ARMS RACING IN ASIA:
THE NAVAL DIMENSION

Event Report
18 November 2016

Institute of Defence and Strategic Studies

RSiS
Nanyang Technological University
S. RAJARATNAM SCHOOL OF INTERNATIONAL STUDIES

Event Report

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18 November 2016
Holiday Inn Atrium, Singapore

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Report of a Workshop organised by:
Military Transformations Programme and
Maritime Security Programme,
Institute of Defence and Strategic Studies (IDSS),
S. Rajaratnam School of International Studies (RSIS),
Nanyang Technological University (NTU),
Singapore

Editor
Richard A. Bitzinger

INTRODUCTION

On 18 November 2016, the RSIS Military Transformations Programme (MTP), together with the RSIS Maritime Security Programme, hosted a one-day workshop on "Arms Racing in Asia: The Naval Dimension." The workshop was held at the Holiday Inn Singapore Atrium and was run back-to-back with the Maritime Security Programme's conference on "Navies, Coast Guards, the Maritime Community and International Stability," held 16–17 November, also in Singapore.

This workshop focused primarily on the issue of recent arms acquisitions by Asian militaries – particularly focusing on maritime systems – and the impact such proliferation might have on regional security. Papers presented at the workshop included: who is selling arms to Asia (and why); the security dimensions of regional arms acquisitions; and how major powers, particularly the United States and China, view the proliferation of increasingly sophisticated weapons systems to the region. Special focus was paid to the proliferation of submarines, aircraft carriers, and unmanned aerial systems, and panellists speculated on the possible spread of extremely high-technology capabilities (so-called "third-offsets" systems) that could have an unknown effect on regional security and military balances. The workshop concluded with a panel discussion featuring experts on naval modernisation and arms proliferation.

The workshop was chaired by Richard A. Bitzinger, Senior Fellow and Coordinator of the Military Transformations Programme.

SECTION 1: IS THERE AN ARMS RACE IN ASIA?

WHO IS SELLING ARMS TO ASIA?

JONATHAN D. CAVERLEY

This memo looks at major conventional weapons *deliveries* to Asia over the past decade.[1] Some of this may be review for attendees, but bears repeating given other conclusions suggested in this memo.

To sum up the findings:

- As many analysts have pointed out, the market is growing, despite China importing much less compared to a decade ago. Growth is fastest in the platforms most important for maritime, power-projection, and anti-access missions.

- It is not a very competitive market however, especially once one looks at procurement by each state. The notable exception is Indonesia, with India possibly following suit.

- The United States and the major European exporters have lost market share over the past ten years.

- Both Russia and China are deeply dependent on a very few number of customers in Asia.

The memo concludes by speculating on the future of the Asian market based on these data. I look forward to feedback on this final section.

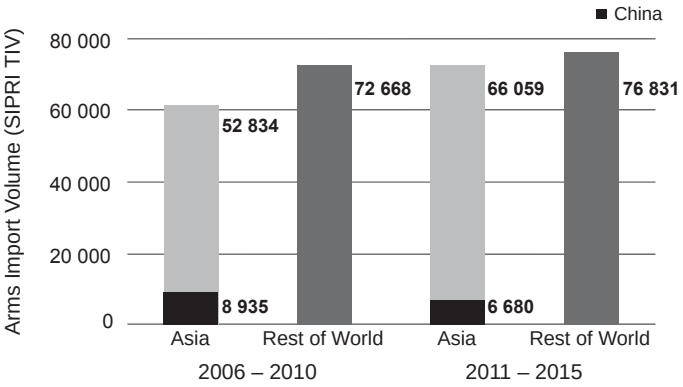
[1] Throughout the memo I employ SIPRI delivery data. for simplicity when I seek to show trends I compare 5 year totals (2006–2010 and 2011–2015) much as SIPRI does. To demarcate the region, I used the Congressional Research Service list of countries that make up "Asia." Stockholm International Peace Research Institute (SIPRI), "SIPRI Arms Transfers Database," 2016. Catherine A. Theohary, "Conventional Arms Transfers To Developing Nations, 2007–2014" (Washington, D.C., 2015).

The Non-China Market in Asia is Big, and Growing

Measured by SIPRI's Trend Indicator Value (TIV), deliveries to the Asia market are growing at a much faster pace relative to the rest of the world as shown in Figure 1. Between 2011–2015, the non-China Asia market has grown by 25 percent relative to 2006–2010. The rest of the world grew at 10.5 percent. Moreover, none of the growth in Asia can be attributed to China where, thanks to massive domestic procurement efforts, imports actually *shrank by 25 percent*. Combined, the Asia market (even with Chinese decline) is now basically half the global arms export market.

That said, the five-year total of regional GDP in constant 2011 dollars has increased by 33 percent over this time period, according to the World Development Indicators. More broadly, regional imports of goods and services have increased by 24 percent over roughly the same time-period (comparing 2005–2009 to 2010–2014 for data availability reasons).[2] Thus growth in the import of weapons to the region is keeping pace with other economic activity.

Figure 1:
Volume of Exports to Asia and Rest of World, 2006–2015 (Source: SIPRI)



[2] World Development Indicators, The World Bank. http://data.worldbank.org/data-catalog/world-development-indicators

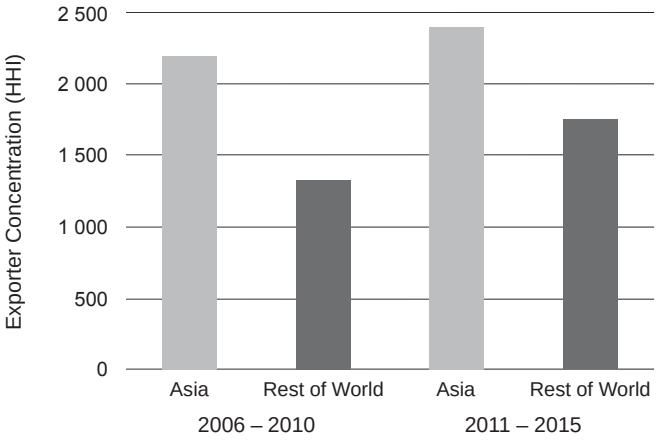
Growth in platforms central to maritime operations are growing faster still in Asia. Table 1 lists the volume of exports by SIPRI's weapons category. The volume of aircraft has increased by 41 percent, ships 39 percent, and missiles and air defence 29 percent. While the aggregate measure of transfers does not resemble an arms race, the high growth in these categories suggest otherwise.

Table 1:
Comparing Export Volume by Weapon Category

CATEGORY	2006–2010	2011–2015	CHANGE
Aircraft	21 065	29 623	41%
Ships	7 456	10 400	39%
Missiles/Air defence	5 854	7 531	29%
Armoured vehicles	5 076	6 063	19%
Sensors	2 125	2 580	21%
Engines	1 412	2 284	62%
Other	910	899	-1%

Categories arranged in order of volume. Source: SIPRI

Figure 2:
Concentration of States' Exports to Asia and Rest of World, 2006–2015



The Market is Uncompetitive

To efficiently describe who is selling to whom, I use the Herfindahl-Hirschman Index (HHI) which factors both the number of states delivering weapons to the region, as well as each exporter's volume of deliveries.[3] Figure 2 depicts the results for the overall market. First, in terms of the countries selling weapons to the region, Asia (not including China) is much more concentrated relative to the rest of the world. Perhaps counterintuitively, Figure 2 also shows that, even as the size of both the Asia and non-Asia markets have grown, concentration has also increased. In short, despite the rapid growth in deliveries, Asian states are buying more weapons from fewer countries.

The levels of concentration grow more striking when we look at the modern weapons essential to both power projection and anti-access maritime strategies (Aircraft, Missiles, and Ships). Figure 3 shows that there are wide disparities across platforms, but that these markets are more concentrated (i.e. higher HHI) relative to the broader market; fewer countries successfully export these weapons compared to products like armour and artillery.

Figure 3 also shows that concentration has declined modestly across many important sectors, with the exception of ships. On the other hand, Figure 4 compares concentration in these platforms' markets between Asia (again excluding China) and the rest of the world. In no area is the Asia market significantly more competitive by this measure, and the differences are dramatic in aircraft and especially ships. In the rest of the world, the market for ships appears quite competitive, but extremely uncompetitive in Asia.

[3] The HHI is the sum of the squared market shares of every competitor in an industry. It approaches zero whenna market consists of a large number of firms of relatively equal size. The US Department of Justice used the HHI for anti-trust regulation, and considers markets in which the HHI is between 1000 and 1800 to be "moderately concentrated," and those in which the HHI is in excess of 1800 to be "concentrated." http://www.justice.gov/atr/public/testimony/hhi.htm.

