological spin-offs and spin-ons, as well as a reliable source of profitable government funding and contracts. In the early years of the Japanese aviation program, however, government

[133] The foundational text on technonational influences on Japanese businesses' push to develop the postwar domestic aircraft industry, as well as other defense-oriented technologies, is Richard J. Samuels. *"Rich Nation, Strong Army": National Security and the Technological Transformation of Japan* (Cornell University Press, 1996).

concerns regarding military-use aircraft made state actors unable or unwilling to support domestic production. Production under license allowed policymakers to balance the demands of the Japanese aircraft industry against these pressures. Unlike in the case of ballistic missile defense, however, I argue that by the late 1990s there had been a fundamental shift in the way government actors thought about the role of aircraft in Japanese defense. Industry actors had been hard at work since the 1950s attempting to reframe military-use aircraft as a "peace industry." More specifically for MPAs, the purpose of these aircraft was recontextualized from anti-submarine warfare to intelligence gathering. Indigenous intelligence capabilities became more desirable in this period and were even reframed as "defensive defense," making the case that Japanese-developed MPAs were necessary. I argue that the shift to domestically developed and produced MPAs following this dual-pronged change in justifiability serves as an example of how state actors rely on production under license only until they no longer fear the political consequences of supporting domestic development.

I begin my analysis by outlining the characteristics and functions of maritime patrol aircraft, noting the inherent dual uses. For example, while MPAs are usually described by the Japanese government today as primarily surveillance-focused, many other countries also highlight their offensive uses, particularly as sub-killing planes. This dual identity as both an offensive and a defensive capability has shaped the discourse surrounding them. I then describe the early years of the postwar aircraft industry, focusing my attention on bureaucratic infighting between MITI and MOF. I examine the decision to develop the first Japanese MPAs under American license, outlining the negotiations regarding the Lockheed P-2 Neptune, designated the Kawasaki P-2J Neptune in Japan. This decision to produce under license, as well as to go with the P-2 Neptune rather than the more cutting-edge Lockheed P-3 Orion, represented a series of compromises between business and state interests. Through this arrangement, Japanese industry was able to attain many of the technological spin-offs they sought while also maintaining a stable relationship with the United States. I discuss the maintenance of this program during the 1970s and 1980s, particularly highlighting the natural progression from licensed production of the P-2J to the P-3 and then to the upgrade, the P-3C. Japanese attempts to indigenize military-use aircraft were often met with significant pushback from the Americans.

I then explore a fundamental shift in the production of MPAs. This change began in the late 1990s and culminated in the decision to upgrade the aging P3-C fleet to Japanese-developed and produced Kawasaki P-1 MPAs. This represented a clear shift from production under license to entirely domestically developed and produced equipment. I assess the status of the Japanese MPA program, highlighting the slow replacement of American-licensed capabilities with Japanese-developed ones. I also briefly examine the Japanese industry's push to produce the Kawasaki P-1 not only domestically but also internationally. Throughout I highlight the mismatch between business interest in participation in the development of the aviation industry and state interests which were initially significantly more ambivalent about domestic Japanese development. I argue that it was only following significant attitudinal changes on the part of Japanese policymakers regarding the important role of surveillance in the maintenance of Japanese defense that the decision was made to switch from licensed production to domestic development.

I conclude the chapter by briefly discussing the implications of this case in comparison with both intelligence-gathering satellites and Patriot missiles. I argue that this chapter outlines a clear case of what happens when justification of indigenous development of capabilities is perceived as difficult initially but becomes possible over time. It is interesting to note that while this chapter focuses primarily on MPAs, the pattern outlined has held for almost all military-use

aircraft over time - there has been a switch toward Japanese domestic production of not only patrol aircraft but also helicopters and most recently fighter jets. The chapter closes with a brief discussion of the implications of the failures of the Kawasaki P-1. In particular, this case raises the question of what will happen to the Japanese aircraft sector if it becomes increasingly unlikely that they can successfully export abroad.

4.1 What are Maritime Patrol Aircraft?

Maritime Patrol Aircraft (MPA) is the most recent term used to refer to a specific type of military-use aircraft. These aircraft have been referred to previously as patrol aircraft, maritime reconnaissance aircraft, and patrol bombers. They are primarily identified by their design, which aims to operate for long periods over water following specific maritime patrol routes.[134] Because of this they are usually fixed wing with turboprop or turbofan engines and are typically fitted with a wide range of sensors. These can include radar, magnetic anomaly detectors, electronic intelligence (ELINT) sensors, and infrared cameras. In terms of development pedigree, most MPAs are evolved from what were originally designated anti-submarine warfare aircraft. Today, however, they are often designated for use in surveillance and search-and-rescue operations. They have traditionally been used in both anti-submarine warfare and anti-ship warfare and have a reputation as "sub-killing" planes. As a natural result of this design history, MPAs used in anti-submarine operations typically carry sonar buoys, mines, depth charges, and torpedoes, and modern MPAs are often equipped with anti-ship missiles as well. Despite these offensive capabilities, most MPAs are not specifically designed for fast air combat maneuvering and are ill-equipped for dogfights and other aerial battles - instead, they are designed primarily with long-duration surveillance missions in mind.

MPAs are arguably among the most important aviation capabilities currently maintained by the Japanese Maritime Self-Defense Force (JMSDF). A significant portion of the JMSDF's role is focused on shore-based maritime patrol, as Japan does not currently maintain aircraft carriers.[135] By the 1990s the Japanese Air Fleet was organized to support the maintenance of approximately 100 Lockheed P3-C Orion MPAs and an equal number of Sikorsky SH-60 Seahawk helicopters. As outlined in the chapter below, the Kawasaki P-1 was introduced in 2013 and entered operation in 2016; procurement was set at 60 airplanes expected to be produced by 2020-2025. Currently, 33 planes are in active service, and the reported Ministry of Defense (MOD) plan is to eventually replace all P-3C aircraft with P-1s at a rate of 1-2 aircraft per year.[136] Figure 4.1, displayed below, outlines the types and locations of the aircraft currently in service under the Japanese Maritime Self Defense Force, as well as what Air Wings, Squadrons, and Flights have which capabilities. Two points of particular interest are the emphasis on MPAs (bolded in the figure) and helicopters, as well as the centralization of these aircraft within specific squadrons rather than mixing airframes

[134] Blimps and zeppelins were among the first designated MPAs in modern military history, and while there have been numerous technological changes in the development of modern MPAs, in some ways the concept of a blimp serves as a good illustration of the type of aircraft an MPA is and what purposes it serves.

[135] Kaijou jieitai 海上自衛隊 [Japan Maritime Self Defense Force]. "Kaijou jieitai ni tsuite: yakuwari."『海上自衛隊について　役割』[About the Japan Maritime Self Defense Force: Duties] 日本防衛省 [Japan Ministry of Self Defense] https://www.mod.go.jp/msdf/about/role/, accessed April 15, 2021.

[136] Despite these concrete procurement agreements, the then-P-1 Program Manager at the MoD, Ishida Ryota, indicated as of 2018 that there were "no specific plans at the moment" to expand the P-1 fleet. Franz-Stefan Gady. "Japan Debating Size of Sub Killer Aircraft Fleet." *The Diplomat*, May 7, 2018. https://thediplomat.com/2018/05/japan-debating-size-of-sub-killer-aircraft-fleet/, accessed March 1, 2021.

within operational units. While until relatively recently MPAs were controversial given their uses during anti-submarine warfare, their current classification as “surveillance” capabilities have made them a cornerstone of Japanese maritime strategy in the Pacific.

Fig. 4.1 - Japan Maritime Self Defense Force Aircraft Types and Locations[137]

Fleet Air Force (HQ: Atsugi, Kanagawa)			
Fleet Air Wing 1 (Kanoya, Kagoshima)	Fleet Air Squadron 1	11th Flight	**P-3C/P-1**
		12th Flight	
Fleet Air Wing 2 (Hachinohe, Aomori)	Fleet Air Squadron 2	21st Flight	**P-3C**
		22nd Flight	
Fleet Air Wing 4 (Atsugi, Kanagawa)	Fleet Air Squadron 3	31st Flight	**P-1**
		32nd Flight	
Fleet Air Wing 5 (Naha, Okinawa)	Fleet Air Squadron 5	51st Flight	**P-3C**
		52nd Flight	
Fleet Air Wing 21 (Tateyama, Chiba)	Fleet Air Squadron 21 (Tateyama, Chiba)	211th Flight	SH-60K
		212th Flight	SH-60J/KK
		213th Flight (SAR)	UH-60J
		Iwo-to SAR Detachment	UH-60J
	Fleet Air Squadron 23 (Maizuru, Kyoto)	231st Flight	SH-60K
	Fleet Air Squadron 25 (Ohminato, Aomori)	251st Flight	SH-60K
Fleet Air Wing 22 (Omura, Nagasaki)	Fleet Air Squadron 22 (Omura, Nagasaki)	221st Flight	SH-60K
		22nd Flight	SH-60K
		223rd Flight	SH60-J
		224th Flight (SAR)	UH-60J
		Kanoya SAR Detachment	UH-60J
	Fleet Air Squadron 24 (Komatsushima, Tokushima)	241st Flight	SH-60J
Fleet Air Wing 31 (Iwakuni, Yamaguchi)	Fleet Air Squadron 71	811th Flight	EP-3, OP-3C
	Fleet Air Squadron 81	812th Flight	UP-3D, U-36A
	Target Drone Unit (Etajima, Hiroshima)		BQM-34AJ
Fleet Air Squadron 51 (Atsugi, Kanagawa)	511th Flight		**P-1/UP-1, P-3C, UP-3C**
	513th Flight		SH-60J/K, USH-60K
Fleet Air Squadron 61 (Atsugi, Kanagawa)			C-130R, LC-90
Fleet Air Squadron 111 (Iwakuni, Yamaguchi)			MCH-101

[137] This data was compiled from a variety of sources, most notably the Japanese Ministry of Defense and the data available through the Dutch Aviation Society; see Nihon boueishou kaijou jieitai koukuu shuudan shireibu 日本防衛省海上自衛隊航空集団司令部 [Japan Ministry of Defense Maritime Self Defense Forces Fleet Air Wing Headquarters].Fleet Air Wing JMSDF. https://www.mod.go.jp/msdf/kuudan/, accessed March 1, 2021; Dutch Aviation Society. "Military Database: Current Airforce: Japan (Asia)." *Scramble*. https://www.scramble.nl/database/military/JP, accessed February 28, 2021.

4.2 Japan's History with Military-Use Aircraft

The aircraft sector, and in particular indigenous and autonomous control over the production of aircraft, has long been seen as a foundation of the Japanese postwar techno-national plan. The benefits of indigenous aircraft production capabilities are many and extend far beyond simple strategic concerns like the ability to mitigate vulnerability, fortify national security, and increase international bargaining power and influence. An industry that has the capabilities necessary to develop, produce, and keep aircraft aloft represents high-profit, high-reward contracts. The long and costly research and development cycle for these technologically cutting-edge aircraft additionally offers the possibility of numerous technological spin-offs. Finally, once established, the aviation industry is an exceptionally stable domestic market, with the core consumer being the state.

Despite this, however, Japan's postwar reentrance into the aircraft sector was not straightforward. During the early years of the Occupation the Americans actively sought to dismantle Japanese military potential, particularly both the Japanese aircraft industry and its technological base. Aircraft manufacturing was officially halted in the early days of the occupation. By late September of 1945, the office of the Supreme Commander for the Allied Powers (SCAP) announced a plan to dismantle all Japanese aircraft, both military and commercial, by the end of the year. The Japanese government was instructed to abolish all governmental and semi-governmental bodies concerned with aviation, and Japanese aircraft firms, which had been consolidated in the lead-up to the Pacific War, were targeted under Occupation trust-busting and were broken up into numerous separate firms.[138]

The aircraft industry's fortunes began to shift following the outbreak of the Korean War in June of 1950. The fall of mainland China and then North Korea to communism caused the Occupation forces to reevaluate how they envisioned a reconstructed Japan. In a series of policy changes known as the "Reverse Course," the SCAP offices began to emphasize Japan's newly established position as the closest American military ally in Northeast Asia. These changes culminated in the reinstatement of a significant population of the prewar leadership, the establishment of the JSDF despite the existence of Article Nine, and the renegotiation of the U.S.-Japan Security Treaty to include a more active role for Japan. During this period discussion opened not only regarding whether Japanese industry could provide the Americans with overhaul and repair services for their aircraft but also whether it would be possible to restart Japanese domestic manufacturing.

While the Americans appeared increasingly amenable to Japanese production of aircraft, at least allowing discussion of Japanese maintenance and perhaps even co-production in some cases, domestically a significant bureaucratic struggle was taking place over the aircraft industry. SCAP had granted the Ministry of Transportation (MOT), rather than the Ministry of International Trade and Industry (MITI), jurisdiction over aircraft production. MITI, however, was determined to gain control over the industry, citing the need for coordinated guidance and nurturance as well as the importance of the industry both strategically and technologically. As soon as the ban on

[138] Nakajima Aircraft, for example, was broken up into twelve separate firms. Like most of the changes made under trust-busting, or *zaibatsu*-busting, most of these efforts to dismantle pre-war businesses would not last past the Reverse Course. Nakajima Aircraft was broken up into five firms, but all of these firms would re-combine into Fuji Heavy Industries in 1953. Mitsubishi Heavy Industries was similarly disassembled and reassembled within twenty years. Samuels, *"Rich Nation, Strong Army,"* 1996. p. 199.

Japanese manufacture of aircraft was formally lifted in April of 1952 MITI began to pressure industry clients to lobby policymakers for the transfer of jurisdiction to them. So committed was MITI to the development of the aircraft sector that even before they had formally gained control, they had begun to draft subsidy programs for the industry. MOT, seeking to maintain both jurisdictional power and its budget, cited safety concerns as a reason MITI should and could not take control over the industry. MITI countered that the military nature of the aircraft sector made it particularly inappropriate for control by any ministry other than their own. The Diet ultimately acquiesced to these requests, and in July of 1952, they passed the Aircraft Manufacturing Law. This law formally recognized MITI's jurisdiction over the aircraft industry. The ministry's victory was somewhat muted, however, as the law functionally accomplished very little else of note. Importantly, it did not provide MITI with financial instruments to cultivate the industry, leaving them still ultimately at the mercy of the Ministry of Finance.[139]

MITI sought to overcome these shortcomings, negotiating loans from a variety of sources including MOF and the Bank of Japan. They additionally sought MOF approval for a three-year exclusion from corporate taxes, public funding for prototype production, and additional formal and informal assistance for the still-nascent aircraft industry. MOF was not overwhelmingly cooperative, as there was significant opposition to the allocation of relatively scant public funds to aircraft, which were seen as part of the arms industry in general. MOF was particularly sensitive at the time to the willingness of the U.S. military to provide loans and contracts, and bureaucrats expressed concern that domestic production of military-use aircraft was both: 1) too obviously in violation of Article Nine, and 2) likely to be seen by the public as too much too soon after the lift on the aircraft manufacturing ban. Even within MITI there was dissent regarding whether and to what degree Japanese participation in the aircraft industry was constitutional, particularly given the ministry's focus on the development of military-use capabilities.[140] Blocked by these concerns, MITI was forced to settle for a short-term, five-year repayment scheme and to agree for the time being that the industry should expand only to meet U.S. demands.

While bureaucratic infighting continued to hamper government policymaking regarding indigenous development of aircraft capabilities, business interests remained focused on lobbying for domestic production. Many of them had already been manufacturing aircraft parts even during the ban using bureaucratic and legal workarounds, as well as the plausibility afforded by dual use. Following the lifting of the manufacturing ban in April 1952 forty firms immediately applied to MITI for permission to enter the aircraft business. These early contracts were still for the repair and overhaul of American planes, but the contract value quickly jumped, and soon Japanese companies were responsible for overhauling all U.S. Navy aircraft in Northeast Asia, with contracts valued at $40-50 million annually.[141] While business actors were content initially with repair contracts, they were primarily interested in using these contracts to leverage their way into manufacturing the aircraft themselves.[142]

Identifying lack of budgetary support as a key issue, the Defense Production Committee (DPC) of Keidanren began to lobby the MOF. A key goal of these lobbying efforts was reframing

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[139] "*Koukuuki Seizouhou"* 「航空機製造法」 [The Aircraft Manufacturing Law]. Act No. 237 of 1952 昭和二十七年法律第二百三十七号. https://www.shugiin.go.jp/internet/itdb_housei.nsf/html/houritsu/01319520716237.htm, accessed March 7, 2021.

[140] Samuels, *"Rich Nation, Strong Army,"* 1996. pp. 201-203.

[141] Ironically, Mitsubishi Heavy Industry received their first orders in June 1953: repair of B-26 bombers which had been attacked by Zero fighters during the Pacific conflict. Ibid. p. 202.

[142] A-JK. Interview by Deirdre Martin. Personal Interview. Tokyo, Japan, July 13, 2018.

the aircraft industry as "justifiable" to government decisionmakers; as a result, in their discussions with the MOF and MITI the DPC began billing the aviation industry as a "peace industry," *heiwa sangyou*.[143] While not successful at allowing for domestic production, these lobbying efforts were successful in achieving some of their goals. In April of 1953, the DPC and the Aircraft Industry Association were able to convince the Japan Development Bank and the Bank of Japan to provide financial mediation with city banks, opening up another stream of revenue for industrial selection and support. By the mid-1950s Japan's domestic aircraft industry had managed to capture production for more than half of the planes ordered by the National Safety Agency, setting a precedent for production under license rather than outright purchase for the aircraft industry.

Although the decision to pursue *most* aircraft production under license represented a compromise between MOF and MITI, this internal truce did not resolve all government concerns regarding domestic production. Although an uneasy internal agreement had been reached between the ministries, the bureaucracy still had to deal with significant ambivalence toward domestic production on the part of politicians. The late 1950s represented a flashpoint between minority parties, particularly the Japan Socialist Party (JSP), and the Liberal Democratic Party (LDP). The LDP was able to gain one-party dominance in the Diet with its creation in 1955; however, the JSP in coalition with other minority parties centered its political priorities on decreasing Japan's military footprint and decoupling from the United States. This meant that the LDP, which generally was interested in more stable strategic ties with their alliance partners, found its hands particularly tied when it came to expansion of Japanese participation in defense programs. Regardless, Japanese industrial planners did not give up on promoting the aircraft industry.

While minority parties and their emphasis on maintenance of Article Nine were an obvious constraint on domestic development, even within the LDP there were barriers to indigenization of the aircraft industry. While most LDP politicians during this time tended to avoid interference in industrial policy, throughout the Cold War period industrial planners had to occasionally deal with pushback from Japanese politicians seeking ties with American companies for either political or occasionally financial reasons. During this period there was a pattern, specifically for procurement decisions, of strong political intervention through the office of the Prime Minister. While most Prime Ministers at the time were seen as weak and tended to stay out of the way of bureaucratic planning, strong leaders, notably Kishi Nobusuke and later Tanaka Kakuei, were able to exercise considerable influence on decisions that had reached deadlock at the ministerial level.[144]

Famously, in 1958 a significant conflict broke out between Prime Minister Kishi and the Japan Defense Agency over the replacement for the F-48 Sabre, a jet fighter developed by North American Aviation and produced under license by Mitsubishi Heavy Industries (MHI). The JDA had spoken up in favor of licensed production of the Grumman F-1, arguing explicitly that the less-developed F-1 would provide a more natural path toward domestic design and production.[145] Kishi, along with then-Finance Minister Satō Eisaku, enthusiastically endorsed the Lockheed F-104 instead. In recent years Kishi's decision to support the F-104 over the JDA's recommendations, which escalated to the point even of replacing a JDA chief who disagreed with the decision, has

[143] This billing of the aviation industry as a "peace industry" was of course relatively disingenuous; seventy-five percent of factory activities involved U.S. military aircraft, and when Japan was first able to negotiate its own production orders in June 1953 it was for military-use capabilities.
[144] Michael J Green. *Arming Japan: Defense production, alliance politics, and the postwar search for autonomy* (Columbia University Press, 1995). p. 68.
[145] Samuels, *"Rich Nation, Strong Army,"* 1996. p.215.

been tied to a series of illegal payoffs between Lockheed's Japanese partner, Marubeni, and several Japanese politicians.[146]

These early years of the postwar Japanese aviation industry set into place four major historical themes which had important implications for the decision to produce first the Kawasaki P-2J and then the Lockheed P-3C under license. The first was business interest and investment in manufacture not only of aircraft in general but of military-use aircraft specifically. The benefits of both technological spin-offs available from aircraft development as well as guaranteed government contracts pushed businesses to invest in the industry, almost without regard for what form that participation might take. This resulted in seeking workarounds to existing rules which would allow them to develop aviation technology even outside of the industry proper, as well as active lobbying of bureaucrats from several different ministries. Keidanren was particularly active and involved in seeking whatever contracts were available, in whatever form they were available.

While industrial actors were convinced that participation in aviation would be key for financial success in the future, they also sought indigenous development for what were arguably more techno-national reasons as well. Addressing a group of once-MHI former engine specialists gathered despite the early postwar ban on Japanese participation in aviation research, then-Ministry of Transportation Railway Technology Research Institute director Nakahara Suichirou is quoted as saying, "Japan lost the war, and science and technology is the only way to recover. Through technology we will contribute to humanity and we will rebuild a Japan that the world will be glad not to have destroyed. […] Right now we cannot conduct research on aircraft, but the day when we can will definitely come."[147] Early efforts on the part of industrial leaders to support MITI, not MOT's, bid for jurisdiction over aviation, serve as additional evidence for the high level of support within Japanese industry for domestic participation within the market.

The techno-nationalist bent to the industry argument that Japan should nurture its domestic aviation manufacturing capabilities is echoed throughout *Rich Nation, Strong Army*, Professor Richard Samuels' seminal work on the role of national security in the development of Japanese industry. He quotes Akazawa Shouichi, the MITI Aircraft and Ordinance Division director in 1955, as saying, "The base of the mountain [of the aircraft industry] is broad; it is a high-precision industry, so the diffusion of the technology will be very great. I considered it a diamond [among industries] … A nation without an aircraft industry will never pass as an industrial nation of the first rank."[148]

A second key theme that emerged during this period was the somewhat ambivalent position taken by government actors on the question of whether Japan would be able to produce aircraft domestically. While MITI, the ministry most explicitly tied to private industry, was actively concerned with nurturing the aircraft industry, it was significantly hampered by the Ministry of Finance. The MOF was concerned about American support and initially blocked attempts to select and nurture the sector. Furthermore, even senior policy strategists at MITI had become

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[146] Richard Halloran. "Five Japanese Had Key Roles In Pushing Lockheed Bids." *The New York Times*. March 1, 1976. These ties would ultimately culminate in the Lockheed Incident, the largest structural corruption scandal to make news in Japan since 1914. See Chalmers Johnson. "Tanaka Kakuei, structural corruption, and the advent of machine politics in Japan." *Journal of Japanese Studies* 12.1 (1986): 1-28.

[147] That Nakahara was addressing this group was in and of itself evidence of the commitment of Japanese industry to airplane research and development; the assembled group was working on expansion of work on stationary gas turbines, claiming they would be for use in maritime transport. This effort represents one of the most overt cases of circumvention of the ban on airplane manufacturing. Maema Takanori 前間 孝則. *Jetto enjin ni toritsukareta otoko.* 『ジェットエンジンに憑りつかれた男』[Men who are obsessed with jet engines] (Kodansha, 1989). p. 190.

[148] Samuels, *"Rich Nation, Strong Army,"* 1996. p. 210.

unenthusiastic about military production by the late 1960s. Samuels reports from his interviews with high-ranking Keidanren members that "MITI was overly cautious and its antidefense officials, like Sahashi Shigeru, imposed a very broad definition of military aircraft."[149] While the Diet did pass the Aircraft Manufacturing Law following the lifting of the manufacturing ban, Diet members themselves did very little in support of the nascent aircraft industry. In fact, these early years of the industry were characterized by a series of anecdotes in which Japanese Prime Ministers, working actively against MITI and the domestic aircraft industry, used acquisitions decisions to secure American support and, occasionally, bribes and favors from American corporations.

A third notable trend in the early postwar period resulted from the combination of the first two: specifically, a pattern of reliance on licensed production, often with the stated goal of slowly making the switch to wholly domestic production. Japanese licensed production began with the aviation industry. While many aviation companies sought domestic contracts, they also understood the government barriers to indigenous development. Rather than taking an all-or-nothing approach in which they lobbied for domestic production exclusively at the risk of losing any chance of participation in the market, they accepted licensed production with the long-term intent of eventual indigenous production. Indeed, Japanese participation was exceptionally successful; between 1952 and 1964 the Japanese aircraft industry produced 1,422 planes, with 1,117 planes going to the JDA – sales amounting to more than $781 million U.S. dollars.[150] Between 1957 and 1967 Japanese industry was producing between 100 and 230 aircraft per year.[151]

This decision to begin with licensed production was largely motivated by Japanese industry desire to participate in the market in whatever form possible, but it was also positively viewed as a method through which important technological lessons could be extracted. Particularly in the aviation industry's early years Japanese companies were demonstrably behind American industry, and production under license was driven by clear differences in capability, particularly when it came to the aircraft industry. In part because of licensed production, this disparity would not last. In 1952 U.S. military procurement represented ¥6.7 billion of Japanese aircraft services and parts. By 1961 that number had declined to only ¥630 million. During the Second Defense Buildup Program from 1962 to 1966, the ratio of technology purchases from abroad to total aircraft R&D spending in Japan fell from 70 to 45 percent.[152]

The fourth and final point is that even in the very early stages of development Japanese actors interested in domestic production, particularly Keidanren and their allies in MITI, identified the "offensive" nature of aircraft as a problem to be solved if the aviation sector were to thrive. In the early postwar period there was arguably no stronger link symbolically for the Occupation forces than that between Japanese militarism and Japanese aircraft. Japanese planes *were* the Japanese military. Dismantling the aircraft industry was one of the first priorities of the occupying forces, and the aircraft manufacturing ban was so in-depth it included not only prohibition on production of mainframes or parts but even on model airplane kits. Even after the manufacturing ban was lifted in 1952, when thinking about how to rebuild Japan's industry, state actors were forced to consider the balance between the possible technological benefits offered by domestic production of aircraft and the obvious negative connotations producing technologies capable of waging war abroad might have. That business actors as early as the 1950s were actively attempting

[149] Ibid. p. 221.
[150] Adjusting for inflation, this roughly converts to $6.7 billion in 2021.
[151] George R. Hall, and Robert E. Johnson. "Transfers of United States aerospace technology to Japan." *The technology factor in international trade* (NBER, 1970). pp. 313-315.
[152] Samuels, *"Rich Nation, Strong Army,"* 1996. pp. 217-218.

to reframe aviation as a "peace industry" speaks volumes to the feeling within the military-industrial complex that justifying aircraft as for peaceful purposes was key in driving the development of the industry. Despite early and active efforts on the part of business actors to reframe aviation in terms of domestic economic development, it was, both in terms of actual budgetary allocation and in terms of common understanding, primarily a security technology. Inevitably, therefore, the overall constitutionality of Japanese domestic production was up for discussion. As early as the 1950s Japanese industrial actors identified that justification of domestic production of aircraft within the confines of Article Nine was a hurdle that would need to be overcome.

In this section I have highlighted the constraints faced by Japanese aircraft manufacturers in the early postwar period. Japanese industry push for domestic development was stalled by postwar government ambivalence, particularly regarding the question of whether it was appropriate for Japanese companies to manufacture military-use aircraft. The compromise the two sides arrived at was licensed development, with Japanese industries producing American-licensed aircraft at an ever-increasing pace. In the next section, I discuss what this pattern looked like in the case of fixed-wing patrol and anti-submarine aircraft, the predecessors to what are now called maritime patrol aircraft (MPAs).

4.3 Licensed Production: The Kawasaki P-2J and the Lockheed P3-C Orion

From the beginning of the postwar period until the final years of the Cold War, Japanese acquisition of maritime patrol aircraft followed a reliable pattern. Japanese repair of American capabilities would lead to licensed production of more and more of the components of a technology until virtually the entire capability was manufactured in Japan. In this section I outline the pedigree of Japanese Cold War MPAs. I begin with a description of the decision to license the Lockheed P2V-7. I discuss Japanese industrial participation in efforts to revamp the aging P2V-7 leading into the development of the Lockheed P-2J. I conclude with a discussion of failed Japanese attempts to pitch an indigenously developed MPA culminating in the decision to build Japan's maritime fleet with the Lockheed P-3C Orion.

From the 1950s through the late 1980s the Japanese companies involved in these negotiations maintained a consistent approach to manufacturing: production under license while testing the boundaries of that license, coming up with new ways to substitute Japanese components for American, and altering the capabilities of manufactured technologies to meet Japanese strategic needs more effectively. In September 1957, the Japanese National Defense Council approved Kawasaki Heavy Industry (KHI)'s license for the manufacture of the Lockheed P2V-7 antisubmarine/search aircraft, marking the first Japanese manufacture of MPA technologies as well as the first aircraft with onboard electronic computers manufactured in Japan. The process of negotiating these contracts went remarkably quickly, smoothed in large part by pressure from Prime Minister Kishi, who sought to finalize Japanese production of the P2V-7 "as an *omiyage*," a gift expressing friendship or a souvenir one might bring to their host, for Eisenhower before their planned summit in 1959.[153] The technological benefits for Kawasaki were obvious; setting aside technological know-how gained from the process of producing computers, the P2V-7 had a top

[153] Green, *Arming Japan*, 1995. p. 68.

speed of 364 mph, making it the fastest Neptune produced at the time.[154] Kawasaki was not the only Japanese company to benefit from this deal, however. The production cycle mirrored common strategies of licensed production at the time: the first several planes were produced from American parts, with later iterations manufactured with equivalent parts produced, where possible, by Japanese subcontractors. In total, from 1957 until its replacement in 1969 forty-eight aircraft were manufactured in Japan, with forty-two produced with 50% Japanese domestic content.

The next phase of Japanese MPA production represented a change in this licensing and production model. In 1961 discussions began regarding what the replacement for the P2V-7 might look like. In August 1957, the same year that the manufacturing deal with Kawasaki was finalized, the U.S. Navy called for proposals to replace the P2V Neptune series with a more advanced aircraft. Lockheed won the contract in April of 1958 and began research and development in May of the same year. The result was the Lockheed Orion, the first production version of which was launched in April of 1961.[155] The Americans were interested in Japanese purchase of and perhaps licensed production of their newest MPA model, the Lockheed P-3 Orion. Despite American interest, there were several arguments against the purchase or even moves to produce the P-3 Orion under license within Japan. First and arguably most important was the prohibitive cost of the P-3 Orion, but a second and perhaps equally persuasive to industry actors was the capability gap between Japanese producers and the state-of-the-art technologies within the P-3. There was a significant question regarding whether Japanese companies would benefit from licensed production of the P-3. The compromise was the Kawasaki P-2J.[156] Kawasaki proposed that it could develop a version of the Lockheed Neptune with slight changes in design to meet Japanese requirements more closely.

Work on this Japanese-modified Neptune began in 1961.[157] An existing P2V-7 mainframe was used for the first model, with later aircraft manufactured new. The Wright radial engines which powered the Lockheed P-2s were replaced with Ishikawajima Heavy Industries (IHI) turboprop engines manufactured under license from General Electric. These were supported by IHI-manufactured booster turbojets, which gave the P2-J a top speed of 400 mph, faster than its predecessor.[158] Updated, much more compact avionics systems were put into place, and the lighter load represented by those smaller systems meant that the P-2J had significantly greater fuel capacity than the versions of the Neptune which had come before. In total eighty-three P-2Js were manufactured, including two converted for electronic intelligence gathering (specifically ELINT; these converted intelligence-gathering planes were designated EP-2J) and four converted for drone support, targeting, and test purposes (UP-2J).[159]

Three features of the P-2J and its development stand out. First, the plane represented a significant step forward technologically on basically every front. When compared to the Lockheed Neptune MPAs on which it was modeled, the P-2J was faster, could fly for longer, and could be converted for intelligence gathering, targeting, and other missions. Second, this excellence was built on the backs of Japanese companies rather than on imports from American corporations – in comparison to its predecessor the P2V-7, which boasted 50% domestic content, the P2-J was cited

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[154] John M. Elliott. "Appendix 1: Aircraft Data – Technical Information and Drawings" in Michael D. Roberts. *Dictionary of American Naval Aviation Squadrons (Volume 2): The History of VP, VPB, VP(HL) and VP(AM) Squadrons*. p. 649.

[155] David S. Reade. *The Age of Orion: Lockheed P-3, an Illustrated History* (Schiffer, 1998).

[156] Originally the Kawasaki P2V-*kai* (改), or the Kawasaki P2V-"modified."

[157] John W. R. Taylor. *Jane's All The World's Aircraft 1966-67* (Macmillan, 1968). pp. 104-105.

[158] Stewart Wilson. *Combat Aircraft since 1945* (Aerospace, 2000). p. 80.

[159] Michell, Simon (ed.). *Jane's Civil and Military Aircraft Upgrades 1994-95* (Coulsdon, UK: Jane's Information Group, 1994).

as having 95% Japanese content.[160] Third, many of the changes in the P2-J's design from the Poseidon models which came before it were reflective of lessons corporations learned from the production of American technologies under license, altered to better address Japanese-specific strategic needs. However, the P-2J, for all its unique characteristics, was based on an already-dated airplane. As mentioned, the P2V-7 was the final Neptune produced by Lockheed and it had been replaced in the American fleet even before Japan had begun production of the P2-J.

Japan's business community had not yet given up on its goal of indigenously developing its own nascent aircraft industry. Significant steps had been taken already to this end; Japan's first attempt to manufacture a commercial transport, the YS-11, had been announced in 1957 and began production in 1962. The YS-11 was produced by the Nihon Aircraft Manufacturing Corporation, a consortium of Japanese aircraft companies which had been encouraged by MITI to collaborate on the development of an airliner. This project represented MITI's active encouragement of and support for indigenization of the aircraft industry, at least in the commercial sector, but it had importantly been pitched as a "spin-on" project transferring civilian technology to the Japanese Defense Agency (JDA) for military use.[161] While this effort would historically be considered a failure, it did effectively demonstrate that there was a viable aircraft industry in Japan, albeit one that had not yet mastered the market. Additionally, beginning with the Nixon Doctrine in September of 1969 the United States began to take steps to reduce its troop levels in Asia.