Figure 3:
Concentration of Exporters to Asia by Platform across Time

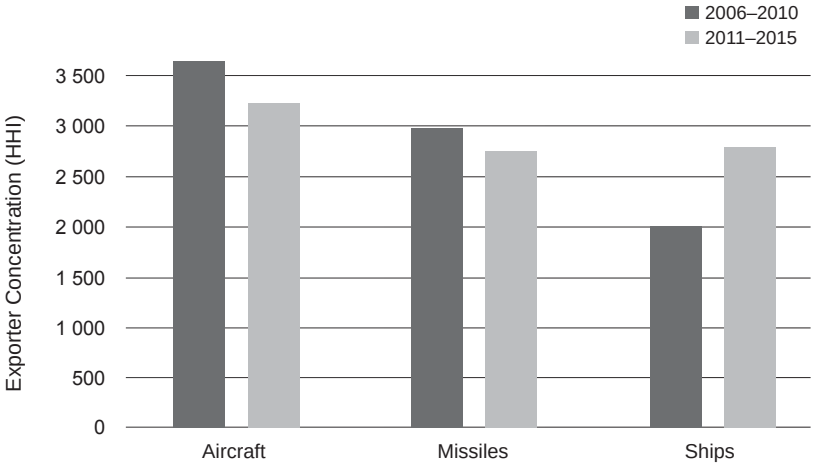
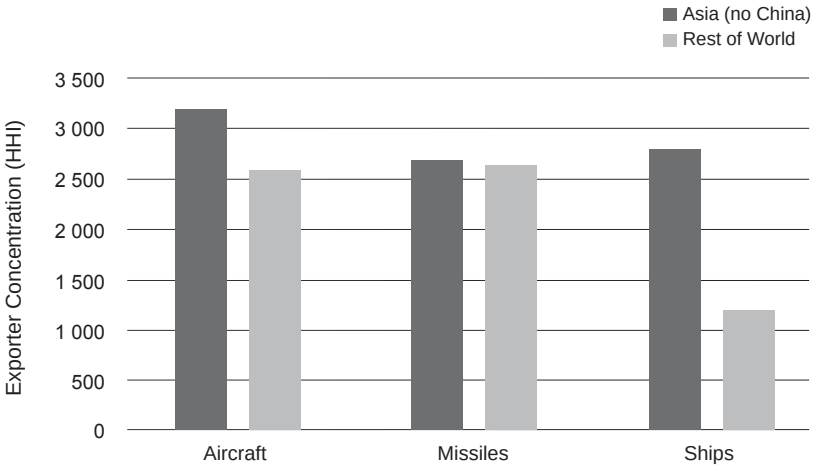


Figure 4:
Concentration of Exporters by Platform by Region



On top of this, looking at aggregate regional HHI *overstates* competitiveness. Procurement decisions are made by countries. Figure 5 depicts exporter concentration for major Asian importers, while Figure 6 depicts the volume of transfers by exporting country. We see that, with the exception of Indonesia, the HHI values are double or triple the regional average. Most countries tend to buy most of their weapons from one or two states, especially when defence budgets are small. However, there is some evidence that several small-budget states in Southeast Asia (specifically Indonesia, Thailand, and Malaysia) are more competitive. In general, Figure 6 suggests unsurprisingly that international political alignment correlates tightly to procurement decisions, although Indonesia and India may be wild cards. The largest shift in the market over the past decade, the turn to China by Pakistan, was due to the American shift in interests away from that country towards India. The next section discusses the difference between the Asia market's three poles: China, Russia, and the United States.

Figure 5:
Concentration of Exporters by State, 2011–2015 (Source: SIPRI)

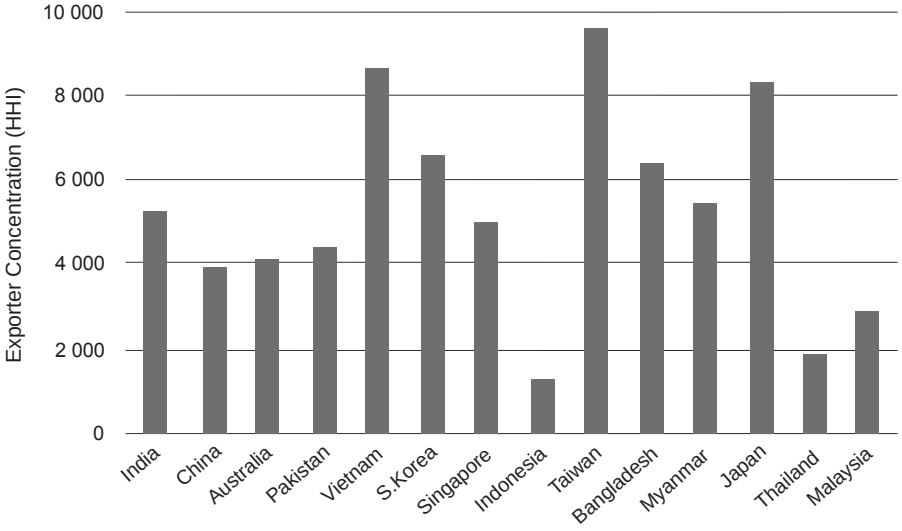


Figure 6:
Exporter Volume of Deliveries by State, 2011–2015 (Source: SIPRI)

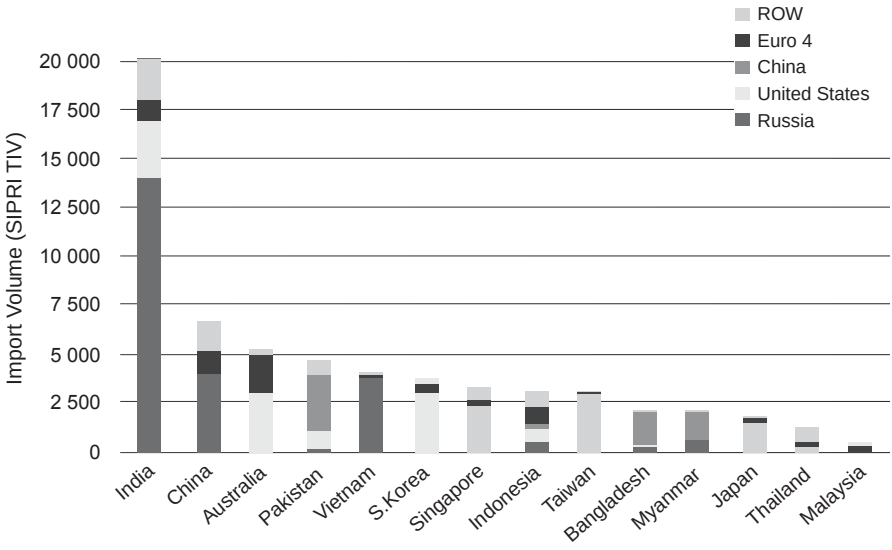


Table 2:
Comparing Major Exporters' Asia and ROW Market Share (Source: SIPRI)

	Market Share (2011–2015)		Change in Percentage vs 2006–2010	
	Asia	**ROW**	**Asia**	**ROW**
Russia	35%	25%	9.6%	2.9%
US	32%	33%	-5.2%	3.4%
China	11%	5.9%	4.6%	2.3%
Spain	3.2%	3.5%	2.4%	0.9%
UK	2.7%	4.5%	0.7%	0.4%
Germany	2.6%	4.7%	-5.0%	-6.1%
Israel	2.3%	1.8%	-0.1%	-0.4%
France	2.1%	5.6%	-6.2%	-1.5%
Italy	1.8%	2.7%	0.9%	0.6%
Ukraine	1.7%	2.6%	0.9%	0.7%

Who is Supplying Asia? Who Needs Asia the Most?

Table 2 compares market shares of the ten largest suppliers to Asia as well as the change in this share between the two five–year periods under consideration. The first aspect to note is that China is the only Asian power with significant market share. With less than one percent of the regional market, the next largest importer, South Korea, does not crack the top ten.

Second, the United States does appear to have lost considerable market share in Asia even as it has gained elsewhere. Nonetheless, the United States performs similarly both in and outside Asia. On the other hand, China and Russia are clearly regional suppliers with large disparities between their market shares in Asia and ROW. Indeed, essentially all of their growth over the past five years has been in Asia. Not surprisingly, the major European exporters underperform in Asia; France and Germany have seen steep declines. Of the smaller suppliers, Israel outperforms in Asia. Perhaps surprisingly, the other major Asian exporter, South Korea does not do much better on its home turf than around the world.

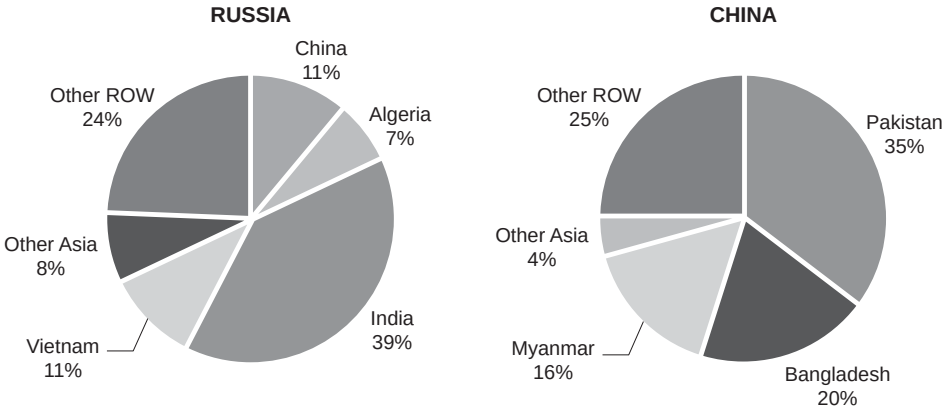
Finally, Asia is even more of a duopoly compared to the rest of the world, with Russia and the United States accounting for 68 percent (versus 58 percent elsewhere). Once China's (rising) regional market share of 11 percent is factored in, there is precious little space for which other states can compete.

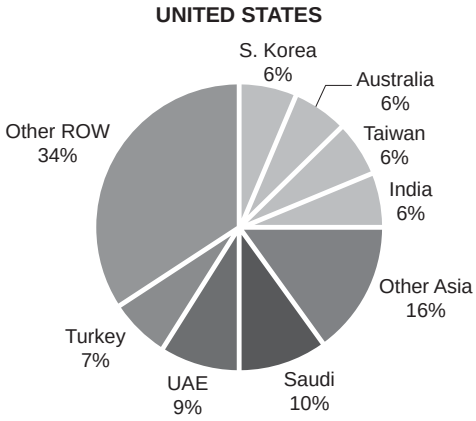
We can use the HHI to describe the level of monopsony, how concentrated is a state's portfolio of clients, for exporters as well. This can serve as a proxy for market power by the exporter relative to any given client. The United States sells to so many other countries that it has the world's lowest HHI, 0.049. Other successful, if smaller, exporters also have quite low HHIs: France at 0.071, Sweden at 0.098. Russia has an astonishingly high HHI of 0.189, slightly better than China (0.195) but worse than even a weak exporter like Turkey (0.171).

These skews are made even clearer when looking at the top three vendors to Asia and their customers. Figure 7 shows the largest Asian and non–Asian customers of Russia, China, and the United States. The results are striking. A mere three states make up 61 percent of Russia's and 71 percent of China's global arms deliveries for 2011–2015. The top three American buyers (none of them in Asia) make up only 26 percent. Beyond the three major customers, China and Russia sell to few other Asian clients. The United States has a much more diverse portfolio both inside and outside the region.