This signaled both an increasing need for Japanese active participation in the alliance and a sense of political unease regarding the reliability of the Americans moving forward. It was against this domestic and international background that then-JDA Director-General Nakasone launched the Fourth Defense Buildup Program in October 1970. One of several sequential five-year defense development programs sponsored by the Japanese government, this program took place from 1972 to 1976 and was meant to establish the Japanese aircraft industry as independent, as well as a significant international player. To this end, it proposed the development of expensive weapons and requested a budget of ¥5.2 trillion, twice the previous budget.[162] In April of 1970, Nakasone announced Japan's intention to produce a purely indigenous MPA, the PXL antisubmarine plane which was under development by KHI at the time. In 1971 ¥300 million was allocated for research and development, and in 1973 the Defense Production Committee of Keidanren established an expert committee to study indigenization and to make an argument for Japanese production of the PXL over licensed production of the Lockheed P-3C Orion, which remained the most advanced MPA available.[163]

Despite Nakasone's support, the case for indigenization turned out to be harder to make than initially expected. This was in large part because there was significant division regarding whether domestic production was necessary or even appropriate in this case. Notably, the eventual recipients of the MPAs in question, the Maritime Self Defense Force, preferred the P-3C, citing its state-of-the-art capabilities as a significant benefit of acquisition. This preference was shared by many of the JDA bureaus, which by the 1970s were facing the inflation caused by the oil shocks. Coupled with pressure from the MOF to keep budgets lower, the JDA bureaus generally were split

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[160] Samuels, *"Rich Nation, Strong Army,"* 1996. p. 215.

[161] The case of the development and eventual failure of the YS-11 is covered in-depth in Stephen C. Mercado. "The YS-11 Project and Japan's Aerospace Potential," *Japan Policy Research Institute Occasional Paper* No. 5, September 1995.

[162] Michael J. Green and Koji Murata. "The 1978 Guidelines for the U.S.-Japan Defense Cooperation: Process and the Historical Impact." Working Paper No. 17. https://nsarchive2.gwu.edu/japan/GreenMurataWP.htm.bak, accessed April 2, 2021.

[163] Samuels, *"Rich Nation, Strong Army,"* 1996. p. 228.

on the question of domestic development. The MOF, for its part, expressed persistent opposition to funding an indigenous MPA, citing its commitment to keeping its defense expenditures at 0.9% of GDP.[164] Even MITI was divided, with the Aircraft and Ordinance Division in favor of the PXL but the Trade Bureau in support of the production of the P-3C, arguing that increasing U.S. pressure to reduce Japan's trade surplus could be offset by agreeing to licensed production.[165] Unable to muster the political support necessary to overcome American pressure, KHI and Nakasone had to admit defeat, and beginning in 1978 Kawasaki started licensed production of the P-3C.[166]

Although this was another case in which attempts to develop Japanese MPAs indigenously were not successful, thwarted by political concerns and in particular bureaucratic ambivalence surrounding the domestic production of military-use aircraft, the JDA emphasized the significant benefits to domestic firms provided by licensed production of the P-3C. Twice as much domestic content was produced during the manufacture of the P-3C, and nearly 3,000 Japanese firms served as subcontractors to KHI, with 60% of the workshare on the mainframe going to KHI and 40% going to other manufacturers. Electronic components manufacturers benefited particularly from this arrangement, as they each acquired separate licenses from Lockheed to participate in production.[167]

As in most cases of production under license, Lockheed made the initial aircraft, three of which arrived at Atsugi base, the headquarters of the MSDF Fleet Air Force, on December 15th, 1981. Licensed production began at KHI immediately after, with deliveries beginning in 1982. The Kawasaki-produced P3-C Orion served as a mainstay of the Japanese Maritime Self Defense Force's fleet from its beginnings in the early 1980s until the end of its production run in the late 1990s. In total there were 107 P-3C aircraft manufactured, with the final P-3C delivered on September 17th, 1997. Over the years the P-3C saw several upgrades both from Lockheed and from Japanese manufacturers, with KHI continually upgrading the onboard electronic systems and other equipment. Using expertise developed in the production of these aircraft Kawasaki went on to produce several different upgrades and alterations, including the EP-3, a P-3C designed for electronic warfare data acquisition, and the OP-3C, an imagery-based intelligence collecting aircraft.

So notable were the technical benefits of technological spin-ons being applied to Japanese P-3Cs that the United States began to seek reciprocity. Beginning in 1984 with the renegotiation of licensed production of the F-15, all U.S. military technology production agreements with Japan included a standard provision that required automatic flowback of all improvements and modifications which were deemed to have been "essentially derived" from U.S. technology. However, before 1991 this was very rarely enforced, with virtually no flowback despite significant improvements and modifications to American-developed technologies. The benefits to KHI in the P-3C case were simply too great to be ignored, with KHI agreeing in December 1991 to transfer an improvement to the P-3C Orion's electrical generation system back to Lockheed. A few months later U.S. officials pushed for additional reciprocity, seeking the transfer of flight-control computer technology KHI had developed for the P-3C.[168]

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[164] "Japan Resists U.S. Push to Boost Defense Funds." *Aviation Week*, March 3, 1980.
[165] Lorell. *Troubled partnership*, 1996. pp. 56-61.
[166] "P-3C Anti-Submarine Warfare (ASW) Patrol Aircraft" *Kawasaki*. https://global.kawasaki.com/en/mobility/air/aircrafts/p_3c.html, accessed April 4, 2021.
[167] Samuels, *"Rich Nation, Strong Army,"* 1996. p. 228.
[168] Barbara Wanner. "Japan Agrees to Transfer Aircraft Navigational Technology," Japan Economic Institute Report, May 1, 1992. p. 5.

From the late 1950s until the mid-to-late 1990s, Japan followed a relatively clear pattern of production of MPA capabilities under license. The reasons for this strategy mirrored those of many other aircraft procured in the postwar period. Japanese aviation companies were committed to domestically producing as much of an aircraft as they were able, but truly indigenous production was hampered by ambivalence and infighting on the government side. While upper levels of the JDA and certain departments and bureaus within MITI championed Japanese domestic development of MPAs, this enthusiasm was not shared across ministries. Bureaucrats were split on whether and what Japan could and should develop indigenously, with the Ministry of Finance particularly focused on constraining research and development budgets. Even within ministries and the services of the JSDF there was disagreement. In the case of the PXL versus the P-3C, for example, the leadership of the JDA called for indigenous development while actors within the Maritime Self Defense Force (MSDF), the service which would receive the aircraft, called for procurement of the more cutting-edge P-3C. Politicians, when they chose to involve themselves in the procurement process at all, tended to further muddy the waters. Beyond their relative sensitivity to American political pressure, several Japanese politicians during this period actively undermined Japanese industry's push to indigenize production, supporting American corporations' bids in return for bribes or political support.

That said, while indigenous production continued to elude Japanese aviation companies, they reaped significant benefits from their participation in licensed production. Such an emphasis was placed on the participation of Japanese companies in the process of licensed production that increasing the percentage of a technology which was manufactured in Japan, by Japanese companies became a new form of indigenization. This experience in turn allowed Japanese companies to improve and modify existing American capabilities, creating what were in all but the legal sense unique Japanese technologies. The benefits of these spin-ons were such that after a few decades American attitudes regarding coproduction shifted, with greater demand for Japanese technology transfers back to the U.S. companies who had provided the development opportunities from which these innovations sprung.

4.4 The Switch: Domestically Producing the Kawasaki P-1

Japan's Kawasaki-manufactured Lockheed Martin P-3C served as the primary MPA for the MSDF Fleet from the early 1980s through the end of the Cold War. By the mid-1990s, however, the fleet was noticeably aging. Interestingly, the United States was concurrently holding discussions regarding what a replacement to the Orion series might look like. In 1989 Lockheed had been awarded a fixed-price contract to develop the P-7, an MPA ordered by the U.S. Navy as a replacement for the P-3C, but the program was canceled in July of 1990 before much progress could be made on development. Japanese decision-makers found themselves at a turning point – they could wait and see what the American replacement might look like, or they could begin discussion of indigenous development of a Japanese MPA.

It was with these factors in the background that the Japanese government early as 1995, the JDA had announced its desire to launch indigenous development of a new MPA that would replace the P-3C. The JDA's Technical Research and Development Institute cited the expectation that in fiscal year 1997 they would receive initial funding to begin an MPA program study.[169]

[169] Paul Lewis. "Japan plans timetable for P-3C Orion replacement." *Flight Global*, November 14, 1995. https://www.flightglobal.com/japan-plans-timetable-for-p-3c-orion-replacement/13722.article Accessed October 7, 2019.

Production of this hypothetical MPA would be granted to Kawasaki, whose reliable track record coupled with its status as Japan's premier MPA manufacturer made the company an obvious choice. Although the United States officially restarted its search for a replacement to the P-3C in 2000, the Japanese government did not choose to wait. The JDA included the announcement of its decision to domestically develop a replacement MPA, then designated the P-X, in its April 2001-March 2006 Five Year Defense Plan. Shortly after Kawasaki was awarded prime contractor status for two programs: developing *both* the P-X and an additional next-generation transport aircraft, designated the C-X.

Kawasaki's simultaneous development of the P-X and C-X was unprecedented in the history of Japanese aeronautics. While discussions had begun around the need for a replacement to the P-3C, similar conversations were being had about how to replace the Kawasaki C-1 and C-130H Hercules cargo aircraft. Military planners within the JDA in consultation with Kawasaki decided that it would be useful if the two new aircraft could be developed with common components to share development resources and lower costs. Based on JDA specifications, the two aircraft had identical body components and numerous shared internal parts including the auxiliary power unit, cockpit panel, flight control system computer, and gear control unit.[170] These resource-sharing measures effectively cut development costs; the combined development of both the P-X and the C-X totaled only ¥345 billion in 2007.[171]

Although the JDA had stated its commitment to keeping the project indigenous, in 2004 Japan and the U.S. revisited the possibility of cooperation on the U.S. Navy's Multi-mission Maritime Aircraft (MMA) program. At that time, development for the American P-3C replacement, the Boeing P-8 Poseidon, had just begun, allowing policymakers who might previously have thought there were no alternatives to domestic production to reevaluate. Options discussed ranged from incorporating U.S. technology into the P-X to keep costs low to terminating the P-X program and participating instead in the U.S. MMA program.[172] Despite these discussions, however, the decision was ultimately made to continue with Japanese production of the P-X. Decisionmakers cited in particular a mismatch in development timeframes and strategic goals between the U.S. in Japan when it came to MPA production which necessitated the development of homegrown Japanese capability.

In June of 2007, Kawasaki rolled out the XP-1, a P-X prototype. On August 31st, 2007 the newly minted Ministry of Defense announced it was procuring four production airframes, with a request in the fiscal year 2008 budget included for ¥67.9 billion to cover the cost of these aircraft.[173] On September 28th, 2007, the first of these prototypes took its maiden voyage, and in

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[170] Kawasaki. "Sky High Expectations for Japan's P-X and C-X Aircraft." *Scope: Kawasaki Heavy Industries Quarterly Newsletter*, No. 73. October 2007. pp. 2-5.

[171] For comparison, this was about equivalent to USD 3.1 billion; the budget for the development of the Boeing P-8 Poseidon, the U.S.-produced replacement for the P-3C which was also introduced in the same timeframe, had a budget of $15 billion. "'Mitsugetsu no Shuuen' Miraizu ni koshitsu" 「＜蜜月の終焉＞　ミライズに固執」 ['End of the Honeymoon: Sticking to Miraiz."] *Chuunichi Shimbun*, November 10, 2007.

[172] Brendan Sobie. "Japan extends talks with USA." *Flight International*, April 12, 2004. https://www.flightglobal.com/japan-extends-talks-with-usa/54003.article, accessed March 15, 2021.

[173] Bouei seisakukyoku bouei keikakuka 防衛政策局防衛計画課 [Defense Planning Division, Defense Policy Bureau.] "Heisei 19nendo Seisaku Hyoukashou (Jizen no jigyou hyouka): jiki koteiyoku shoukaiki (P-X) 「平成１９年度　政策評価書（事前の事業評価）　次期固定翼哨戒機（Ｐ－Ｘ）」 [2007 Policy Evaluation Report (Preliminary Business Evaluation): Next Fixed-Wing Patrol Aircraft (P-X)]. 日本防衛省 [Japanese Ministry of Defense]. September 30, 2007.

2013 Kawasaki delivered its first pair of P-1s to the MSDF.[174] For its first several years of production the Ministry of Defense procured these aircraft at a rate of one or two per year, but in 2015 the order changed to a bulk order of 20 to cut unit costs.[175]

In terms of design, the P-1 was manufactured with many of the same goals as other MPAs in mind. It can conduct long-range surveillance and intelligence gathering over both land and sea. It is manned by a 13-person crew (2 pilots and 11 crew members) and is powered by 4 turbofans developed specifically for Kawasaki by IHI. The Kawasaki P-1 is designed to carry a heavy armament load. It has 8 hardpoints for missiles and 8 internal bomb bay stations, making it possible for the aircraft to carry American or Japanese-made anti-ship missiles, air-to-ground missiles, and various torpedoes. Key features which Japanese businesses have highlighted in their attempts to market the P-1 abroad include increased operational survivability, quieter flights, better maneuverability, and better fuel economy allowing for longer flights overall. It is also the world's first production aircraft to use fiber optic cables to transmit flight control commands from its cockpit.

Throughout the Cold War, Japan relied on the compromise of licensed production. This middle-of-the-road acquisition strategy served Japanese industry well throughout the Cold War and resulted in the development of an increasingly robust indigenous aircraft manufacturing capability. In every iteration of Japanese MPA produced under license, a larger percentage of the total system was produced by Japanese subcontractors, who in turn took the lessons from this production and built upon them. Ultimately this resulted in Japanese corporations producing upgrades that were so effective that by the 1980s American companies began to seek technology flowbacks from their licensed production programs. In a way, just as in the 1950s they worked around aviation manufacturing bans by expanding their R&D in other related areas, Japanese companies by the mid-1980s had managed to work around licensed production. They achieved indigenization not through the ground-up Japanese production they had originally envisioned but instead by indigenizing the *parts* of the licensed technology, piece by piece, until the resulting capability was Japanese in all but the most theoretical sense.

What, then, accounts for the decision to switch strategies and begin indigenization of MPA technologies in this case? Several events took place in the 1980s and 1990s which shifted Japanese attitudes regarding licensed production of military-use aircraft. First, on the business side, rising tensions with the United States regarding Japan's trade imbalance caused increased pressure on politicians for spending on American, rather than Japanese-manufactured, arms.[176] This in turn led to a situation in which U.S. defense officials began to put pressure on Japan to procure arms through the Foreign Military Sales (FMS) process rather than through licensed production or commercial avenues. "For coproduction, releasability of technologies is very important," explained one policy planner in an interview. "But for FMS there is zero technology transfer, so

[174] Just as the P-X was eventually designated the P-1, the C-X went on to be designated the Kawasaki C-2. Kyodo. "KHI gives MSDF fist P-1 antisub patrol aircraft." *The Japan Times*, March 27, 2013. https://www.japantimes.co.jp/news/2013/03/27/business/khi-gives-msdf-first-p-1-antisub-patrol-aircraft/, accessed March 1, 2021.

[175] Greg Waldron. "Japan defence budget calls for 20 P-1s, 5 V-22s." *Flight International*, January 14, 2015. https://www.flightglobal.com/japan-defence-budget-calls-for-20-p-1s-5-v-22s/115622.article, accessed March13, 2021.

[176] Stokes, Henry Scott. "U.S. Pushing Japan for Higher Rate of Arms Spending; Defense Budget up 6.3% for 1980." *The New York Times*, January 14, 1980.

there's no real benefit to Japanese companies. The Americans like it, but it isn't ideal for us – in commercial sales there is room to grow our own capacity."[177]

Second, as Japanese technological capacity grew, the benefits to coproduction shrank. By the era of the P-3C Orion, Japanese industry had gone from being interested in learning from American technologies to being concerned that American companies might use technology transfers to steal Japanese industrial secrets. Japanese industrial actors surveyed in the early 1990s about obstacles to U.S.-Japan defense production cooperation cited too much political pressure from the U.S. Department of Defense to procure weapons through the FMS process, as well as DoD restrictions on Japanese companies participating in joint projects. They also admitted that they felt the primary motivation on the part of the Americans for bilateral defense technology innovation was to acquire Japanese commercial technologies. Overall, Japanese industry actors concluded that by the 1990s co-development was no longer attractive for its own sake. In the future, it would only be sought when Japanese companies were given commercial incentives to bring their advanced technologies to the table.[178]

These attitudes also reflected the third and final major change in business attitudes: the sense of trauma around the development and production of the FS-X fighter. In the early-to-mid 1980s, Japan's aviation community had announced its intention to independently develop its first fighter since the Second World War. In the summer of the 1985 U.S. officials began exerting significant pressure on the Japanese to abandon their plans for indigenous development and instead to work cooperatively with U.S. industry to modify an existing U.S. fighter. Several years of extremely difficult and contentious negotiations during the height of the U.S.-Japan trade war concluded with Japan agreeing to cooperatively develop a modified American F-16. Despite what Japanese industry considered to be major concessions, however, the submission of the agreement to U.S. Congress in early 1989 resulted in a long and acrimonious debate, with "Japan bashers" arguing the agreement amounted to giving American technology away to the country's biggest economic competitor. Ultimately the Bush administration was forced to insist on further changes, particularly emphasizing technological reciprocity from the Japanese. Development did not get underway until 1990. While American analysts see the case of the FS-X as one in which Americans failed to understand the strength of the Japanese aviation industry, Japanese planners saw it as a huge blow. In effect, it demonstrated that American cooperation was predicated on keeping Japanese industry from challenging American hegemony in aviation technology. The experience of the FS-X caused Japan to be more mistrustful of American defense cooperation and significantly soured Japanese businesses on co-production.[179]

All these factors contributed to a slow erosion of trust in the licensed production system on the part of the Japanese aviation industry. As Japanese technological capacity grew, there were fewer and fewer technological spin-offs available to industry. The existence of the Arms Export Ban meant that spin-ons could only be targeted at capabilities with one customer: the Japanese government. By the time renewal of the P-3C was up for discussion, licensed production did not offer as many incentives as it once had, leading Japanese industry to push even more aggressively for domestic production.

This industry-side push, however, was arguably successful not just because of an increase in business interest, but instead because of fundamental changes in incentive structures on the state side. Most politicians during the Cold War tended to stay away from the nitty-gritty of acquisitions

[177] M-WH. Interview by Deirdre Martin. Personal Interview. Tokyo, Japan, July 25, 2019.
[178] Green, *Arming Japan*, 1995.
[179] For an exceptionally in-depth look at the negotiations over the FS-X, refer to Lorell, *Troubled Partnership*, 1996.

decisions. As always, there were exceptions to this rule, but it was rare that those politicians who chose to weigh in did so in favor of Japanese industry. If politicians were ambivalent, bureaucrats were undecided, divided by agency, budgetary concerns, and relative closeness to industry vs. the United States. There was ambivalence within the bureaucracy regarding whether undertaking expensive indigenization projects which would anger the Americans, eat up significant chunks of the already-small defense budget, and which might very well trigger debate regarding the constitutionality of these capabilities, was worth the slight benefits businesses would reap beyond those already available through licensed production. This ambivalence, along with the lack of clear delineation regarding which ministries should make these decisions, led to bureaucratic policies which tended to support Keidanren in efforts to indigenize parts being produced under license, but which did not significantly lobby in support of indigenization.

Government attitudes, however, began to change toward the end of the Cold War. Two major factors motivated this shift: first, changes in the U.S.-Japan alliance, and second, increasing concerns regarding Japan's flagging manufacturing sector. On the systemic side, following the collapse of the Soviet Union the United States began to move to significantly decrease its troops and equipment stationed in East Asia. Japan, however, faced the same strategic threats it had before. If anything, the slow but steady rise of China and North Korea's ongoing search for a nuclear capability meant that Japan had a greater need for maritime patrol capabilities than ever before. Japanese policymakers simultaneously faced a growing demand from the Americans that they take a more active and invested role in the alliance on one hand and a sneaking suspicion on the other that the United States' primary security objectives in East Asia no longer entirely overlapped with Japan's own. In the words one Lockheed Martin employee in Japan, "There is an insufficiency of trust – Japanese officials want to be sure now that they will be covered in case of a crisis."[180] Japan needed to develop its own capabilities – to normalize its security position, to increase its value within the alliance, and to make sure that strategic gaps within its own security posture would be filled.

In the case of the switch between the P-3C to the Kawasaki P-1, despite the P-1's much higher price tag as well as American pressure to cooperate on production of the P-8, the Japanese Ministry of Defense cited government concerns about the potential for the erosion of its defense production base as a primary driving factor in the decision to invest in domestic development.[181] Additionally, recent efforts have been made by the Japanese government to streamline and increase the efficiency of procurement both domestically and abroad, with MoD seeking substantial financial resources through the suspension of old capabilities, development of long-term domestic contracts, and other measures.[182] The Kawasaki P-1 is highlighted throughout Ministry of Defense documents as one of several capabilities through which Japan seeks to revive its flagging industries and retain a security defense base while cutting overall costs.

This reemphasis on the defense base – and the concentrated government effort to ensure technological support while responding to government needs – was a primary goal of the second Abe administration's often-discussed Medium-Term Defense Program from fiscal years 2014-2018. As part of this program the Ministry of Defense pursued organizational restructuring, notably combining all departments dealing with equipment acquisition into one new agency, the

[180] L-AC. Interview by Deirdre Martin. Personal Interview. Tokyo, Japan, August 2, 2018.
[181] Christopher W. Hughes. "The slow death of Japanese techno-nationalism? Emerging comparative lessons for China's defense production." *The Journal of Strategic Studies* 34.3 (2011). p. 463.
[182] Nihon boueishou 日本防衛省 [Japan Ministry of Defense]. *Reiwa 2nenban bouei hakusho* 「零話年版防衛白書」[2020 Defense White Papers. p. 229.

Acquisition, Technology, and Logistics Agency (ATLA).[183] A former director of the ATLA argued in an interview, "There's no defense industry in Japan. Japanese industry thinks the government should take a leading role in determining sales. But the ATLA cannot develop its own equipment; the Ministry of Finance would never allow that. Requests must go through the military. I would like the military to understand that a secure industrial base is very important." When asked what he thought of the significance of the P-1 in terms of Japanese efforts to expand their industrial base, he replied, "I think for this a success story is really necessary. The development of the P-1 was a huge success, one that I hope other companies will emulate. The question will be, can they sell it. The government can only do so much; business buy-in is also necessary."[184]

This reframing of domestic production of MPAs reflects fundamental changes in government-side attitudes about how Japan thinks about its strategic position, its relationship with the United States, and the role of the government in nurturing the defense industry. These changes explain how, after a long history of supporting licensed development over indigenous, KHI was able to negotiate the contract for the P-1. What, then, caused these changes in government approaches? While certainly systemic factors offer some explanation, I argue that changes in the ability of government actors to justify the domestic production of MPAs played a significant role in the trajectory of Japanese MPA acquisition.

As in the case of satellites, in the early 2000s there was a shift in public conceptions of both aircraft in general and MPAs. As commercial aviation became more commonplace, the stigma around production of aviation technology declined. Furthermore, the changing international balance of power meant that there was perceived to be greater need for independent Japanese capabilities. This was particularly the case in the development of Japanese surveillance and intelligence gathering capabilities, as touched upon in Chapter 2. This re-emphasis on independent intelligence gathering as a form of national security was accompanied by a rebranding of the Kawasaki P-1. While previous iterations of the aircraft had explicitly been referred to as "anti-submarine" aircraft, the marketing around the P-1 focused instead on its capacity for intelligence gathering, patrol, and surveillance. This was a natural offshoot of later-model Japanese upgrades of the P-3C which had been packaged as defense machines. When asked why Japan had reemphasized the P-1's role in surveillance a Raytheon employee answered, "There's always been distrust within Japan that the U.S. filters information, and that's gotten more pointed since the 1990s. So when it comes to intelligence technology, they've really been working to develop those domestically."[185]

This reframing of MPAs as primarily for defensive purposes was additionally accompanied by a fundamental shift in the way Japan has talked about the role of domestic production of security technologies. Since the mid-2010s Japanese political leaders, led by former prime minister Abe Shinzou, have been able to put significant pressure on the Ministry of Finance to increase defense spending for items which have been deemed critical. "The toughest hurdle has always been the budget line – you need first the research budget line, then the development budget line, etc…," explained one expert in an interview. "But the Abe administration hasn't seemed to be as concerned about how it looks regarding defense, so they've been able to use their political power to get certain things on the budget. I expect they're planning on applying pressure and drip-feeding

[183] These included the Bureau of Finance and Equipment, Staff Offices, the Technical Research and Development Institute, and the Equipment Procurement and Construction Office. Japanese Ministry of Defense. *Medium Term Defense Program (FY2014-2018)*. December 17, 2013.
[184] M-WH. Interview by Deirdre Martin. Personal Interview. Tokyo, Japan, July 25, 2019.
[185] R-HM. Interview by Deirdre Martin. Personal Interview. Tokyo, Japan, July 31, 2018.

capabilities [like the P-1 and information gathering satellites] through in the next five years or so."[186] This has been reflected in official government plans, which have in turn framed these projects slated for domestic development, including the P-1, as key security goals in the next several years.

The P-1 has been central to Japanese military and business planning since it was commissioned. It has featured prominently in several years of Defense White Papers, which have referred to the importance of continued procurement and enhancement of the P-1 to meet goals including strengthening a posture of persistent ISR, strengthening superiority in sea and air power, and strengthening maritime cooperation with allies including India and Australia, among others.[187] Following the lowering of weapons export restrictions in April of 2014, the newly-reorganized Acquisition, Technology, and Logistics Agency (ATLA) within the MoD has pushed the P-1 not only in terms of its ability to protect Japanese territory but also in its potential to reinvigorate Japanese industry.[188] Japan has sought to sell the P-1 abroad. In 2015 two P-1s were sent to the Royal International Air Tattoo, the world's largest military air show, marking the first time in history that any Japanese military aircraft had performed in a European exhibition. Japan has actively sought to sell the P-1 to the U.K., New Zealand, and Thailand, as well as proposed the technology used in the P-1 for a French-German project to replace their own P-3C Orion planes.[189]

These efforts to sell the P-1 have as of the time of writing failed to bear fruit. In September 2020 Germany announced that the P-1 was no longer being considered in its MPA search. While Germany had previously been the champion of the P-1 in the face of French ambivalence, the relatively high cost of Japanese products caused planners to reconsider.[190] While the high asking price of the P-1 and its related technology was also cited as a reason it lost to the Boeing Poseidon P-8 in similar competitions in the U.K. and New Zealand, this was not the only reason it lost out.[191] An official related to the Japan Times that "the German side believes it would take over five years for the P-1 to acquire type certification, questioning whether the aircraft could be ready by 2025."[192] This echoed a growing concern for Japanese policymakers and business-people alike – that perhaps Japan's relatively circumspect approach to the development of military-use aircraft, as well as its self-constraint regarding the export of these technologies, have fundamentally hobbled Japanese industry in its efforts to compete globally with more established, battle-tested technologies. "Beyond the cost, which is always higher, Japanese weapons have a reputation for

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[186] A-KP. Interview by Deirdre Martin. Personal Interview. Tokyo, Japan, August 13, 2018.
[187] Nihon boueishou, *Reiwa 2nenban bouei hakusho*, 2020. pp. 225, 487, 493, 533-535.
[188] Franz-Stefan Gady. "Japan Seeks to Export its New Sub-Hunting Plane." *The Diplomat*. September 9, 2015. https://thediplomat.com/2015/07/japan-seeks-to-export-its-new-sub-hunting-plane/, accessed March 1, 2021.
[189] Nobuhiro Kubo and Andrea Shalal. "Japan seeks role in French-German marine surveillance plane project: sources." *Reuters*, April 24, 2018. https://www.reuters.com/article/us-japan-defence-germany-france/japan-seeks-role-in-french-german-marine-surveillance-plane-project-sources-idUSKBN1HW088, accessed February 6, 2020.
[190] The P-1 costs about ¥16 billion, or around USD 147 million in comparison to the P-8's value of around $83 million. Nikkei staff writers. "Japan in talks to sell patrol plane tech to Germany and France." *Nikkei Asia*. August 20, 2018. https://asia.nikkei.com/Politics/Japan-in-talks-to-sell-patrol-plane-tech-to-Germany-and-France, accessed September 30, 2018.
[191] Type certification refers to the various tests necessary to confirm that an aircraft meets specifications and can perform safely under a variety of conditions. "Germany Rejects Japanese P-1 Maritime Patrol Aircraft." *Defense World*, September 8, 2020. https://www.defenseworld.net/news/27815/Germany_Rejects_Japanese_P_1_Maritime_Patrol_Aircraft, accessed September 10, 2020.
[192] Jiji. "Germany grows wary about Japan's participation in patrol plane project." *The Japan Times*, September 20, 2020. https://www.japantimes.co.jp/news/2020/09/07/national/germany-wary-japans-patrol-plane-project/, accessed September 22, 2020.

being untested," one researcher said when asked about why France and Germany might choose not to acquire P-1 technologies, "and countries care about the reliability of security products."[193]

4.5 Justifying Maritime Patrol Aircraft

What explains the shift in MPA acquisition strategy which took place in Japan from the mid-1990s into the new millennium? Whether or not it is ever successfully exported abroad, the indigenous development of the Kawasaki P-1 represents a break from Japan's previous approach to the production of anti-submarine and maritime patrol aircraft. In the above sections, I have outlined the history of Japan's relationship with the development of aircraft, particularly MPAs. Even before the formal end of the American Occupation Japanese businesses have sought active engagement with the aircraft industry, expressing the belief that participation in this sector would be crucial not only for their own success and survival but also for the economic success and security of the Japanese nation. Participation in the aircraft industry has long been a cornerstone of Japanese industry's techno-national project. Until the end of the Cold War, however, there was significant ambivalence toward domestic development on the part of state actors. Politicians, when they were involved at all, tended to serve as spoilers, occasionally pushing for American contracts to the detriment of business interests within Japan. Bureaucratic infighting, particularly between MITI, MOF, and MOT, stalled industrial lobbying efforts. Even within the JDA, there was a lack of clear consensus regarding what ideal acquisitions strategies were, with high-level cooperation with industry often clashing with service-level desires for American technologies which tended to be more cutting-edge and available for use sooner than domestic projects.

The result was a strategy of compromise; industrial players, unable to muster the political support necessary to push for domestic development, turned their influence and efforts toward support for production under license. It was this strategy that defined the Japanese approach to the production of MPA technologies. Japanese companies, led by Kawasaki, attempted to lobby for indigenous production but ultimately accepted licensed production as the next best outcome in the case of both the Lockheed P-2 Neptune and the P-3C Orion. However, when the time came in the 1990s for the P-3C to be replaced, Japan did not continue with its traditional approach of co-production. Instead, it sought to develop and produce its own MPA, resulting in the Kawasaki P-1. At several different key points during the acquisition process Japan was presented with, and even considered, the option of cooperating with the United States, continuing its reliance on American development.

What changed between the P-3C and the P-1? Why were Japanese industry efforts successful in the 1990s and early 2000s when they had been so unsuccessful in the late 1950s and early 1970s? Although it is certainly the case that the international balance of power and the Japanese relationship with the United States played a role in determining these outcomes, domestic bargaining within Japan also significantly colored outcomes.

The history of the Japanese aircraft industry is, in many ways, the story of a triumph of industry pressure. Throughout this chapter, I have outlined Japanese industry's commitment to the domestic development of MPAs. In postwar history, there have been roughly four distinct "periods", characterized in turn by representative maritime patrol aircraft: the P-2V7, the P-2J, the P-3C, and the P-1. In each of these cases, the period preceding acquisition was marked by industry lobbying for an ever-increasing share of not only production but also *development*. In the 1970s

[193] A-DR. Interview by Deirdre Martin. Personal Interview. Tokyo, Japan, March 25, 2019.

KHI pushed for the indigenously developed PXL to replace the P-2J over the American-made P-3C, citing its increasing expertise acquired through years of licensed production. While ultimately these political battles ended in compromise, the degree to which indigenization was sought on the contractor and subcontractor level indicates the degree of business interest in production throughout the Cold War.

While many companies sought domestic contracts, they also understood the government barriers to indigenous development. These barriers were not insignificant, and they imposed significant constraints not only on policymakers making acquisitions decisions but also on industry actors thinking about how to maximize their bottom line. Even as late as the mid-1990s, when surveyed on what the biggest obstacles were to improved U.S.-Japan defense technological and industrial collaboration, 80% of industry respondents answered that Japan's three arms export principles constituted a major obstacle.[194] The 1967 passage of the Three Principles on arms exports had wide-ranging effects on industry commitment to defense production, but arguably the most important of these was that it made it impossible for businesses to exist solely as arms producers – the primary goal of development of an aviation industry would have to be either a commercial industry or, more likely, technological spin-offs and spin-ons which would help the development of technologies which *could* be marketed for sale abroad. The political and constitutional constraints in place on Japanese industry coupled with state ambivalence caused the business community to settle on production under license as the "next best" alternative to indigenous production.

It is difficult to aggregate state attitudes about the production of aircraft in general and MPAs in particular throughout the Cold War period. This is arguably a result of three major factors: the relative lack of support from politicians for indigenization, the significant ideological and practical splits on policy regarding aviation from within the bureaucracy, and the relative structural weakness of the JDA in enacting policies. Over time, however, these attitudes shifted; in particular, since the end of the Cold War Japanese leaders, concerned about both the uncertain future of the U.S.-Japan alliance and Japan's flagging industries, have redoubled their efforts toward *kokusanka*, the indigenization of military technologies. This push has been both reflected in and strengthened by the consolidation of acquisition-related organizations within the JDA into the ATLA, which has pushed significantly for the Japanese defense industry to expand abroad.

In this chapter I outlined an initial mismatch between state and business interests in the case of the development and production of Japan's maritime patrol aircraft capability. While business interests have been interested in entering the market since the late 1950s and have actively sought indigenous development since the 1970s, Japanese government actors were for many years ambivalent regarding domestic production. Since the 1990s, however, there has been a significant change in state approaches to MPA development, leading to both sides agreeing that domestic production was necessary. The result was the domestic development of the Kawasaki P-1, an MPA which has been universally acknowledged as one of the most advanced MPA models available but which has struggled on the international market. Throughout the postwar period, the perceived ability or inability of actors to justify the trajectory of antisubmarine or marine patrol aircraft was exceptionally important in determining outcomes.

Production under license was a middle ground that allowed Japanese corporations to participate actively in the aviation industry without seeming to pour public funds into military

[194] Michael J. Green. "The Japanese Defense Industry's Views of U.S.-Japan Defense Technology Collaboration: Findings of the MIT Japan Program Survey." *The MIT Japan Program*. Center for International Studies, Massachusetts Institute of Technology. January 1994. p. 19.

technologies. So successful were these efforts that by the 1980s Japan was producing maritime patrol aircraft which were majority-Japanese manufactured. These aircraft were Japanese in all but their designation. This was a case of true "justification," in which businesses in cooperation with the Japanese state indigenized from within the production line until they were manufacturing high-tech aircraft which were Japanese in all but name. Over time, this strategy was not lost on American military planners, who became acutely aware that Japanese companies were re-making American capabilities in their own image. The result was increasing pressure from the American side to purchase more through FMS, seeking to protect their own technologies, as well as for more equal technology transfer agreements.