The geopolitical significance of these trading relationships should not be ignored. For all the recent comity between China and Russia, 50 percent of Russia's sales go to the two most important rivals on China's border. In addition, 71 percent of China's deliveries in 2011–2015 have gone to states bordering India (which happens to be Russia's chief customer).

Figure 7:
Deliveries by Importer as Percent of Total Deliveries, 2011–2015 (Source: SIPRI)





Conclusion: Russia versus the "West?"

At first glance, the market appears to be shifting decisively in the direction of Russia (and to a more limited extent China) at the expense of the United States and Europe. This is especially the case in maritime and anti–access platforms. Figures 8 and 9 show how Russian market share over time in SIPRI's "Ships" category has skyrocketed to half the market. Russian exports from 2011–2015 were twenty-eight times the previous period. Even if we factor out the export of an aircraft carrier and nuclear submarine to India, this increase is "only" sixteen–fold. The conclusion starts to explore what forces might explain this, and make some more forward-looking observations (while admitting that deliveries are an imperfect way to predict future developments given the long lag time of arms deals).

Perhaps this is evidence of a general geopolitical realignment by smaller states in the region, a turn away from the United States and Europe towards Russia and China. However, the data presented above suggest that the United States, the world's only *global* arms dealer, is not underperforming in Asia; its market share both in and outside the region are relatively similar (albeit they are changing at different rates). Rather, Russia and China *outperform* in Asia relative to the rest of the world. The data show that all other countries beside the United States concentrate their sales in their own region.

As Figure 6 shows, with the exception of India, the large importers almost overwhelmingly depend on weapons from a long-standing patron. The smaller countries that might play one sponsor off another are unlikely to spend enough to influence the larger market. There appear to be limits to how much more market share other states can take from the United States and Europe. One piece of evidence to support this is that Europe still commands a large percentage of the Ships market (23 percent), the one area in which the United States generally chooses not to compete.

Figure 8:
Market Share for Ships, 2006–2010

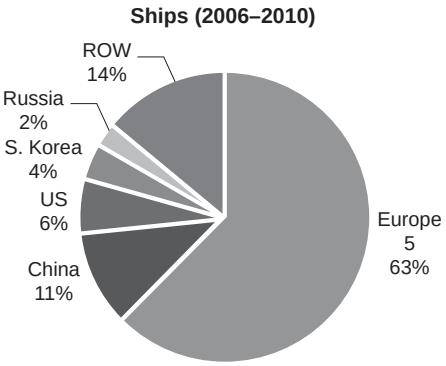
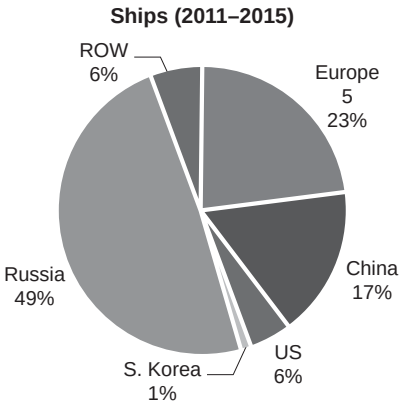


Figure 9:
Market Share for Ships, 2011–2015



Nonetheless, the precipitous decline in European market share between the two periods demands investigation. With the demise of the Warsaw Pact, Russia, at least in terms of arms transfers, has essentially devolved into an Asian regional power. Indeed, it is deeply dependent on a very few countries in Asia at that. In terms of market power, having the ability to drive hard bargains and walk away from deals, it is not in a strong position, especially if China successfully brings better products (reverse-engineered from Russian imports) to the market. Moreover, 39 percent of its transfers went to a single country (India) that is a) looking to build a sophisticated, power-projecting military on its own and b) probably needs allies other than Russia in its rivalries with China and Pakistan.

Russia is hampered by massive corruption that makes its military spending ineffective at producing top weaponry at a reasonable price. And at any rate, it is cutting its defence spending dramatically (one estimate has next year's decline at 27 percent but a better estimate is a still massive 8 percent).[4] Russia's large rearmament plan, even before the impending 2016 budgets cuts, emphasised procurement over R&D, another indication of the relatively short time horizon of the Putin administration. Indeed, the percentage of the Russian defence order (GOZ) spent on R&D declined from 30.7 percent in 2006 to 14.7 percent in 2015.[5]

It would be hubristic to predict the demise of a defence industrial base that has bounced back from the near-complete collapse of its state and economy. But, given these structural forces, Russia is likely to act like a second-tier player, exporting its crown jewels to Asia for financial gain rather than influence.[6] But while Russia can no longer advance its international strategy very far through arms transfers, this does not mean that Russian arms transfers cannot have international strategic effects.

Caverley and Kapstein offer an alternative explanation: the rising anti-access military demands of these states cannot be met by the expensive, sophisticated, power projecting hardware supplied by the West, especially with a Russian fire sale.[7] The fact that Europe's loss of market share in the above went almost entirely to Russia would suggest that this is where the competition in the market is. The United States will dominate the global but limited market for advanced power projecting weapons, while other countries will compete fiercely to supply the less-sophisticated weapons for the anti-access missions these countries need.

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[4] "Russia prepares for deep budget cuts that may even hit defence" *Financial Times* 2016 https://www.ft.com/content/806400be-9e94-11e6-891e-abe238dee8e2

[5] Susanne Oxenstierna, "Russia's Defense Spending and the Economic Decline," *Journal of Eurasian Studies*, 2016.

[6] Keith Krause, *Arms and the State: Patterns of Military Production and Trade*, 1995.

[7] Jonathan D. Caverley and Ethan B. Kapstein, "Who's Arming Asia?," *Survival* 58, no. 2 (2016): 167–84.

THE SECURITY DIMENSIONS OF REGIONAL ARMS ACQUISITIONS

SHERYN LEE

It is evident that since around 2000, a sustained and rapid build-up of naval and associated arms acquisitions has been underway in the Asia-Pacific. The region is largely a maritime theatre, and the significance of sea-lanes, maritime borders and natural resources, has meant the rapid modernisation of naval and air defence capabilities over other services. Moreover, the region's rapid economic growth has translated into the ability to invest in increasing the quality and quantity of major naval and associated air platforms, as well as investment into indigenous defence industries. This paper examines the most important features and repercussions of the diffusion of advanced weapons to the region. It focuses on the largest and most technologically sophisticated navies in the Asia-Pacific: The People's Republic of China (PRC), Japan, the Republic of Korea (ROK, South Korea), and Vietnam. These countries' vigorous naval and associated air modernisation programmes demonstrate that the US, Japan, South Korea and Vietnam are all reacting to Chinese military modernisation. Highly capable blue-water navies are being developed, for instance, modern surface combatants (destroyers and frigates), aircraft carriers (euphemistically called 'amphibious transport ships' or 'sea control ships'), submarines, as well as land-based aircraft for both maritime surveillance and strike.

China

China's long-term military modernisation emphasizes the upgrading of its naval and air power, and a realignment of its force structure. In the long-term, the PLA can challenge the qualitative and quantitative superiority of American forces in the Western Pacific. Its modernisation programmes suggest that the PLA aims to develop a credible conventional and nuclear

deterrent based on a triad of land- (missiles), air- and sea-based systems in which to control the 'near seas', and to project its national power in the 'far seas'.[8] Related to this, it has vested interests in maintaining its sovereignty claims in the East and South China Seas (Taiwan, Takeshima/Dokdo, Ieodo/Suyan, Spratly islands, Paracel islands).

Currently, the PLA Navy has more than 75 major surface combatants (destroyers and frigates), and acquisitions include two 8,000-ton *Sovremenny*-class destroyers purchased from Russia in 2000, with another two ordered in January 2002. Four Type 071 *Yuzhao*-class amphibious ships were added to the East Sea Fleet in 2016, and three Type 052D destroyers were delivered to the South Sea Fleet in 2015. Numerous Type 054A or *Jiangkai-II* frigates are under construction. China's new destroyers and frigates "provide a significance upgrade to the PLA Navy's area air defence capability, which will be critical as it expands operations into distant seas beyond the range of shore-based air defence".[9] China now has the largest fleet of attack submarines in the world (62)—with the US Navy's force falling to 53 in 2009—and the PLA Navy has put into service four new classes of indigenously built submarines, the *Jin*-class, the *Song*-class, the *Yuan*-class, and the *Song*-class.

China has made most of its advancements in the development of its anti-access and area-denial (A2/AD) capabilities, especially its anti-ship cruise missiles (ASCM) and anti-ship ballistic missiles (ASBM). While its short-range ballistic missiles, the DF-12s, are targeted for a Taiwan contingency, it is clear that the modernisation of its ASCMs and ASBMs are targeting US missile defence and countering American extended deterrence in the Western Pacific. It is also increasingly investing into space and hypersonic glide platforms that are capable of outdoing US missile defence with regards to Terminal High Altitude Area Defence (THAAD), and SM-3 and SM-6 on Aegis destroyers and cruisers. The Chinese can and have invested in intermediate-, medium- and short-range nuclear warheads—

[8] See Nan Li, 'The evolution of China's naval strategy and capabilities: from "Near Coast" and "Near Seas to "Far Seas", *Asian Security*, Vol. 5, No. 2 (2009), pp. 144-169.
[9] US Department of Defense, *Annual Report to Congress on Military and Security Developments Involving the People's Republic of China 2015* (Washington: Department of Defense, 2015), p. 9.

both the DF-21D 'carrier killer' and DF-26 can be armed with nuclear warheads—which pose significant problems for American deterrence and missile defence. With regards to space, China is investing in anti-satellite (ASAT) systems that can blind the US' heavy reliance on satellite communication in the maritime theatre, which would significantly impact US warfighting capabilities, and modern C4ISR capabilities.