The development and production of a homegrown Japanese maritime patrol aircraft is one of the clearest examples of a phenomenon that is becoming increasingly common in Japanese acquisition. In it, business and state interests in domestic production initially diverge, and as a result a capability is initially produced under license. The argument for production of the Neptune P-27, the P-2J, and eventually the P-3C Orion under license was that it would be too costly, both politically and financially, for Japanese businesses to develop completely domestically. This very much followed the pattern discussed in the Chapter 3 discussion of Japanese BMD and Japan's continued participation in the Patriot Program. However, in response to changing incentive structures and in particular Japanese state actors' attitudes regarding the justifiability of indigenous production, over time the change was made to domestic aircraft production, taking advantage of the lessons learned during licensed production of the P-3C to produce the Kawasaki P-1, a cutting edge MPA developed and produced entirely in Japan.

The Kawasaki P-1 may well serve as a blueprint for the further indigenization of other types of capabilities. The P-1 is one of several projects the ATLA considers "completed"; these include the Kawasaki C-2 (the eventual result of the P-1's concurrently developed C-X), an Asahi-class destroyer, the Type 16 maneuver combat vehicle, and many others. The ATLA also has many more current projects in place, including a supersonic advanced missile currently being developed by MHI and a revived version of the F-X fighter, also being developed by Mitsubishi. As justification of production of military capabilities becomes less important to politicians, the government will likely push more and more for indigenously developed technologies like the P-1.

In the case presented in this chapter, licensed production driven by the initial mismatch between business and state interests regarding domestic production of MPA technology shifted to domestic production of a comparable capability once policymakers viewed that indigenous production as justifiable. In the following chapter, I outline a case in which discussion of Japanese production was never entertained and in which Japanese companies were unenthusiastic about participation: the ill-fated Aegis Ashore project, with a focus on the discussion of the acquisition of radar capabilities for the project.

5 Purchase From Allies: The Lockheed Martin SPY-7 Radar and Aegis Ashore

In early July of 2018, a Japanese Ministry of Defense (MOD) official leaked to Reuters that the government had chosen a supplier for radar equipment in support of its new Aegis Ashore technologies.[195] Japan had announced its intention to bolster its existing missile defense capabilities in early 2017 in response to a series of North Korean missile launches, weighing the pros and cons of two advanced missile defense systems: Terminal High Altitude Area Defense (THAAD), and Aegis Ashore.[196] By the end of the year, the Japanese Cabinet had announced its intention to pursue Aegis Ashore. To this end, it had approved a record-high draft budget for the 2018 fiscal year, with much of the increase focused on spending on missile defense. Japanese defense officials had estimated the cost of the two Aegis ashore batteries at around $2 billion. Like any complex defense system, however, components for many of the parts of Aegis Ashore batteries were to be negotiated separately. The contract for the radar which would support Aegis Ashore was the first major agreement to be signed, and many practitioners were watching carefully, noting that there were concerns that the final price of the systems was likely to be closer to $4 billion, double the initial price.[197] These initial negotiations, practitioners argue, were likely to set the tone for future contracts and to give a good sense of how and whether prices were likely to climb moving forward.

For weeks rumors had been flying regarding whether Japan was likely to choose Raytheon's SPY-6 or a version of Lockheed Martin's Long Range Discrimination Radar (LRDR), to be designated SPY-7. The MOD's decision to go with Lockheed Martin over Raytheon was somewhat unexpected. While it was the case that the core technical components of Aegis Ashore were manufactured by Lockheed Martin, Raytheon's SPY-6 had already seen significant practical success on U.S. Navy Warships since 2013 and boasted significant anti-aircraft features that the SPY-7 lacked at the time. When I conducted interviews at Raytheon Tokyo and Lockheed Martin Tokyo, my interview subjects had a variety of reactions to the news. One thing that they all agreed upon when asked, however, was that this contract could only have gone to an American company.

In previous chapters, I have described patterns of acquisition in which Japanese companies, interested in domestic development, have placed significant pressure on policymakers to indigenize security capabilities wherever possible. When, as in the case of intelligence-gathering satellites, government actors agree that acquisition is necessary and do not struggle to justify these capabilities as defensive, indigenous development is the result. Where there is an initial mismatch

[195] Nobuhiro Kubo (Reuters). "Government to pick Lockheed Martin radar for missile defense system: ministry official." *The Japan Times*, July 3, 2018, https://www.japantimes.co.jp/news/2018/07/03/national/japan-picks-lockheed-martin-radar-missile-defense-system-ministry-official/.

[196] Reuters. "Japan Favors Aegis Ashore over THAAD to bolster missile defenses: sources." *The Japan Times*, May 13, 2018, https://www.japantimes.co.jp/news/2017/05/13/national/japan-favors-aegis-ashore-thaad-bolster-missile-defenses-sources/.

[197] Tim Kelly and Nobuhiro Kubo (Reuters). "Japan to buy advanced U.S. radar for missile-defense system." *The Japan Times*, July 1, 2017. https://www.japantimes.co.jp/news/2018/07/01/national/japan-buy-advanced-u-s-radar-missile-defense-system/.

in interest, Japan often defaults to production under license. When justification does not become easier over time or when business interest in indigenization declines, as in the case of Patriot missiles, licensed production is likely to continue. When justification becomes possible over time, as in the case of maritime patrol aircraft, indigenization reliably occurs. Overall, the previous chapters have described a Japan that has been gradually increasing its technological self-reliance over time. What, then, explains the alternative: when Japan opts to rely on the United States entirely, purchasing capabilities without sincere and significant discussion of indigenization?

Why did the negotiations over contracts for Aegis Ashore, particularly its radar system, assume from the start that the systems would be purchases from the United States? This is particularly puzzling for three reasons. First, Japanese businesses have in the past demonstrated significant interest in the domestic development of radar capabilities. The decision by industry actors not to make a bid for participation represents a break in the usual pattern of Japanese industry lobbying for greater self-reliance. Second, Japan currently has an indigenous radar industry which it is actively marketing to buyers overseas. The decision not to participate in Aegis Ashore is a missed opportunity to expand the Japanese market. Finally, the trend over time in Japanese acquisitions trajectories has generally been *less* reliance on purchase from ashore, not more.

In this chapter, I argue that the decision to purchase the SPY-7 Radar system, the first of many components to make up Aegis Ashore, represents a confluence of disinterests in domestic production. Japanese businesses have participated in the development of technologies for BMD in the past and indeed have domestically produced radar technologies of their own. However, the complexity of the systems in question, the relative lack of spin-off benefits given Japanese businesses' existing expertise in radar, and the PR cost of participating in Aegis Ashore all led Japanese industry not to push for domestic production.

On the state side, leaders faced the same difficulties with justifying domestic development that they did for other ballistic missile programs. Missiles – and their associated systems – appear in interviews with policymakers to be seen as simply more difficult to justify than other types of military technologies. These problems were exacerbated by additional pressures put on the Japanese government by the United States, which under the Trump administration had redoubled its efforts to pursue contracts for American industry wherever possible. Japan, faced with a rising China and the threat of an increasingly active nuclear North Korea, needed to find some way to negotiate contracts that would appease their allies and make themselves appear like active members of the alliance. Concerns about justification and a lack of pressure from domestic business interests meant that the Aegis Ashore contracts represented an ideal offering to the Trump administration. I argue that the result of this disinterest on both the government and business sides was the decision to purchase from allies.

I begin this chapter with a brief discussion of the history of Japanese participation in radar development. I note that, as in previous cases, postwar Japanese industry has a history of producing radar under license leading to domestic production of similar technologies. In fact, Japan's first-ever defense equipment export under the 2014 revised arms export restrictions was a set of fixed and mobile surveillance radars. In other words, as with other technologies, Japan learned radar development while producing under license. To examine why Japan did not follow this path with Aegis Ashore, I outline the structural challenges facing Japan in the mid-to-late 2010s. I focus on three external concerns. In the short term, Japanese leadership needed to find some way to address the rising belligerence of a nuclear North Korea. In the longer term, the rise of Chinese regional

hegemony posed a serious threat to Japanese self-determination and its position in Northeast Asia. Finally, Japanese leadership grappled with rising concerns about possible American abandonment.

Having established the security context, I then outline the actual functions and capabilities of Aegis Ashore. To understand the controversy surrounding acquisition it is important to understand what technologies make up a battery, what the purpose of the Aegis Ashore is, and how it is different from current Japanese BMD capabilities. I argue that the technical specifications and the purpose of Aegis Ashore informed the decision to purchase from American providers rather than develop or produce them domestically. First, Japanese businesses evaluated whether an indigenous radar could compete with the functionality of American products, as well as whether they needed access to the market. Ultimately, they did not feel that they would benefit from domestic production and therefore did not lobby particularly hard for it. Second, both government and business actors anticipated how difficult it would be to justify the domestic development of Aegis Ashore. The result was that government and business actors agreed that they would not seek domestic development, opting instead for purchasing from allies.

I discuss the process of negotiating the radar contract which would support Aegis Ashore. In this section, I rely heavily on interviews conducted with actors within both Raytheon's and Lockheed Martin's Tokyo offices in the immediate wake of the Japanese government's decision to purchase the Lockheed Martin SPY-7 over the Raytheon SPY-6. These interviews shed significant insight into the inner workings of the Aegis Ashore negotiations. They also highlighted, at least from the perspective of American industry, what Japanese government priorities were in the negotiations for Aegis Ashore. I discuss reasons Japanese companies did not lobby for participation in development, highlighting the benefits they receive as trading companies in cooperation with American industry as well as recent Japanese difficulties competing in the production of modular defense systems. In these interviews, American defense industry actors repeatedly highlighted both Japanese industry ambivalence in participation in Aegis Ashore and the political and social importance of justification for both industry and government. I argue that purchase from abroad was pursued because both business and government actors agreed that the benefits of domestic development would not be worth the political costs. I conclude with a discussion of the future of Japanese ballistic missile defense (BMD). In June of 2020, the Japanese Ministry of Defense announced that it would be canceling Aegis Ashore, citing decreasing threats from North Korea and significant opposition to the system from local communities. This cancellation highlights the issues with justifying domestic development that caused Japanese companies and government alike to eschew it, i.e., its relatively low benefits for industry, its political unpopularity, and its debatable defensiveness. I claim that this chapter brings into focus a facet of justifiability that has not necessarily been apparent in other chapters: that while government actors are naturally *more* sensitive to concerns surrounding whether domestic development can be justified to the public, businesses have become increasingly concerned about this as well.

5.1 Japan and Radar Development

Japanese industry has had a somewhat complicated relationship with radar over the years. Although Japan has specialized in technologies that arguably support the development of a strong radar industry, the historical record has shown that until recently neither Japanese industry nor the government has significantly prioritized radar development. In some ways, this is somewhat counterintuitive. First, because the technologies which underpin radar development are

technologies in which Japanese companies specialize, one might expect Japanese industry to lobby for domestic development because they are likely to be competitive in that market. Second, in terms of "justifiability" of technologies, radar, like satellites and other information-gathering technologies, are likely to be understood as more defensive than offensive. While radar is a necessary tool, an invasion cannot be launched with only radar. Throughout this section I outline attitudes surrounding the domestic development of radar, focusing on the argument that industry ambivalence around the necessity for indigenously developed radar capabilities combined with governmental confusion and ambivalence led to a historical pattern of purchase from abroad.

In the lead-up to the Pacific War, Japan had significant technological capability in areas necessary for radar development and production. For example, the Yagi-Uda antenna, often referred to simply as the Yagi antenna, is a type of directional antenna invented in 1926 by Uda Shintaro of Tohoku Imperial University in collaboration with Yagi Hidetsugu, also from the same university.[198] Uda and Yagi's papers on antennas and magnetron design represented some of the most cutting-edge research at the time and were closely studied by scientists and engineers abroad. The Yagi-Uda antenna formed the foundation on which Western nations constructed their radar capabilities. Yagi and Uda's work fundamentally informed the creation of radar as it exists today. Neither researcher was ever assigned to work on radar development within Japan, however. Although Japan was exceptionally advanced in magnetron development Japanese military planners and government officials appear to have lacked appreciation for the possibilities offered by radar.

This lack of early emphasis on radar development in combination with significant service rivalries leading to low levels of information sharing even within the Japanese imperial military meant that Japan ran around 3-5 years behind the West in terms of radar technologies. Even when Japan allied itself with other Western powers it did not initially benefit from their expertise. There was essentially no exchange of technical information between the co-signees of the Tripartite Pact until 1940, when Japanese officers were invited to Germany in December 1940 and January 1941. While on this expedition Ito Yoji, an engineer himself and the leader of the Naval delegation, was shown German and British radar technologies and immediately began work on the development of a Japanese version. Famously, Japan only achieved a complete radar system in November 1941, literally days before the attack on Pearl Harbor.

It is not the case that Japan did not develop or produce radar themselves during the Pacific War; in fact, more than 7,000 sets of many different types were developed for the Imperial Army and Navy. Japanese industry, although at that time very much under the control of the military, participated heavily in this development. The Army-organized Tama Technology Research Institute (TTRI), for example, was tasked with the development of "radio range-finder" technologies. Most of the work completed by this organization was done by contractors at labs in

[198] Uda was the principal contributor to the design, but Yagi is more commonly associated with the antenna. There are two probable causes for this puzzling anecdote. First, Yagi was the first to publish on the antenna in English, and as discussed below Japan was slower than the West to adopt the technology. Second, while Yagi filed the patent with both of their names on it in Japan, the American patent only had his name on it. Shintarou Uda 宇田新太郎. "Tanpa choubiimu ni tsuite (daiichi houkoku)"「短波長ビームに就て (第一報告)」[On the wireless beam of short electric waves]. *電氣學會雜誌 [The Journal of the Institute of Electrical Engineers of Japan]* 46, no. 452 (1926): 273-282; Hidetsugu Yagi 八木秀次. Denpa shikou houshiki 電波指向方式 [Variable Directional Electric Wave Generating Device]. Japanese Patent No. 69115, filed May 5, 1926, issued August 13, 1926; Hidetsugu Yagi. Variable Directional Electric Wave Generating Device. U.S. Patent No. 1,860,123, filed September 3, 1926, issued May 24, 1932.

Toshiba Shibaura Denki (now Toshiba Corporation) and Nippon Electric Company (NEC).[199] The Naval Technical Research Institute (NTRI) similarly began work on a prototype pulse-modulated system with help from NEC, the Japan Radio Company (JRC), and the research lab of the NHK (Japan Broadcasting Corporation).[200]

Japanese capabilities continued to run behind their contemporaries, however, again in large part due to policymaker emphasis on other uses of magnetron technologies.[201] An ironic anecdote that underscores how the lack of Japanese decisionmaker interest in the application of their researchers' expertise in magnetron development to radar technologies hampered their capabilities came in February 1942 following the Battle of Singapore. When Japan took Singapore the remains of two British radars were found along with handwritten notes giving details of the theory and operation of the technology. Apocryphally, Japanese planners were baffled by an acronym mentioned throughout the documentation: "YAGI." It was only later that it was determined that this was not an acronym but instead referred to the "Yagi antenna" developed by Professors Uda and Yagi at Tohoku Imperial University in the mid-1920s.[202]

Following the end of the Pacific War and throughout the Cold War there was relatively little attention paid to radar development for military purposes. Again, this is not to imply that research was not being conducted on indigenous radar development *at all*; rather, radar technologies were under development for commercial, rather than defense, purposes. The development of 3-D radar by Mitsubishi Electric (MELCO) is the clearest example of this push and pull in action. In the early 1960s, the JDA announced its desire to be able to incorporate altitude data and other similar changes into its air defense system. In 1961 the JDA's Technical Research and Development Institute (TRDI) announced its requirement for a domestically produced 3-D radar system. In 1962 it commissioned proposals from NEC, Toshiba, and MELCO, but only MELCO pursued the technology independently. By 1966 TDRI and MELCO had jointly developed and tested the world's only permanent ground-based 3-D radar for air surveillance. The JDA noted in reports that a central benefit of this approach was new civil control applications. [203]

MELCO was happy to participate in this development, but its primary focus remained on civilian rather than military projects. After the TDRI-MELCO joint design prototype entered production, development started within MELCO on a *different* 3-D radar with an entirely different design. Rather than immediately introduce the prototype to their contacts in the JDA, MELCO adopted the technology into civil aviation significantly before reintroducing it to the JDA. This

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[199] Shigeru Nakajima, "The history of Japanese radar development to 1945," in *Radar Development to 1945,* ed. Russell Burns (Institution of Electrical Engineers: 1988). pp. 245-258.

[200] Yasuzo Nakagawa. *Japanese Radar and Related Weapons of World War II* (Aegean Park Press: 1998). Shigeru Nakajima. "History of Japanese Radar Development to 1945." *日本無線技報* 27 (1988): p. 47-55.

[201] The initial focus for magnetron output was power transmission rather than radar. As the ability of developed devices to output energy increased, the focus turned to weapons development. In 1943 in a large facility in Shimada, Japan, development began on a death ray using magnetron technologies. This is another example of how military planners' focus on offensive rather than defensive or information-gathering technologies hindered early Japanese radar production. All the equipment and documents at Shimada were destroyed before the Americans could reach them. U.S. Naval Technical Mission to Japan. "Japanese Electronic Tubes." Intelligence Targets Japan (DNI) of September 4, 1945. Fascilie E-1, Target E-13, 17 January 1946.

[202] Gentei Sato. "A secret story about the Yagi antenna." *IEEE Antennas & Propagation Magazine* 33, no. 3 (1991): 7-18.

[203] Boueichou Gijitsu Kenkyuu Honbu 防衛庁技術研究本部 [Japan Defense Agency, Technical Research and Development Institute]. *Boueichou gijutsu kenkyuu honbu gojuunenshi* 防衛庁技術研究本部五十年史 [The 50-Year History of the Japanese Defense Agency Technical Research and Development Institute] (Tokyo: Boueichou Gijutsu Kenkyuu Honbu, 2002). pp. 139-141.

was the case with other producers as well; Toshiba radars were not separated into civilian versus military production teams but were instead designed by the same teams in the same facilities.[204]

Throughout the Cold War, one major theme which emerged in Japanese development of radar technologies was that it was driven primarily by commercial, rather than defense, applications. Unlike satellites, missiles, and aircraft, Japanese businesses were unlikely to lobby for contracts to develop radar capabilities for defense. Exceptions to this pattern tended to emerge when technology was particularly cutting edge or would represent access to technological spin-offs that commercial development on its own could not support. In those cases, Japanese companies tended to be more willing to participate. Even in these cases, however, demand on the business side was lowered; an example can be seen in the 3-D radar system case. While the JDA sought proposals from NEC, Toshiba, and MELCO, only MELCO invested significant resources into this development. In general, during this period indigenous Japanese radar sales to the JDA represented a repurposing of commercial-use capabilities.

This commercial emphasis on the part of business actors did not translate into slowed or stifled technological development. The development of military-use radar was never particularly high on the priority list for Japanese industry. However, by the 1990s Japanese radar developed for commercial purposes, particularly automobiles, were exceptionally cutting-edge and had capabilities significantly exceeding equivalent technologies produced by American industry. A key example of this appeared in the controversy in the early 1990s over the U.S.-Japan coproduction of the FS-X fighter. This controversy, which was outlined in much greater detail in Chapter 4, focused on American pressure for collaboration on what had been intended to be an indigenous Japanese fighter jet. The debate centered on American concerns regarding reciprocity in technological transfers between Japan and the United States, especially as trade friction between the two countries increased.

In 1989, senior American administration officials had emphasized repeatedly the significant potential value of access to the active phased-array (APA) radar developed by MELCO. The radar had several characteristics which made it extremely attractive to American defense experts. First, MELCO was capable of manufacturing transmit/receive (T/R) modules used in the radar at a significantly lower cost than American corporations. [205] Second, MELCO and the TDRI were able to make the radar small enough to put onto a fighter aircraft. This feature was particularly notable because it was a spin-on from civilian industries' development of high-performance semiconductors and high-density integrated circuits. The radar also featured an extremely efficient cooling system, ultra-high-resolution, and unprecedented terrain-mapping abilities.[206] All of these features caused U.S. access to "basic design, performance and cost data" for the MELCO APA radar to be one of the greatest potential benefits of collaboration for the Americans.[207]

Overall, Japan's relationship with the acquisition of radar technology has been nuanced. Radar was not necessarily technology that was "selected" by MITI and Japanese industry as strategically important to restore Japanese industrial power, as was the case with aircraft, missiles, and space. Businesses also did not lobby the government particularly fervently for defense contracts related to the technology, as happened in space, missiles, and aircraft. When they were approached by the Japanese government to apply radar technologies to defense projects, Japanese

[204] Samuels, *"Rich Nation, Strong Army,"* 1996. p. 297
[205] Lorell, *Troubled Partnership*, 1995. p. 330.
[206] Vogel, *The Power Behind "Spin-Ons,"* 1991. p. 67.
[207] John D. Moteff. *FSX Technology: Its Relative Utility to the United States and Japanese Aerospace Industries* (Washington, D.C.: Congressional Research Service, Library of Congress, April 12, 1989). p. 10.

companies often did so, and successfully. But the burden of effort appears to have been, at least much of the time, on the Japanese government to ask for these capabilities. In previous chapters, I have described a Japanese industry that has fundamentally driven patterns of Japanese defense technology acquisitions. In space, missiles, and aircraft, even when faced with significant ambivalence on the part of policymakers concerned with whether capabilities could be justified as "defensive" to the public, Japanese industry actors have pushed for domestic development. It is therefore relatively surprising that when it came to radar, an industry in which Japanese companies could be internationally competitive, there was not significant lobbying for contracts.

What accounts for this less-than-proactive approach to military-use radar as a technology on the part of Japanese businesses? When asked why Japanese businesses did not seek domestic radar contracts more aggressively, several interview subjects indicated that especially for dual-use technologies, defense contracts were not a primary driver of profits. "On the company side, Japanese companies don't really generate revenue from defense technologies," one interviewee responded.[208] Another interview subject expanded on this concept, arguing,

> "With a lot of these types of contracts [that are clearly justifiable within the realm of Article Nine], it's not that the government doesn't want them indigenously produced. But often businesses don't actively seek to sell them. Even the corporations which produce defense technologies don't rely on military revenue. As an example, Mitsubishi is arguably the largest producer of security technology. Defense is only about 5% of its total revenue. Likewise for NEC, only 1.5% of its revenue is from the Self Defense Forces, but that SDF is its second-biggest customer."[209]

Additionally, several interview subjects, particularly those on the government side, argued that businesses were less likely to push for defense contracts when the benefits were spin-on rather than spin-off.

This was particularly the case from the end of the Pacific War through mid-2014 when the Abe administration loosened the existing rules on arms exports. The Diet had adopted the Three Principles of Arms Exports in 1967: that arms exports were not allowed to go to 1) communist bloc countries; 2) countries which were under arms exports embargoes under United Nations Security Council resolutions; and 3) countries involved in or likely to be involved in international conflicts.[210] It was this third point that drove most of the effects of the Japanese Arms Export Ban, which beginning in 1976 in practice banned all sale of military-use hardware abroad, with some exceptions for technology transfers to the United States.[211] As long as the Arms Export Ban remained in place, there were very few benefits for Japanese companies to push for contracts that involved technologies in which they already possessed a significant comparative advantage.

Government actors were similarly reserved when it came to involving Japanese industry in radar acquisition. Although, as stated, Japanese companies could produce cutting-edge radar technologies, it was relatively rare that these technologies existed in a vacuum. Rather, it was more

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[208] A-MS. Interview by Deirdre Martin. Personal Interview. Tokyo, Japan, August 23, 2019.
[209] M-TS. Interview by Deirdre Martin. Personal Interview. Tokyo, Japan, February 14, 2018.
[210] Nihon Gaimushou 日本外務省 [Ministry of Foreign Affairs of Japan]. *Buki yushutsu sangensoku nado 武器輸出三原則等 [The Three Principles on Arms Exports, etc.]*. April 21, 1967, revised February 27, 1976, https://www.mofa.go.jp/mofaj/gaiko/arms/mine/sanngen.html, accessed 20 June 2021.
[211] Ministry of Foreign Affairs of Japan. "Japan's Policies on the Control of Arms Exports." https://www.mofa.go.jp/policy/un/disarmament/policy/index.html, accessed June 20, 2021.

common for radar to be a part of larger technology packages, i.e., used in support of planes or missile defense systems or similar types of capabilities. Where possible, MITI appears to have lobbied the Ministry of Finance to include Japanese technologies as sub-components like radar. However, government actors were still under a variety of constraints. Beyond opposition to military development just from minority parties, even within the LDP, there was a strong sense in the 1960s through the early 1990s that pushing for domestic production of capabilities was often more politically costly than it was beneficial. This effect was amplified in the 1980s and early 1990s when pressure from the United States to buy more security technologies – and to allow technological reciprocity – intensified as Japan and America's trade war intensified.

There were exceptions to this rule, particularly when politicians and bureaucrats saw concerted lobbying on the part of MITI, Keidanren, and businesses. The support of business was particularly important for LDP politicians, who were more likely to listen when industry argued that the technonational benefits of indigenous development of security technologies outweighed possible costs. But overall politicians remained concerned about justifying Japanese participation in weapons development to the public, reserving their support for contracts that were actively lobbied for by businesses or "selected" by MITI.

In the cases presented in previous chapters, it has been common for Japanese businesses to actively push for domestic development of selected security technologies. However, this was not necessarily something industry actors always pursued. In general, there were two main reasons that businesses lobbied for defense contracts during this period: the possibility of access to spin-offs and spin-ons. Business actors tended to push for contracts when they felt that participation in research and development would provide them with new technologies which could be used in commercial products or that technologies already developed by Japan for commercial products could profitably be applied to the military system. In the case of radar, Japanese commercial technological development was far enough advanced that many business actors did not see military radar technology as a necessary avenue for technological development.

Often when commercial technologies outpace military technologies industry pushes for security contracts to obtain "spin-ons," lucrative contracts in which companies can leverage their commercial expertise for big-ticket high-tech military development. In the case of Japanese radar, however, the benefits of this approach were relatively low due to the constraints of the Arms Export Ban. While Japanese companies were happy to apply their radar capabilities to technologies for the Japanese Self Defense Forces, they were not able to then market these capabilities abroad, meaning that their only defense market was the Japanese military.

The result of the combination of the Japanese government's concerns about justifying of participation in large-scale military projects and Japanese industry actors' lack of active lobbying for radar contracts was the pattern of acquisition seen throughout the Cold War and into the early 2000s. In general, Japanese radar development was conducted for commercial products, particularly automobiles. When Japanese industry produced radar for military contracts, that technology tended to be variations of already existing commercial technologies. Most notable was the relatively low degree to which industry and its allies in MITI lobbied for domestic development of radar technologies. When it happened, it tended to be in cases where extremely lucrative contracts were available, or when the technology was actively being sought by the United States.

This calculus, in which industry did not emphasize or lobby for domestic development of military-use radar because of its limited capacity for both spin-offs and spin-ons, appears to have changed somewhat following the 2014 Abe administration easing of restrictions of the export of military technologies. As discussed below, the Japanese government's efforts in recent years to

revitalize Japanese industry through the promotion of defense technology exports have been met with mixed success. However, in 2020, shortly after the government announced that it would be canceling Aegis Ashore, Japanese industry actors did manage to successfully conclude their first-ever sale of major defense equipment. On August 28, 2020, Japan signed a contract deal with the Philippine Department of National Defense for three fixed, long-range air surveillance radars and a mobile surveillance radar.[212]

5.2 Buying Aegis Ashore

Beginning in early 2017 North Korea began a series of missile test launches. On February 12th, the DPRK launched an intermediate-range ballistic missile into the Sea of Japan. In March, they fired four extended-range Scud ballistic missiles that landed within 200 miles of Japan. In April alone 3 intermediate-range Hwasong-12 ballistic missiles were fired, one of which landed in the Sea of Japan. This escalation would continue throughout the year. On May 15th, 2017, North Korea successfully tested a Hwasong-12 missile and announced that it would be capable of delivering a nuclear warhead to U.S. territories.[213] On July 4th and July 28th, North Korea claimed to successfully test-fire its first and second intercontinental ballistic missiles.[214] On August 28th, North Korea launched a missile that traveled over the Japanese islands.[215] By the end of the year, North Korea had conducted nine distinct missile tests, many of which had encroached on Japanese territory. These tests by themselves were cause for concern, as they represented a clear pattern of escalation. The seriousness of the situation was amplified, however, by the September 3rd announcement that the DPRK had successfully tested a hydrogen bomb that could be fitted onto an ICBM.[216]

As the perceived immediate target of many of these attacks, Japanese leadership felt heavy pressure to be seen as taking decisive action. In March of 2017, the Liberal Democratic Party (LDP) had proposed in the Diet that the government consider introducing a new missile shield system to address possible insufficiencies in Japanese missile defense. By late April 2017, reports began circulating that Japan was considering purchasing Aegis Ashore systems from the United States to combat increasing threats from a nuclear North Korea.[217] In late December of 2017, the

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[212] The Philippine Department of National Defense announcement did not specify the radar type, but previous reports indicated it was likely that the contract would include an improved version of the Mitsubishi Electric J/FPS-3 active electronically scanned array radar and the J/TPS-P14 mobile radar. Mike Yeo. "Japan secures first-ever major defense export with Philippine radar order." *Defense News*, August 28, 2020., https://www.defensenews.com/global/asia-pacific/2020/08/28/japan-secures-first-ever-defense-export-with-philippine-radar-order/, accessed June 10, 2021.

[213] William J. Broad and David E. Sanger. "North Korea Missile Test Appears to Tiptoe Over a U.S. Tripwire." *The New York Times*, May 15, 2017, https://www.nytimes.com/2017/05/15/world/asia/north-korea-missiles.html.

[214] David E. Sanger, Choe Sang-Hun, and William J. Broad. "North Korea Tests a Ballistic Missile That Experts Say Could Hit California." *The New York Times*, July 28, 2017, https://www.nytimes.com/2017/07/28/world/asia/north-korea-ballistic-missile.html.

[215] Susan Heavey and Jack Kim. "Message from North Korean missile over Japan 'loud and clear': Trump." *Reuters*, August 28, 2017, https://www.reuters.com/article/us-northkorea-missiles/message-from-north-korean-missile-over-japan-loud-and-clear-trump-idUSKCN1B8283.

[216] Justin McCurry. "North Korean nuclear test confirmed in major escalation by Kim Jong-un." *The Guardian*, September 3, 2017, https://www.theguardian.com/world/2017/sep/03/north-korean-nuclear-test-confirmed-in-major-escalation-by-kim-jong-un.

[217] Kyodo. "Japan to expedite study on adopting land-based Aegis system." *The Japan Times*, April 29, 2017. https://www.japantimes.co.jp/news/2017/04/29/national/japan-expedite-study-adopting-land-based-aegis-system/.

Cabinet approved a record-high draft defense budget submitted for the 2018 fiscal year. The primary goal of the programs outlined in the draft budget was to strengthen Japanese missile defense. It included upgrades to existing missile defense systems, the introduction of two Aegis Ashore interceptor batteries, and the procurement of long-range cruise missiles to be launched from fighter jets. Overall, the draft budget increased from ¥5.13 trillion (approximately $46.3 billion) to ¥5.19 trillion (approximately $46.8 billion), with ¥700 million ($6.3 million) allocated to surveying potential sites and designing a deployment plan for Aegis Ashore.[218]

Although it is undeniable that the barrage of attacks from North Korea in 2017 served as a useful catalyst for explaining the decision to acquire Aegis Ashore, it is not strictly the case that these attacks *caused* that acquisition. One Ministry of Defense official explained in an interview,

> "It's true that you hear these narratives that Aegis Ashore was a reaction to the North Korean missile tests, and then that gets turned into a story about how Japanese defense policy is reactionary. But it would be impossible for Japan to have a missile launched over them in August and then by December to announce they are acquiring Aegis Ashore. That isn't how budget requests work. In general, there's a five-year lag for any major project, because that's how the budget request cycle works – one request for five years of R&D, and then a follow-up request at the end of that cycle for acquisition. So I suppose it's true that Aegis Ashore *was* reactionary, but not to the attack people think. The MOD and the rest of the Japanese government began to discuss Aegis Ashore in 2013, after the missile crisis in 2012 and 2013. At that time because of the long duration of the crisis, there was a huge challenge for the Aegis Destroyer system, because it was really costly to keep Aegis Destroyers constantly out at sea. That wouldn't be a problem for Aegis Ashore. If you look back, they actually talk about Aegis Ashore in the 2013 National Defense Policy Guidelines. So really, while people talk about 2017 as if it caused the Aegis Ashore acquisition, it would be more accurate to say that the crisis in 2017 provided military planners and policymakers a clear justification for what they'd been thinking about doing since 2013."[219]

An interview subject who works at Lockheed Martin echoed this point, arguing that Aegis Ashore was the culmination of 10 years of development efforts, including 4 years of active campaigning for it and 2 years of marketing and education.[220] Aegis Ashore was not, as it is often characterized, the reactionary acquisition of a state dealing with an unexpected threat. Instead, it represents something else entirely: the culmination of a half-decade of slow and incremental policy change justified at a critical juncture by the appearance of a crisis.

This change is reflective of three major changes facing Japanese policymakers. The first, as discussed, was an increasingly belligerent and nuclear-armed North Korea. While most policymakers acknowledge that Japan is rarely the actual object of North Korean ire, they consider themselves hostages in the ongoing relationship between the DPRK and the United States. How Japan should go about facing this rising threat is cause of immediate and ongoing concern. In some ways, however, the rise of China has been equally concerning to Japan, and the expansion of missile defense has been targeted as much toward long-term maintenance of Japanese security

[218] Daisuke Kikuchi. "Japanese Cabinet OKs record ¥5.19 trillion defense budget to counter North Korea with interceptor batteries, first cruise missiles." *The Japan Times*, December 22, 2017.
[219] M-TS. Interview by Deirdre Martin. Personal Interview. Tokyo, Japan, February 14, 2018.
[220] LM-CA. Interview by Deirdre Martin. Personal Interview. Tokyo, Japan, August 2, 2019.

against China as it has toward North Korea.[221] Finally, Japanese policymakers have since the 1990s increasingly feared abandonment by the United States and have sought to bolster their own capabilities both to be seen as contributing more actively and to decrease their reliance. For all these reasons, Aegis Ashore was a natural conclusion to ongoing security concerns facing Japanese government.

What, then, is Aegis Ashore? What are the key components, what is the history of the system, and what is its purpose? How does it differ from the ballistic missile defense (BMD) system of Patriot batteries and Aegis cruisers Japan already maintained? To understand the controversies surrounding the acquisitions negotiations that took place, it is necessary to understand the technologies involved and how the system would fit into the broader Japanese BMD constellation. By the time discussions of acquisition of Aegis Ashore were underway, Japan already had a relatively extensive BMD network. This was made up primarily of two types of BMD: mobile Patriot batteries, which are mounted on trucks and other vehicles, and Aegis destroyers, military ships which are equipped with missiles and are deployed at sea.