Japan

The Japan Maritime Self-Defence Force (JMSDF) is the most powerful Navy in the Asia-Pacific after the United States Navy, and Japan's alliance with the United States has long been an anchor of the US security role in Asia. The Japanese Navy is evolving to "combine enhanced capabilities to retain sea control in the Sea of Japan and the East China Sea (particularly with regards to Takeshima/Dokdo islands and Senkaku/Diaoyu islands) with extended operational reach and flexibility, including an expeditionary component to meet alliance and diplomatic commitments in East Asia and beyond its confines".[10] Although Japan indigenously develops its own ships, these platforms have benefited from access to advanced American software and weapons. The US and Japan have also cooperated in developing certain technologies—sensor, advanced kinetic warhead, second-stage propulsion and a lightweight nose cone—for the Ballistic Missile Defence (BMD) interceptor missiles (SM-3 Block IIA version) used by only Japanese and American *Aegis* ships, with Japan funding a significant share of the effort. In 2015, the US authorised the sale of two additional *Aegis* destroyers, and Japan also announced plans to modernise its existing six destroyers with the latest *Aegis* system, to bring its capability up to eight BMD-capable *Aegis* destroyers using the SM-3.

Japan has also invested in 42 F-35A Joint Strike Fighters (JSF), as part of its modernisation process allowing further interoperability with the US Air Force and the US Navy's air wing. Upgrades to its aging F-2 fighters

[10] Alessio Patalano, 'Japan as a Seapower: Strategy, Doctrine, and Capabilities under Three Defence Reviews, 1995-2010', *Journal of Strategic Studies*, Vol. 37, No. 3, pp. 403-441.

include equipping them with American Joint Direct Attack Munition (JDAM) kits, that enable the jets to have a precision bombing capability. To assist its integration with US global command and control, it also acquired three RQ-4 *Global Hawk* unmanned surveillance systems and E-2D Advanced Hawkeye airborne early warning and control aircraft, which would greatly enhance allied situational awareness of air and naval activity in the Pacific. The JMSDF has also made significant investments in its submarine fleet, with the aim to bring their fleet total from 16 to 22 by 2020. Currently, the *Soryu*-class is being produced at a rate of one per year, greatly outstripping the decommissioning rate of its predecessor, the *Oyashio*-class. The *Soryu*-class is one of the most advanced diesel-electric submarines in the world, with an air independent propulsion system that allows it to remain submerged longer than any other submarine of similar displacement.

South Korea

South Korea's growing nationalism and self-assertiveness in its foreign and defence policy, as well as its desire to protect its maritime claims in the East China Sea (Ieodo/Suyan Rock and Takeshima/Dokdo islands) has motivated key blue-water power projection capabilities. South Korea has benefited from American technical expertise for *Aegis* and *Patriot* PAC-3 upgrades, as well as upgrading airborne early warning and control aircraft designed to detect incursions in South Korean airspace. It is also continuing upgrades to its ground tactical C4I system, and aims to acquire a harbour surveillance system and mobile underwater surveillance sonar. Due to its concern for its maritime territories, it has also invested in power projection and long-range surveillance capabilities, in particular, *Global Hawk* unmanned aerial vehicles, AH-64E *Apache* heavy attack helicopters, F-35 JSFs, and four A330 MRTT aerial refuelling tankers, which would extend the reach of its fighter aircraft, as well as *Aegis*-equipped destroyers.

South Korea announced that it will build nine advanced German-designed Type 209 submarines by 2020 for intelligence and interdiction purposes; it currently operates thirteen. It is also acquiring four *Dokdo*-class LPX [Landing Platform Experimental] amphibious transport ships. In 2015, it also announced that it will acquire four air refuelling tanker aircraft, which would

increase the operational time of its fighter jets, particularly over Takeshima/Dokdo islands. In 2016, it also opened its new naval base on Jeju island, adding to its existing facilities at Busan and Jinhae. The facility is south-facing, offering unobstructed access to South Korea's major SLOCs passing through the western Pacific. Although mainly in response to the North Korea contingency, South Korea's strengthening of its air defence capabilities has also factored into account China's unilateral declaration of its ADIZ in 2013 (which overlapped both South Korean and Japanese ADIZs). South Korea is indigenously developing its "Kill Chain" and Korea Air and Missile Defence System, which aims to intercept a ballistic missile kill chain stage by stage. To support these platforms, the ROK Navy also has three *Aegis*-equipped KDX-III destroyers equipped with SM-2 Block IIIA/Bs, and it has plans to procure six more *Aegis*-equipped destroyers, armed with SM-6 by 2019. Additionally, since 2014, South Korea has displayed interest in acquiring THAAD.

Vietnam

Improving its naval and air capabilities has become critical for Vietnam, with the objective of deterring the Chinese over contested features in the South China Sea. This has led to the development of a strategy to maintain a continuous naval and air presence not to confront China but to deter it from aggressive moves to intimidate the Vietnamese. Hanoi has signalled its intent to invest in qualitatively sophisticated air and naval capabilities. It must also be noted that the only two occasion (1974 and 1988) in which China has used military force in the South China Sea, thus far, has both involved Vietnam and both times involved a significant loss of life.

These factors have contributed to the emergence of competitive arming dynamics, in which Vietnam is reacting to Chinese capabilities deployed in the South China Sea. To this end, the VPN aims to have at least 20 green-water vessels, and is also planning to modernize its Hong Ha and Ba Son shipyards. China's military modernisation, on the other hand, is targeted at blue-water power projection, and thus Vietnam's response is quite asymmetric. In December 2009, it was confirmed that Hanoi had purchased six diesel-electric Russian Project 636 enhanced Kilo-class, the last of which was delivered in 2016. The Vietnamese have also

acquired another two *Gepard*-class frigates to bring their total to six—two of which are being optimized for surface attack, and the other two are being enhanced for anti-submarine warfare. The *Gepard*-class ships are particularly suited for littoral operations—it is a relatively small ship with a short-to medium range but it has a stealth-enhanced ship design, are equipped with anti-ship missiles, and are capable of air defence and ASW. Currently, Vietnam's most robust deterrent is its missile force, which includes 40 SS-N-26 *Yakhont* shore-to-ship cruise missiles. It has negotiated licenses for domestic production of three classes of advanced anti-ship missiles, including the P-5 SS-N-3 *Shaddock*, P-15 *Termit*, and SS-N-25 *Switchblade*. In January 2016, it added to its modernisation of air capabilities, receiving an additional two Su-30MK2 combat aircraft from Russia, bringing the current number of combat capable fighters to 101.

Repercussions

It is clear that the region is becoming more contested and that both the quality and quantity of armaments is increasing. This means that there is increasing chance of miscalculation and misadventure. Sophisticated acquisitions are being brought due to competitive security behaviour, with many countries declaring such purchases and upgrades as related to the need to respond to a changing regional balance of power. That is, acquisitions are being sought as responses to 'rivals' qualitative and quantitative levels of armaments. Much of these acquisitions are also being complemented with behaviour that does not directly involve the armed forces, mainly enhanced security partnerships and defence technology transfer agreements. For example, Vietnam's closer embrace of the U.S, as well as the technology transfer agreements between the US and South Korea on *Aegis* technology. The majority of regional countries acknowledge that their ability to modernise their own forces would result in merely an asymmetric response—this is true of China vis-à-vis the United States, as well as Japan, the ROK and Vietnam vis-à-vis China. What these means is that armament dynamics are not about competition and maintaining parity,

rather, regional arms acquisitions must be viewed in context alongside the security partnerships they attempt to instigate. This makes a much more dangerous region, as it is evident that acquisitions are backed with intent, threat-based understandings of the 'neighbourhood', and political motivations.

However, as of November 2016, the prospect of multipolarity and independent defence postures has increased, with the US presidential election of Donald Trump, whose rhetoric has undermined the shared values and interests that underpin many of America's Asian alliances. The San Francisco Treaty system has imparted a level of strategic restraint on regional countries to cooperate as opposed to arm,[11] however, arguably regional powers will now push for more self-reliant defence options. It must be noted that the region has four current and latent nuclear powers—China, Japan, South Korea and Taiwan;[12] with calls for nuclearisation underway.[13] Regional anxiety that President Obama's pivot and strategic rebalance will not eventuate has cemented, as well as disbelief that reassurances of moving 60 percent of the US Navy to the Pacific by 2020 will eventuate. This will mean the increased diffusion of sophisticated technologies in the naval, nuclear and air defence space, creating a more contested region and the desire to arm as opposed to cooperate.

[11] See Victor Cha, 'Powerplay: Origins of the US alliance system in Asia', *International Security*, Vol. 34, No. 3 (2010), pp. 158-196; and Kent Calder, 'Securing security through prosperity: the San Francisco System in comparative perspective', *The Pacific Review*, Vol. 17, No. 1 (2004), pp. 135-157.

[12] See Mark Fitzpatrick, *Asia's Latent Nuclear Powers: Japan, South Korea and Taiwan*, Adelphi Paper No. 455 (London: IISS and Routledge, 2016).

[13] David Feith, 'With Trump, Asia's Nuclear Crisis Expands: Next to North Korea and fearing US abandonment, South Korea and Japan Weigh Their Options', *The Wall Street Journal,* 11 November 2016, http://www.wsj.com/articles/with-trump-asias-nuclear-crisis-expands-1478797800.

THE VIEW FROM CHINA

ZHANG ZHEXIN

Why the Trump Victory Could Be Good News for Asia-Pacific Security Order

Donald Trump's unexpected victory in the Presidential election triggered overwhelming concerns in Asia–Pacific countries about future peace and stability of the region. Such anxiety ranges from the possible US strategic withdrawal from the region, leaving it largely to China's hands, to higher chances for Japan and South Korea to develop their own nuclear weaponry as Mr Trump suggested, to more trade disputes, if not a trade war, with the United States in view of the apparent demise of the Trans–Pacific Partnership (TPP). In a word, as associate editor of *The Diplomat* Ankit Panda lamented on Nov. 9, Trump's victory may "herald the end of the postwar order" and all regional countries need to "prepare for unchartered geopolitical waters in Asia."

This is a natural response from the policy and academic elites in Asia–Pacific countries, who are doubtful of the direction and coherence of Mr Trump's geo-policy in face of the ever more salient security issues in the region. Indeed, over the past few years, the Asia–Pacific has not only witnessed growing security disputes and even brief confrontation between China and the United States or its allies, but it also seems to have undergone an incipient arms race. Statistics show that compared with 2013, when this author argued in an article that an arms race remained a remote possibility for Asia–Pacific countries, China, South Korea, Vietnam and the Philippines have all increased their military expenditure by nearly or more than 20 percent, while the share of military spending in the total GDP of Russia, Australia, New Zealand, Indonesia, Malaysia and Thailand has risen conspicuously, partly due to the depreciation of their currencies (see Appendix). Meanwhile, some countries, especially China, have been eager to display their upgraded arsenals, including new models of submarines and stealth fighters, more powerful missiles and missile–defence systems, and advanced technologies that can be used in cyber or outer space operations.

Although a Trump-led White House will inevitably cause security concerns and faltering policies in many regional countries for the next few months, yet in the longer term, the Trump victory may turn out to be a blessing in disguise for the anxious Asia–Pacific countries in that the regional security situation is likely to become more peaceful and stable, though not necessarily under the predominant US leadership as the Obama administration has been pursuing.

Above all, the Trump administration will not possibly overhaul the US rebalancing strategy, but it may "rebalance" it with more economic weight. On one hand, it is generally believed in the US strategic circle, that a rising China will rush to fill in the strategic vacuum and may pose immediate security challenges to the standing US security principles like the "freedom of navigation" and to the US allies. Thus, even if Mr Trump and his national security team decide to withdraw strategically from the region, such as deploying fewer troops and naval vessels, downplaying the role of its security alliance with Japan, South Korea and Australia, reducing the number and scale of joint military excises and other operations, to name but a few cases, the decision will certainly face insurmountable resistance from the policy circle and the educated public, let alone the vast national security-related bureaucracy and those on the Capitol Hill speaking for the huge "military-industrial complex."

On the other hand, Mr Trump's ambitious economic blueprint — a 21st–century "New Deal" in essence — requires a peaceful and stable Asia–Pacific, not only because it needs to expand the export market for US goods (though by more "fair" trade in Mr Trump's term), but also because the US reindustrialisation and infrastructure building also need financial, technological and talent support from the region. Thus, it is in the best interest of the Trump administration to keep the regional security order pivoted to the US political and military presence as well as its alliance system for the time being, and encourage regional countries to gradually undertake more security responsibilities through bilateral arrangements or multilateral consultation. Fortunately, Mr Trump's reassuring telephone calls with the South Korean President and Japanese Prime Minister within two days of his election serve as a good start.

Furthermore, with China's strategic focus shifting from "resisting external pressure" to "enhancing cooperation," it is very hopeful that China, the United States, and other regional countries will work more closely together to maintain peace and stability in the Asia–Pacific. To most Chinese observers, China has always been trying to pursue a peaceful-rise strategy, and its "assertive" actions over the past few years are by and large reactive to the worsening security environment it has been facing due to the US rebalancing, especially in security arenas. Therefore, if Mr Trump indicates a milder stance toward China, that is, acknowledging China's security concerns and its positive role in Asia–Pacific security, and downplaying the US "forward deployment" postures, then China will be more than happy to show its goodwill and take concrete actions to reassure regional countries that it neither aims to "kick the US out of the region," nor seeks to overturn the existing regional order and norms by coercive means.

In fact, keen observers have noticed the nuanced changes in China's regional strategy in recent years. As written by Prof. Shi Yinhong, a leading Chinese geopolitist, China has begun to enhance its security status by more "strategic economic" means than by "strategic military" means since 2014. The progressing "Belt and Road" initiative and the Asian Infrastructure Investment Bank (AIIB), the enhanced economic cooperation between China and Central/South Asian countries, as well as China's finalised free trade agreements (FTAs) with South Korea and Australia, all help mitigate the security pressure China faces to the east from the Pacific. If Mr Trump truly treats China as an equally respectable partner and chooses to "talk business" with China rather than impose undue security pressure upon it, China is very likely to – and would be in a better position to, considering its indignant public opinion – act accordingly and work toward a peaceful and stable regional order, so as to push its "Belt and Road" initiative eastward.

Finally, regional peace and stability may be strengthened – ironically – by the Trump administration's protectionist economic policy. If Mr Trump puts half of what he said during his campaign about how he would "make America great again" regardless of established trade norms and institutions

such as the mandates of the World Trade Organization (WTO), let alone setting tougher restrictions to foreign workers and enterprises, then Asia–Pacific countries would have no other choice but to turn to China for financial and trade markets. When the TPP deceases, the Regional Comprehensive Economic Partnership (RCEP) will prosper, reinvigorating the economic integration process centred on “10+3” (ASEAN plus China, Japan and South Korea) which had been progressing quite rapidly and hopefully before the US adopted the rebalancing strategy.

As Chinese President Xi Jinping said on the APEC Summit held in Beijing in November 2014, the Asia-Pacific economic integration process advocated by China is an inclusive one; the United States is welcome to join. But it is not as high-standard or legally-binding as the TPP, and thus would better fit the developmental stages of most regional countries. If the Trump administration’s economic policy alienates the United States from the vast Asia-Pacific market, while China keeps realizing its “Belt and Road” initiative and pushing forward broader Asia–Pacific economic integration, then the whole region can expect increasingly friendly and cooperative security atmosphere like that during the first decade of this century. Certainly, the US’ leadership role in regional economic and strategic issues will in part transfer to China’s hands, which is not necessarily bad news for regional countries, with regard to the growing generosity China has displayed in global economic cooperation.

Based on the above estimations, we can reasonably predict that the future Asia–Pacific security framework will shift towards a “Consultation of Two (C2)” structure or, as Chinese leaders put it, a more stable “new type major-power relationship,” which will benefit China, the United States and the whole region. For, although the US will concede certain leadership to China and some other countries, it will enjoy better security environment in the region at much lower costs than it has burdened itself with during the past decades; besides, a “C2” structure is not a “G2” where China and the United States decide on major regional issues behind closed doors, but it is a structure open to all regional countries where major decisions have to be agreed upon by both China and the United States through ample

discussion and consultation, because any major decision on regional security and economic issues will need endorsement from both countries if it is to achieve lasting positive effects. Such a structure would serve the interest of all regional countries.

In spite of those hopes for long-term development of regional peace and cooperation, short-term security risks triggered by the Trump victory should not be ignored either, which include but are not limited to: 1) acute conflicts in the South China Sea or East China Sea between China and the United States (for Mr Trump will likely call up the US Naval FON operations in China's periphery during the first three to four months of his office to demonstrate his strong Presidency, while Chinese leaders may find it hard to back off in face of open hostility); 2) growing confrontation or even skirmishes between India and Pakistan (for both sides are eager to test the US policy inclination, whether towards a not-so-reliable ally in counter-terrorism or an ever more important security and economic partner on the global stage); and 3) new military manoeuvres or nuclear/missile tests by North Korea (to test the US commitment to its alliance with South Korea and to its announced goal of denuclearisation of the Korean Peninsula).

As the key to prevention or settlement of all these risks basically lies with China and the United States, it is of crucial importance for both sides to begin strategic talks as early as possible to enhance their mutual understanding, exercise adequate strategic patience when feeling provoked, and establish effective hotlines for any security contingencies. From President Xi's congratulatory remarks to Mr Trump on November 9 and the multitude of expert analyses in the Chinese media after Trump's victory, China is developing more and more confidence in working with the next US President.

Appendix.
Military expenditures of selected Asia-Pacific powers (1992–2015), in 2011 constant US$ (billion).

	1992	2001	2003	2009	2011	2013	% of total 2013 GDP	2015	% of total 2015 GDP
US	489	397	508	701	711	619	3.95	596	3.30
China	25.3	45.4	57.4	129	147	171	2.09	215	1.92
Japan	52.5	60.3	61.5	59.7	60.5	59.4	0.81	46.3	1.12
S. Korea	16.4	20.6	21.9	30.1	30.9	32.6	2.75	38.6	2.80
Russia	62.3	33.7	39.1	64.5	70.2	84.9	4.16	91.1	6.87
India	16.8	28.6	29.2	49.0	49.6	49.1	2.24	51.1	2.47
Australia	16.0	18.7	19.9	26.7	26.6	24.6	1.50	27.8	2.27
N.Z.	1.5	1.5	1.5	1.8	1.7	1.7	1.05	2.4	1.40
Vietnam	0.7	----	1.5	2.6	2.7	3.2	2.23	4.6	2.40
Singapore	4.2	7.5	8.0	9.4	8.9	8.9	3.51	10.2	3.48
Indonesia	1.9	1.9	4.1	4.3	5.8	8.4	0.78	8.1	0.94
Malaysia	2.4	3.0	4.4	4.8	4.8	4.8	1.42	5.3	1.79
Thailand	4.7	3.3	3.3	5.8	5.5	5.6	1.43	6.1	1.70
Philippines	1.8	2.1	2.4	2.5	2.7	3.2	1.34	3.9	1.33

* 2015 figures are calculated in 2014 US$ (billion). Due to fluctuations of currency exchange rates, the figures for some countries, such as Japan and Russia, have changed drastically year on year.
Figures compiled by the author. Source: SIPRI Military Expenditure Database: 1988–2015; IMF database 2013 and 2015.

THE VIEW FROM WASHINGTON

DEAN CHENG

Over the past decade, defence spending across much of Asia has been steadily rising. Six of the ten largest arms importers are now in Asia, including India, China, Australia, Pakistan, Vietnam, and South Korea. Compared with Europe, where many states spend less than 2 percent of GDP on defence, many Asian states devote far more resources.

This trend has been deepening. In the period 2010–2014, Asia represented 42 percent of global arms imports, which rose to 46 percent in the 2011–2015 period. Four Asian countries are among the largest ten defence budgets (China, India, Japan, and South Korea).[14] Military capabilities throughout Asia are improving.

Much of the expansion in capabilities and reach is embodied in growing naval and maritime-related capabilities among Asian states. This should hardly be surprising, as the Asia-Pacific and Indo–Pacific regions are both dominated by the air and maritime domains. Therefore, one would expect any increase in regional military capability to include the maritime and air components. The clearest example of this is the addition of aircraft carriers. China's Liaoning has been operating for two years. Reports indicate that China's first indigenous aircraft carrier will likely be completed in the next year. Japan has now added four helicopter destroyers (the *Hyuga* and *Izumo* classes) to the Japanese Maritime Self Defence Force (JMSDF), which are helicopter carriers for all intents and purposes. The South Korean navy has meanwhile added a *Dokdo*-class landing ship, which also bears a resemblance to a helicopter carrier.