Aegis Ashore is a land-based component designed to support a larger Aegis-based missile defense system. Unlike Patriot batteries, which tend to be mobile, Aegis Ashore is installed in a fixed location. Before Japan decided to acquire Aegis Ashore it was primarily installed in sites in Eastern Europe as part of the European Phased Adaptive Approach (EPAA), the U.S. contribution to NATO's missile defense system. It includes a deckhouse (a control center), a radar to monitor incoming missiles and other projectiles, a launching system, and missile interceptors. The Aegis Ashore systems currently either operational or under development use similar combat system elements to those that are used aboard the U.S. Navy's cutting-edge Aegis Destroyers. This includes computers and intelligence systems, display systems, and power supplies and cooling.[222] The system is designed to serve as a midcourse defense against medium and intermediate-range missiles, which would mean the system is meant to intercept incoming missiles and warheads in space.[223] Aegis Ashore is currently installed in Romania and Poland. Japan would have been the third country to host the system.

A theoretical benefit of Aegis Ashore as a system, as described by Lockheed Martin, the primary manufacturers, is that all elements are already in use in land-based and sea-based applications. Because of this, the argument goes, Aegis Ashore is an "affordable" solution to missile defense.[224] This is one of the main reasons cited for the Japanese decision to select Aegis Ashore over THAAD; the former was both cheaper and seen as more versatile than the latter. A THAAD setup, which generally comes with 48 missiles and nine mobile launch pads, would be priced at around $1.1 billion. Official estimates from Japanese defense policymakers varied wildly regarding how many THAAD systems would be necessary to achieve total coverage. Reports claimed that Japan would need anywhere from 6 to 16 THAAD systems for total protection of territory.[225] Only two Aegis Ashore systems would be required to defend the entirety of Japan. At

[221] One interview subject said, "When it comes to Japanese security, if North Korea is cancer, China is a chronic illness." M-KY. Interview by Deirdre Martin. Personal Interview. Tokyo, Japan, August 1, 2018.
[222] Missile Defense Agency. "Fact Sheet: Aegis Ashore." *U.S. Department of Defense Missile Defense Agency*, July 28, 2016.
[223] Missile Threat. "Aegis Ashore." *Center for Strategic & International Studies Missile Defense Project*, last updated June 15, 2018, https://missilethreat.csis.org/defsys/aegis-ashore/, accessed June 20, 2021.
[224] "Aegis Ashore." *Lockheed Martin*, https://www.lockheedmartin.com/en-us/products/aegis-combat-system/aegis-ashore.html, accessed June 19, 2021.
[225] Mari Yamaguchi (The Associated Press). "Japan to buy Aegis Ashore missile defense systems." *Defense News*, December 19, 2017; Kikuchi, "Japanese Cabinet OKs record ¥5.19 trillion defense budget."

around $1.8 billion estimated for the entire package, Aegis Ashore was considered a cost-effective choice.

There were other benefits to the selection of Aegis Ashore. A significant feature of Lockheed Martin's pitch to Japanese military planners was that the technologies included were based on those already in place in "Aegis At Sea," the nickname for sea-based Aegis Missile Defense similar to those already deployed by the Japanese. The argument was that this made Aegis Ashore inherently more compatible with Japan's existing BMD systems and would leverage past Japanese BMD investments.[226]

The comparatively low price tag and the promise of interoperability of Aegis Ashore were not the only motivating factors. Of particular interest to Japanese policymakers was the possibility for cooperation between American and Japanese industry actors on the project. The Aegis Ashore system would be equipped with SM-3 Block IIA missiles, which Japan and the United States had been collaboratively co-developing since 2017, allowing Japanese industry to participate more actively in equipping the system.[227] Before the deal was finalized there was even discussion that Raytheon and Lockheed Martin would collaborate with Japanese partners on the development of new radar technologies in support of Aegis Ashore. The new radars were envisioned to be variations of models already developed by Raytheon and Lockheed which would include components using gallium nitride, an advanced material made by both Mitsubishi Electric and Fujitsu, that can amplify power more efficiently than conventional semiconductors.[228] Although this collaboration did not come to fruition – Mitsubishi Electric and Fujitsu were the trading partners for Raytheon and Lockheed Martin, respectively, but did not actively contribute to the development of the radar – it demonstrates an initial interest on the part of the Ministry of Defense and Japanese businesses in the possibilities for collaboration represented by Aegis Ashore.

From the beginning, Aegis Ashore faced significant pushback, particularly from domestic audiences. Radar technology was at the center of the controversy from the beginning, in part because it was the first contract to be negotiated but also because of characteristics specific to the technology. Experts warned that the deployment of either radar system under serious consideration could trigger health concerns because they emit strong radio waves. Local opposition centered on any number of fears from the general to the extremely specific. For example, there were public fears that proximity to Aegis Ashore installations would open their towns up to terrorism or a heightened threat of missile attacks, or that the installations would interfere with underground lava plateaus which had improved water quality in the region.[229]

Beyond local controversies, the adoption of Aegis Ashore was controversial at the national level for three reasons. First, Aegis Ashore represented one of the single largest expansions of Japanese ballistic missile defense to date. Japanese BMD up until this point was extensive, but it

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[226] "Advanced Persistent Surveillance Fact Sheet." *Lockheed Martin*, June 2020. https://www.lockheedmartin.com/content/dam/lockheed-martin/rms/documents/aegis/APS_FactSheet_V2.pdf, accessed June 18, 2021.

[227] Tom Karako. "Aegis Intercept Test: Critical Questions." *Missile Threat*, Center for Strategic and International Studies, June 22, 2017, last modified July 6, 2020, https://missilethreat.csis.org/aegis-intercept-test-critical-questions/, accessed June 10, 2021.

[228] Tim Kelly and Nobuhiro Kubo (Reuters). "U.S. and Japanese firms collaborating on new missile defense radar, sources say." *The Japan Times*, May 23, 2017, https://www.japantimes.co.jp/news/2017/05/23/national/politics-diplomacy/u-s-japanese-firms-collaborating-new-missile-defense-radar-sources-say/, accessed June 1, 2017.

[229] Eric Johnston. "Japan's two Aegis Ashore anti-missile candidate sites run into local opposition." *The Japan Times*, December 11, 2018, https://www.japantimes.co.jp/news/2018/12/11/national/japans-two-aegis-ashore-anti-missile-candidate-sites-run-local-opposition/, accessed June 18, 2021.

represented the culmination of many incremental policy decisions. Aegis Ashore was seen by many as a huge leap forward in terms of BMD technology acquisition for Japan. As outlined in Chapter 3, serious discussions of Japanese participation in missile defense and the Patriot Program began in the 1980s. Japan started joint technical research on BMD with the U.S. in 1998, and the Japanese government announced in December of 2003 that it would introduce BMD systems of its own. Additionally, many of the initial BMD protections in place were lent to Japan from the United States, with purchases and procurement occurring later in the process. It was only in 2005 that Japan and the United States announced they would be launching joint technical development on BMD interceptors to be installed on Aegis ships.[230] Overall, therefore, it was relatively rare for Japan to announce such a large project all at once.

Second, and arguably most controversial, although the system had been chosen as a cheaper alternative to THAAD, Aegis Ashore was still extremely expensive. The price per battery was originally estimated at ¥70-80 billion yen, or around $1.5 billion for the two required.[231] Even this amount represented a large increase in the Japanese defense budget, which has historically been capped at 1% of GDP. When contract negotiations began, that number also began to expand. By early 2018 the estimate had grown to $2 billion. When the radar contract with Lockheed Martin was finalized in July of 2018, sources involved in negotiations privately admitted that the systems would cost at least $4 billion, possibly more.[232] "We can't talk about the price right now," one interviewee from Raytheon said regarding the radar contract. "But whatever you're thinking, it's much more."[233] When it was announced, Reuters reported that each SPY-7 radar would cost around ¥130 billion ($1.17 billion) each, nearly the cost of a battery. This number did not include costs such as maintenance and operation.[234]

A final concern surrounding the acquisition of Aegis Ashore had very little to do with Aegis Ashore itself. Instead, it centered on the defense budget proposal which included Aegis Ashore. Along with Aegis Ashore, Japan allocated in the budget proposal ¥2.2 billion (approximately $20 million) to procure the Joint Strike Missile by Norway's Kongsberg Defense & Aerospace AS. These long-range cruise missiles would be the first Japanese-owned missiles mountable on fighter jets. The government denied that the missiles would be used for attacking other countries, claiming instead that they would be used to defend islands or MSDF destroyers equipped with Aegis missile defense systems.[235] Nevertheless, the push for these cruise missiles coupled with LDP politicians' discussion of whether or not Japan should have the ability to strike enemy bases caused both policymakers and the public to express concern that this acquisition would represent a fundamental shift away from "defensive defense."[236]

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[230] Hideaki Kaneda, Kazumasa Kobayashi, Hiroshi Tajima, and Hirofumi Tosaki. "Japan's Missile Defense: Diplomatic and Security Policies in a Changing Strategic Environment." *The Japan Institute of International Affairs*, March 2007.
[231] Junnosuke Kobara. "Japan's plan for 2 superdestroyers to cost more than Aegis Ashore." *Nikkei Asia*. November 25, 2020. https://asia.nikkei.com/Politics/Japan-s-plan-for-2-superdestroyers-to-cost-more-than-Aegis-Ashore, accessed June 19, 2021.
[232] Kubo, "Government to pick Lockheed Martin radar for missile defense system."
[233] R-MR. Interview by Deirdre Martin. Personal Interview. Tokyo, Japan, July 31, 2019.
[234] Reuters Staff. "Japan picks $1.2 billion Lockheed radar for Aegis Ashore batteries." *Reuters*. July 29, 2018, https://www.reuters.com/article/us-northkorea-usa-japan-aegis/japan-picks-1-2-billion-lockheed-radar-for-aegis-ashore-batteries-idUSKBN1KK0AV, accessed June 20, 2021.
[235] Kikuchi, "Japanese Cabinet OKs record ¥5.19 trillion defense budget."
[236] Kyodo. "Japan to expedite study."

5.3 Negotiating purchases: Lockheed and Raytheon

Radar systems in support of Aegis Ashore represented the first major contract deal to be negotiated. Although there was some discussion in the very early stages regarding collaboration between American and Japanese companies on new radar technologies, ultimately it was determined early in the negotiation process that the two frontrunners were Lockheed Martin with their Long-Range Discrimination Radar (LRDR, now designated SPY-7) and Raytheon with their SPY-6 radar. Japanese business participation in the acquisition process was limited to serving as trading companies. This was still an important role in the negotiations, as the Japanese Ministry of Defense is legally prohibited from directly contracting with foreign corporations. American defense contractors instead must work with a Japanese trading company which in turn sells the capability to the Japanese government. Trading companies work at every stage of the acquisition process and there is significant cross-pollination between Japanese trading companies and American defense firms. For example, Mitsubishi Electric was the trading party working with Lockheed Martin on the overarching Aegis Ashore system. However, for the radar system specifically, Lockheed Martin worked with Fujitsu, while Mitsubishi Electric served as a trading partner for Raytheon.

Contract bidding began in April of 2018 with a formal request for proposal (RFP) from the Japanese government soliciting business proposals for the Aegis Ashore radar. An RFP is generally considered to be a wish list of sorts and includes the specific requirements the government is seeking for the system. Notably, while an average RFP for a comparable military technology tends to run a few pages long depending on the complexity of the system, the MOD RFP for the radar technology for Aegis Ashore was around 35 pages. Several interview subjects working at American defense companies indicated that the Japanese side was not particularly certain of what, concretely, they needed from the system.

When asked what accounted for this, several sources indicated that specifics of the bureaucratic system almost certainly had the answer. Most high-level bureaucrats tasked with negotiating large-scale, top-down defense contracts are career bureaucrats who tend to cycle frequently between ministries rather than stay in one position and build expertise. As a result, if a bureaucrat is at the beginning of his or her term in the Ministry of Defense, they might have very little expertise in BMD.[237] In cases where Japanese companies have lobbied for participation in the development cycle, this has not been a significant problem because of significant horizontal ties between businesses and the bureaucracy, especially MITI. Any missing expertise within the bureaucracy was supplemented by Japanese industry, who were extremely familiar with the technologies in question. They were particularly able to cooperate with the bureaucracy to determine what Japan's strategic needs were and how different technologies might fill those needs.

These horizontal ties between Japanese businesses and bureaucracies and the ways that they helped to overcome organizational problems surrounding procurement are one of the reasons Japanese trading companies work with American defense contractors. In addition to their legal roles, trading companies provide access to and influence among policymakers in cases where the decision is made to purchase from abroad. Changes around that time in the bureaucratic structure

[237] This is not always the case; one of my interview subjects, who asked to remain anonymous, was working at JAXA at the time of the interview but had been sent to that position by the Ministry of Defense. However, when it comes to high-level career bureaucrats there are no guarantees regarding their specific subject matter expertise. Additionally, if contract negotiations occur early in an on-loan bureaucrat's post, they are even less likely to be experts on defense technologies.

made these ties are less direct, however. This problem was further exacerbated by changes within the organization of the Japanese government. "Procurement used to be more difficult in terms of negotiating a budget, but the process was also very straightforward," said one source who used to work at a high level in the Japan Ground Self Defense Force Ground Research and Development Command. "It was the Research and Development Command or the equivalent for the different services. Now the ATLA [Acquisition, Technology, and Logistic Agency] exists in the MOD, but things are less clear." This problem has become particularly severe for large-scale programs like BMD. When asked how the process of connecting procurement and Japanese grand strategy worked for Aegis Ashore, he answered, half-joking, "No one knows."[238]

Raytheon's SPY-6 and Lockheed Martin's SPY-7 quickly emerged as the two obvious frontrunners in the negotiations. The two systems had a few key differences which differentiated them from one another. Raytheon's SPY-6 had a legacy of success, as it had originally been produced in support of the U.S. Navy's Aegis Warships in 2013 and had, according to reports, exceeded Navy performance objectives. The Raytheon radar is made up of two-foot square modules that can be snapped together to form an array of any size. Because it is modular, it can be scaled up or down to fit the needs of the system it supports. It could therefore be installed both on land in Aegis Ashore locations or at sea on Aegis destroyers. It also features significant anti-aircraft features.[239] Japan had initially sought to buy the SPY-6 radar when it initially agreed to buy Aegis Ashore, but the United States had at the time expressed reluctance to supply it.[240] The Lockheed Martin SPY-7 was developed for the Pentagon's Missile Defense Agency to defend the U.S. homeland from sites in Alaska and Hawaii. Like the SPY-6, it is modular and scalable, and it has been reported to be extremely sensitive and is particularly optimized to detect ballistic missiles. Lockheed Martin, who serves as the system integrator for Aegis Ashore as a whole, additionally made the case during the pitch process that Aegis Ashore was optimized to work with SPY-7 radar.[241]

The final decision to acquire Lockheed Martin's SPY-7 radar in support of Aegis Ashore was announced on July 29th, 2018. I conducted interviews with American defense contractors at Raytheon's Tokyo headquarters on July 31st, 2018, and at Lockheed Martin Japan on August 2nd, 2018. When asked why they thought Japanese companies had not been seriously considered for indigenous development, especially given Japanese technological capabilities when it came to radar, I received similar answers across the board. First, interview subjects cited both industry and policymaker concern that Japanese industry would not be competitive when it came to development. One source indicated that Japanese defense technologies tend to run a minimum of one generation behind the United States. He also argued that Japanese defense contractors have no real incentive for efficiency.[242] Budget constraints were also cited as a concern for the Aegis Ashore project. While Japanese companies could theoretically produce something comparable given time and resources, a lack of budget and an immediate perceived need for the capability drove outcomes for policymakers.[243]

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[238] M-YN. Interview by Deirdre Martin. Personal Interview. Tokyo, Japan, July 12, 2018.
[239] "U.S. Navy's SPY-6 Family of Radars." *Raytheon Missiles and Defense*, https://www.raytheonmissilesanddefense.com/capabilities/products/spy6-radars, accessed June 20, 2021.
[240] Kelly & Kubo. "Japan to buy advanced U.S. radar for missile defense system."
[241] "SPY-7: The World's Most Powerful and Versatile Radar Keeping You Safe at Home and Abroad." *Lockheed Martin*, https://www.lockheedmartin.com/en-us/products/spy-7.html Accessed June 20, 2021.
[242] R-MR. Interview by Deirdre Martin. Personal Interview. Tokyo, Japan, July 31, 2019.
[243] R-HM. Interview by Deirdre Martin. Personal Interview. Tokyo, Japan, July 31, 2019.

When asked why Japanese companies were seen as less competitive, interview subjects cited the complexities of Aegis Ashore as a system. "Japan's industry isn't as successful at integrating complex defense systems as its American counterparts," argued one interview subject. "There are a lot of different reasons for it – cultural, organizational, political. I think the most convincing argument is that Japanese industry is vertically integrated. They want to be in control of all of the different components. They can work together between main companies and branches, but they're all in the same silo." He argued that American companies, on the other hand, assume that their different systems need interoperability and design their capabilities to work with others. He cited the Patriot system: "Raytheon makes the launchers and the radar, Lockheed Martin makes the missiles, and they all work together. They're designed to slot in and out with one another."[244]

Overall, the decision to purchase the Aegis Ashore radar system from American defense contractors rather than seeking licensed production or indigenous development was the culmination of disinterest in domestic production from both government and business. Government actors sought to be seen as effectively addressing the ongoing North Korean crisis. "Almost everything about Aegis Ashore has been heavily top-down, much more than it used to be," argued an interview subject. "During the North Korean crisis, the Japanese government had to be seen as doing something."[245] Japanese technology was behind American technology, particularly when seeking to integrate large and complex systems like those involved in Aegis Ashore. Japanese government actors could not afford the long timelines necessary for domestic catch-up.

Why not seek production under license? Two clear themes emerged. First, on the government end, Japanese actors faced significant and increasing pressure from the Trump administration to "carry their weight" in the alliance, particularly by buying American military technologies. Second, Japanese businesses did not push for involvement because of a sense that they could not be competitive. They also expressed ongoing concerns about publicly justifying participation in Aegis Ashore, which was politically controversial at the time. The Japanese government selected Aegis Ashore, and by extension the SPY-7 radar, as a technology to purchase from the United States due both to government-side concerns about appearing effective and because of lack of business interest in domestic development.

As of the 2021 fiscal year, Japanese defense spending had risen every year consecutively since 2013. Much of this increase, especially following 2016, has been driven by technology purchases from the United States.[246] While Japan has seen some success in "contributing" to the alliance through co-production, the Trump administration emphasized outright purchase. "Particularly with sensitive technologies," one interview subject explained, "The United States is concerned about information security and is reticent to cooperate."[247] Trump's frustration with what he considered to be an unequal burden on the United States caused him to confide to advisors that he was considering withdrawing from the U.S. Japan alliance, complaining that the alliance does not require Japan to come to the defense of the United States.[248]

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[244] LM-CA. Interview by Deirdre Martin. Personal Interview. Tokyo, Japan, August 2, 2019.
[245] Ibid.
[246] Mari Yamaguchi (The Associated Press). "Purchases of American weapons drive Japan's defense spending hike." *Navy Times*, August 30, 2019, https://www.navytimes.com/news/your-navy/2019/08/30/purchases-of-american-weapons-drive-japans-defense-spending-hike/, accessed June 16, 2021.
[247] A-MS. Interview by Deirdre Martin. Personal Interview. Tokyo, Japan, August 23, 2019.
[248] Reynolds, Isabel & Emi Nobuhiro (Bloomberg). "Abe's plan for U.S. Aegis Ashore missile shield rattles Akita residents." *The Japan Times*, September 10, 2019, https://www.japantimes.co.jp/news/2019/09/10/national/politics-diplomacy/abes-plan-u-s-aegis-ashore-missile-shield-rattles-akita-residents/, accessed June 15, 2021.

The Aegis Ashore radar contract was negotiated in the heat of increased trade friction with America, and many Japanese policymakers saw Aegis Ashore as an obvious concession. Japanese industry could not reasonably be expected to compete with Lockheed Martin and Raytheon in terms of radar to support Aegis Ashore, and so this contract was a good opportunity to invest in the alliance. "Aegis will be a big-ticket purchase," said one Japanese official, "it will be a nice gift for President Trump."[249]

Additionally, businesses did not push for involvement for several reasons. One primary reason is that Japan simply was not able to compete with the SPY-6 and SPY-7 radars produced by American defense contractors. Japanese industry has struggled as weapons systems have become more complex, particularly when it comes to integrating their technologies into large weapons systems. "Japan produces airplane components," one Lockheed Martin interview subject joked, "but they can't get their planes off the ground."[250] To a degree, this appears to be motivated by Japanese industry preference for vertical integration rather than horizontal.

Still, however, there have been many cases in which Japanese industry was in a less competitive position but still lobbied for domestic production. This was the pattern for almost all technologies produced under license in the postwar. What, then, accounts for Japanese industry reticence to be involved in Aegis Ashore, specifically? In this case, justification – and whether Japanese industry involvement would be likely to endear companies to voters – appears to have played an important role. Aegis Ashore, particularly the radar technology, was controversial from the start.

A particular flashpoint was local opposition to the installations. In Akita and Yamaguchi prefectures, the two locations initially earmarked for Aegis installation, local policymakers and military planners faced significant opposition to installation. "There are concerns about radio waves from the Aegis radar and whether cellphone reception and television sets would be affected. And you can't say that there's been a sufficient investigation into the effects of Aegis Ashore on human health," argued one of the leaders of the local opposition in the Mutsumi area of Yamaguchi prefecture. Another indicated concerns that the installation of Aegis Ashore would harm water quality in the area, which he attributed to water being trapped under a lava plateau.[251] A resident of Araya, a town located near the site in Akita prefecture chosen for installation, expressed concerns regarding limitations on flights in the area and how that would affect medical evacuation flights for the aging population in the area. Many surveyed expressed fear that their proximity to the Aegis Ashore installation would make their town a target for missiles and terrorist attacks.

Justification played an important role in the demise of Aegis Ashore. Local criticism only worsened when it came to light that faulty data had led the Ministry of Defense to select the installation locations. While the government struggled to justify Aegis Ashore because of its domestic controversy and high price tag, Japanese businesses also sought to distance themselves from the project. "Japanese businesses are increasingly worried about their image," one interview subject argued, "and they don't want to be seen as producing offensive capabilities."[252] This was a particularly salient point given controversies surrounding the radar itself. While many local concerns focused on the threat that the installations might be attacked or that missiles might fall into the nearby communities, still more worried about radio waves emitted by the radar.

[249] Kelly & Kubo. "Japan to buy advanced U.S. radar."
[250] LM-CA. Interview by Deirdre Martin. Personal Interview. Tokyo, Japan, August 2, 2019.
[251] Johnston. "Japan's two Aegis Ashore anti-missile candidate sites."
[252] M-IT. Interview by Deirdre Martin. Personal Interview. Tokyo, Japan, July 24, 2019.

"Japanese companies seem unmotivated or inactive because they don't think this is their responsibility," argued one retired MOD official, "and their main business is commercial, so reputation is very important. They don't want to be seen as the one driving this kind of acquisition."[253]

5.4 Difficulty Justifying Aegis Ashore

What explains cases in which Japan purchases capabilities outright from the United States rather than seeking domestic production either through indigenous development or through licensed production? In previous chapters, I have described a pattern within the Japanese defense industry in which Japan has been gradually increasing its technological self-reliance over time. What, then, accounts for the decision to purchase radar capabilities for Aegis Ashore from the United States rather than seeking to produce domestically? It is not the case that indigenous industry lacks the technical ability to eventually develop and produce these capabilities. Even within the ballistic missile defense sector, Japanese industry has been involved in technological development. For example, the SM-3 Block IIA missiles earmarked to be used on Aegis Ashore were co-developed by Japan and the United States.[254] It is also not the case that Japan is not capable of producing radar technologies domestically; in 2020, only two years following the Aegis Ashore radar contracts, Japan signed a contract to export an indigenously developed radar to the Philippines.[255]

In this chapter, I have argued that the decision to purchase radar capabilities for Aegis Ashore from Lockheed Martin was a result of a confluence of disinterest by both government and commercial actors in domestic production. The complexity of the systems in question, the relative lack of spin-off benefits given Japanese industry's existing expertise in radar, and the PR cost of participating in Aegis Ashore all led Japanese industry actors not to push for domestic production. On the government side, leaders faced the same difficulties with justification that they did for other ballistic missile programs. These were further exacerbated by additional pressures put on the Japanese government by the Trump administration to purchase American technologies. Concerns about justification and a lack of pressure from domestic business interests meant that the Aegis Ashore contracts represented an ideal offering to the Trump administration. I argue that the result of this disinterest on both the government and business sides was the decision to purchase from allies. Concerns regarding the relationship with the United States were not the only reason for the decision to purchase radar technologies from abroad, however. I argue that business and policymaker concerns regarding justifying acquiring the capabilities to the public led to its ultimate demise.

Aegis Ashore was difficult to justify in the summer of 2018 when the Japanese government selected the SPY-7 radar to support the system. Less than a year later the PR concerns which had caused Japanese industry actors to avoid engagement worsened when it came to light that the

[253] M-HW. Interview by Deirdre Martin. Personal Interview. Tokyo, Japan, July 25, 2021.
[254] Ironically, local-level protest was not enough to stop production of the SM-3 Block IIA missile, even though significant concern surrounding Aegis Ashore centered on whether the rocket booster on the interceptor could put civilian infrastructure or people at risk. Megan Eckstein. "MDA Director Says SM-3 Block IIA Ready for Production, Unrelated to Japan's Decision to Back Out of Aegis Ashore." *United States Naval Institute News*, June 19, 2020, https://news.usni.org/2020/06/19/mda-director-says-sm-3-block-iia-ready-for-production-despite-safety-concerns-from-co-developer-japan, accessed June 20, 2020.
[255] Yeo. "Japan secures first-ever major defense export."

Defense Ministry had made significant errors in the geographical surveys used to select Yamaguchi and Akita prefectures for Aegis Ashore installations. The Ministry of Defense attributed the errors to a misunderstanding of Google Maps data, as angles of elevation had been calculated based on figures measured with a ruler. However, policy planners had not noticed that the scales of maps used for checking height and distance were different, resulting in errors in the angles for all nine candidate locations.[256] Similar problems were found in the Yamaguchi site as well. As a result, the mayor of Abu, one of the communities near the Yamaguchi site, asked the Ministry of Defense to give up on deployment, saying, "The whole town is against it."[257] This criticism was not simple lip service to public concerns but instead reflected tangible political costs for the LDP. In late July, an independent candidate running on her opposition to the installation of Aegis Ashore was able to defeat the LDP candidate in the Upper House election, heightening policymaker fears they would be unable to install the system at all.[258]

In June of 2020, the Defense Ministry abruptly announced that it was suspending the deployment of Aegis Ashore. Two reasons were cited: cost and technical concerns. By 2018 it was clear that the system would cost at least twice as much as initial estimates, with prices of interceptor missiles and other expenses likely to increase the overall price tag even further.[259] Cost alone, however, cannot account for the decision to abandon the system. Upon the cancellation of Aegis Ashore, Japanese Ministry of Defense officials began to discuss acquiring two "superdestroyers" to replace Aegis Ashore. This plan, however, does not address many of the issues Aegis Ashore was meant to resolve, including the heavy burden placed on personnel deployed on ships for long periods, high maintenance costs, and the high cost of fuel to keep Aegis destroyers afloat. The initial pitch for Aegis Ashore had been that these issues cost Japan more in the long run and that maintenance of a long-term location was a more far-sighted solution to missile defense. The adoption of these "superdestroyers" certainly will not resolve this problem and is likely to significantly exacerbate them. Estimates already indicate that this plan will almost certainly cost at least 20-25% more than Aegis Ashore would have.[260] It is certainly the case that Aegis Ashore is an expensive system and indeed would likely have cost more than initially thought. It was, however, selected in the first place because it was the most cost-effective solution to Japanese policymaker concerns with their existing BMD capabilities. The price alone is unlikely to be the answer to why it was canceled.

"Technical concerns," a word used by Prime Minister Suga to refer to local opposition based on fears that SM-3 Block IIA, are more likely to have driven the decision to move away

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[256] The public outcry over this error was exacerbated when, during the briefing with residents on the incident, a Ministry of Defense official was caught dozing during the session. Kyodo. "Akita governor blasts Defense Ministry over missile defense system survey errors." *The Japan Times*, June 11, 2019, https://www.japantimes.co.jp/news/2019/06/11/national/akita-governor-blasts-defense-ministry-missile-defense-system-survey-errors/, accessed June 12, 2019.

[257] Kyodo. "Defense chief apologizes to Yamaguchi governor for faulty Aegis survey." *The Japan Times*, July 3, 2019, https://www.japantimes.co.jp/news/2019/07/03/national/politics-diplomacy/defense-chief-apologizes-yamaguchi-governor-faulty-aegis-survey/, accessed July 3, 2019.

[258] Kyodo. "Independent candidate opposed to Aegis Ashore missile defense system deployment wins seat in Akita." *The Japan Times*, July 22, 2019, https://www.japantimes.co.jp/news/2019/07/22/national/politics-diplomacy/independent-candidate-opposed-aegis-ashore-missile-defense-system-deployment-wins-seat-akita/, accessed June 2, 2021.

[259] Kyodo. "Japan's land-based missile defense plan will cost double the initial quote, Defense Ministry says." *The Japan Times*, July 24, 2018, https://www.japantimes.co.jp/news/2018/07/24/national/politics-diplomacy/japan-sees-cost-land-based-missile-defense-doubling-initial-quote/, accessed June 23, 2021.

[260] Kobara. "Japan's plan for 2 superdestroyers."

from Aegis Ashore. The Ministry of Defense's strategy of supplementing BMD by increasing the number of destroyers is a move that does little to address concerns regarding a large number of personnel deployed for long periods, or the high cost of fuel. It does, however, address the significant local pushback Aegis Ashore received from the local communities near sites earmarked for installation. By relying on sea-based missile defense, the Japanese government avoids this pushback.

Unlike other Japanese capabilities addressed in this manuscript, discussions are still very much ongoing regarding the fate of the Lockheed Martin SPY-7 radar earmarked for Aegis Ashore. As of writing, the contract for the purchase of these capabilities has not been canceled. In fact, the SPY-7 radar may be at the center of the decision to develop "superdestroyers" in the first place. In the initial aftermath of canceling Aegis Ashore Japanese defense officials had indicated that they sought to supplement existing BMD with more Aegis-equipped destroyers. Because the SPY-7 contract was not canceled, a discussion quickly began surrounding how this new radar could be used to support Japanese BMD. Unfortunately, the weight of SPY-7 arrays was likely to make existing destroyers too top-heavy.[261] The solution proposed was "superdestroyers," as defense officials argued that the large size of the vessels would allow them to support the weight of the SPY-7 radar.

In this case, both businesses and the government were ambivalent about domestic production of capabilities. Businesses viewed the production of radar to be associated with Aegis Ashore to be more costly than beneficial. The technological spin-offs expected from participation were minimal due to existing Japanese expertise, and Japanese industry was unlikely to be able to be competitive in selling the technologies to any actors beyond the Japanese government. Japanese government actors were concerned about appearing proactive in dealing with the North Korean threat, as well as appearing to respond to American pressures to purchase defense technologies from U.S. contractors. Both Japanese business and government were concerned with the optics of developing technologies in support of Aegis Ashore particularly given controversies surrounding it domestically. The result was a decision to purchase from abroad. This case demonstrates the important role concerns regarding justification play in decisions surrounding acquisition both for the government and for business.

In the preceding chapters, I have claimed that acquisition decisions in Japan have been the result of balancing of interests between businesses, which seek profit and the opportunity to leverage technological spin-ons and spin-offs, and government, which seeks to address pressing security concerns but tend to be concerned with justifying the capabilities to the public. I have argued that in cases where government and businesses agree regarding whether they are interested in domestic development, outcomes tend to be stable over time. For example, in the case of spy satellites, the government and businesses agreed that domestic development was desirable, and so from the beginning of military-use spy satellite development in Japan domestic industry has taken a leadership role. Similarly, in the case of radar for Aegis Ashore, both businesses and the government agreed that pushing for indigenous development was neither necessary nor desirable. The result was purchasing from abroad.

[261] Expert discussion during this time suggested that this would be a good opportunity for Raytheon to argue in favor of abandoning the SPY-7 in favor of the SPY-6, although this ultimately did not happen. Loren Thompson. "Raytheon Presses Case for Replacing Lockheed Martin Radar In Missile Defense Of Japan." *Forbes*, September 22, 2020, https://www.forbes.com/sites/lorenthompson/2020/09/22/raytheon-presses-case-for-replacing-lockheed-martin-radar-in-missile-defense-of-japan/, accessed September 25, 2020.

In cases where there is initially mismatch between government and business interests, however, acquisition trajectories tend to be more complicated. I have argued that in these cases, particularly when businesses are interested in and lobbying for domestic development but government expresses concern regarding justification, licensed production is often pursued. Producing capabilities under license affords businesses some of the benefits of domestic development, allows them to learn to produce capabilities on their own, but also gives plausible deniability because capabilities are technically not domestically developed. This was the initial strategy for both the Japanese production of Patriot missiles and maritime patrol aircraft. Over time, if there are changes in the perceived justifiability of the capability, as in the case of maritime patrol aircraft, states will change their acquisition strategy and move toward domestically developed technologies. If, as in the case of Patriot missiles, the missiles are still seen as "unjustifiable", the state will continue with licensed production indefinitely.

The cases I have presented up until this point have all taken place in the Japanese context. Japan is an ideal case to examine because the constraints placed on policymakers by Article Nine of the Japanese constitution heighten the effects of politicians' concerns regarding justifiability. One might, at this point, reasonably ask whether this argument is just an argument about Japan, based on the specific constraints facing Japanese businesses and politicians. I argue, however, that while these effects are clearest in Japan, they exist in other states as well. In the final chapter, I make the argument that the claims described in the Japanese case hold in many "middle power" states allied with superpowers who have the technological capacity to produce high-tech security capabilities, but which must make strategic choices regarding what technologies to focus on. In the following chapter, I outline my findings in the South Korean and Taiwanese cases, arguing that a similar balancing of interests occurs in these as well and that in cases where there is an initial mismatch licensed production is often treated as a stopgap. I also discuss the degree to which these findings apply outside of the East Asian context.