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[14] Ashley Kirk, "What Are the Biggest Defence Budgets in the World?" Daily Telegraph (October 27, 2015), http://www.telegraph.co.uk/news/uknews/defence/11936179/What-are-the-biggest-defence-budgets-in-the-world.html

These purchases reflect the reality that, as local navies develop, they are incorporating not only more platforms, but increasingly sophisticated ones. As noted, the wealthier states have begun to add helicopter carriers. Other East Asian nations are adding diesel-electric, and even air independent propulsion (AIP), submarines to their fleets. Indonesia has reportedly ordered three more submarines from South Korea, supplementing the five submarines already in their navy.[15] Other states are adding advanced maritime patrol aircraft (MPA) to their arsenals.

Meanwhile, surface forces are increasingly capable as well. Most of the surface combatants of regional navies are equipped with anti-ship missiles. The new Indonesia SIGMA 10514 frigates include Exocets, for example. Similarly, modernising air forces are incorporating maritime strike capabilities.

But Is It Arms Racing?

What is unclear is whether this accumulation of capabilities presages a burgeoning *arms race* in Asia. This, of course, first requires determining what constitutes an arms race. There are three broad models of arms races. First, arms races may be defined a systematic interaction between two more states, in which the participants improve their weapons either quantitatively or qualitatively, and do so in response to other states' actions. But it can also be defined as states acting in response to broader improvements in military technology, while striving to maintain relative parity among each other. It can also be further defined as expanding military capabilities as a response to internal political pressures, including arms acquisition processes, electoral politics, nationalism, and the influence of the "military industrial complex."[16]

These explanations are not mutually exclusive, but they highlight that there are different factors that are seen as central to arms racing: interstate interaction (in an action-reaction cycle), technological developments, and

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[15] Nani Afrida, "Indonesia to Purchase Three More Submarines," Jakarta Post (November 10, 2016), http://www.thejakartapost.com/news/2016/11/10/indonesia-to-purchase-three-more-submarines.html

[16] Joseph Maiolo, "Introduction," in *Arms Races in International Politics*, ed. by Thomas Mahnken, Joseph Maiolo, and David Stevenson (NY: Oxford University Press, 2016), pp. 6-8.

primarily internal imperatives. Depending upon the definition, the Asian situation may or may not be defined as constituting an arms race. This is further complicated by the reality that Asia, unlike Cold War Europe, is not divided into two mutually exclusive camps, but instead, remains riven by a number of rivalries. Thus, military acquisition efforts may not only be driven by all three factors, but also be motivated by multiple states. A nation may acquire arms in order to counter arms acquisitions by one neighbour, but also to remain at technological parity with other states.

As important, Asian importation of modern arms is arguably also a function of regional factors that are not part of any of these three explanations of arms racing behaviour. Three considerations are: expanded economies, delayed modernisation of the armed forces in many states, and limited capabilities of domestic arms industries.

Ongoing Economic Development

Since the 1970s, the Asian region has enjoyed several decades of economic development. Japan's economy began rising in the 1960s, while South Korea's economy was already rising in the 1970s. Southeast Asia became known as the "Asian tigers" in the 1980s. The Chinese economy underwent "reform and opening" in the early 1980s, and by the 1990s was steadily expanding.

Consequently, Asian states have more to lose. If one considers defence spending as the international equivalent of an insurance policy, an expanding economy justifies some increased defensive capability, if only to safeguard those gains. Moreover, many Asian states had defeated internal security threats by the 1990s (the Philippines being a notable exception to this). Consequently, military forces could shift their focus from counterinsurgency operations (which often rely more on manpower than advanced technology) to more traditional defence of territorial integrity and national sovereignty. This includes the ability to monitor expansive exclusive economic zones (EEZs), requiring an expansion of air and naval capabilities.

Delayed Modernisation Efforts

While the region's various economies strengthened, however, the militaries often remained fairly limited. This was due in part to the more pressing nature of ensuring domestic security, as various states faced separatist movements and insurgencies. National security concerns were also eased by the maritime nature of Asia—security was eased by the "tyranny of distance" and the general existence of maritime, rather than land, borders. Invading other states would require significantly more effort (and warning time). Notably, the Chinese military was pared back in the 1980s, as Deng Xiaoping concluded that there were few immediate threats to China's land borders.

When some regional militaries began to modernise in the 1990s, moving to replace 1960s vintage aircraft and ships, the 1997 Asian economic crisis abruptly halted or delayed many of those efforts. As regional economies have strengthened in the intervening two decades since then, it should therefore be expected that some of the increased wherewithal would be applied to national security and defence. It is unreasonable to assume that regional military forces should be static, permanently equipped with systems dating back to the 1970s or 1980s, as though embedded in amber. This is especially true as military capabilities and systems evolve. The various conflicts since the end of the Cold War, including the first Gulf War, the Balkan conflicts, the toppling of the Taliban in Afghanistan, and the invasion of Iraq in 2003, as well as subsequent conflicts in the Middle East, Estonia, Georgia, and Ukraine, have amply demonstrated the impact of new technologies on military operations.

Limited Capabilities of Domestic Industries

Another consideration for assessing whether increasing Asians arms imports is evidence of arms racing lies in the limits of local defence industries. Many regional efforts at modernisation will inevitably require importation of substantial amounts of equipment, because few domestic industrial bases can meet the requirements of modern warfare. Despite

several decades of effort at improving indigenous capabilities, the level of domestic military production varies widely among the various Asian states. Some nations, such as Japan, South Korea, and the PRC, have robust defence industrial capacities capable of meeting most of their national military demands. Each of these nations relies largely on its own shipbuilding industries to support their fleets.

Even these states, however, often have areas where they remain dependent upon foreign sources—military turbofan engines is a key example. Indeed, no Asian nation currently produces a military jet engine that competes with Pratt & Whitney, General Electric, Snecma, or Rolls-Royce.

The defence industrial base of most Southeast Asian nations is more limited, so they rely even more on imports or co-production for many key military systems. Despite an extensive technological base, Singapore's largest combatants, the *Formidable*-class frigates and *Victory*-class corvettes are foreign designs (French *Lafayette* and German *MGB-62* respectively). The largest combatants in the Malaysian and Indonesian navies are also imports, although increasingly produced under co-production arrangements, such as the SIGMA 10514 frigates.

In many cases, the key sub-systems and weapons are often imported as well. Asian navies typically field French Exocets, American Harpoons, or Chinese C-802s for anti-surface tasks, and operate a variety of imported air defence systems to defend themselves.

Consequently, rising imports of arms does not necessarily reflect the action-reaction cycle typically associated with "arms race" behaviour. Instead, many of these imports are due to the ongoing requirement for foreign equipment and systems to meet the demands for modernising navies and air forces.

Increasing Value of Arms

Due to the various factors noted above, regional militaries are growing increasingly sophisticated. This means, however, that the arms imported will be more capable, and correspondingly will also be increasingly expensive. Consequently, when measured by value, arms imports will inevitably increase; this does not, though, necessarily translate into an expansion of the size of regional militaries. This is especially true for air and naval platforms, as the price of associated sub-systems, especially avionics and sensors, has steadily risen over the past several decades. Thus, the same expenditure may actually mean fewer hulls and airframes, although each is individually more capable.

Australia, for example, may rank among the top ten arms importers, by value, but the number of ships and aircraft it is purchasing is not that large. The cost of the F-35 Joint Strike Fighters and Shortfin Barracuda submarine mean that the overall size of the Australian defence forces is likely to shrink, barring a corresponding increase in the overall Australian defence budget.
Indeed, even the PRC, whose official defence budget has grown annually by double digits for the last two decades, has seen its air force and navy shrink in terms of absolute numbers of platforms (while enjoying a growing set of capabilities). Not even the People's Liberation Army (PLA) can afford to replace its older aircraft and combatants on a one-for-one basis.

Is There an Action–Reaction Cycle?

Besides domestic and technological-based assessments, determining whether an arms race is occurring typically examines the prospect of action-reaction cycles. Indeed, this is perhaps the "classic" definition of an arms race. It is clear that East and South Asia are both experiencing a heightening of regional tensions. What is less clear is whether there is an action-reaction dynamic at work.

Part of the rise in tensions is due to the lack of resolution on border issues, which has begun to become more heated in the past several years. It is important to recognise, however, that many Asian national boundaries have

long been in dispute. Unlike in Europe, there has never been a regional acceptance of the post-World War II borders. There has been no regional counterpart to the Helsinki Accords which codified the post-World War II European borders—a situation which held until the recent developments in Crimea and Ukraine. By contrast, from the Northern Territories between Japan and Russian, through Dokdo/Takeshima, the Diaoyutai/Senkakus, to the South China Sea, as well as Arunachal Pradesh/South Tibet and Kashmir, a number of border disputes remain potential flashpoints.

Nonetheless, while remaining in dispute, most of these differences have not raised the prospect of imminent conflict. Since the early 2000s, however, tensions have been renewed or heightened in several instances. For example, India and Pakistan have long had delicate relations, but recent actions in Kashmir, as well as the Mumbai attacks, have elevated tensions. Similarly, the Korean peninsula has not exactly been peaceful since the end of the Korean War, but the situation has deteriorated over the last several years, as North Korea has repeatedly conducted nuclear and missile tests, in defiance of UN sanctions.

Perhaps most publicised, of course, has been increasing Chinese activity in the South China Sea. This includes the rapid expansion of artificial islands, as well as Chinese oil drilling operations off Vietnam and naval task forces sailing near Malaysia. This combination of activities marks a significant escalation from past exchanges of claims and counter-claims over various features by the various parties.