6 South Korea, Taiwan, and Beyond

In August of 2013, Japan unveiled the Izumo, its new top-of-the-line helicopter destroyer. Construction had begun in 2011 at IHI, and the first unit cost ¥113.9 billion (approximately $1 billion). By 2017, rumors had begun circulating that the design of the Izumo hinted that it had been produced with more than helicopters in mind. The Izumo was significantly larger than its predecessor, the Hyuuga, and its hangar and elevators had been built to dimensions that could accommodate F-35B and MV-22 Osprey fighter jets. The flight deck had also been constructed to withstand the heat and pressure generated by the F-35's exhaust.[262] Debate within the Diet began in 2018 regarding whether they should be referred to as "defensive aircraft carriers" or "multi-purpose operation mother ship" with the Liberal Democratic Party's junior coalition partner, the Komeito, opposing the idea because "mother ship" evoked the image of "aircraft carrier."[263] In December of 2018, the Japanese Diet approved the latest iteration of the National Defense Program Guidelines (NDPG), which paved the way for the conversion of its two Izumo-class helicopter destroyers, the Izumo and the Kaga, into aircraft carriers.[264] Notable about this decision was the relatively low level of opposition this announcement was met with. This case represents another example of a case in which the ability to justify capabilities was important; in fact, the JSDF and IHI sought to obscure the true purpose of the ship until the Diet would approve it. Only when it was "justifiable" did the NDPG announce the conversion of these "defensive" helicopter carriers to aircraft carriers.

While the decision to convert the Izumo-class helicopter destroyer into an aircraft carrier is interesting and counterintuitive, as Japan is still constrained against acquiring offensive military technologies and aircraft carriers are one of the core foundations of force projection, it is not a standalone case. Japan is not the only state in Northeast Asia to express an interest in indigenously developed aircraft carriers. While many naval theorists have argued that the age of the aircraft carrier is long gone, claiming that force projection is no longer as important in an international system with ICBMs and nuclear weapons, the conversion of the Izumo and the Kaga into aircraft carriers represents just one incident in a trend of Northeast Asian countries seeking this "outdated" technology.[265] In its 2019 defense report titled "Navy Vision 2045," the Republic of Korea Navy

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[262] Tyler Rogoway. "Officials Admit Japan's 'Helicopter Destroyers' Were Also Designed for Jets." *The Drive*. February 27, https://www.thedrive.com/the-war-zone/18855/officials-admit-japans-helicopter-destroyers-were-also-designed-for-jets, accessed 23 June 2021.

[263] 母艦 (*bokan*, mother ship); 航空母艦 (*koukuu bokan*, aircraft carrier). Shinichi Fujiwara. "Japan avoids flak by refusing to call flattop 'aircraft carrier'." *Asahi Shimbun*, December 6, 2018, http://www.asahi.com/ajw/articles/AJ201812060055.html, accessed December 9, 2018.

[264] Japan Ministry of Defense, *National Defense Program Guidelines for FY 2019 and Beyond*, December 18, 2018, p. 21.

[265] See Kil Joo Ban. "Aircraft Carrier Balancing in Northeast Asia and South Korean Carrier Program: Power, Threat, and Function." *Korean journal of defense analysis* 33, no. 1 (2021): 43-65; Sarosh Bana. "Sea power: the rise of the aircraft carrier in the Asia-Pacific." *World Affairs* (2015): 43-50; Richard A. Bitzinger. (2018). The Aircraft Carrier: An Idea That Refuses to Die. (RSIS Commentaries, No. 027). RSIS Commentaries. Singapore: Nanyang Technological University; Felix Chang. "Taking Flight: China, Japan, and South Korea Get Aircraft Carriers." *Foreign Policy Research Institute*, January 14, 2021,

(ROKN) outlined a roadmap for procuring South Korea's first "light" aircraft carrier. Increasingly, however, experts began to speculate that the Korean Navy intended to seek not only a "small" aircraft carrier. These suspicions were seemingly confirmed when Seoul decided to purchase twenty F-35B fighters. These fighter jets are designed in large part to operate from aircraft carriers, leading those watching South Korean procurement to wonder off what ships the Navy intended to fly them.[266] By August of 2020, both the Navy's plans and the design of the aircraft itself had expanded as the government of Korea officially announced its intention to acquire a full-fledged aircraft carrier of its own. First designated LPX II and then re-designated the CVX, the carrier is expected to cost ₩2.3 trillion ($2 billion) to construct and around ₩50 billion ($45 million per year to maintain). The vessel is being developed by Hyundai Heavy Industries and is a larger iteration of the company's Dokdo amphibious assault ship. The ROKN has expressed its desire to have the CVX ready for operations by 2033.[267]

Justification of the technology has also proven extremely important in this case. South Korea's goal of indigenously developing an aircraft carrier has sparked debate and controversy from analysts and political actors alike, both at home and abroad. Senior researchers in Korea have argued that the carrier would be both "overkill and underkill" – far too much firepower to focus on North Korea alone, but not enough to address other security threats in the region like rising China.[268] Domestically, the military has come under criticism for failing to follow due procedures like conducting a feasibility study in advance. While the majority party, the Democratic Party of Korea, has supported the project, the main opposition party, the People Power Party (PPP), has opposed both the development and acquisition of the aircraft carrier. One PPP member, an ex-general named Shin Wok-sik, argued that an indigenous aircraft carrier, if developed, would only serve to respond to requests from the United States.[269] This case – in which businesses, particularly HHI, sought domestic production of profitable technologies and government waited until the technology was considered justifiable to the public – seems to indicate that my central arguments about business-state balancing and the role of justification in determining outcomes apply not only in Japanese cases but to others as well.

I have made the case that the type of acquisitions decisions states make are reflective of balancing between business interests, which focus on profit and the opportunity to leverage technological spin-ons and spin-offs, and government interests, which center around pressing security concerns and justifying the capabilities to the public. I have argued that in cases where government and businesses agree regarding whether they are interested in domestic development, outcomes tend to be stable. In cases where there is a mismatch between government and business interests, however, outcomes are more complicated and more likely to change over time. I have argued that in these cases licensed production is often the result.

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https://www.fpri.org/article/2021/01/taking-flight-china-japan-and-south-korea-get-aircraft-carriers/, accessed June 2, 2021.

[266] Mark Episkopos. "South Korea is Getting 'Light' Aircraft Carriers." *National Interest*, August 8, 2020, https://nationalinterest.org/blog/buzz/south-korea-getting-light-aircraft-carriers-166525, accessed May 24, 2021.

[267] Juho Lee. "South Korea's New CVX Aircraft Carrier Project: An Overview." *Naval News*, May 27, 2021, https://www.navalnews.com/event-news/madex-2021/2021/05/south-koreas-new-cvx-aircraft-carrier-project-an-overview/, accessed May 30, 2021.

[268] Jihoon Yu and Erik French. "Why South Korea's Aircraft Carrier Makes Sense." *The Diplomat*, March 27, 2021, https://thediplomat.com/2021/03/why-south-koreas-aircraft-carrier-makes-sense/, accessed May 15, 2021.

[269] DPK members responded to PPP disagreement, arguing that they opposed the acquisition just for the sake of opposing it. Da-min Jung. "Controversy rises over military's push for light aircraft carrier development." *The Korea Times*, January 4, 2021, https://www.koreatimes.co.kr/www/nation/2021/02/205_301918.html, accessed June 22, 2021.

Japan has been a guiding case of this examination of the role of justification in acquisitions decisions because the constraints faced by policymakers – and their subsequent need to justify capabilities – are very high. The existence of Article Nine and the constellations of formal and informal rules that have resulted from it regarding what Japan can and cannot acquire, develop, and possess have highlighted the importance of justifiability in acquisition. Japan also serves as an ideal case because of the strong position of industry actors within Japan, as well as their significant ties to the Liberal Democratic Party (LDP), the ruling party who have themselves enjoyed relatively stable electoral dominance. Key in this calculus has been the fact that defense and the maintenance of Article Nine have traditionally been the point on which the minority party has chosen to challenge the LDP. However, while these effects are particularly clear in Japan, they exist in other states as well. This chapter examines the acquisition trajectories of South Korea and Taiwan, demonstrating that while the effects of this interest-balancing are not as clear as in the Japanese case, they still are observable. A similar balancing of interests occurs in both cases, and in cases where there is an initial mismatch licensed production is often treated as a stopgap.

South Korea and Taiwan are obvious choices for comparison with Japan for four main reasons. First, and most crucially, all three meet the scope conditions of the argument presented in this volume: all three are advanced industrialized democracies that are allied with a superpower. All three have thriving heavy manufacturing and high-tech sectors and could, theoretically, domestically produce any security capabilities political leaders might deem necessary. On the other hand, all three are protected under the American nuclear umbrella and have strong long-term security alliances with the United States. South Korea and Japan host American bases, and all three regularly rely on American military technology and intelligence sharing. The United States considers all three an active security priority and is likely to support either selling technologies to them or coproduction where appropriate. This means that Japan, Taiwan, and South Korea all face a similar calculus when deciding on acquisitions strategies. While they have strong technological capabilities, they are forced to make strategic decisions regarding what to seek to develop domestically versus purchase from abroad.

Second, these strong technological capabilities are a result of another characteristic shared by the three. Japan, South Korea, and Taiwan are all developmental states, a term used by international political economists to refer to a particular pattern of state-led macroeconomic planning. Critically, one of the key reasons that state-led economic planning works within the developmental state is the existence of robust ties between government and business. The concept of the developmental state was derived from Chalmers Johnson's foundational work on the Japanese Ministry of International Trade and Industry (MITI), and Taiwan and South Korea have been seen as alternative examples.[270] This is important for this project because these close relationships between business and government allow businesses access to policymakers when lobbying for security contracts.

Third, all three states have robust democracies with high levels of political engagement and participation. Policymakers in all three states face the threat of replacement if they make acquisition decisions that are too politically unpopular. The degree to which policymakers are accountable varies over time and between cases, of course. Democracy only solidified in South Korea and Taiwan in the late 1980s, and the Japanese Liberal Democratic Party has enjoyed majority rule with only two short breaks since its inception in 1955. Leaders in all three of these

[270] For more on the developmental state, see Chalmers Johnson. *MITI and the Japanese miracle: the growth of industrial policy, 1925-1975* (Stanford University Press, 1982); Meredith Woo-Cumings, ed. *The Developmental State* (Cornell University Press, 1999); Stephan Haggard. *Developmental states* (Cambridge University Press, 2018).

countries, however, do seem to act as if public matters. The ability of the government to justify acquisition patterns is therefore exceptionally important in all three cases.

Finally, because all three are Northeast Asian military "middle" powers with deep security tied to the United States, the regional structural threats they face are quite similar. Most notably, Japan, South Korea, and Taiwan must all contend with existential threats in the face of a belligerent and nuclear-powered North Korea and a rising China. The threat horizon is not spread equally throughout. Taiwan is more concerned with and likely to face threats from China, while South Korea's relationship with China is more stable. South Korea has the most complicated relationship with North Korea and is most likely to suffer the heaviest casualties in the event of a conflict on the peninsula. That said, conditions across these three actors are generally similar enough to make a compelling case in favor of comparison.

The remainder of this chapter presents these comparative cases, making the argument that similar patterns of business-government negotiation and concern regarding public justifiability of capabilities play out throughout. I begin with South Korean security acquisition patterns. I offer a basic overview of South Korean military technology and capabilities, as well as a historical background offering context for the relationship between industry actors and the government in the development of military technologies. I discuss the constraints facing Korean policymakers, focusing on the historical back and forth between different political actors regarding the South Korean security relationship with the United States. I then discuss two acquisition outcomes: THAAD, which was purchased from the United States, and shipbuilding capabilities, which South Korea has indigenized over time. I argue that in both cases justifiability of the technologies in question has fundamentally shaped acquisition decisions, but that the complicated relationship of the South Korean public with the United States causes the concept of "justifiability" to play out in distinct ways. South Korea has sought cooperation ventures with foreign contractors and governments beyond the United States but is ultimately susceptible to American pressures.

I then turn to Taiwan, describing Taiwanese security capabilities and briefly reviewing the historical and political context in which acquisitions decisions were made. I discuss the critical role played by the relationship with mainland China in acquisitions decisions and outline two interesting acquisition outcomes masquerading as one: the decision to purchase tanks from the United States, and the push for F-16V jets. In both cases I discuss the interaction of business and government interests, claiming that whether domestic development can be justified to the public is a deciding factor in whether Taiwan chooses to develop domestically versus purchasing from the United States. Much of Taiwanese security acquisition seems focused not necessarily on building capabilities to defend against the threat of Chinese attack, but instead on appearing to proactively build their capabilities, expanding their high-tech capabilities, and building a strong relationship with the United States.

I conclude with a broader discussion of the applicability of this argument to cases outside of East Asia. The specific characteristics of these three cases – their status as developmental states and their close relationships with the United States – highlight the importance of close ties between government and businesses in determining acquisitions outcomes. There is a question, however, of whether this argument only applies to these specific cases. I argue that while these trends are most easily observed in East Asian cases, particularly Japan, they may hold in other cases as well.

6.1 Patterns of South Korean Acquisition

The Republic of Korea (ROK) is a relatively young democracy faced with a wide range of serious security threats and challenges. Following the end of the Korean War in late July of 1953, the country experienced a long period of effective autocracy until democratic consolidation began to gain a foothold in the late 1980s.[271] Although the Korean War had left the country economically devastated, then-president Park Chung-Hee announced the Five-Year Economic Development Plan in 1963. This export-oriented industrialization policy placed significant priority on economic growth, self-reliance, and modernization. This development plan hinged on building and supporting export businesses through preferential low-interest bank loans and tax benefits. It, therefore, needed significant capital to work as planned. As a result, Park's administration sought external support, particularly from Japan and the United States. The relationship with Japan was officially normalized with the Korea-Japan treaty ratified in June 1965, with Japanese loans and compensation for damages suffered as one of the benefits of the agreement.[272] The Park administration also kept close ties with the United States and clarified the status of forces agreement outlining the legal situation of U.S. forces stationed on the peninsula in exchange for large amounts of economic aid.

The export businesses supported by the ROK government enjoyed close government ties and actively cooperated with the government in the project of rebuilding the economy. These businesses eventually became the *chaebol*, large industrial conglomerates with many affiliates controlled by an owner with significant and sometimes extra-legal authority.[273] The exceptional success of this first development plan carried over into second, third, and fourth development plans, focusing on the expansion of heavy and chemical industries. This gave the South Korean industry an exceptional capability for steel production and oil refinement. In the late 1980s, the government focused its attention on tightening monetary laws and interest rates, stabilizing prices, and causing a boom in electronics manufacturing. All this growth was contingent on two key points: strong government-business ties and reliance on American financial support. [274]

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[271] This brief overview of postwar South Korean political and economic history relies heavily on Bruce Cumings' seminal work on modern South Korean history. Bruce Cumings. *Korea's place in the sun: A modern history (updated edition)* (WW Norton & Company, 2005).

[272] This financial support was offered in exchange for, rather than in addition to, an official apology from the Japanese government for atrocities committed during the colonial period. This lack of official apology – and the Japanese government's official stance that the significant financial support and reparations paid to the Park administration *were* the official government apology – remains one of the key issues in South Korea-Japan relations to this day.

[273] Chan Sup Chang. "Chaebol: The South Korean Conglomerates." *Business Horizons* 31, no. 2 (1988): 51-57. This structure of conglomerates is an interesting reoccurring feature of developmental states in East Asia. In Japan, a similar phenomenon occurred. In the imperial period, these were *zaibatsu*, the industrial and financial vertically integrated conglomerates who held significant control over the Japanese economy through close government ties. As discussed in several earlier chapters, these *zaibatsu* were dissolved by the Allied Occupation but were succeeded by the remarkably similar *keiretsu*, groups of banks, suppliers, distributors, and manufacturers with close interlocking relationships. Unsurprisingly, this corporate structure thrived in East Asian developmental states given the importance of government direction of companies. See Kozo Yamamura. "Zaibatsu, Prewar and Zaibatsu, Postwar." *The Journal of Asian Studies* 23, no. 4 (1964): 539-554; James R. Lincoln and Masahiro Shimotani. 2009. "Whither the Keiretsu, Japan's Business Networks? How Were They Structured? What Did They Do? Why Are They Gone?." UC Berkeley Working Paper Series, Walter A. Haas School of Business, University of California, Berkeley, https://escholarship.org/content/qt00m7d34g/qt00m7d34g.pdf.

[274] For the two seminal works on South Korea and the politics of the developmental state, see Alice Amsden. *Asia's next giant: South Korea and late industrialization* (Oxford University Press, 1989); Meredith (Jung-en) Woo-Cumings. *Race to the Swift: State and Finance in Korean Industrialization* (Columbia University Press, 1991).

Defense industrialization, as discussed above, was in large part driven by an ambition to increase the ROK's self-reliance and subsequently decrease its reliance on the United States. This desire was driven partially by nationalism but more practically by the U.S. reduction of troops in the 1960s even in the face of a significant escalation of tensions with North Korea.[275] The ROK government from the beginning took a strong directorial hand in the development of this national defense industry, starting with the establishment of the Agency for Defense Development in 1971. In 1974 the government offered even more support when the National Assembly enacted the Special Law on the Promotion of the Defense Industry, which granted the defense sector numerous special legal privileges, notably tax and tariff reductions.[276] Unlike in Japan, where business interest drove production in many cases, industries selected by the government as strategically important were required to engage in parallel production of military and commercial products.[277]

Early defense production in South Korea was dependent on technological assistance provided by the United States, with licensed production common throughout the 1970s. Over time South Korean manufacturers began the process of reverse-engineering U.S. equipment, as well as seeking joint, rather than licensed, production. In practice, this made the ROK's acquisition patterns extremely reliant on support from the U.S. When the United States began to prohibit countries who were recipients of technological transfers from exporting U.S. military equipment to third parties, it significantly hampered the export potential of the ROK's defense industry. Until the end of the 1980s South Korean production remained limited to assembling pre-manufactured equipment, coproduction, and licensed production. Following democratic consolidation, in the early 1990s the South Korean government began to turn its focus to indigenization efforts.[278]

In 2005, encouraged by the Roh Moo-hyun administration, the ROK Ministry of National Defense announced the Defense Reform 2020 plan. This plan, which has been significantly revised several times since its initial introduction, seeks to overhaul the ROK's armed forces by reducing their size and instead relying on increasingly state-of-the-art weapons. A key objective of this push has been reducing dependence on the United States, as the challenge of successfully transitioning operational control (OPCON) in the event of a conflict on the Korean Peninsula has troubled leaders since the 1990s.[279] Through these efforts, the ROK has succeeded in successfully indigenizing most of its domestic defense demand. South Korean defense industry has shown particular progress in shipbuilding, armored vehicles, and precision-guided munitions. However, the ROK has lagged in some key technologies, including engines, thermal imaging, and flight control systems, and remains dependent on foreign suppliers for those technologies. For example, South Korea has produced the KDX-III, one of the world's most advanced naval destroyers, but most of the advanced technologies employed by the KDX-III, like its Aegis combat system, are

[275] Chung-in Moon and Jin-Young Lee. "The revolution in military affairs and the defence industry in South Korea." *Security Challenges* 4, no. 4 (2008). p. 117.
[276] Ibid. p. 120.
[277] Chung-in Moon and Jae-Ok Paek. "Defense Innovation and Industrialization in South Korea." *SITC Policy Briefs* 2010, no. Policy Brief 14 (2010). p. 4.
[278] Kaan Korkmaz and John Rydqvist. *The Republic of Korea: A Defence and Security Primer* (Stockholm: Swedish Defense Research Agency, April 2012). pp. 72-73.
[279] In 1994 Presidents Bill Clinton and Kim Young-sam returned peacetime OPCON to South Korea. Over a decade later, Presidents Roh Moon-Hyun and George W. Bush agreed to aim for completion of wartime control by April 2012. This deadline has been pushed back several times since, with the most recent being the Moon administration seeking to reach the criteria for transfer of wartime control by 2022. Ibid. pp. 12-13; Johannes Nordin. "Taking Back Control: South Korea and the Politics of OPCON Transfer." *Institute for Security and Development Policy*, January (2020).

developed abroad.[280] South Korea has sought to overcome these technological weaknesses while pursuing further independence from the United States by diversifying its sources, acquiring alternative technologies from other foreign countries.

While historically South Korean defense acquisition was driven by licensed production and technological transfers from the United States, a strong state-led program in support of growing indigenization of defense technologies has led to an increasingly self-reliant military. Acquisition decisions have often been led by the government rather than by business interest, especially during the period of military rule from the 1960s through the 1980s. However, after democratic consolidation in the late 1980s Korean big businesses, particularly *chaebols*, played an increasingly important role in defense production. Democratic consolidation has had another effect, however, as it has led to a rise in the importance of justifiability in determining acquisition trajectories. In the following two subsections I offer brief examinations of two technologies, THAAD and shipbuilding, and argue that in both cases justification and the interaction of business and government interests shaped outcomes.

6.1.1 South Korea and THAAD

Terminal High Altitude Area Defense (THAAD) is an American-developed anti-ballistic missile defense system. It is designed to defend against short, medium, and intermediate-range ballistic missiles. The THAAD interceptor does not carry a warhead. Instead, it destroys its target with the kinetic force of its impact. This in combination with its high-altitude intercept is designed to decrease the likelihood of exploding conventional or nuclear warhead-tipped ballistic missiles, mitigating the effects of weapons of mass destruction before reaching the ground.[281] THAAD is a useful supplement to Patriot missiles, as it can cover far wider areas than PAC-3. A THAAD battery consists of four main components: a launcher, which is truck-mounted and highly mobile, eight interceptors per launcher, a radar array, and a fire control component for communications and data management.[282] Lockheed Martin was awarded a $689 million contract to develop THAAD in 1992, with Raytheon selected as a sub-contractor to develop the ground-based radar necessary. The THAAD program entered manufacturing development in the 2000s, with the first battery unit activated in May of 2008.

By the early 2010s relations with North Korea, which had previously stabilized somewhat in the 1990s and 2000s because of the Six-Party Talks, had significantly broken down. On December 12, 2012, North Korea launched a satellite, designated the Unha-3, into orbit. In response, The United Nations Security Council passed Resolution 2087 expanding existing sanctions. They argued that the December 12th satellite launch had used technology applicable to ballistic missiles, violating existing agreements. The North Korean National Defense commission announced its intention to continue rocket launches and to conduct another nuclear test. True to their promises, in mid-February the DPRK conducted another nuclear test.

In late July of 2013, South Korea's Ministry of Defense submitted a budget request to Parliament asking for ₩214.5 trillion ($192.6 billion) for fiscal years 2014-2018. The proposal focused on strengthening South Korean missile defense, requesting a total of $26.4 billion for

[280] Korkmaz and Rydqvist, *The Republic of Korea*. p. 94.
[281] Lockheed Martin, "Terminal High Altitude Area Defense (THAAD)." https://www.lockheedmartin.com/en-us/products/thaad.html accessed 30 June 2021.
[282] Missile Defense Agency. "Terminal High Altitude Area Defense (THAAD)." *U.S. Department of Defense*. Last updated April 8, 2021, https://www.mda.mil/system/thaad.html, accessed June 28, 2021.

related capabilities.[283] This decision was motivated by several factors, the most recent of which was North Korea's rising belligerence. There were other reasons, however. Analysts cited growing South Korean concern that their current missile defense systems were not sufficient to reliably intercept attacks from the DPRK. North Korea was not the only point of concern. Notably, Seoul was actively seeking to delay the transfer of wartime OPCON which was scheduled at the time for 2015.

Where South Korea would acquire these strengthened capabilities was, however, still very much under discussion. The United States was very interested in the expansion of its deployment of BMD assets and associated sensors in East Asia, as it had successfully cooperated with Japan on BMD since the 1990s. In the 2010 Ballistic Missile Defense Review Report (BMDR) the U.S. Department of Defense articulated a new "phased adaptive approach" in East Asia which sought to pursue the deployment of a regional BMD architecture designed to deal with future, longer-range ballistic missile threats.[284] South Korean defense planners knew, therefore, that their American alliance partners were enthusiastic about selling THAAD to them.

Initially, however, South Korean defense planners were unenthusiastic about purchasing THAAD. Instead, they had since 2006 been working to develop a semi-indigenous missile defense system, the Korean Air and Missile Defense (KAMD) system. The KAMD system is a combination of a variety of components sourced from a range of contractors, including the indigenously developed KDX-III Class Aegis Destroyers, Patriot and SM-2 missiles from the United States, secondhand PAC-2 missiles from Germany, and Green Pine land-based radar systems from Israel.[285] Seoul had also sought to import the Iron Dome from Israel, although they were ultimately unsuccessful at the time.[286] Crucially, the South Korean military sought to ensure that the system itself would be indigenized, with Korean companies in the role of the system integrator. The control tower of the system, the Air and Missile Defense Cell (AMD-Cell) had been planned to deploy by the end of 2012, but some failures during the testing phases delayed its launch.[287] Korean officials at the time claimed that the KAMD system could be integrated into American BMD systems, but practitioners behind the scenes expressed uncertainty.

In October of 2013, the South Korean military formally sought detailed information on THAAD from the Pentagon, causing some to wonder whether the ROK might be interested in purchasing THAAD after all.[288] A high-ranking South Korean Defense Ministry official was quick to clarify, however, that this request had been motivated by a desire to research long-range surface-to-air missiles (L-SAM). The official reported that South Korea fully intended to develop an L-SAM system with domestic technology and that the Defense Ministry had no plans to procure THAAD.[289] Reports emerged, however, that the Pentagon was surveying locations in South Korea

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[283] Zachary Keck. "South Korea Goes All In On Missile Defense." *The Diplomat*, July 26, 2013, https://thediplomat.com/2013/07/south-korea-goes-all-in-on-missile-defense/, accessed June 24, 2021.
[284] Ian E. Rinehart, Steven A. Hildreth, Susan V. Lawrence. "Ballistic Missile Defense in the Asia-Pacific Region: Cooperation and Opposition." *Congressional Research Service*, April 3, 2015.
[285] Keck, "South Korea Goes All In On Missile Defense."
[286] Yossi Melman. "South Korea In Advanced Negotiations For Iron Dome Purchase." *The Tower*, June 6, 2013, http://www.thetower.org/south-korea-in-advanced-negotiations-for-iron-dome-purchase/, June 10, 2021.
[287] Eun-jung Kim. "S. Korea to deploy indigenous missile defense system in July." *Yonhap News Agency*, April 10, 2013, https://en.yna.co.kr/view/AEN20130410010900315, accessed June 2, 2021.
[288] Min-sik Yoon. "S. Korea requests Pentagon's information on THAAD missile defense system: source." *The Korea Herald*, October 18, 2013, http://www.koreaherald.com/view.php?ud=20131018000139, accessed June 14, 2021.
[289] "S. Korea Requested Information on THAAD to Develop L-SAM." *KBS World*, June 5, 2014, http://world.kbs.co.kr/service/news_view.htm?lang=e&Seq_Code=103072, accessed June 24, 2021.

for THAAD deployment, and questions were raised regarding if THAAD were to be deployed in the region which actors would control it, and which would foot the bill.

In 2014 and 2015 South Korean political leadership continued its policy of "strategic ambiguity" regarding missile defense, resisting both the deployment of more interceptors and incorporating KAMD into the U.S. allied network. South Korean leaders continued to stress the importance of missile defense while not publicly committing to a stance on whether THAAD was being considered. Analysts considered this an effort to postpone both international and domestic discussions of the implications of THAAD deployment. This did not have the desired effect; by early 2015 South Korean leadership faced significant criticism from the Chinese government regarding even the possibility of THAAD being procured or deployed on the Korean peninsula.

In February 2015, the Chinese Minister of Defense, Chang Wanquan, expressed his opposition to the system in a meeting with his South Korean counterpart. This formal complaint was based on the concern that the THAAD radar could be configured to increase its coverage over Chinese territory, which the Chinese Defense Ministry considers a form of surveillance. During the conversation, South Korean Defense Minister Han Min-koo reaffirmed that Seoul's position is that Washington had not decided on deployment or requested a decision from Seoul and that no discussions on the topic were taking place. This statement ran contrary to statements from U.S. Deputy Defense Secretary Robert Work, who stated in 2014 that the United States was "working with the South to make a decision on the deployment."[290] This did not appear to appease the concerns of Chinese officials, as in March a visiting assistant foreign minister repeated his concern regarding THAAD and implied that South Korea should seriously consider Chinese opposition to the technology. The ROK Defense Ministry expressed its discomfort over China's repeated opposition, arguing that this was a question of national sovereignty even as it continued to deny any plans to deploy the system.[291]

Once again, it appears to have been the shock of a North Korean test that spurred the South Korean government into action. In January of 2016, the DPRK conducted its fourth nuclear test. One month later, official discussions regarding the deployment of THAAD began between the ROK and the U.S., with the decision to deploy the system made public by the Park Geun-hye administration on July 7, 2016.[292] The initial agreement regarding financial burden-sharing was that under the Status of Forces agreement the South Korean government would be responsible for providing the land and relevant facilities necessary to host THAAD, while the U.S. would fund the deployment of the THAAD battery. There was some concern in April 2017 that South Korea would be forced to purchase the capability outright or at least pay for its deployment when then-President Trump argued that the ROK should bear the costs. This was later retracted, however, and the United States agreed once again to bear the costs of deployment.[293]

It is only because the ROK does not bear the costs of deployment that these capabilities have been justifiable at all, as South Korean policymakers have faced significant criticism for the deployment of THAAD. A week after the deployment of THAAD was announced significant

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[290] Myo-ja Ser. "China's defense chief raises THAAD." *Korea JoongAng Daily*, February 4, 2015, https://koreajoongangdaily.joins.com/2015/02/04/politics/Chinas-defense-chief-raises-Thaad/3000556.html, accessed June 30, 2021.

[291] Sang-ho Song. "Seoul fires back at China's opposition to THAAD." *The Korea Herald*, March 17, 2015, http://www.koreaherald.com/view.php?ud=20150317001093, accessed 30 June 2021.

[292] "U.S. and South Korea agree THAAD missile defence deployment." *BBC News*, July 8, 2016, https://www.bbc.com/news/world-asia-36742751, accessed June 25, 2021.

[293] "THAAD on the Korean Peninsula." *Institute for Security of Development Policy*. October 2017. https://isdp.eu/publication/korea-thaad/, accessed June 13, 2021.

protest erupted in Seongju county, one of the locations slated for THAAD deployment. Residents argued that the deployment would have significant health costs and could ruin their local economy, and local leaders cut their fingers and wrote "We oppose THAAD with our lives!" in blood.[294] This dramatic protest was interpreted by many policymakers as a bad omen, as there is an established pattern of local villages joining forces with political activists to initiate long and sometimes violent protests against new military installations.[295]

Politicians were correct to be concerned, as protest did not stop in Seongju. A protest camp was formed. Thousands of South Koreans traveled to the county to voice their opposition to the system, and Buddhist monks set up a shrine and held vigil next to an access road to the golf course where the THAAD installation was being set up.[296] In April of 2018 thousands of South Korean riot police were deployed to disperse protestors who tried to keep supplies from reaching the installation. The residents had been blocking the road to the site since mid-2017, forcing the U.S. to use helicopters to shuttle in supplies.[297]

Outside of the immediate installation areas, public opinion on THAAD was mixed. A Gallup Korea poll conducted in July 2016 indicated that 50% of respondents were in favor of the installation while 32% were opposed. Some of the respondents opposed cited a reluctance to be increasingly dependent on the U.S. military. When President Park was impeached for an unrelated corruption scandal THAAD became a central issue in the presidential elections. The eventual winner, Moon Jae-in of the Democratic Party, campaigned to halt THAAD deployment. Once in office, however, he retracted this promise, as following a sixth powerful North Korean nuclear test he declared THAAD a national necessity. In August of 2017, a Gallup poll showed 72% support for deployment. On September 6, 2017, the final components of the THAAD battery arrived in Seongju.[298]

What explains the decision to rely on the American deployment of THAAD? Korean policymakers initially sought indigenous development of an ABM system capable of addressing North Korean threats, but ultimately were forced to change course and to acquire THAAD through cooperative deployment with the United States. This decision represents the constraints under which a government concerned with national security may find itself, as well as the importance of justifiability in determining outcomes. Initially, the South Korean government sought indigenous development as it was seen as both technically possible and preferable to further reliance on the United States. The South Korean public is not, as in the Japanese case, particularly against the deployment of BMD technology. It does, however, tend to prefer decreased reliance on the United States. Indigenous development, even though it presented a longer timeline, was therefore preferable to South Korean policymakers. However, as the immediate need for these capabilities became apparent, public distaste for reliance on the U.S. was outweighed by the threat posed by North Korean missiles. Ultimately the decision to deploy was justifiable even to the anti-THAAD President Moon.

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[294] This form of protest has a long history in South Korea.
[295] Choe Sang-Hun. "South Korean Villagers Protest Plans for U.S. Missile Defense System." *The New York Times*, July 13, 2016, https://www.nytimes.com/2016/07/14/world/asia/south-korea-thaad-us.html, accessed June 16, 2021.
[296] Lauren Frayer. "Korean Village's Message to THAAD Missile Defense System: 'Go Away.'" *NPR*, May 4, 2017, https://www.npr.org/sections/parallels/2017/05/04/526852668/korean-villages-message-to-thaad-missile-defense-system-go-away, accessed June 14, 2021.
[297] Reuters Staff. "South Korean protestors denounce U.S. anti-missile system ahead of North-South summit." *Reuters*, April 23, 2018, https://www.reuters.com/article/us-northkorea-missiles-thaad/south-korean-protesters-denounce-u-s-anti-missile-system-ahead-of-north-south-summit-idUSKBN1HU101, accessed April 5, 2021.
[298] THAAD on the Korean Peninsula." *Institute for Security of Development Policy*.

What, then, was the role of business in this decision? Defense procurement has historically been driven primarily by government directives rather than by businesses, so unsurprisingly immediate government need for the capability outweighed business interests. In the case of THAAD, however, businesses involved had few reasons to lobby for indigenous development. While South Korean businesses are involved in the development of medium and long-range missiles, the majority of the ROK's cutting-edge mid-to-long-range ballistic missiles have been developed by the government, with relatively few produced commercially. This is in large part because with South Korea joined the Missile Technology Control Regime (MTCR) in January of 2021 it agreed to U.S. restrictions on range and payload possible for missiles that can be exported.[299] As of May 2021, these restrictions on South Korea have been lifted, prompting many to wonder whether South Korean businesses are likely to exert more pressure for domestic production in the future.[300]

THAAD is a case in which the initial South Korean push for indigenous development of an ABM system was superseded by immediate and pressing security concerns. In the end, the result was not even the purchase of THAAD but reliance on U.S. capabilities. This change was the result of a change in what was considered necessary and justifiable. In the early stages of the procurement process South Korean government officials were guided by public sentiment in favor of less reliance on the United States, but when an immediate security threat occurred the "justifiable" option was instead that same reliance. This is most clearly demonstrated in the violent South Korean protests against installation in 2018. At the time relations with North Korea had normalized somewhat and a peace treaty appeared on the horizon. "A peace treaty is being discussed," said the THAAD residents' committee said in a statement, "There is no more North Korea as an excuse. We can neither understand nor accept construction plans to operate the THAAD."[301] This attitude stands in stark contrast with the 72% support for deployment in the wake of a North Korean nuclear test.

In the THAAD case, justification required government actors to take decisive action, and businesses did not have a significant vested interest in development. This is a somewhat unusual case, however. Much more frequently South Korean acquisition has followed a pattern of initial purchase or production under license leading to reverse engineering and eventual indigenization. The ROK's push for indigenous shipbuilding capabilities, outlined in the following section, is an example of this pattern in action.

6.1.2 South Korea and Indigenizing Shipbuilding

In the opening of this chapter, I briefly discussed the ROK Navy's push to develop its first indigenous light aircraft carrier, the CVX. I also briefly discussed the existence of the KDX-III, one of the world's most advanced naval destroyers. Both technologies represent the culmination of a long-term pattern of military acquisition in which initial purchase or production under license allows South Korean companies to reverse engineer technologies and begin to manufacture indigenous versions. Naval shipbuilding has been the clearest case of this pattern in action, as

[299] Julia Masterson. "South Korea Tests New Missile." *Arms Control Today*, June 2020, https://www.armscontrol.org/act/2020-06/news/south-korea-tests-new-missile, accessed June 12, 2021.
[300] Brian Kim. "U.S. lifts missile restrictions on South Korea, ending range and warhead limits." *Defense News*, May 25, 2021, https://www.defensenews.com/global/asia-pacific/2021/05/25/us-lifts-missile-restrictions-on-south-korea-ending-range-and-warhead-limits/, accessed May 26, 2021.
[301] Reuters Staff. "South Korean protestors denounce U.S. anti-missile system."

initial production under license allowed South Korean conglomerates to build expertise and eventually produce domestic models. This strategy was deeply tied in with the growth of the commercial South Korean shipbuilding market.

The South Korean government has identified the 1958 Act on the Encouragement of Shipbuilding as the origin of South Korea's shipbuilding industrial policy. This act did not have any concrete policy prescriptions or lead to any significant achievements at the time due to budget shortages, but it did have the effect of causing shipbuilding to be featured regularly in Korea's economic planning.[302]In the 1970s the South Korean government moved into heavy industries including chemicals, steel, and shipbuilding. These industries were heavily favored by government policies due to their strategic importance, as well as their benefits in moving up the value-added chain toward increasingly sophisticated products. To build up its domestic research into these technologies the government established a government research institute into shipbuilding. Led by Hyundai Heavy Industries, South Korean shipbuilding overtook Japan and dominated the global industry for decades.[303] Overall, the shipbuilding industry represents around a 10% share of Korean exports and accounts for around 6.5% of South Korea's GDP.[304] From the years 2007 to 2014 Korean shipbuilders accounted for more than 30% of the global market, and Korea's average vessel value is twice that of the global average.[305]

In the early years of the alliance with the United States, the South Korean Navy was furnished exclusively with hand-me-down World War 2-era ships purchased from the Americans. However, when the ROK government selected the domestic shipbuilding industry as critical to national security and growth, the naval shipbuilding industry also began to expand. It was South Korean government policy in the 1970s to require companies benefiting from selection to manufacture both commercial and military-use technologies. To this end, Korea built its first successful naval vessels under U.S. supervision in 1972. These were followed by four patrol ships in 1974 produced jointly with the United States, then an additional twelve in the period from 1979-1982.[306]

From this initial pattern of purchase and then joint production, South Korea began to diversify the sources from which it sought to acquire and then reverse-engineer technologies. Over time these capabilities, stitched together from various sources, were comprised of enough Korean-manufactured technologies as to be considered "indigenous." While the Korean military relied on ships purchased from the Americans up until the 1990s, by the 2000s the Korean Navy was furnished almost entirely with domestically developed and manufactured technologies, with only its aircraft provided by the United States.

As an example, South Korea began seeking to develop its own corvettes, a type of small warship, in the early 1980s. Of the four initially commissioned on December 21, 1983, all were

[302] Some historical scholars have argued that the modern Korean shipbuilding industry began in the 1910s when the Japanese built shipyards and ports. This 1958 date is the beginning of modern South Korean shipbuilding policy. Council Working Party on Shipbuilding (WP6). "Peer Review of the Korean Shipbuilding Industry and Related Government Policies," *OECD*, November 25, 2014.

[303] Jaewon Kim. "South Korean shipbuilders enjoy jump in new orders." *Nikkei Asia*, March 31, 2021, https://asia.nikkei.com/Business/Transportation/South-Korean-shipbuilders-enjoy-jump-in-new-orders, accessed June 1, 2021.

[304] Richard A. Bitzinger. "S. Korean naval shipbuilding: full speed ahead." *Asia Times*, July 1, 2019, https://asiatimes.com/2019/07/s-korean-naval-shipbuilding-full-speed-ahead/, accessed June 16, 2021.

[305] Council Working Party on Shipbuilding (WP6). "Peer Review of the Korean Shipbuilding Industry." p. 2.

[306] Janne E. Nolan. *Military Industry in Taiwan and South Korea* (Springer, 1986). p. 75.

built by different Korean companies.[307] The bodies were built domestically using experience and expertise acquired from the coproduction of other, smaller ships. Internally they were equipped with a Dutch weapon-control system, U.S.-Italian gas turbines, and (West) German diesel engines.[308] This is a clear demonstration of two major themes of South Korean shipbuilding: first, the government sought to diversify both technologies, to avoid relying too much on U.S. support, and domestic manufacturers, to ensure that all companies in question benefited from the spin-off and spin-on technologies achievable through the development process. Of the corvettes currently in service in the South Korean Navy, all are domestically produced.

The strength of the South Korean shipbuilding industry has translated into arms sales, as well. South Korean overseas arms sales increased from $253 million in 2006 to $3.54 billion in 2015. The naval shipbuilding sector has had significant success in exports, as well, successfully selling submarines to Indonesia, frigates to the Philippines, and landing platform docks to Indonesia, the Philippines, and Peru.[309] South Korean naval vessels represent the only advanced weapons in South Korea's arsenal with Korean-designed systems.[310]

What accounts for the South Korean decision in the 1970s to gradually turn from licensed development to first diversification of licensed production and then eventually indigenization of capabilities? I argue that this case represents a confluence of interests in which the South Korean government directed domestic businesses to focus explicitly both on commercial and defense applications of shipbuilding technologies. The South Korean government had technonational and strategic reasons for making this decision. While businesses had significantly less structural power than in the Japanese case, they were actively invested and interested in the domestic development of naval ships given their existing expertise and the possibility of technological spin-offs. Overall, justification – what shipbuilding means to South Korea, and how it is perceived by the public – has played an important role in determining outcomes.

On the government side, there are technonational, alliance-based, and strategic reasons for the turn to the indigenization of naval shipbuilding. Technonationally, manufacturing ships was a natural progression of South Korean development, particularly as government policy highlighted the importance of steel, heavy manufacturing, and chemicals. It is not a coincidence that Japan also sought shipbuilding capacity – shipbuilding is a growth industry important for achieving ever-increasing value added to climb the export chain. The South Korean government, therefore, had obvious economic and technonational motivations in encouraging the domestic production of naval ships.

In terms of the alliance, the manufacture of naval vessels provides South Korea with a degree of independence from the United States. It also provides Korean leaders with a bargaining chip to argue that they actively contribute to and participate in the alliance. Much of South Korea's partnership strategy with the United States centers on seeking to encourage partnership between Korean and American defense firms in which collaborative development leads to progressively more equal status. The argument is that by distancing themselves from their dependence on the United States, they will make a more equal and healthy security partnership.[311]

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[307] The *Donghae* was manufactured by the Korea Shipbuilding Corporation, the *Suwon* by Korea Tacoma, the *Gangneung* by Hyundai Heavy Industries, and the *Anyang* by Daewoo Heavy Industries.
[308] Nolan. *Military Industry*. p. 75.
[309] Bitzinger. "S. Korean naval shipbuilding."
[310] U.S. Congress, Office of Technology Assessment, Global Arms Trade, OTA-ISC-460 (Washington, DC: U.S. Government Printing Office, June 1991). p. 136.
[311] Ibid. pp. 133-134.

Strategically, the expansion of naval capabilities makes sense for Korean government planners. In the 1970s and 1980s particularly there was significant concern regarding North Korean insurgent operations on the South Korean coast. This led to the early years of the South Korean naval shipbuilding industry being concentrated on producing high-speed patrol boats for guarding shallow inshore waters. As ballistic missiles have become an increasing threat, South Korean manufacturing has focused on the production of submarines and destroyers, emphasizing the importance of a mobile and sea-based alternative to land-based anti-ballistic programs.

South Korean businesses had significantly less control over the shape of acquisition, especially in the early years of the shipbuilding industry when the ROK was still largely authoritarian. South Korean businesses also did not have to lobby particularly strongly to gain these contracts, which the government had already promised to them. Still, the desire of business actors to participate in development drove these outcomes. As of summer 2021, The commercial shipbuilding industry in South Korea is the largest in the world. Naval shipbuilding contracts have provided these companies with huge profit margins, and government support of naval contracts has allowed them ever-increasing access to technological spin-offs and spin-ons.

Most importantly, justification of capabilities has been crucial in the decision to switch from purchase and then development under license. The growth of South Korea's shipbuilding industry in the postwar has been a source of great national pride. The success of the commercial industry has been mirrored in the 2000s and onward by increasing success in military sales. Perhaps most importantly, ships serve as important signifiers of national prestige. It is almost certainly not a coincidence that South Korea has sought indigenous aircraft carrier capabilities very soon after the Japanese and Chinese carrier programs were announced.[312]

Naval shipbuilding is imminently justifiable to the South Korean public. It is an industry in which South Korean manufacturers excel. It has clear strategic purposes, and it also appeals to public nationalist sentiments regarding prestige and development. Building naval ships also allows South Korean leaders to balance variable public opinions regarding the United States and North Korea. A strong navy provides a solid defense against North Korea but can be framed in terms of BMD and defensive policy when necessary. Strong naval capabilities additionally allow the South Korean government to simultaneously cultivate a more equal security relationship with the United States while also decreasing overall technological reliance on their ally. For these reasons – the convergence of business and government interests, as well as with the ease with which government actors were able to justify domestic development to the public – the ROK pursued indigenization of naval shipbuilding capabilities as soon as technically possible.

6.1.3 Justifying South Korean Military Acquisition

In general, South Korean military acquisition has tended in many cases to follow a predictable pattern. Starting in the 1960s and the 1970s with export-led growth, the South Korean government in cooperation with South Korean industry actors began a process of indigenization of military technologies. This generally began with the purchase of old equipment from the United States, although wherever possible businesses and government officials sought co-production or licensed production. This allowed South Korean companies to reverse engineer technologies before ultimately producing them indigenously. Additionally, South Korea would often seek out not only American technologies but instead capabilities from a wide range of sources to diversify

[312] Farley, Robert. "Why Did South Korea Decide to Build Aircraft Carriers?" *The Diplomat*, August 18, 2020, https://thediplomat.com/2020/08/why-did-south-korea-decide-to-build-aircraft-carriers/, accessed August 20, 2020.

their military technologies and decrease their reliance on the United States. This is the pattern South Korea pursued when procuring naval vessels, for example. What was once a navy composed almost entirely of World War Two-era ships purchased from the United States is now an almost entirely indigenous maritime fleet, including one of the most advanced destroyers in the world. Over time South Korea has sought to diversify more and more of its military capabilities, including not only ships but submarines, tanks, and even medium-to-long-range missiles.

While this was the pattern South Korea often pursued, however, it was not always successful in doing so. There are many capabilities for which South Korea relies on U.S. technologies, purchases from the United States, or co-produces with the U.S. The South Korean Navy, for example, relies on fighter jets purchased from the United States. In 2020 the ROK Defense Project Production Committee made plans to acquire an undisclosed number of airborne early warning and control aircraft, as well as more signals intelligence (SIGINT) or SIGINT gathering aircraft. More than $2 billion was set aside for these acquisitions.[313]

What, then, determines acquisition outcomes in South Korea? As in the Japanese case, I argue that the interaction between business and government interests often determines outcomes. When neither business nor government seeks domestic production, capabilities are likely to be purchased. When both seek indigenization, domestic production is likely. When there is a disagreement between business and government interests, the result is often production under license with eventual indigenization likely when and if this disagreement is resolved. The source of this disparity in business and government interests is often the question of justifiability: both government and business actors are concerned with public perception of domestic production and are only likely to pursue capabilities that they consider to be "justifiable" to the public.

Two key differences differentiate the South Korean case from the Japanese. First, there is a subtle but important difference in the relative power balance between business and government in the ROK Japanese businesses represent an important financial and political base for both the Japanese bureaucracy and the Liberal Democratic Party. The result has been significant and active political lobbying from Japanese businesses in favor of more domestic production of security technologies. As one interview subject argued, "Mitsubishi teaches the government how to defend Japan."[314] In the South Korean case, the government has taken a much more active role in guiding the industrial policy of defense procurement. There are several reasons for this. First, until the late 1980s South Korea was not democratic and therefore had a more authoritarian leadership approach. Second, by the time the South Korean government began attempting to indigenize its military technology sector it had already observed the example of Japan, and it was arguably clearer on what sectors industrial policy needed to focus on to enjoy military spin-offs and ons. Third, and related to the second major difference between Japanese and South Korean procurement trajectories, South Korea was not bound by concerns regarding Article Nine and appearing defensive.

In addition to differences in the organizational balance of power between the government and business in Japan and South Korea, why a capability might or might not appear to be justified to the public – and what "justifiability" government actors are likely to be concerned with – vary between the two countries. South Korea does not have a provision in its constitution forbidding the maintenance of a military force for power projection. South Korea is arguably still embroiled

[313] Mike Yeo. "South Korea to spend $2 billion on aircraft buy." *Defense News*, June 29, 2020, https://www.defensenews.com/global/asia-pacific/2020/06/29/south-korea-to-spend-2-billion-on-aircraft-buy/, accessed December 14, 2020.
[314] A-KP. Interview by Deirdre Martin. Personal Interview. Tokyo, Japan, August 13, 2018.

in an ongoing military conflict. Because of this, South Korean leaders are not particularly concerned about whether their capabilities are seen as "defensive" beyond run-of-the-mill concerns about avoiding security dilemmas. Instead, a "justifiable" capability should provide increased national security, particularly during times when the relationship with North Korea is on the decline. Similarly, the complicated relationship between the South Korean population and American military forces stationed on the peninsula requires policymakers to seek capabilities that seem to decrease reliance on their ally whenever possible.

In this section, I have discussed the general pattern of South Korean military acquisitions. I have argued that while the effects of balancing between business and government on determining acquisition decisions are less obvious in the South Korean case than in the Japanese, they are still observable. Furthermore, this decreased effect is a reflection of a closer alignment of "justifiability" between the two actor types due to the lack of legislation requiring military technologies to be defensive only within South Korea. Nevertheless, the important role of justification in determining outcomes remains in both cases. I now turn to Taiwan, arguing that these concerns play out in a very similar way in this case.

6.2 Patterns of Taiwanese Acquisition

Taiwan, or the Republic of China (ROC), has had a complicated relationship with military development and procurement. In many ways, its patterns of acquisition are reflective of its precarious position in the international system. Beyond basic maintenance of its own defense, the government of Taiwan has two primary goals with all its defense procurement which stand to some degree at odds with one another. First, Taiwan seeks to draw itself into a closer security relationship with the United States, seeking to encourage active American engagement with the alliance to maintain confidence in American security promises. Second, Taiwan seeks to develop technologies and capabilities which allow it a degree of self-sufficiency from the United States and the alliance, fearing that abandonment will leave it unprotected from Chinese attacks.[315] The result has been a preference, as in the Japanese and South Korean case, for production under license for many technologies. However, while South Korea tends to purchase capabilities either due to significant and pressing security timelines or to a relative lack of business interest and expertise in manufacturing these technologies, many of Taiwan's defense procurement purchases are the result of a deliberate strategy by which it seeks to appeal to the United States.

Some scholarship places the origins of Taiwan's developmental state as early as the 1930s. The basis of this argument emphasizes the developmental policies begun by the Kuomintang (KMT) on the mainland during the Second World War. The government took an active role in development policy even at this time, establishing several institutions focused on incorporating Western science and technology into wartime industry. However, most scientists chose not to retreat with the nationalists to Taiwan after 1949, and this lack of scientific community combined with low industrial development in Taiwan meant that the Taiwanese developmental state stalled in the early years of the ROC. Most scholars, therefore, place the beginning of the Taiwanese developmental state in the 1970s instead of the wartime period. [316]

In the 1950s the United States began disbursing funds for basic science education, hoping to build a stronger industrial base in Taiwan. The KMT did not seriously begin investing in

[315] Nolan. *Military Industry*. p. 47.

[316] For an in-depth look at the history of the developmental state in Taiwan, see Megan J. Greene. *The origins of the developmental state in Taiwan: science policy and the quest for modernization*. Harvard University Press, 2009.

scientific development until the mid-1960s, however. Several external interventions motivated these changes in policy. First, the People's Republic of China (PRC) conducted its first nuclear weapons test in October of 1964, significantly raising the concrete military threat posed to Taiwan by its rival and neighbor. Second, in 1967 President Lyndon Johnson sent a mission to Taiwan to survey its technological needs and assets. This mission, led by the Special Assistant to the President for Science and Technology, made several suggestions regarding Taiwan's current capabilities, as well as began providing technical inputs and expertise to allow Taiwan to grow its industrial defense base. The third and easily most important intervention in the development of Taiwan's defense industry, however, was the termination of American economic assistance in 1965. Before this event, Taiwan was completely dependent on the United States for all military acquisitions. The withdrawal of economic assistance, however, motivated the Taiwanese government to expand its defense base. This development was further accelerated in the 1970s upon normalization of relations between the United States and the PRC. One final shock fundamentally shaped Taiwanese acquisition strategy. In 1978 the "derecognition" of Taiwan led to the revocation of the 1954 Mutual Defense Treat and the phased withdrawal of U.S. forces. Additionally, Taiwanese access to U.S. military technology was formally restricted to small amounts of equipment and services. Following this, the Taiwanese defense budget grew exponentially, with the expansion of weapons production among the largest increases.

Taiwan soon found itself in a difficult position strategically. It was limited by significant political constraints on access to other suppliers, and even if Taiwan had been able to diversify its sources of defense technologies, early reliance on U.S. hardware meant that their forces were configured almost exclusively around U.S. military equipment. To diversify would require reconfiguring the Taiwanese armed forces from the ground up. The result was a strategy of "self-reliance" in which military development must be focused inward rather than externally. As a result of all these concerns, Taiwanese government planners increased their efforts to coordinate economic and defense development, seeking to create production sectors that were efficient and compatible with one another.[317]

Concerns about efficiency have driven Taiwanese planning. Taiwan's relative international isolation and its ongoing concerns regarding the possibility of a trade war have meant that Taiwan's economic performance has been viewed as an equally critical "defense" variable as its concrete military capacity. For many years Taiwan's overall industrialization, which like South Korea was export-driven and directed by the central government, was focused on developing technology-intensive sectors to stay beyond the reach of Chinese industrialization. It was important to coordinate this high-tech development with defense objectives. As a result, close coordination between business and government, especially defense, has characterized Taiwanese development since the 1970s.

Taiwan only achieved a democratic transition in the late 1980s. Until that point, it was ruled by the KMT, who wielded centralized authoritarian power. The character of the relationship between business and government in Taiwan until the 1990s mirrors South Korea more closely than Japan. Notably, Taiwanese indigenous defense planning is highly centralized around the Ministry of National Defense (MND) and three main state-affiliated defense companies, the National Chung-Shan Institute of Science and Technology (NCSIST), the Aerospace Industrial Development Corporation (AIDC), and the China Shipbuilding Corporation (CSBC). Until democratization, Taiwan's military-industrial planning apparatus was characterized by a fundamental schism between "old guard" political leaders and more professionalized military

[317] Nolan. *Military Industry*.

planners. Following democratization, the private sector began to play a more active role. The manufacturing chain is more centralized in Taiwan than in Japan or South Korea, as some 200 small and medium-sized private companies work to supply components to the big three defense firms affiliated with the state.

Licensed production and reverse engineering, as in the South Korean case, have played an important role in the development of Taiwan's military-industrial base. From 1960-1988 Taiwan was the fourth-largest recipient of U.S. production licenses for conventional weapons systems, behind only Japan, Italy, and South Korea. That said, Taiwan walks a difficult balance between purchasing from the United States, often in an attempt to obtain security reassurances and the promise of additional high-tech capabilities, and indigenous production to maintain its self-reliance. Particularly crucial in this calculus is the public's attitude toward mainland China. When the domestic populace views China as a threat, even when American support is reliable defense strategies waver.[318] The result has been an acquisition strategy that some policy analysts have described as poorly coordinated, dysfunctional, and based around buying the "wrong" weapons.[319]

6.2.1 Taiwan and Purchase of U.S. Tanks

In 2019, Taiwan announced its intention to buy 108 MIA2T Abrams tanks from the United States. These tanks have enhanced armor protection that can withstand nuclear, biological, and chemical attacks, and are a variant of M1A2SEPV2, which have been customized by Abrams for Taiwanese army requirements.[320] This announcement came on the heels of increased pressure from the Trump administration for greater burden-sharing amongst East Asian allies and in particular for allies to buy more American military technologies. Including fourteen M88A2 Hercules tank recovery vehicles and several thousand rounds of shells, the sale was estimated to be around $2 billion.

Several questions arise surrounding the decision to purchase these capabilities. These tanks will mark the newest additions in a large collection. The Taiwanese army, at least on paper, possesses around 1,200 main battle tanks, all American-made. The MIA2T Abrams tanks expected to be delivered in 2021 are the newest of their kind by an extremely large margin; the youngest Taiwanese tanks currently in service, the M-60s, date back to the 1970s.[321] These tanks were acquired during a time when the primary concern regarding an attack from China was that invading forces would land on Taiwan's beaches.

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[318] See David An for an in-depth analysis of the interplay between domestic attitudes, Chinese belligerence, and American security promises in Taiwan's security strategies. David An. "Reconstructing Taiwan's Military Strategy: Achieving Forward Defense through Multi-Domain Deterrence." *The National Bureau of Asian Research*. NBR Special Report #69, February 2018.

[319] Paul Huang. "Taiwan's Military is a Hollow Shell." *Foreign Policy*, February 15, 2020, https://foreignpolicy.com/2020/02/15/china-threat-invasion-conscription-taiwans-military-is-a-hollow-shell/, accessed July 5, 2021; Michael D. Swaine. *Taiwan's National Security, Defense Policy, and Weapons Procurement Processes* (Santa Monica, CA: RAND Corp., 1999); Corey Lee Bell. "Is Taiwan Really Buying the 'Wrong' Weapons?." *The Diplomat*, March 31, 2020, https://thediplomat.com/2020/03/is-taiwan-really-buying-the-wrong-weapons/, accessed July 1, 2021.

[320] Eurasian Times Desk. "Taiwan Firm On Buying World's Most Lethal 'Abrams Tank' From the US to Deter China." *The EurAsian Times*, April 14, 2021, https://eurasiantimes.com/taiwan-firm-on-buying-108-m1a2t-abrams-tanks-from-us-amid-rising-tensions-with-china/, accessed April 15, 2021.

[321] David Axe. "If China Invades Taiwan, Taipei Plans To Throw A Thousand Tanks At The Beachhead." *Forbes*, December 9, 2020, https://www.forbes.com/sites/davidaxe/2020/12/09/if-china-invades-taiwan-taipei-plans-to-throw-a-thousand-tanks-at-the-beachhead/, accessed February 20, 2021.

Why has Taiwan invested $2 billion in tanks in the year 2021? Strategic arguments in favor of this procurement are weak at best. There has been significant pushback within the community of security experts who study Taiwan regarding whether these capabilities are necessary at all. Setting aside whether China would even feasibly be expected to launch an attack on Taiwan by physically landing on the beaches rather than launching a cyber attack or a missile, if China can land and maintain its position on Taiwanese beaches their numerous cutting-edge anti-tank rockets and airdroppable light tanks are likely to make quick work of even the most cutting-edge defensive tanks. China has strengthened its amphibious capabilities in recent years, making the Taiwanese ability to fight back an invading Chinese force even less likely than previously thought.[322] "You would struggle to find anyone that can make an operational case for the tank sale," argued one specialist on the region. "I could find a more effective way to spend a billion dollars – a huge portion of Taipei's $11 billion defense budget – to enhance cross-strait deterrence."[323]

Often when capabilities are procured which seem to not particularly meet the strategic needs of the country in question, the answer can be found in the private sector. This is particularly the case in Taiwan and South Korea, which have built their defense sectors on purchasing capabilities, negotiating co-production contracts, and then eventually indigenizing those capabilities. There has been, however, basically no pressure on the Taiwanese government from big businesses to procure tank technologies. The Taiwanese defense sector is largely government-affiliated, and SMEs involved in the production of components for defense do not produce most of the necessary components to manufacture a tank on par with the Abrams, or even to produce it under license. Given that export of tanks abroad would be politically difficult for Taiwanese industry, there are very few benefits to Taiwanese companies to push for the acquisition of cutting-edge tanks.

What, then, accounts for the decision to acquire these tanks from the United States? Although the contract for the tanks does not include technologies that could significantly threaten Chinese forces, Beijing immediately registered a complaint upon the finalization of the deal. The reason, according to the Chinese foreign ministry, is that the 108 Abrams tanks and the 250 Stinger ground-to-air missiles the Trump administration approved for sale to Taiwan were not the primary goals of the Taiwanese government. Instead, the Taiwanese government appears to have negotiated these deals with Washington in the hopes of securing two things: greater security assurances from the United States, and the contract for the sale of 66 F-16 fighter jets from Lockheed Martin.[324]

Taiwanese business does not have a vested interest in domestic production of tanks, but it does in indigenously developed fighter aircraft. After the Reagan administration refused to sell F-20 and F-16 fighter jets to Taiwan, the Taiwanese government developed an indigenous fighter aircraft, aptly named the Indigenous Defense Fighter Aircraft (IDF), domestically and at great expense. Israel has worked with Taiwan since the 1980s to co-produce aircraft components. Cutting-edge fighter jet contracts, therefore, would be of interest both to Taiwanese defense planners and to Taiwanese businesses.

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[322] Michael Peck. "Why Does Taiwan Need M-1 Abrams Tanks?" *The National Interest*, November 23, 2019, https://nationalinterest.org/blog/buzz/why-does-taiwan-need-m-1-abrams-tanks-99207, accessed April 3, 2021.
[323] Paul McCleary. "Taiwan Buys Lots of Tanks, But Really Wants New F-16Vs." *Breaking Defense*, July 9, 2019, https://breakingdefense.com/2019/07/taiwan-buys-lots-of-tanks-but-really-wants-new-f-16vs/, accessed June 28, 2021.
[324] Ibid.

Taiwan's precarious position in the international system makes it something of an anomaly in terms of defense technology acquisition. On one hand, Taiwan is reliant on the United States in terms of arms sales and co-production specifically and in terms of security promises more generally. Its unusual position and its difficult relationship with China make it a tricky partner for co-development, and its defense industry, while robust, cannot reliably export military use technologies and therefore tends to be somewhat stunted. The result has been defense acquisition patterns that are difficult to reliably predict. Overall, however, Taiwan has followed a very similar military technology production pattern to South Korea and Japan: it began by relying on military sales from the United States, but over time wherever possible switched to either co-production or production under license. The strong hold of the Taiwanese government over the private sector has meant that defense industry interests have been less important in determining outcomes, in large part because of difficulties expanding commercially outside of Taiwan.

Public perception – and the justifiability of capabilities – has been huge in determining outcomes in Taiwan. The Taiwanese public varies in its attitudes regarding the relationship with China, a shift which is often reflected in the political administration in power in Taiwan at any given time. Acquisition decisions within Taiwan must be justifiable in terms of their usefulness in protecting Taiwan from Chinese attacks. Sometimes, however, this leads to outcomes that are unexpected at first glance, as in the case of tank acquisition in 2019.

6.3 An "Asian" Pattern?

I have argued that defense technology acquisition patterns reflect domestic political balancing between government and business actors. When government and business interests align, acquisition patterns are consistent over time. When state and business interests diverge, states choose flexible trajectories like development under license. This is because a divergence in interest in domestic production between business and government tends to be based on the "justifiability" of capabilities. Social understandings of capabilities are constructed and therefore mutable. For this reason, in cases where business and government interests diverge due to concerns regarding whether indigenization of the capability can be justified to the public, policymakers tend to opt for production under license as a procurement strategy. Licensed production offers a middle ground for businesses and government in which one country holds intellectual property rights to a product and grants manufacturing rights to another.

In previous chapters, I outlined Japanese acquisition patterns. In this chapter, I have made the case that while these patterns may not be as obvious as in other cases, arguments about justification apply in the South Korean and Taiwanese cases. The balance between business and government interest is murkier in South Korea and Taiwan than in Japan, in part because of authoritarian legacies which cause private industry in these cases to be less independent from the government. Justification, however, remains important in determining procurement outcomes.

I have demonstrated that although these patterns exist in other cases, they are arguably the most visible in Japan. What accounts for this, and does this mean that ultimately the explanatory power of this argument does not extend beyond East Asia? At least theoretically, the findings of this project should extend to other cases as well, so long as those cases have a developed military-industrial complex with close ties with the government and are in long-term security relationships with a superpower.

Additional cases for testing might be India, France, and Israel. All three of these cases are examples of states that are, at least for significant periods of time, militarily allied with the United

States. They are advanced industrialized democracies with robust military-industrial complexes, which means that they all face important strategic choices regarding whether to purchase from the United States, develop domestically, or seek some middle-ground approach. Most importantly, they are all democracies, leaving their political leaders susceptible to the pressure of public perception. For the sake of comparison, one might look into the significant variation in acquisitions trajectories in missile production, satellite development, and space launch between these cases and their Asian equivalents. Notably, licensed production is significantly less common in these non-Asian cases, suggesting that while the logic outlined in this book should hold across cases, there may be something uniquely Asian in the balancing that occurs between business and the government.

In this section, I have briefly discussed applicability of this argument to other cases, both within East Asia and abroad. In the final chapter of this book, I briefly offer conclusions regarding the lessons presented in this manuscript.

7 Justifying Acquisition

What causes states to choose to develop some military-use technologies domestically while relying on purchase or coproduction for others? Variation in procurement trajectories between different types of military technologies is a characteristic shared by almost all military "middle powers." Security programs vary widely, patterns of acquisition do not reliably adhere to predictable trends, and they often do not exclusively reflect pressing security threats. Indigenous development of capabilities takes a long time and is often costly both fiscally and politically. Furthermore, most modern states capable of launching indigenous development programs have the option of purchasing comparable capabilities from allies. Acquisition decisions have important implications for states' foreign policies and their relationships with their neighbors. Most importantly, what technologies states seek out and how they acquire them also provide clues regarding priorities, constraints, and intent.

I argue that defense technology acquisition patterns reflect domestic political balancing between two sets of interests that collide to create acquisition outcomes. First, government actors are concerned with the political cost of indigenous development. They seek to respond to pressing security concerns facing their state while also appearing to behave legitimately to domestic and international audiences. Second, business actors seek the potential for technological spin-offs and spin-ons, access to research and development funds toward technologies important to the overarching technonational plan, and access to international research communities they might otherwise have been excluded from. When government and business interests align, acquisition patterns are consistent over time. When state and business interests diverge, states with strong defense industrial bases are likely to choose flexible trajectories like development under license.

Decisionmakers are often interested in domestic development – it is good for business and increases national self-reliance. They are also, however, concerned about their public image, especially in democracies. Government actors in particular want to be perceived by the public as both effective and legitimate. When indigenous development of a capability is seen by policymakers as necessary to acquire but also "difficult to justify" either because it does not seem to address pressing security concerns or because it is seen as illegal or illegitimate, government actors are unlikely to support domestic development in the short term. Policymakers understand, however, that the "justifiability" of a capability is socially constructed – that is, it is based on public understanding of the legitimacy of that technology. Because justification is a social concept, it is mutable. For this reason, in cases where business and government interests diverge due to concerns regarding whether indigenization of the capability can be justified to the public, policymakers tend to opt for production under license as a procurement strategy.

Licensed production is a "middle-ground" strategy that does not afford the full benefits of indigenous development at the outset. However, these agreements come with an implicit promise that if it becomes more "justifiable" to produce the capability domestically the state may switch to indigenization for later models. Licensed production allows businesses to avoid long R&D and training cycles and to begin to produce indigenous capabilities faster and at a lower cost than otherwise.

I begin this conclusion chapter by briefly summarizing the findings of the body chapters, in each case outlining the trajectory of acquisition, as well as how the interaction of business and state interests combined or converged to produce outcomes. The first four of these chapters focused on the Japanese case, offering clear examples of cases in which Japanese business and state interests converged, diverged, and changed over time. The sixth chapter presented comparative cases, analyzing South Korean and Taiwanese acquisition approaches. I close with a brief discussion of several important implications of these findings, describing lessons learned both about the politics of acquisition but also regarding the broader literature on states and technology.

In cases where there is an initial agreement between government and business actors regarding the necessity for and appropriateness of domestic development of defense technologies, indigenous production will be reliably pursued even at significant trouble and cost. This was the case when it came to the procurement of Japanese intelligence-gathering satellites, outlined in detail in Chapter 2. Japan's tortured course to space capabilities began in the early 1950s. Japan has a long history of space research and Japanese businesses, particularly Mitsubishi Electric (MELCO) were interested in the production of military space capabilities early on. However, interested business and state actors faced the heavy self-imposed constraints of Article Nine, the Basic Space Law of 1969, and a host of similar legislation outlawing the use of space for military purposes and limiting Japanese capacity for IGS development. Despite significant political lobbying from Japanese businesses since as early as the mid-1980s for the acquisition of spy satellites, these legislative constraints decreased the perceived legitimacy of procurement of IGS capabilities. The North Korean launch of a Taepodong mid-range missile over the Japanese main island in 1998, however, triggered a revision of the Basic Space Law and the development of indigenous IGS capabilities.

In this case, once the acquisition of IGSs had been decided at all, the easy convergence of business and state interests in favor of indigenization led to an entirely domestically produced fleet of surveillance satellites. Japanese businesses, particularly MELCO, had long pushed for the development of these capabilities, and bureaucrats and policymakers justified them as both necessary for national security and fundamentally defensive, especially following the shock of the North Korean missile launch. Even this relatively "easy" case demonstrates the importance of "justifiability" for policymakers, as state-side actors maintained existing legal provisions against the military uses of space which barred the development of spy satellites until the growing North Korean threat changed the public understanding of what was necessary to protect the Japanese homeland.