Arms Acquisitions Are Not Necessarily Reactive

Nonetheless, it is not clear that we are seeing states obtaining weapons in reaction to other states' actions. In the first place, as noted above, there are a variety of factors at work in various modernisation efforts. Modernisation, for example, is as much due to the need to replace obsolescent equipment as it is in reaction to any specific nation's actions. Similarly, while India and Pakistan are both improving their militaries, it is not necessarily due to the other side's military acquisitions, so much as the broader state of unsettled relations between the two nations (including armed clashes in Kashmir and elsewhere).

The main exception, arguably, is the South China Sea. As China has assumed a more assertive position, backed by a variety of means including civilian fishing boats, maritime militia, Chinese Coast Guard and other law enforcement vessels (i.e., “white hulls”) as well as naval capabilities, local states are striving to respond, including through increased acquisition to sustain increased presence. Indonesia’s decision to expand its military and government forces deployed around Natuna would appear to be in direct response to increasing Chinese activity. Similarly, Vietnamese acquisition of diesel-electric submarines, as well as Su-27 Flanker fighters and advanced surface-to-air missile systems, would seem to fit the classic action–reaction dynamic associated with arms racing.

The Region Is Not a Series of Dyads

Further complicating assessments of the Asian situation are the combination of dyadic behaviours. Unlike Cold War Europe, Asia is overlaid by a variety of cross-cutting rivalries and tensions. The two Germanys, and even more NATO and the Warsaw Pact, focused only on each other. By contrast, it is harder to limit Asian actions to single states. Is Japanese foreign and defence policy reacting to China, to Russia, to North Korea (and perhaps even South Korea)? This makes attribution of behaviour much harder—in turn complicating the determination of “arms races,” since it is not clear who is racing whom.

The situation is further exacerbated because some parties are simultaneously engaging in sprints and marathons (or their behaviour would be consistent with both), depending upon which dyad is under

consideration. South Korea is clearly concerned about North Korea (although it is difficult to label that situation as an “arms race”). Historical and political factors, as well as the problem of Dokdo/Takeshima, mean some South Korean military planning is oriented towards Japan. Meanwhile, China is a permanent factor in the background of all northeast Asian defence planning. This pattern makes it harder to conclude whether Asia is engaging in AN arms race, or multiple arms races.

Technology Is Not Symmetrical

A final complication in assessing whether there are action-reaction arms races underway is the nature of modern military technology. The best means of countering a surface warship may not be another surface warship but a submarine. Similarly, the best counter to a submarine may not be another submarine but mines, maritime patrol aircraft, and anti-submarine warfare helicopters.

Doctrine, too, is an essential part of determining whether action-reaction cycles are in play. Submarines may be purchased for defensive use (to counter enemy invasion forces) or offensive use (to attack adversary sea lanes of communications). If two states purchase submarines, and both also have defensive naval doctrines, is an arms race underway?

In the Asian situation, the multitude of players, different types of weapons (sometimes in small quantities), and disparate doctrines makes assessing whether arms races are underway very difficult. What would seem clear is that regional military acquisitions are not driving regional tensions, but are instead a reflection of those same tensions. This would suggest that whether “arms races” exist is largely beside the point.

SECTION 2: CASE STUDIES IN REGIONAL ARMS PROLIFERATION

SUBMARINES

JAN JOEL ANDERSSON

Many countries around the world are in the process of acquiring new submarines or modernising their existing fleets.[17] Established submarine operators, such as the US, Russia, the UK, Germany, France, and Sweden, are all in the process of renewing their current fleets but the growth markets are in Asia.[18] According to industry sources, the global submarine market is worth US$22.8 billion in 2016 and expected to increase to US$36.3 billion in 2026, of which the Asia-Pacific represents a 32 percent market share.[19] Big current procurement contracts include Australia's contract for 12 new submarines from France, and Pakistan's announcement of a deal for eight new submarines from China.[20] While national security concerns is often cited as a main reason driving the demand for submarines, domestic industrial and technological development goals as well as national prestige are also important factors in explaining the demand for submarines.[21]

In Asia, countries currently acquiring or planning to acquire new submarines in addition to Australia and Pakistan, include Bangladesh, China, India, Indonesia, Japan, Malaysia, Singapore, South Korea, Taiwan, and Vietnam.[22] Vietnam and Bangladesh are the most recent countries in

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[17] This paper draws on and extends analyses previously published in Jan Joel Andersson, 'The Race to the Bottom. Submarine Proliferation and International Security', *Naval War College Review*, Vol. 68, No. 1 (Winter) 2015; and Jan Joel Andersson, 'Submarine Capabilities and Conventional Deterrence in Southeast Asia', *Contemporary Security Policy*, Vol 36, No 3 (December 2015).

[18] Ristian Atriandi Supriyanto, 'Southeast Asia's underwater bazaar', *The Jakarta Post*, July 26, 2011; NTI, 'Submarine Proliferation Resource Collection', 11 July 2013, pp. 1-3, http://www.nti.org/analysis/reports/submarine-proliferation-overview/.

[19] Submarine Market Worth $36.3B by 2026 Growing at 4.74 percent CAGR, PRN Newswire, Sep 30, 2016, http://www.prnewswire.com/news-releases/submarine-market-worth-363b-by-2026-growing-at-474-cagr-595378941.html

[20] "Australia, French firm sign subs contract," Australian Associated Press, September 30, 2016, http://www.news.com.au/national/breaking-news/australia-french-firm-sign-subs-contract/news-story/9fc67a7da335278e9db526e059e9a121;"China to supply Pakistan with eight new attack submarines," The Express Tribune, August 31, 2016, http://tribune.com.pk/story/1173324/china-supply-pakistan-eight-new-attack-submarines/

[21] Till, *Asia's Naval expansion*, p. 225; Australian Government, *Future Submarine Industry Skills Plan. A Plan for the Naval Shipbuilding Industry* (Canberra: Department of Defence, Defence Materiel Organisation, 2013)

[22] Carl Thayer, 'Southeast Asian States Deploy Conventional Submarines', *The Diplomat*, 3 January 2013, http://thediplomat.com/2014/01/southeast-asian-states-deploy-conventional-submarines/?allpages=yes&print=yes.

Asia to add submarines.[23] In 2009, Vietnam ordered six Kilo Class diesel-electric attack submarines from Russia.[24] The first boat was handed over to the Vietnamese Navy in late 2013 with delivery of the last boat expected in late 2016 or early 2017.[25] Bangladesh, in turn, announced in the Spring of 2013 that it had agreed to procure two submarines and that it already had acquired necessary missiles and torpedoes.[26] Delivery of two refurbished Chinese Ming Class (Type 035G) submarines to the Bangladeshi Navy took place in November 2016.[27] Other countries in the region contemplating acquiring submarines are Myanmar, Thailand and the Philippines. Myanmar is also said to develop a submarine force and a first group of 20 Myanmar Navy personnel reportedly began submarine warfare training in Pakistan in the spring of 2013.[28] In response, Thailand and the Philippines have also announced plans to acquire submarines.[29]

Table 1:
Submarines in South East Asia

Country	Current	Ordered/Firm Plans
Australia	6	12[30]
Bangladesh	2	-
Indonesia	2	3[31]
Malaysia	2	-
Singapore	4	2[32]
Taiwan	4[33]	-
Vietnam	5	1[34]

[23] 'Vietnam builds naval muscle', *Asia Times*, 29 March 2012.
[24] 'Vietnam orders submarines and warplanes from Russia', BBC, 16 December 2009.
[25] 'Russia to begin delivery of submarines to Vietnam in November', *Thanh Nien News*, 2 September 2013, http://www.thanhniennews.com/index/pages/20130731-russia-to-deliver-a-submarine-to-vietnam/.
[26] 'Bangladesh Navy plans to procure two submarines,' *Naval Technology*, 1 March 2013.
[27] 'Bangladesh Navy gets 2 submarines', The Daily Star, 14 November 2016, http://www.thedailystar.net/country/bangladesh-navy-gets-2-chinese-submarines-1314553; 'Two submarines added to Bangladesh armada', *Dhaka Tribune*, November 14, 2016, http://www.dhakatribune.com/bangladesh/2016/11/14/two-submarines-added-bangladesh-armada/
[28] 'Myanmar Navy starts submarine training in Pakistan', *IHS Jane's Defence Weekly*, 20 June 2013.
[29] 'Submarine base nears completion, Now navy "Needs" a fleet', *Bangkok Post*, October 13, 2013; Ristian Atriandi Supriyanto, 'Southeast Asia's underwater bazaar', The *Jakarta Post*, 26 July 2011; 'DND Mulls Submarine Acquisition', *Defense Studies*, 8 October 2013. http://defense-studies.blogspot.com/2013/10/dnd-mulls-submarine-acquisition.html.
[30] The 12 new planned submarines will begin replacing the current six submarines in the fleet from around 2030.
[31] 'Indonesia ordered three new submarines in 2011 to be delivered by 2018 to replace its existing two boats.
[32] Singapore announced in 2013 that two new submarines had been ordered to be delivered in 2020 to replace two older boats.
[33] Two of Taiwan's four submarines are some 70 years old and seldom leave port.
[34] The first five of six submarines have been delivered with the remaining one to be delivered by late 2016.

Analysing capability

There is much concern of the proliferation of submarines for crisis stability in South East Asia.[35] However, rising numbers of submarines do not necessarily equate a rising threat. The numbers are also rather small. With the exception of China and Japan, most submarine forces in Asia remain rather limited in size. Moreover, and most importantly, it is very difficult to evaluate the capabilities of a submarine force.[36] In fact, deploying a submarine force effectively and safely is very challenging and costly. It is so challenging and costly that some long-time submarine operators have decided to get out of the business altogether, such as Denmark in 2004 and Canada has been considering.[37]

To effectively deploy a submarine force requires not only boats but the technical skills necessary to service and maintain them and enough trained crew to operate them. These requirements are hard to fulfil and more complex than those required for surface ships.[38] The first hurdle to overcome is acquiring a minimum number of submarines. Conventional wisdom holds that at a fleet of at least four submarines is required for a satisfactory distribution of boats and flow of personnel between maintenance, deployment and training. A smaller fleet will not provide enough opportunities for crew training, regular patrol deployments or maintenance to sustain a capable submarine force over time.[39]

Maintenance and Logistics

Once a submarine is built and delivered, maintenance becomes central. Containing more parts and systems than both combat aircraft and surface warships, modern submarines are among the most complicated man-made machines in the world.[40] Due to their taxing underwater environment,

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[35] James Clay Moltz, 'Submarine and Autonomous Vessel Proliferation: Implications for Future Strategic Stability at Sea', Report, US Naval Postgraduate School, December 2012, pp. 8-9; http://www.nps.edu/Academics/Centers/CCC/PASCC/Publications/2012/2012%20021%20Submarine%20Proliferation%20rev.pdf;

[36] One attempt to offer an evaluation of Iran's submarine capability is Wade H. Smith, 'A Methodology for Determining Third World Submarine Capabilities. Case Study Iran', Thesis, Naval Postgraduate School, Monterey, California, September 1992.