When there is not a convergence of business and government interest in indigenous production, licensed production is likely. Further, when the capability fails to become “justifiable” over time either because of increased strategic need or because of normalization of the technology through the commercial market, licensed production will continue indefinitely, maintained by institutional inertia. The development of Japanese ballistic missile defense (BMD), exemplified by the Patriot program, serves as an example of this in action. Many of the same business actors who had been invested in Japanese indigenous IGS capabilities lobbied significantly for the development of a Japanese missile. Despite this business interest in indigenous production, policymakers were concerned with how they could justify domestic development of missile technologies as "defensive." In 1985, the Japanese government announced the decision to produce PAC-2 missiles under U.S. license. This decision came during a time when Japanese companies were heavily constrained in terms of what they could produce but expressed to policymakers their interest in the possibility of technological spin-ons, i.e., the ability to leverage preexisting

technological and manufacturing expertise, as well as in access to research and development funds. Even licensed production of these capabilities was initially controversial – one Mitsubishi Heavy Employee involved with development indicated that other businesses had chosen not to bid to avoid being seen as weapons-mongers. Much of the budget for the project had initially been hidden in other locations and was only given final approval from Japanese political leadership following the 1998 launch of the North Korean Taepodong missile, which presented an obvious justification for the acquisition of antiballistic missile capabilities.

Development under license was initially a strategic hedge on the part of the Japanese political leadership, who sought fast access to these capabilities and were unable at the time of acquisition to justify the development of these “offensive” capabilities to the public but who also faced significant political pressure from interested business players who sought eventual indigenous development. Over time understanding of these missiles has shifted, leading to perhaps more possibility for indigenous development, but in the present Japanese companies have already received the benefits of licensed development and are increasingly less interested in developing at home. As a result, Japan has begun purchasing PAC-3 missiles from Lockheed Martin while developing other interceptor missiles in cooperation with the Americans.

Some technologies are always difficult to justify domestic development. Some, however, become more legitimate over time. When this occurs, initial production under license is likely to develop into indigenous production as the capability becomes more "justifiable." This is what took place in the development trajectory of Japanese maritime patrol aircraft. Japan maintained and operated 100 P3-C aircraft produced either by Lockheed Martin or by Japanese manufacturer Kawasaki under U.S. license since 1978. Business interest was high in the development of these capabilities initially, but the same legal and political constraints which faced the Patriot program constrained domestic production. However, over time the specific technological abilities of these capabilities have shifted away from the strategic priorities of Japanese military planners; as a result, the shift was made away from production under U.S. license to the fully indigenous development of Japanese maritime patrol aircraft. The Kawasaki P-1, which is equipped with radar, sonar, and electronic countermeasures and which is sometimes billed as a "sub-killing" plane, was introduced into the JMSDF arsenal in 2013.

This reflects an initial tension between business-side interests, who sought domestic entry into the technology market associated with MPA capabilities, and state-side interests, who sought immediate acquisition rather than the long-term development of indigenous capabilities. Once Japanese businesses completed necessary R&D and American capabilities no longer matched perceived Japanese security needs, state-side interests were more able to *justify* development and domestic production began.

What happens, then, when a state has determined that it has a strategic need for a capability, but both government and business are disinterested in domestic development? In these cases, it makes sense for states to rely on purchases from allies. Buying technologies allows a state to skip long research and development cycles, significantly decreasing the price tag and speeding up procurement timelines. Purchase also serves a secondary function: it allows the smaller state to strengthen its relationship with the larger, purchasing "big-ticket" items while diverting attention and foreign policy pressure away from technologies which it is more committed to developing indigenously. This was particularly important for American allies during the Trump administration when pressure was high to "buy American."

This is roughly what happened in the case of Aegis Ashore. Public discussion of the Japanese purchase of Aegis Ashore, a land-based Aegis missile defense system, began in early-to-

mid-2017 in response to North Korean missiles launched toward and into the Sea of Japan in March and April. This discussion was further expedited by the successful test of North Korea's first ICBM in July, another missile launch over Hokkaido in late August, and a sixth nuclear test in September. As a result, the production or purchase of the Aegis Ashore system was rumored by late April and confirmed by December, with finalization planned by 2023. One of the first major acquisition decisions made was to award the contract for radar supporting the two Aegis Ashore land-based missile defense batteries to Lockheed Martin. Although initial reports surrounding Aegis Ashore painted the system as a collaboration between the Japanese and the Americans, this selection, which chose Lockheed Martin's SPY-7 radar system over the previous frontrunner, Raytheon's SPY-6 radar system, was a clear example of a case in which indigenous production was not seriously considered.

On the business side, while Japanese corporations can produce radar technologies, interviews with participants in the acquisitions process indicate Japanese businesses were not interested in producing radars for Aegis Ashore. The long list of required capabilities, as well as the relative lack of battle testing for Japanese technologies, lowered the likelihood that production of these capabilities would lead to technological spin-offs or benefits. Both business and state actors indicated that because the Aegis Ashore is still a controversial system, they also fear perceived involvement with the systems. The problem of domestic justifiability was so acute in this case that Aegis Ashore as a program was canceled during the writing of this manuscript, although the SPY-7 radar is being repurposed for alternative BMD programs.

This is a clear case in which the convergence of state and business interests against indigenous development led Japan to purchase capabilities from the U.S. Businesses viewed the production of radar to be associated with Aegis Ashore to be more costly than beneficial. The technological spin-offs expected from participation were minimal due to existing Japanese expertise, and Japanese industry was unlikely to be able to be competitive in selling the technologies to any actors beyond the Japanese government. Japanese government actors were concerned about appearing proactive in dealing with the North Korean threat, as well as appearing to respond to American pressures to purchase defense technologies from U.S. contractors. Both Japanese business and government were concerned with the optics of developing technologies in support of Aegis Ashore particularly given controversies surrounding it domestically. The result was a decision to purchase from abroad. This case demonstrates the important role concerns regarding justification play in decisions surrounding acquisition both for the government and also for business.

In Chapter 2 through 5 I addressed primarily Japanese cases, demonstrating how complex interactions between business interests, state interests, and the perceived "justifiability" of capabilities to the public determined acquisition strategies in Japan. In Chapter 6, I argued that similar patterns of business-government negotiation and concern regarding public justifiability of capabilities play out in both the South Korean and Taiwanese cases. I discussed the pattern in both South Korea and Taiwan of initial purchase from the United States, then switch to coproduction or licensed production. This licensed production would be used to reverse engineer technologies, sometimes from multiple countries of origin, until the technologies involved were indigenized.

When neither business nor government seeks domestic production in South Korea and Taiwan, capabilities are likely to be purchased. When both seek indigenization, domestic production is likely. When there is a disagreement between business and government interests, the result is often production under license with eventual indigenization likely when and if this disagreement is resolved. The source of this disparity in business and government interests is often

the question of justifiability: both government and business actors are concerned with public perception of domestic production and are only likely to pursue capabilities that they consider to be "justifiable" to the public.

Two key differences differentiate the South Korean case from the Japanese. First, in South Korea, the government has taken a much more active role in guiding the industrial policy of defense procurement. South Korea is a newer democracy than Japan. In addition, what "justifiability" government actors are likely to be concerned with varies. South Korean leaders are not particularly concerned about whether their capabilities are seen as "defensive." Instead, a "justifiable" capability should provide increased national security, particularly during times when the relationship with North Korea is on the decline. Similarly, the complicated relationship between the South Korean population and American military forces stationed on the peninsula requires policymakers to seek capabilities that seem to decrease reliance on their ally whenever possible.

The Taiwanese government has a similarly active role in defense procurement, and its defense industry is further weakened by the impossibility of selling Taiwanese-manufactured military technology abroad. The relationship with mainland China plays a critical role in Taiwanese acquisitions. Much of Taiwanese security acquisition seems focused not necessarily on building capabilities to defend against the threat of Chinese attack, but instead on appearing to proactively build their capabilities, expanding their high-tech capabilities, and building a strong relationship with the United States.

I concluded with a broader discussion of the applicability of this argument to cases outside of East Asia. The specific characteristics of these three cases – their status as developmental states and their close relationships with the United States – highlight the importance of close ties between government and businesses in determining acquisitions outcomes. I argue, however, that while these trends are most easily observed in East Asian cases, particularly Japan, they may hold in other cases as well.

There are three main lessons to be drawn from the cases presented in this study. First, acquisitions decisions are the result of strategic balancing between state and business interests. Outright indigenous development or purchase from the state's primary security ally are likely indicators that those interests aligned either for or against development, while the decision to develop under license indicates mismatched interests at outset. Second, in cases where state and business interests were mismatched at outset, licensed production was often a strategic hedge on the part of decision-makers, as it is a "middle-ground" strategy that does not afford the full benefits of indigenous development at the outset but which makes switching to indigenous development at a later date faster and cheaper. Third and finally, the ability of policymakers to "justify" the domestic development of certain capabilities fundamentally shapes outcomes in important and observable ways. This implies that actors understand that certain capabilities have different images and reputations and that while they often make policies to work around these perceptions, they tend to defer to what they consider to be public acceptance of certain capabilities, even at the expense of powerful actors within the state.

What, then, are the broader implications of this study? The findings of this dissertation speak to the existing literature of the securitization of Japan, they support findings being presented in other work being done on the intersection of states and technology, and they offer broad implications for the paradigmatic "isms" of International Relations theory, particularly Realism.

First, this argument has obvious and important implications for the ongoing discussion that exists in the Japan-specific literature on if, why, and how Japan is building its military capabilities.

Japan's policymakers are particularly constrained when it comes to public perceptions of military buildup, as both its neighbors and its domestic audience have a well-established allergy to a building up of Japan's capabilities. This argument explains some of the peculiarities of Japanese buildup: why, for example, did it acquire two helicopter carriers, the Izumo and the Kaga, which looked and functioned suspiciously like aircraft carriers but were claimed *not* to be - until the Abe administration admitted they were to be converted into aircraft carriers after all? The argument presented in this study about the importance of justification and politician's tendency to develop "defensive" capabilities which are designed to be converted to desired capabilities when they are somehow understood to be "justifiable" has obvious implications.

In addition to offering anecdotal and hypothetical answers to some of the stranger examples of Japanese military buildup, this approach also attempts to bridge the gap between business and state-side interests when it comes to the development of capabilities. There is a robust industrial policy literature on links between Japanese technonational business and state-side interests, but in applications of these arguments to military capabilities, the existing literature tends to argue that either state-side threats or business-side profits drive outcomes. The argument presented in this work offers an alternative, median explanation which describes under what conditions the Japanese state versus businesses will drive outcomes.

Second, this argument speaks to the broader literature on the links between technology and warfare. Much of this work focuses on the leveling out of the technological production playing field, as the revolution in military affairs (RMA) is no longer an exclusively American phenomenon, arguing that as this process speeds up even middle powers will be increasingly able to design, build, and operate advanced conventional weapons rivaling that of the United States.[325] The literature has focused on development and adoption difficulties and the problems they may pose to this "flattening" of military technologies; my work indicates also that business-side interest is necessary at least in democracies to foster this indigenization of capabilities, and that corporations are likely to be uninterested in reverse-engineering capabilities when they perceive that they are unlikely to be competitive in these markets.

Additionally, this seems to amplify some of the initial findings regarding other questions of interest within the literature on technology and warfare. For example, Michael Horowitz and Matthew Fuhrmann, in their 2017 article on the expansion of drone technology internationally, discuss why and how states *adopt* certain capabilities. They frame their argument in terms of "state side" and "supply side" interest, arguing that both political desire and need and business interest interact in the decision to acquire drones.[326] This strategic calculus plays out similarly in their argument as it does this study, lending credibility to the argument that it is the interaction of business interest and capacity and political will which leads to acquisition strategies. My work implies that this interaction drives not only *what* states will develop but also *how* they will acquire capabilities.

The findings of this project suggest four interesting implications. First, states seem to care about the “optics” of their military buildups and will seek strategies that paint their development in the correct light. It is evident that Japan is building its military capacity, but it is also notable that it has done so *quietly*. By this, I mean that Japan has sought to build its military technology base increasingly on technologies that are perceived as defensive and which, at least theoretically,

[325] Richard A. Bitzinger. “The globalization of the arms industry: The next proliferation challenge.” *International Security* 19, no. 2 (1994): 170-198.

[326] Matthew Fuhrmann and Michael C. Horowitz. "Droning on: Explaining the proliferation of unmanned aerial vehicles." *International organization* 71, no. 2 (2017): 397-418.

signal defensive intent. By the same token, countries could also seek to grow their militaries "loudly, "acquiring capabilities that are understood as offensive and which project revisionist intent. It is not clear whether the public actually cares about the “justifiability” of capabilities, but it is certainly the case that both businesses and politicians care very deeply. This contributes to the literature that argues that certain capabilities have symbolic meaning, as well as the literature on reputation in politics.

Second, throughout the project, I have focused on cases in which business actors seeking military contracts have successfully or unsuccessfully lobbied for domestic development of capabilities. Indigenous production of military technologies has been a foundation on which Japan and other countries have built their domestic industries, and a strong military-industrial complex has been seen by policymakers as a probable source of economic revival and future growth. The Japanese government, for example, have pinned many of their hopes for economic recovery on the expansion of the defense market now that the arms export ban has been lifted. This project, however, also underpins the importance of business buy-in to the indigenous development of defense technologies. Japanese industry, for example, has increasingly seemed ambivalent about the production of defense technologies, their confidence shaken by early negative experiences on the international market. No matter how much government policies push indigenous development, therefore, without business interest in and commitment to domestic development, these projects are unlikely to succeed in the long term.

Third, many, many countries produce military technologies under U.S. license. They do so for a variety of reasons, including more cost-effective contracts, the opportunity to learn from the production process, etc. Licensing production has been a foundational method through which America has supported its allies and built its security relationships. This project has also indicated, however, that a major reason states pursue licensed production is as a stopgap until they can justify domestic development to the public. As domestic publics become more accepting of certain types of military technology, therefore, if there is also business buy-in it should be more likely that states will seek to abandon licensing agreements in favor of indigenization.

Finally, a subtle but important point regarding this implication that changing justification of capabilities will lead to more indigenous development is that if the determining factor in deciding what capabilities states will seek to develop indigenous capabilities is justification, this does not always necessarily lead to more pacifistic outcomes. Public attitudes are not always about pacifism or defense. The South Korean and Taiwanese cases were about the projection of national legitimacy or strength. Given this, if capabilities which are more offensive or likely to lead to revisionist defense policies are increasingly acceptable to the public, we might expect to see more domestic development of them even in cases where indigenization is destabilizing to the region.

References

"Advanced Persistent Surveillance Fact Sheet." *Lockheed Martin*, June 2020. https://www.lockheedmartin.com/content/dam/lockheed-martin/rms/documents/aegis/APS_FactSheet_V2.pdf, accessed June 18, 2021.

"Aegis Ashore." *Lockheed Martin*, https://www.lockheedmartin.com/en-us/products/aegis-combat-system/aegis-ashore.html, accessed June 19, 2021.

AFP-Jiji, "Japan Launches New Spy Satellite to Keep an Eye on North Korea." *The Japan Times*, March 17, 2017. https://www.japantimes.co.jp/news/2017/03/17/national/japan-launches-new-spy-satellite-keep-eye-north-korea/, accessed 25 October 2017.

Akaha, Tsuneo. "Japan's Nonnuclear policy." *Asian Survey* 24.8 (1984): 852-877.

Allison, Graham. "Conceptual Models and the Cuban Missile Crisis" *American Political Science Review*, September 1969.

Amsden, Alice Hoffenberg. *Asia's next giant: South Korea and late industrialization*. Oxford University Press on Demand, 1989.

An, David. "Reconstructing Taiwan's Military Strategy: Achieving Forward Defense through Multi-Domain Deterrence." *The National Bureau of Asian Research*. NBR Special Report #69, February 2018.

Anchordoguy, Marie. *Reprogramming Japan: The high tech crisis under communitarian capitalism*. Cornell University Press, 2008.

Aoki Setsuko. "New Law Aims to Expand Japan's Space Business," *Nippon.com*. March 3, 2017. https://www.nippon.com/en/currents/d00294/new-law-aims-to-expand-japan%E2%80%99s-space-business.html, accessed December 10, 2019.

Aratana jidai no anzen hoshou to boueiryoku ni kan suru kondankai 新たな時代の安全保障と防衛力に関する懇談会 [Discussion group regarding maintaining peace and defense power in the new era]. "Bouei seisan/gijutsu kiban" 「防衛生産・技術基盤」 ["The foundation of defense technology/production."] 日本防衛省 [Japan Ministry of Defense]. April 2010. http://www.kantei.go.jp/jp/singi/shin-ampobouei2010/dai5/siryou1.pdf. Accessed June 20, 2021.

Arena, Phil. "Phil Arena: Measuring Military Capabilities." *Phil Arena*, June 22, 2012, http://fparena.blogspot.com/2012/06/measuring-military-capabilities.html. Accessed October 7, 2013

Axe, David. “If China Invades Taiwan, Taipei Plans To Throw A Thousand Tanks At The Beachhead.” *Forbes*, December 9, 2020, https://www.forbes.com/sites/davidaxe/2020/12/09/if-china-invades-taiwan-taipei-plans-to-throw-a-thousand-tanks-at-the-beachhead/, accessed February 20, 2021.

Ban, Kil Joo. "Aircraft Carrier Balancing in Northeast Asia and South Korean Carrier Program: Power, Threat, and Function." *Korean journal of defense analysis* 33, no. 1 (2021): 43-65.

Bana, Sarosh. "Sea power: the rise of the aircraft carrier in the Asia-Pacific." *World Affairs* (2015): 43-50.

Bartlett, Benjamin G. “Institutional Determinants of Cyber Security Promotion Policies : Lessons from Japan, the U.S., and South Korea.” Doctoral dissertation, University of California, Berkeley, 2018. http://oskicat.berkeley.edu/record=b24911205~S1

Bell, Corey Lee. "Is Taiwan Really Buying the ‘Wrong’ Weapons?." *The Diplomat*, March 31, 2020, https://thediplomat.com/2020/03/is-taiwan-really-buying-the-wrong-weapons/, accessed July 1, 2021.

Bitzinger, Richard A. “S. Korean naval shipbuilding: full speed ahead.” *Asia Times*, July 1, 2019, https://asiatimes.com/2019/07/s-korean-naval-shipbuilding-full-speed-ahead/, accessed June 16, 2021.

Bitzinger, Richard A. (2018). The Aircraft Carrier: An Idea That Refuses to Die. (RSIS Commentaries, No. 027). RSIS Commentaries. Singapore: Nanyang Technological University.

Bitzinger, Richard A. "The globalization of the arms industry: The next proliferation challenge." *International Security* 19, no. 2 (1994): 170-198.

Bloembergen, Nico, et al. “Report to The American Physical Society of the study group on science and technology of directed energy weapons.” *Reviews of Modern Physics* 59.3 (1987): S1.

Boueichou Gijitsu Kenkyuu Honbu 防衛庁技術研究本部 [Japan Defense Agency, Technical Research and Development Institute]. *Boueichou gijutsu kenkyuu honbu gojuunenshi* 防衛庁技術研究本部五十年史 [The 50-Year History of the Japanese Defense Agency Technical Research and Development Institute]. Tokyo: Boueichou Gijutsu Kenkyuu Honbu, 2002.

Bouei seisakukyoku bouei keikakuka 防衛政策局防衛計画課 [Defense Planning Division, Defense Policy Bureau.] “Heisei 19nendo Seisaku Hyoukasho (Jizen no jigyou hyouka): jiki koteiyoku shoukaiki (P-X)” 「平成１９年度　政策評価書（事前の事業評価）次期固定翼哨戒機（Ｐ－Ｘ）」[2007 Policy Evaluation Report (Preliminary Business

Evaluation): Next Fixed-Wing Patrol Aircraft (P-X)]. 日本防衛省 [Japanese Ministry of Defense]. September 30, 2007.

Boyd, John. “Japan Struggles to Fit Into Agreement on SDI.” *The Scientist*, November 29, 1987, https://www.the-scientist.com/news/japan-struggles-to-fit-into-agreement-on-sdi-63276, accessed February 23, 2020.

Broad, William J. and David E. Sanger. “North Korea Missile Test Appears to Tiptoe Over a U.S. Tripwire.” *The New York Times*, May 15, 2017, https://www.nytimes.com/2017/05/15/world/asia/north-korea-missiles.html, accessed May 16, 2017.

Burgess, John. “Japan Decides to Join SDI Conditionally.” *The Washington Post*, September 8, 1986, https://www.washingtonpost.com/archive/politics/1986/09/08/japan-decides-to-join-sdi-conditionally/f9281c82-7764-475e-a675-8363eaf9f455/, accessed February 23, 2020.

Cagle, Mary T. *Historical Monograph Project Number: AMC 75 M - History of the Nike Hercules Weapon System*. Redstone Arsenal, AL: U.S. Army Missile Command, April 19, 1973.

Chang, Chan Sup. "Chaebol: The South Korean Conglomerates." *Business Horizons* 31, no. 2 (1988): 51-57.

Chang, Felix. “Taking Flight: China, Japan, and South Korea Get Aircraft Carriers.” *Foreign Policy Research Institute*, January 14, 2021, https://www.fpri.org/article/2021/01/taking-flight-china-japan-and-south-korea-get-aircraft-carriers/, accessed June 2, 2021.

Choe Sang-Hun. “South Korean Villagers Protest Plans for U.S. Missile Defense System.” *The New York Times*, July 13, 2016, https://www.nytimes.com/2016/07/14/world/asia/south-korea-thaad-us.html, accessed June 16, 2021.

Choi, Sung-jae. “The North Korean factor in the improvement of Japanese intelligence capability.” *The Pacific Review* 17, no. 3 (2004): 369-397.

Christensen, Thomas J. & Jack Snyder. “Chain Gangs and Passed Bucks: Predicting Alliance Patterns in Multipolarity,” *International Organization*, Vol. 44, No. l (Spring 1990), pp. 137-168;

Cirincione, Joseph. “Brief History of Ballistic Missile Defense and Current Programs in the United States.” *Carnegie Endowment for International Peace [online]*, 2000. https://carnegieendowment.org/2000/02/01/brief-history-of-ballistic-missile-defense-and-current-programs-in-united-states-pub-133, accessed October 5, 2020.

CNS North Korea Missile Test Database. *The Nuclear Threat Initiative*. Last updated March 31, 2021. https://www.nti.org/analysis/articles/cns-north-korea-missile-test-database/ Accessed June 15, 2021.

Cochran, Thad. *Stubborn Things: A Decade of Facts about Ballistic Missile Defense*. Committee on Governmental Affairs, Subcommittee on International Security, Proliferation, and Federation Services, September 2000. https://www.hsdl.org/?view&did=437971, accessed November 11, 2019.

Cohen, Jerome A. "Japan's Watergate: Made in U.S.A." *The New York Times*, November 21, 1976.

Council Working Party on Shipbuilding (WP6). "Peer Review of the Korean Shipbuilding Industry and Related Government Policies," *OECD*, November 25, 2014.

Cumings, Bruce. *Korea's place in the sun: A modern history (updated edition)*. WW Norton & Company, 2005.

de Gouyon Matingnon, Louis. "Ohsumi, The First Japanese Satellite." *Space Legal Issues*. April 17, 2019. https://www.spacelegalissues.com/ohsumi-the-first-japanese-satellite/, accessed April 21, 2019.

Downs, George W., David M. Rocke, and Randolph L. Siverson, "Arms Races and Cooperation," in Kenneth A. Oye, ed., *Cooperation under Anarchy.* Princeton, N.J.: Princeton University Press, 1986.

Dreyer, June Teufel. "China and Japan: 'Hot economics, cold politics.'" *Orbis* 58.3 (2014): 326-341.

Dutch Aviation Society. "Military Database: Current Airforce: Japan (Asia)." *Scramble*. https://www.scramble.nl/database/military/JP, accessed February 28, 2021.

Eckstein, Megan. "MDA Director Says SM-3 Block IIA Ready for Production, Unrelated to Japan's Decision to Back Out of Aegis Ashore." *United States Naval Institute News*, June 19, 2020, https://news.usni.org/2020/06/19/mda-director-says-sm-3-block-iia-ready-for-production-despite-safety-concerns-from-co-developer-japan, accessed June 20, 2020.

Elliott, John M. "Appendix 1: Aircraft Data – Technical Information and Drawings" in Michael D. Roberts. *Dictionary of American Naval Aviation Squadrons (Volume 2): The History of VP, VPB, VP(HL) and VP(AM) Squadrons*.

Encyclopedia Aeronautica. "Japan." http://www.astronautix.com/j/japan.html.

Episkopos, Mark. "South Korea is Getting 'Light' Aircraft Carriers." *National Interest*, August 8, 2020, https://nationalinterest.org/blog/buzz/south-korea-getting-light-aircraft-carriers-166525, accessed May 24, 2021.

Eurasian Times Desk. “Taiwan Firm On Buying World’s Most Lethal ‘Abrams Tank’ From the US to Deter China.” *The EurAsian Times*, April 14, 2021, https://eurasiantimes.com/taiwan-firm-on-buying-108-m1a2t-abrams-tanks-from-us-amid-rising-tensions-with-china/, accessed April 15, 2021.

Farley, Robert. “Why Did South Korea Decide to Build Aircraft Carriers?” *The Diplomat*, August 18, 2020, https://thediplomat.com/2020/08/why-did-south-korea-decide-to-build-aircraft-carriers/, accessed August 20, 2020.

Feldman, Shai. *Israeli Nuclear Deterrence: A Strategy for the 1980s*. New York: Columbia University Press, 1982.

Fouse, David. “Japan gets serious about missile defense: North Korean crisis pushes debate.” *Asia-Pacific Security Studies* 2.4 (2003).

Frayer, Lauren. “Korean Village’s Message to THAAD Missile Defense System: ‘Go Away.’” *NPR*, May 4, 2017, https://www.npr.org/sections/parallels/2017/05/04/526852668/korean-villages-message-to-thaad-missile-defense-system-go-away, accessed June 14, 2021.

Fuhrmann, Matthew, and Michael C. Horowitz. "Droning on: Explaining the proliferation of unmanned aerial vehicles." *International organization* 71, no. 2 (2017): 397-418.

Fujiwara Shinichi. “Japan avoids flak by refusing to call flattop ‘aircraft carrier’.” *Asahi Shimbun*, December 6, 2018, http://www.asahi.com/ajw/articles/AJ201812060055.html, accessed December 9, 2018.

Gady, Franz-Stefan. “Japan Debating Size of Sub Killer Aircraft Fleet.” *The Diplomat*. May 7, 2018. https://thediplomat.com/2018/05/japan-debating-size-of-sub-killer-aircraft-fleet/, accessed March 1, 2021.

Gady, Franz-Stefan. “Japan Seeks to Export its New Sub-Hunting Plane.” *The Diplomat*. September 9, 2015. https://thediplomat.com/2015/07/japan-seeks-to-export-its-new-sub-hunting-plane/, accessed March 1, 2021.

Gallagher, Chris. “Japan Protests Against Russian Missile Deployment on Disputed Islands.” *Reuters*, December 2, 2020. https://www.reuters.com/article/us-russia-japan-missiles/japan-protests-against-russian-missile-deployment-on-disputed-islands-idUSKBN28C0WP, accessed December 21, 2020.

“Germany Rejects Japanese P-1 Maritime Patrol Aircraft.” *Defense World*, September 8, 2020. https://www.defenseworld.net/news/27815/Germany_Rejects_Japanese_P_1_Maritime_Patrol_Aircraft, accessed September 10, 2020.

Glaser, Charles L. “Political Consequences of Military Strategy: Expanding and Refining the Spiral and Deterrence Models,” *World Politics*, Vol. 44, No. 4 (July 1992): 497-538.

Goldstein, Avery and Edward D. Mansfield, eds. *The nexus of economics, security, and international relations in East Asia*. Stanford University Press, 2012.

Govella, Kristi E. "Permeable Policymaking: Foreign Firms in the Japanese Political Economy." Doctoral dissertation, University of California, Berkeley, 2016. http://oskicat.berkeley.edu/record=b24741657~S1

"Government to mull West German-style SDI participation." *Jiji Press*, February 14, 1986.

Green, Michael J. *Arming Japan: Defense production, alliance politics, and the postwar search for autonomy*. Columbia University Press, 1995.

Green, Michael J. "The Japanese Defense Industry's Views of U.S.-Japan Defense Technology Collaboration: Findings of the MIT Japan Program Survey." *The MIT Japan Program*. Center for International Studies, Massachusetts Institute of Technology. January 1994.

Green, Michael J. and Koji Murata. "The 1978 Guidelines for the U.S.-Japan Defense Cooperation: Process and the Historical Impact." Working Paper No. 17. https://nsarchive2.gwu.edu/japan/GreenMurataWP.htm.bak, accessed April 2, 2021.

Greene, J. Megan. *The origins of the developmental state in Taiwan: science policy and the quest for modernization*. Harvard University Press, 2009.

Haggard, Stephan. *Developmental states*. Cambridge University Press, 2018.

Hall, George R., and Robert E. Johnson. "Transfers of United States aerospace technology to Japan." *The technology factor in international trade*. NBER, 1970. 305-363.

Halloran, Richard. "Five Japanese Had Key Roles In Pushing Lockheed Bids." *The New York Times*. March 1, 1976.

Halperin, Morton H., and Priscilla Clapp. *Bureaucratic politics and foreign policy*. Brookings Institution Press, 2007.

Hayashi Iwao 林磐男. *Sengo nihon no sensha kaihatsushi – tokusha kara 90shiki sensha e 戦後日本の戦車開発史―特車から９０式戦車へ [The History of the development of postwar tanks]*. Tokyo: Kaya Shobou, 2002.

Heavey, Susan and Jack Kim. "Message from North Korean missile over Japan 'loud and clear': Trump." *Reuters*, August 28, 2017, https://www.reuters.com/article/us-northkorea-missiles/message-from-north-korean-missile-over-japan-loud-and-clear-trump-idUSKCN1B8283, accessed August 28, 2017.

Heginbotham, Eric, and Richard J. Samuels. "Mercantile realism and Japanese foreign policy." *International Security* 22, no. 4 (1998): 171-203.

Hemmert, Martin. “The influence of institutional factors on the technology acquisition performance of high-tech firms: survey results from Germany and Japan.” *Research Policy* 33.6-7 (2004): 1019-1039.

Henderson, Robert D’A., Robertson, Kenneth G., Erskine, Ralph, Wirtz, James J. and Unsinger, Peter Charles “Reviews and commentary.” *International Journal of Intelligence and CounterIntelligence*, 10:2 (1997). 227-255.

Hildreth, Steven. “Ballistic Missile Defense: Historical Overview,” *CRS Report for Congress*, Congressional Research Service, July 9, 2007.

Huang, Paul. “Taiwan’s Military is a Hollow Shell.” *Foreign Policy*, February 15, 2020, https://foreignpolicy.com/2020/02/15/china-threat-invasion-conscription-taiwans-military-is-a-hollow-shell/, accessed July 5, 2021.

Hughes, Christopher W. “Japan’s emerging arms transfer strategy: diversifying to re-centre on the US–Japan alliance.” *The Pacific Review* 31, no. 4 (2018): 424-440.

Hughes, Christopher W. *Japan’s Remilitarisation*. Routledge, 2009.

Hughes, Christopher W. *“*The slow death of Japanese techno-nationalism? Emerging comparative lessons for China's defense production.*”* *The Journal of Strategic Studies* 34.3 (2011): 451-479.

Hung, Shiu-Wan, and Ruei-Hung Tang. “Factors affecting the choice of technology acquisition mode: An empirical analysis of the electronic firms of Japan, Korea and Taiwan.” *Technovation* 28.9 (2008): 551-563.

Iida, Keisuke. *Japan’s Security and Economic Dependence on China and the United States: Cool Politics, Lukewarm Economics*. Routledge, 2017.

Isik, Cevdet, et al. Principles of Integrated Maritime Surveillance Systems. United States, Springer US, 2012.

“Japan Considers Building Missile,” *The Christian Science Monitor*, April 24, 1989. https://www.csmonitor.com/1989/0424/oconsid.html, accessed November 18, 2020.

Japan Defense Agency. “Defense White Paper 1984.” *Japan Defense Agency*, 1984.

Japan House of Representatives. *Genshiryoku kihonhou*「原子力基本法」 [Atomic Energy Basic Act]. Act No. 186, December 19,1955.

Japan House of Representatives. *Uchuu kihonhou honbun.* 「宇宙基本法本文」 [The New Basic Space Law: Full Text.] May 13, 2008.

Japan House of Representatives. *Wagakuni ni okeru uchuu no kaihatsu oyobi riyou no kihon ni kansuru ketsugi.* 「我が国における宇宙野開発及び利用の基本に関する決議」 [Resolution related to the basics of our country's development and use of space]. May 1969.

Japan Ministry of Defense. "Japan's BMD." *Japan Ministry of Defense.* April 17, 2012. http://www.mod.go.jp:80/e/d_act/bmd/bmd.pdf , accessed April 18, 2018.

Japan Ministry of Defense. *Medium Term Defense Program (FY2014-2018)*. December 17, 2013.

Japan Ministry of Defense, *National Defense Program Guidelines for FY 2019 and Beyond*, December 18, 2018.

Japan Ministry of Defense. "The Guidelines for Japan-U.S. Defense Cooperation." April 27, 2015. http://www.mod.go.jp/e/d_act/anpo/pdf/shishin_20150427e.pdf, Accessed October 31, 2017.

Japan Ministry of Foreign Affairs. "IV. Contents of Japan's Defense Capability." National Defense Program Outline in and After FY 1996. December 1996. https://www.mofa.go.jp/policy/security/defense96/contents.html Accessed December 18, 2019.

Japan Ministry of Foreign Affairs. "Japan's Policies on the Control of Arms Exports." https://www.mofa.go.jp/policy/un/disarmament/policy/index.html, accessed June 20, 2021.

Japan Ministry of Foreign Affairs. "Japan-U.S. Joint Declaration on Security: Alliance for the 21st Century." April 17, 1996. https://www.mofa.go.jp/region/n-america/us/security/security.html, accessed 21 June 2021.

Japan Ministry of Foreign Affairs. "National Defense Program Outline in and after FY 1996." *Ministry of Foreign Affairs of Japan*, December 1995. https://www.mofa.go.jp/policy/security/defense96/, accessed December 25, 2020.

"Japan Resists U.S. Push to Boost Defense Funds." *Aviation Week*, March 3, 1980.

"Japan successfully launches new optical spy satellite," *Mainichi Shimbun*. November 28 2009, http://mdn.mainichi.jp/mdnnews/news/20091128p2a00m0na014000c.html, accessed December 4, 2017.

"Japan wants star without wars." *The Economist* 200: 69-70, August 2, 1986.

"Japanese hawks get their spy satellites." *The Japan Times*, December 22, 1998.

JAXA. “NASDA History.” Last updated 2003, https://global.jaxa.jp/about/history/nasda/index_e.html, accessed June 15, 2019.

JAXA. “Past Projects – Satellites and Spacecraft.” https://global.jaxa.jp/projects/past_project/sat.html

JAXA. “Prof. Itokawa, ‘Father of Japanese Rocketry.’” *ISAS: History of Japanese Space Research*. Last updated 2008, https://www.isas.jaxa.jp/e/japan_s_history/profito.shtml, accessed June 15, 2019.

Jervis, Robert. “Cooperation under the Security Dilemma,” *World Politics*, Vol. 30, No. 2 (January 1978): 167-214.

Jiji. “Germany grows wary about Japan's participation in patrol plane project.” *The Japan Times*, September 20, 2020. https://www.japantimes.co.jp/news/2020/09/07/national/germany-wary-japans-patrol-plane-project/, accessed September 22, 2020.

Jiji. “Japan to acquire long-range standoff missiles by 2022.” *The Japan Times*. September 7, 2020. https://www.japantimes.co.jp/news/2020/09/07/national/japan-long-range-missiles-2022/, accessed September 8, 2020.

Johnson, Chalmers. *MITI and the Japanese miracle: the growth of industrial policy, 1925-1975*. Stanford University Press, 1982.

Johnson, Chalmers. “Tanaka Kakuei, structural corruption, and the advent of machine politics in Japan.” *Journal of Japanese Studies* 12.1 (1986): 1-28.

Johnston, Eric. “Japan’s two Aegis Ashore anti-missile candidate sites run into local opposition.” *The Japan Times*, December 11, 2018, https://www.japantimes.co.jp/news/2018/12/11/national/japans-two-aegis-ashore-anti-missile-candidate-sites-run-local-opposition/, accessed June 18, 2021.

Jung Da-min. “Controversy rises over military’s push for light aircraft carrier development.” *The Korea Times*, January 4, 2021, https://www.koreatimes.co.kr/www/nation/2021/02/205_301918.html, accessed June 22, 2021.

Kaijou jieitai 海上自衛隊 [Japan Maritime Self Defense Force]. “Kaijou jieitai ni tsuite: yakuwari.” 『海上自衛隊について　役割』[About the Japan Maritime Self Defense Force: Duties] 日本防衛省 [Japan Ministry of Self Defense] https://www.mod.go.jp/msdf/about/role/, accessed April 15, 2021.

Kallender, Paul, and Christopher W. Hughes. “Japan’s Emerging Trajectory as a ‘Cyber Power’: From Securitization to Militarization of Cyberspace.” *Journal of Strategic Studies*, 40.1-2 (2017): 118-145.

Kaneda, Hideaki, Kazumasa Kobayashi, Hiroshi Tajima, and Hirofumi Tosaki. “Japan’s Missile Defense: Diplomatic and Security Policies in a Changing Strategic Environment.” *The Japan Institute of International Affairs*, March 2007.

Karako, Tom. “Aegis Intercept Test: Critical Questions.” *Missile Threat*, Center for Strategic and International Studies, June 22, 2017, last modified July 6, 2020, https://missilethreat.csis.org/aegis-intercept-test-critical-questions/, accessed June 10, 2021.

Kapur, Nikhil Paul. *The 1960 US-Japan Security Treaty Crisis and the Origins of Contemporary Japan*. Harvard University, 2011.

Kawasaki. “Sky High Expectations for Japan’s P-X and C-X Aircraft.” *Scope: Kawasaki Heavy Industries Quarterly Newsletter*, No. 73. October 2007. 2-5.

Keck, Zachary. “South Korea Goes All In On Missile Defense.” *The Diplomat*, July 26, 2013, https://thediplomat.com/2013/07/south-korea-goes-all-in-on-missile-defense/, accessed June 24, 2021.

Keidanren 経済団体連合会. “Shinjidai ni taioushita boueiryoku seibi keikan no seiseku wo nozomu.”『新時代に対応した防衛力整備計画の策定を望む』 [Calling for a defense force structure plan in accordance with the new era]. Keidanren. May 11, 1995. https://www.keidanren.or.jp/japanese/policy/pol042.html, accessed November 4, 2020.

Kelly, Tim, and Nobuhiro Kubo. “Exclusive: Japan to Upgrade Patriot batteries for Olympics as North Korean missile threat grows.” *Reuters*. July 28, 2016. https://www.reuters.com/article/us-japan-northkorea-patriot-exclusive/exclusive-japan-to-upgrade-patriot-batteries-for-olympics-as-north-korean-missile-threat-grows-sources-idUSKCN1082W1, accessed March 1, 2021.

Kelly, Tim and Nobuhiro Kubo (Reuters). “Japan to buy advanced U.S. radar for missile-defense system.” *The Japan Times*, July 1, 2018, https://www.japantimes.co.jp/news/2018/07/01/national/japan-buy-advanced-u-s-radar-missile-defense-system/, accessed July 2, 2018.

Kelly, Tim and Nobuhiro Kubo (Reuters). “U.S. and Japanese firms collaborating on new missile defense radar, sources say.” *The Japan Times*, May 23, 2017, https://www.japantimes.co.jp/news/2017/05/23/national/politics-diplomacy/u-s-japanese-firms-collaborating-new-missile-defense-radar-sources-say/, accessed June 1, 2017.

Keohane, Robert O. *After hegemony: Cooperation and discord in the world political economy*. Princeton University Press, 2005.

Kibino Yasushi 気比野 靖. *Nichi-bei haitekku masatsu: SDI to Nihon no mirai.* 「日米ハイテク摩擦 : SDI と日本の未来」 [U.S.-Japan High Tech Tension: SDI and Japan’s Future]. Gijutsu to Ningen, October 1, 1987.

Kikuchi, Daisuke. “Japanese Cabinet OKs record ¥5.19 trillion defense budget to counter North Korea with interceptor batteries, first cruise missiles.” *The Japan Times*, December 22, 2017, https://www.japantimes.co.jp/news/2017/12/22/national/politics-diplomacy/japanese-cabinet-oks-record-%c2%a55-19-trillion-defense-budget-counter-north-korea-interceptor-batteries-first-cruise-missiles/, accessed December 24, 2017.

Kim, Brian. “U.S. lifts missile restrictions on South Korea, ending range and warhead limits.” *Defense News*, May 25, 2021, https://www.defensenews.com/global/asia-pacific/2021/05/25/us-lifts-missile-restrictions-on-south-korea-ending-range-and-warhead-limits/, accessed May 26, 2021.

Kim, Eun-jung. “S. Korea to deploy indigenous missile defense system in July.” *Yonhap News Agency*, April 10, 2013, https://en.yna.co.kr/view/AEN20130410010900315, accessed June 2, 2021.

Kim Jaewon. “South Korean shipbuilders enjoy jump in new orders.” *Nikkei Asia*, March 31, 2021, https://asia.nikkei.com/Business/Transportation/South-Korean-shipbuilders-enjoy-jump-in-new-orders, accessed June 1, 2021.

Kiyota, Kozo, and Tetsuji Okazaki. “Foreign technology acquisition policy and firm performance in Japan, 1957–1970: Micro-aspects of industrial policy.” *International Journal of Industrial Organization* 23.7-8 (2005): 563-586.

Kobara Junnosuke. “Japan’s plan for 2 superdestroyers to cost more than Aegis Ashore.” *Nikkei Asia*. November 25, 2020. https://asia.nikkei.com/Politics/Japan-s-plan-for-2-superdestroyers-to-cost-more-than-Aegis-Ashore, accessed June 19, 2021.

Korkmaz, Kaan & John Rydqvist. *The Republic of Korea: A Defence and Security Primer*. Stockholm: Swedish Defense Research Agency, April 2012.

Korsmo, Fae L. “The genesis of the international geophysical year.” *Physics Today* 60, no. 7 (2007): 38.

Kotani Ken 小谷賢. “Waga kuni ni okeru interijensu no genjou to kadai.” 「わが国におけるインテリジェンス現状と課題」 [“Current state of intelligence and intelligence issues in Japan.”] *Bouei kenkyuujou news* [*The National Institute for Defense Studies News]* 100 (2006).

Koukuuki Seizouhou. 「航空機製造法」[The Aircraft Manufacturing Law]. Act No. 237 of 1952 昭和二十七年法律第二百三十七号. https://www.shugiin.go.jp/internet/itdb_housei.nsf/html/houritsu/01319520716237.htm, accessed March 7, 2021.

Krasner, Stephen D. “State power and the structure of international trade.” *World Politics*, Vol. 28, No. 3 (1976): 317-347.

Kubo, Nobuhiro and Andrea Shalal. “Japan seeks role in French-German marine surveillance plane project: sources.” *Reuters*, April 24, 2018. https://www.reuters.com/article/us-japan-defence-germany-france/japan-seeks-role-in-french-german-marine-surveillance-plane-project-sources-idUSKBN1HW088, accessed February 6, 2020.

Kubo, Nobuhiro (Reuters). “Government to pick Lockheed Martin radar for missile defense system: ministry official.” *The Japan Times*, July 3, 2018, https://www.japantimes.co.jp/news/2018/07/03/national/japan-picks-lockheed-martin-radar-missile-defense-system-ministry-official/, accessed July 3, 2018.

Kusunoki, Ayako. “The Satō Cabinet and the Making of Japan’s Non-Nuclear Policy.” *The Journal of American-East Asian Relations* 15 (2008): 25-50.

Kyodo. “Akita governor blasts Defense Ministry over missile defense system survey errors.” *The Japan Times*, June 11, 2019, https://www.japantimes.co.jp/news/2019/06/11/national/akita-governor-blasts-defense-ministry-missile-defense-system-survey-errors/, accessed June 12, 2019.

Kyodo. “Defense chief apologizes to Yamaguchi governor for faulty Aegis survey.” *The Japan Times*, July 3, 2019, https://www.japantimes.co.jp/news/2019/07/03/national/politics-diplomacy/defense-chief-apologizes-yamaguchi-governor-faulty-aegis-survey/, accessed July 3, 2019.

Kyodo. “Independent candidate opposed to Aegis Ashore missile defense system deployment wins seat in Akita.” *The Japan Times*, July 22, 2019, https://www.japantimes.co.jp/news/2019/07/22/national/politics-diplomacy/independent-candidate-opposed-aegis-ashore-missile-defense-system-deployment-wins-seat-akita/, accessed June 2, 2021.

Kyodo. “Japan’s land-based missile defense plan will cost double the initial quote, Defense Ministry says.” *The Japan Times*, July 24, 2018, https://www.japantimes.co.jp/news/2018/07/24/national/politics-diplomacy/japan-sees-cost-land-based-missile-defense-doubling-initial-quote/, accessed June 23, 2021.

Kyodo. “Japan to expedite study on adopting land-based Aegis system.” *The Japan Times*, April 29, 2017, https://www.japantimes.co.jp/news/2017/04/29/national/japan-expedite-study-adopting-land-based-aegis-system/, accessed May 1, 2017.

Kyodo. “KHI gives MSDF fist P-1 antisub patrol aircraft.” *The Japan Times*, March 27, 2013. https://www.japantimes.co.jp/news/2013/03/27/business/khi-gives-msdf-first-p-1-antisub-patrol-aircraft/, accessed March 1, 2021.

Kyodo. “Two-thirds of public against easing weapons export curbs: poll,” *The Japan Times*, February 23, 2014, https://www.japantimes.co.jp/news/2014/02/23/national/politics-diplomacy/two-thirds-of-public-against-easing-weapons-export-curbs-poll/.

Lee Juho. “South Korea’s New CVX Aircraft Carrier Project: An Overview.” *Naval News*, May 27, 2021, https://www.navalnews.com/event-news/madex-2021/2021/05/south-koreas-new-cvx-aircraft-carrier-project-an-overview/, accessed May 30, 2021.

Lewis, Paul. “Japan plans timetable for P-3C Orion replacement.” *Flight Global*, November 14, 1995. https://www.flightglobal.com/japan-plans-timetable-for-p-3c-orion-replacement/13722.article, accessed October 7, 2019.

Liff, Adam P. “Japan’s defense policy: Abe the evolutionary.” *The Washington Quarterly* 38.2 (2015): 79-99.

Lincoln, James R., and Masahiro Shimotani. 2009. "Whither the Keiretsu, Japan's Business Networks? How Were They Structured? What Did They Do? Why Are They Gone?." UC Berkeley Working Paper Series, Walter A. Haas School of Business, University of California, Berkeley, https://escholarship.org/content/qt00m7d34g/qt00m7d34g.pdf.

Lind, Jennifer M. “Pacifism or passing the buck? Testing theories of Japanese security policy.” *International Security* 29.1 (2004): 92-121.

Lockheed Martin, “Terminal High Altitude Area Defense (THAAD).” https://www.lockheedmartin.com/en-us/products/thaad.html accessed 30 June 2021.

Lorell, Mark A. *Troubled partnership: A history of US-Japan collaboration on the FS-X Fighter*. RAND, 1996.

Maema Takanori 前間 孝則. *Jetto enjin ni toritsukareta otoko.*『ジェットエンジンに憑りつかれた男』[Men who are obsessed with jet engines]. Kodansha, 1989.

Masterson, Julia. “South Korea Tests New Missile.” *Arms Control Today*, June 2020, https://www.armscontrol.org/act/2020-06/news/south-korea-tests-new-missile, accessed June 12, 2021.

Mercado, Stephen C. “The YS-11 Project and Japan’s Aerospace Potential,” *Japan Policy Research Institute Occasional Paper* No. 5, September 1995.

McCleary, Paul. “Taiwan Buys Lots of Tanks, But Really Wants New F-16Vs.” *Breaking Defense*, July 9, 2019, https://breakingdefense.com/2019/07/taiwan-buys-lots-of-tanks-but-really-wants-new-f-16vs/, accessed June 28, 2021.

McCurry, Justin. “North Korean nuclear test confirmed in major escalation by Kim Jong-un.” *The Guardian,* September 3, 2017, https://www.theguardian.com/world/2017/sep/03/north-korean-nuclear-test-confirmed-in-major-escalation-by-kim-jong-un, accessed September 4, 2017.

McDougall, Walter A. *Heavens and the earth: a political history of the space age*. Baltimore & London: The Johns Hopkins University Press, 1997.

Melman, Yossi. "South Korea In Advanced Negotiations For Iron Dome Purchase." *The Tower*, June 6, 2013, http://www.thetower.org/south-korea-in-advanced-negotiations-for-iron-dome-purchase/, June 10, 2021.

Michell, Simon (ed.). *Jane's Civil and Military Aircraft Upgrades 1994-95*. Coulsdon, UK: Jane's Information Group, 1994.

Missile Defense Agency. "Fact Sheet: Aegis Ashore." *U.S. Department of Defense Missile Defense Agency*, July 28, 2016.

Missile Defense Agency. "Terminal High Altitude Area Defense (THAAD)." *U.S. Department of Defense*. Last updated April 8, 2021, https://www.mda.mil/system/thaad.html, accessed June 28, 2021.

Missile Threat. "Aegis Ashore." *Center for Strategic & International Studies Missile Defense Project*, last updated June 15, 2018, https://missilethreat.csis.org/defsys/aegis-ashore/, accessed June 20, 2021.

"MHI to get license to produce PAC-3 interceptor missiles." *The Japan Times*. July 20, 2005. https://www.japantimes.co.jp/news/2005/07/20/national/mhi-to-get-license-to-produce-pac-3-interceptor-missiles-2/, accessed February 28, 2021.

"Mitsubishi To Build Missiles." *Technology Week*, June 5, 1967.

"'Mitsugetsu no Shuuen' Miraizu ni koshitsu" 「＜蜜月の終焉＞　ミライズに固執」['End of the Honeymoon: Sticking to Miraiz." *Chuunichi Shimbun*, November 10, 2007.

Moon, Chung-in, and Jin-Young Lee. "The revolution in military affairs and the defence industry in South Korea." *Security Challenges* 4, no. 4 (2008): 117-134.

Moon, Chung-in, and Jae-Ok Paek. "Defense Innovation and Industrialization in South Korea." *SITC Policy Briefs* 2010, no. Policy Brief 14 (2010).

Moravscik, Andrew. "Taking Preferences Seriously: A Liberal Theory of International Politics." *International Organization* Vol. 51, No. 4 (1997).

Moteff, John D. *FSX Technology: Its Relative Utility to the United States and Japanese Aerospace Industries*, Washington, D.C.: Congressional Research Service, Library of Congress, April 12, 1989.

Myoken, Yumiko. "The Bill of Basic Space Law." *Science and Innovation Section British Embassy* 4 (2008): 4.

Nakagawa Yasuzo. *Japanese Radar and Related Weapons of World War II*. Aegean Park Press: 1998.

Nakajima Shigeru, “The history of Japanese radar development to 1945,” in *Radar Development to 1945,* ed. Russell Burns. Institution of Electrical Engineers, 1988. pp. 245-258.

Nakajima, Shigeru. "History of Japanese Radar Development to 1945." *日本無線技報* 27 (1988): p. 47-55.

Nihon boueishou 日本防衛省 [Japan Ministry of Defense]. *Reiwa 2nenban bouei hakusho* 「零話年版防衛白書」 [2020 Defense White Papers].

Nihon boueishou kaijou jieitai koukuu shuudan shireibu 日本防衛省海上自衛隊航空集団司令部 [Japan Ministry of Defense Maritime Self Defense Forces Fleet Air Wing Headquarters]. 『Fleet Air Wing JMSDF』https://www.mod.go.jp/msdf/kuudan/, accessed March 1, 2021.

Nihon Gaimushou 日本外務省 [Ministry of Foreign Affairs of Japan]. *Buki yushutsu sangensoku nado 武器輸出三原則等 [The Three Principles on Arms Exports, etc.]*. April 21, 1967, revised February 27, 1976, https://www.mofa.go.jp/mofaj/gaiko/arms/mine/sanngen.html, accessed June 20, 2021.

Nihon gaimushō **日本外務省** [Japan Ministry of Foreign Affairs]. 「平成２０年版 外交青書」(２００８年版 第５１号)　第５章第２節 『外交力強化』[“Chapter 5, Section 2: Enhancing Diplomatic Capacity”, in *Diplomatic Blue Book 2008*, No. 51 (April 2008)].

Nihon gaimushō **日本外務省** [Japan Ministry of Foreign Affairs]. 「平成２１年版　外交青書」（２００９年版第５２号）　第５章第２節『外交力強化（２．情報収集）』平成２１年４月　[“Chapter 5, Section 2: Enhancing Diplomatic Capacity: (2) Intelligence Collection,” in *Diplomatic Blue Book 2009,* No. 52 (April 2009).]

Nikkei staff writers. “Japan in talks to sell patrol plane tech to Germany and France.” *Nikkei Asia*. August 20, 2018. https://asia.nikkei.com/Politics/Japan-in-talks-to-sell-patrol-plane-tech-to-Germany-and-France, accessed September 30, 2018.

“Nipponkoku no jieitai to Amerika Gasshuukoku guntai to no aida ni okeru kouhou shien,buppin mata wa ekimu no sougou no teikyou n ikan suru Nipponkoku seifu to Amerika Gasshuukoku seifu to no aida no kyoutei wo kaiseisuru kyoutei.”『日本国の自衛隊とアメリカ合衆国軍隊との間における後方支援、物品又は役務の相互の提供に関する日本国政府とアメリカ合衆国政府との間の協定を改正する協定』 [Agreement Between the Government of Japan and the Government of the United States of America Concerning Reciprocal Provision of Logistic Support, Supplies and Services Between the Self Defense Forces of Japan and the Armed Forces of the United States of America.]

April 15, 1996, https://www.mofa.go.jp/mofaj/gaiko/treaty/pdfs/treaty159_10a.pdf, accessed October 10, 2020.

Nolan, Janne E. *Military Industry in Taiwan and South Korea*. Springer, 1986.

Nordin, Johannes. "Taking Back Control: South Korea and the Politics of OPCON Transfer." *Institute for Security and Development Policy*, January (2020).

Oros, Andrew L. "Japan's growing intelligence capability." *International Journal of Intelligence and Counterintelligence* 15, no. 1 (2002): 1-25.

Osborne, Tony. "Double First for Kawasaki P-1 at Paris Air Show." *Aviation Week*. June 21, 2017. https://aviationweek.com/shownews/paris-airshow/double-first-kawasaki-p-1-paris-air-show Accessed May 11, 2021.

"P-3C Anti-Submarine Warfare (ASW) Patrol Aircraft" *Kawasaki*. https://global.kawasaki.com/en/mobility/air/aircrafts/p_3c.html, accessed April 4, 2021.

Pace, Scott. "US–Japan Space Security Cooperation." in Schrogl, Kai-Uwe, Peter L. Hays, Jana Robinson, Denis Moura, and Christina Giannopapa, Eds. *Handbook of Space Security Policies, Applications and Programs*. Springer Reference, 2015: 337-354.

Peck, Michael. "Why Does Taiwan Need M-1 Abrams Tanks?" *The National Interest*, November 23, 2019, https://nationalinterest.org/blog/buzz/why-does-taiwan-need-m-1-abrams-tanks-99207, accessed April 3, 2021.

Pekkanen, Saadia M. *Picking Winners?: From Technology Catch-up to the Space Race in Japan*. Stanford University Press, 2003.

Pekkanen, Saadia, and Paul Kallender-Umezu. *In Defense of Japan: From the Market to the Military in Space Policy*. Stanford University Press, 2010.

Pempel, T.J. *Regime shift: Comparative dynamics of the Japanese political economy*. Cornell University Press, 1998.

Pyle, Kenneth. *Japan rising: The resurgence of Japanese power and purpose*. PublicAffairs, 2009.

Radcliffe, William W. "Origins and Current State of Japan's Reconnaissance Satellite Program." *Studies in Intelligence* 54, no. 3 (2010): 9-21.

Raytheon. "Missile Defense." *Raytheon Missiles and Defense.* https://www.raytheonmissilesanddefense.com/capabilities/missile-defense, accessed February 26, 2021.

Reade, David S. *The Age of Orion: Lockheed P-3, an Illustrated History*. Schiffer, 1998.

"Reagan set to speed up Star Wars," *The Guardian*, February 7, 1987.

Reuters. "Japan favors Aegis Ashore over THAAD to bolster missile defenses: sources." *The Japan Times,* May 13, 2017, https://www.japantimes.co.jp/news/2017/05/13/national/japan-favors-aegis-ashore-thaad-bolster-missile-defenses-sources/, accessed May 14, 2017.

Reuters Staff. "Japan picks $1.2 billion Lockheed radar for Aegis Ashore batteries." *Reuters*. July 29, 2018, https://www.reuters.com/article/us-northkorea-usa-japan-aegis/japan-picks-1-2-billion-lockheed-radar-for-aegis-ashore-batteries-idUSKBN1KK0AV, accessed June 20, 2021.

Reuters Staff. "South Korean protestors denounce U.S. anti-missile system ahead of North-South summit." *Reuters,* April 23, 2018, https://www.reuters.com/article/us-northkorea-missiles-thaad/south-korean-protesters-denounce-u-s-anti-missile-system-ahead-of-north-south-summit-idUSKBN1HU101, accessed April 5, 2021.

Reynolds, Isabel & Emi Nobuhiro (Bloomberg). "Abe's plan for U.S. Aegis Ashore missile shield rattles Akita residents." *The Japan Times,* September 10, 2019, https://www.japantimes.co.jp/news/2019/09/10/national/politics-diplomacy/abes-plan-u-s-aegis-ashore-missile-shield-rattles-akita-residents/, accessed June 15 2021.

Rich, Michael, Edmund Dews, and C. L. Batten Jr. *Improving the military acquisition process: Lessons from RAND research*. No. RAND/R-3373-AF/RC. Santa Monica, CA: RAND Corp., 1986.

Richanbach, Paul H., et al. *The Future of Military R&D: Towards a Flexible Acquisition Strategy*. No. IDA-P-2444. Alexandria, VA: Institute for Defense Analyses, 1990.

Rinehart, Ian E., Steven A. Hildreth, Susan V. Lawrence. "Ballistic Missile Defense in the Asia-Pacific Region: Cooperation and Opposition." *Congressional Research Service,* April 3, 2015.

Rodman, Peter. *Shield Embattled: Missile Defense as a Foreign Policy Problem*. The Nixon Center, October 2001.

Rogoway, Tyler. "Officials Admit Japan's 'Helicopter Destroyers' Were Also Designed for Jets." *The Drive*. February 27, https://www.thedrive.com/the-war-zone/18855/officials-admit-japans-helicopter-destroyers-were-also-designed-for-jets, accessed 23 June 2021.

"S. Korea Requested Information on THAAD to Develop L-SAM." *KBS World*, June 5, 2014, http://world.kbs.co.kr/service/news_view.htm?lang=e&Seq_Code=103072, accessed June 24, 2021.

Saegusa, Asako. “Japan split over US aid for spy satellites.” *Nature* 396, no. 6710 (1998): 401.

Saeki, Norihiko. “SASKE R&D Program”. Presentation given March 4, 2009. http://usgif.org/system/uploads/1008/original/Norihiko_Saeki.pdf Accessed May 27, 2018.

Sagan, Scott. “Why Do States Build Nuclear Weapons?: Three Models in Search of a Bomb” *International Security*, Vol. 21, No. 3 (Winter 1996-1997).

Samuels, Richard J. *“Rich Nation, Strong Army”: National Security and the Technological Transformation of Japan*. Cornell University Press, 1996.

Samuels, Richard J. *Securing Japan: Tokyo’s grand strategy and the future of East Asia*. Cornell University Press, 2008.

Sanger, David E., Choe Sang-Hun and William J. Broad. “North Korea Tests a Ballistic Missile That Experts Say Could Hit California.” *The New York Times*, July 28, 2017, https://www.nytimes.com/2017/07/28/world/asia/north-korea-ballistic-missile.html, accessed July 30, 2017.

Sato, Gentei. "A secret story about the Yagi antenna." *IEEE Antennas & Propagation Magazine* 33, no. 3 (1991): 7-18.

Sato, Heigo. “Japan-US Security Relations under the Koizumi Administration: Implications for Bush’s Second Term.” *National Institute for Defense Studies*, 2004.

Sato, Yasushi. “Managing the Interface between Politics and Technology: Itokawa Hideo, Shima Hideo, and the Early Japanese Space Programs.” *Historia Scientarium (International Journal of the History of Science Society of Japan)*, Vol.21, No. 3, March 31, 2012: 193-210.

Ser Myo-ja. “China’s defense chief raises THAAD.” *Korea JoongAng Daily*, February 4, 2015, https://koreajoongangdaily.joins.com/2015/02/04/politics/Chinas-defense-chief-raises-Thaad/3000556.html, accessed June 30, 2021.

Schoppa, Leonard J. “Two-level games and bargaining outcomes: Why gaiatsu succeeds in Japan in some cases but not others.” *International Organization* 47, no. 3 (1993): 353-386.

Sherman, J. Daniel. “Patriot PAC-2 Development and Deployment in the Gulf War.” *Acquisition Review Quarterly*, Winter 2003. https://www.dau.edu/library/arj/ARJ/arq2003/ShermanWT3.pdf, accessed November 16, 2020.

Singer, J. David. “Reconstructing the correlates of war dataset on material capabilities of states, 1816–1985.” *International Interactions* 14, no. 2 (1988): 115-132.

Sneider, Daniel. “Japan agonizes over joining ‘star wars’ program. Issue sparks debate in parliament on Japanese role in East-West confrontation.” *Christian Science Monitor*, December 18, 1985.

Sobie, Brendan. “Japan extends talks with USA.” *Flight International*, April, 12 2004. https://www.flightglobal.com/japan-extends-talks-with-usa/54003.article, accessed March 15, 2021.

Song Sang-ho. “Seoul fires back at China’s opposition to THAAD.” *The Korea Herald*, March 17, 2015, http://www.koreaherald.com/view.php?ud=20150317001093, accessed 30 June 2021.

“SPY-7: The World’s Most Powerful and Versatile Radar Keeping You Safe at Home and Abroad.” *Lockheed Martin*, https://www.lockheedmartin.com/en-us/products/spy-7.html, accessed June 20, 2021.

Stokes, Henry Scott. “U.S. Pushing Japan for Higher Rate of Arms Spending; Defense Budget up 6.3% for 1980.” *The New York Times*, January 14, 1980.

Swaine, Michael D. *Taiwan's National Security, Defense Policy, and Weapons Procurement Processes*. Santa Monica, CA: RAND Corp., 1999.

Taylor, John W. R. *Jane’s All The World’s Aircraft 1966-67*. Macmillan, 1968.

Tellis, Ashley J., Janice Bially, Christopher Layne, and Melissa McPherson. “Chapter Seven: Measuring Military Capability” in *Measuring National Power in the Postindustrial Age*. Product Page. RAND Corporation, January 1, 2000. http://www.rand.org/pubs/monograph_reports/MR1110.html.

“THAAD on the Korean Peninsula.” *Institute for Security of Development Policy*. October 2017. https://isdp.eu/publication/korea-thaad/, accessed June 13, 2021.

Thompson, Loren. “Raytheon Presses Case for Replacing Lockheed Martin Radar In Missile Defense Of Japan.” *Forbes*, September 22, 2020, https://www.forbes.com/sites/lorenthompson/2020/09/22/raytheon-presses-case-for-replacing-lockheed-martin-radar-in-missile-defense-of-japan/, accessed September 25, 2020.

Tsuneoka Chieko. “Japan Plans Its Own Missiles Able to Hit North Korea.” *The Wall Street Journal*. December 9, 2020. https://www.wsj.com/articles/japan-plans-its-own-missiles-able-to-hit-north-korea-11607510528, accessed December 11, 2020.

Uda Shintarou 宇田新太郎. “Tanpa choubiimu ni tsuite (daiichi houkoku)”「短波長ビームに就て (第一報告)」[On the wireless beam of short electric waves]. *電氣學會雜誌 [The Journal of the Institute of Electrical Engineers of Japan]* 46, no. 452 (1926): 273-282.

Urayama, Kaori. “Missile Defense, US-Japan Alliance and Sino-Japanese Relations, 1983--2007.” Doctoral dissertation, Boston University, 2008.

“U.S. and South Korea agree THAAD missile defence deployment.” *BBC News*, July 8, 2016, https://www.bbc.com/news/world-asia-36742751, accessed June 25, 2021.

U.S. Congress, Office of Technology Assessment, Global Arms Trade, OTA-ISC-460. Washington, DC: U.S. Government Printing Office, June 1991.

“U.S. debate on early deployment of SDI puts Tokyo in a bind,” *Christian Science Monitor*, February 18, 1987.

U.S. Department of Defense. *Critical Technologies Plan*. March 15, 1990. https://apps.dtic.mil/dtic/tr/fulltext/u2/a219300.pdf, accessed March 1, 2021.

U.S. Naval Technical Mission to Japan. “Japanese Electronic Tubes.” Intelligence Targets Japan (DNI) of September 4, 1945. Fascilie E-1, Target E-13, January 17, 1946.

“U.S. Navy’s SPY-6 Family of Radars.” *Raytheon Missiles and Defense*, https://www.raytheonmissilesanddefense.com/capabilities/products/spy6-radars, accessed June 20, 2021.

Vogel, Steven Kent. *The Power Behind “Spin-Ons”: The Military Implications of Japan’s Commercial Technology*. Vol. 41. Berkeley Roundtable on the International Economy, University of California, Berkeley, 1991.

Vogel, Steven Kent. *Japan remodeled: How government and industry are reforming Japanese capitalism*. Cornell University Press, 2006.

Waldron, Greg. “In Focus: China crisis adds urgency to Japanese air force modernization.” *Flight International*, October 8, 2012. https://www.flightglobal.com/in-focus-china-crisis-adds-urgency-to-japanese-air-force-modernisation/107229.article, accessed March 13, 2021.

Waldron, Greg. “Japan defence budget calls for 20 P-1s, 5 V-22s.” *Flight International*, January 14, 2015. https://www.flightglobal.com/japan-defence-budget-calls-for-20-p-1s-5-v-22s/115622.article, accessed March 13, 2021.

Walt, Stephen M. *The Origins of Alliances* (Ithaca, N.Y.: Cornell University Press, 1987).

Waltz, Kenneth N. “Structural realism after the Cold War.” *International security* 25, no. 1 (2000): 5-41.

Waltz, Kenneth N. *Theory of International Politics*. Long Grove: Waveland Press, Inc., 1979.

Wanner, Barbara. “Japan Agrees to Transfer Aircraft Navigational Technology,” Japan Economic Institute Report, May 1, 1992.

Wilson, Stewart. *Combat Aircraft since 1945*. Aerospace, 2000.

Woo-Cumings, Meredith (Jung-en). *Race to the Swift: State and Finance in Korean Industrialization*. Columbia University Press, 1991.

Woo-Cumings, Meredith, ed. *The Developmental State*. Cornell University Press, 1999.

Wudunn, Sheryl. “North Korea Fires Missile Over Japanese Territory.” *The New York Times*. September 1, 1998, https://www.nytimes.com/1998/09/01/world/north-korea-fires-missile-over-japanese-territory.html, accessed June 13, 2021.

Yamaguchi Mari (The Associated Press). “Japan to buy Aegis Ashore missile defense systems.” *Defense News*, December 19, 2017. https://www.defensenews.com/land/2017/12/19/japan-to-buy-aegis-ashore-missile-defense-systems/, accessed December 25, 2020.

Yamaguchi Mari (The Associated Press). “Purchases of American weapons drive Japan’s defense spending hike.” *Navy Times*, August 30, 2019, https://www.navytimes.com/news/your-navy/2019/08/30/purchases-of-american-weapons-drive-japans-defense-spending-hike/, accessed June 16 2021.

Yamamura, Kozo. "Zaibatsu, Prewar and Zaibatsu, Postwar." *The Journal of Asian Studies* 23, no. 4 (1964): 539-554.

Yagi Hidetsugu 八木秀次. Denpa shikou houshiki 電波指向方式 [Variable Directional Electric Wave Generating Device]. Japanese Patent No. 69115, filed May 5, 1926, issued August 13, 1926.

Yagi Hidetsugu. Variable Directional Electric Wave Generating Device. U.S. Patent No. 1,860,123, filed September 3, 1926, issued May 24, 1932.

Yeo, Mike. “Japan secures first-ever major defense export with Philippine radar order.” *Defense News*, August 28, 2020., https://www.defensenews.com/global/asia-pacific/2020/08/28/japan-secures-first-ever-defense-export-with-philippine-radar-order/, accessed June 10, 2021.

Yeo, Mike. “South Korea to spend $2 billion on aircraft buy.” *Defense News*, June 29, 2020, https://www.defensenews.com/global/asia-pacific/2020/06/29/south-korea-to-spend-2-billion-on-aircraft-buy/, accessed December 14, 2020.

Yoon Min-sik. “S. Korea requests Pentagon’s information on THAAD missile defense system: source.” *The Korea Herald*, October 18, 2013, http://www.koreaherald.com/view.php?ud=20131018000139, accessed June 14, 2021.

Yu Jihoon & Erik French. “Why South Korea’s Aircraft Carrier Makes Sense.” *The Diplomat*, March 27, 2021, https://thediplomat.com/2021/03/why-south-koreas-aircraft-carrier-makes-sense/, accessed May 15, 2021.