[37] Christopher P. Cavas, 'Flag Lowers on Danish Subs', *Defense News*, 2004.

[38] Anthony, *The Naval Arms Trade*, p. 49.

[39] 'Creating a Submarine Force the French Way', *Asian Defense Journal*, vol. 8, 1989, p. 46

[40] Australian Government, *Future Submarine Industry Skills Plan* (Canberra: Departement of Defence, Defence Material Organisation, 2012), pp. 2-3.

submarines pose particular challenges to keep operational. This is especially the case in tropical climates where warm saline water increases the rate of corrosion and wear and tear on equipment.[41] Any deferment of regular service and maintenance quickly leads to a submarine being unsafe for operations and thus unavailable for deployment and training of crew.

According to a detailed study published by the Australian Department of Defence, submarines are 'maintenance heavy' and must be expected to spend about half their life in extended and preventative maintenance and repair.[42] In addition to regular ship maintenance, modern submarines require significant technical skills in servicing everything from propulsion and large batteries to acoustics and electronics as well as weapons systems and periscope optics.[43] Among the most important skills that are needed to maintain modern submarines are high pressure welding, advanced electronics repair and battery maintenance. The catastrophic consequences of mechanical or equipment failure requires extraordinary attention to quality control of components and maintenance. All these skills are possible to learn but require significant time and focused national effort over many years.[44] While the Soviet submarine program developed some excellent designs during the Cold War, poor and faulty maintenance led to numerous catastrophic accidents.[45] Submarine operators in the West are not immune to these difficulties. For example, falsified inspection reports forced US firm Northrop Grumman Shipbuilding to reexamine 10 000 welds on at least eight submarines in 2009.[46]

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[41] 'White Paper: The Feasibility of A Corrosion Resistant Ship', BMT Defence Services Limited, 2009.
[42] John Coles, Paul Greenfield and Arthur Fisher, 'Study into the Business of Sustaining Australia's Strategic Collins Class Submarine Capability', Report issued by John Coles, November 2012, Canberra, Department of Defence, Australia, p. i.
[43] Anthony, *The Naval Arms Trade*, p. 49.
[44] The loss of the nuclear attack submarine USS Scorpion in 1968 due to a series of maintenance problems led to an overhaul of submarine maintenance quality control protocols in the US Navy. Johnson, *Silent Steel*: Australian Government, *Future Submarine Industry Skills Plan*; Coles et al., 'Study into the Business of Sustaining Australia's Strategic Collins Class Submarine Capability'..
[45] Weir and Boyne, *Rising Tide;* according to a Chinese study, the Soviet submarine force suffered 338 safety accidents between 1970 and 1990, quoted in Lyle Goldstein and Shannon Knight, 'Sub Force Rising', *US Naval Institute Proceedings*, Vol. 139, Issue 4, (April 2013), p. 41.
[46] Christopher P. Cavas, 'Weld inspector's lies may affect 9 ships', *Navy Times*, June 1, 2009. http://www.navytimes.com/article/20090601/NEWS/906010324/Weld-inspector-s-lies-may-affect-9-ships.

Maintaining and servicing complex ships like submarines require not only technical expertise but also suitable shore facilities and a logistics organisation able to stock and provide spare parts and equipment.[47] A country without a suitable drydock, for example, is unable to perform extensive maintenance and repair on the submarines hulls. The complexity of maintenance and logistics increases with the number of different types of ships in a fleet. Even routine maintenance such as testing equipment and stocking spare parts becomes more complicated on a fleet consisting of several types of submarines.[48] Moreover, many submarine operators do not acquire the intellectual property (IP) rights to the design of their boats which means that they do not have the technical details needed to conduct even routine repairs, maintenance, refits, overhauls, and manufacturing work on the boats. Lack of access to relevant IP rights forces these navies to contract out basic services to private sector actors at significant cost reducing funds available for operations and training.[49]

Inadequate repair facilities and lack of IP rights means that a submarine operator is incapable of supporting its submarine force independently and will have to send their boats abroad for extended periods of time. Inadequate repair facilities and failure to obtain IP–rights may also be an indication of a general lack of attention to maintenance issues and may indicate that a submarine force is only capable of 'show the flag' type operations or for very short conflicts.[50]

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[47] For example, the South African Navy commenced a minor overhaul of one of its German Type 209 submarines locally in 2007 but inadequate infrastructure and technical understanding of onboard electrical systems led the boat to be out of commission for more than five years. 'Parliament hears of SA submarine woes', *News 24*, 13 December 2010,http://www.news24.com/printArticle.aspx?iframe&aid=d6a87d4a-50e9-4bfa-8ea6-42196273a4e9&cid=1059; 'Submarines: The Ghost Boats of South Africa', *Strategy Page*, August 20, 2012. http://www.strategypage.com/htmw/htsub/articles/20120820.aspx?comments=Y#startofcomments.

[48] Personal interview with a former senior naval base commander, Norfolk, VA, USA, October 2013; James C. Bussert, 'Chinese Submarines Pose a Double-Edged Challenge'.

[49] Byers and Stewart Webb,'That Sinking Feeling'.

[50] Wade H. Smith, 'A Methodology for Determining Third World Submarine Capabilities. Case Study Iran', Thesis, Naval Postgraduate School, Monterey, California, September 1992, p. 19.

Training and Deployment

A submarine without a competent crew cannot do much more than conduct harbour tours. Training submarine crews is however difficult and time consuming. Operating a submarine is very different from operating a surface vessel. The most obvious difference is that submarines move in three dimensions instead of two. Unlike surface ships, where at least some of the crew can directly observe their environment, a submarine is completely dependent on its sensors, the reliability of underwater charts and its crew's ability to correctly interpret the data even for the most rudimentary of manoeuvres.[51]

While basic submarine skills can be learned in a relatively short period of time, it may take up to two years of intensive training to become a qualified submariner.[52] For a submarine crew to become a unit able to operate effectively at sea may take up to six years.[53] To reach the highest skill levels of submarine commander requires a minimum of 10–15 years of active service.[54] Once qualified, submariners require regular deployment to maintain their skills. While surface sailors and officers may practice most of their skills on any surface vessel, a submarine crew can only effectively train on board a submarine. Although simulators are becoming increasingly powerful, many submarine skills cannot be learned and maintained without actual deployments. A lack of available boats for deployments thus quickly leads to lost skills.[55] Adding to the challenges of training is the problem of recruiting and keeping submarine crews and officers of 'the right stuff'. Submarine services from Western Europe to East Asia report recruitment and retention problems.[56]

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[51] Delgado, *Silent Killers*; Rear Admiral R.C. Moffitt, 'Report of the Review of the Submarine Workforce Sustainability', Canberra, Royal Australian Navy, 31 October 2008.[52] Anthony, The Naval Arms Trade, p. 49.

[52] It may take up to five or even more years to master advanced technical systems. Leon Engelbrecht, "SA gets third submarine," *Defence and Aerospace Technology*, February 5, 2008. http://www.itweb.co.za/index.php?option=com_content&view=article&id=3786&catid=96:defence-and-aerospace-technology; F. Hartman, 'Submarine Training with the FGN', *Naval Forces*, vol. 7, no. 4, 1986.

[53] 'Creating a Submarine Force the French Way', p. 47

[54] The students of the Royal Navy elite 'Perisher' submarine prospective command course have around 8-12 years of submarine experience prior to attempting to qualify for command; 'Perisher. Submarine Command Training in the Royal Navy', http://www.navy.mil/navydata/cno/n87/usw/issue_18/perisher.htm.

[55] Moffitt, 'Report of the Review of the Submarine Workforce Sustainability', pp. 39-40.

[56] Thomas Harding, 'Navy 'running out of sailors to man submarines"', 20 August 2012, http://www.telegraph.co.uk/news/uknews/defence/9486226/Navy-running-out-of-sailors-to-man-submarines.html; Kim Eun-jung, 'S. Korean Navy offers insight into demanding submarine life', Yonhap News, 4 August 2013, http://english.yonhapnews.co.kr/n_feature/2013/08/02/57/4901000000AEN20130802008900315F.HTML

A submarine training program, its intensity and the intellectual level of the recruits are essential in determining the capabilities of a submarine force. Submarine training facilities on shore and training time at sea are important indicators of how well a submarine force can operate. At-sea training is the most important part of any submarine curriculum in determining the capabilities of a submarine force. Also, given the many aspects of submarine operations, a crew that has been well-trained on one type of operation, such as covert surveillance, will not necessarily be capable of executing another type of operation like anti-submarine warfare.[57]

Availability of submarine rescue resources and attention to training of submarine rescue are important indicators of the level of a submarine force's capability. Close access to a qualified submarine rescue system and confidence in its operation promotes morale and allows a submarine force to train more aggressively and realistically than a force without such access. The psychological component of submarine operations should not be underestimated.[58]

While detailed information on the nature of submarine exercises is hard to find, information of longer independent deployments and participation in advanced exercises provide indications on the proficiency of submarine crews in running their boats without shore support and their ability to conduct extended patrols. Many submarine crews may be able to undertake short daytime routine operations in shallow waters close to land but not have the practice or confidence to operate far away from shore. Extended patrols require and demonstrate navigational skills and the ability to operate submarines away from base. An important indicator of the level of crew training and competence is also the presence of foreign advisors and trainers.[59] A submarine force heavily dependent on foreign advisors and trainers cannot be expected to be able to operate independently.[60]

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[57] Schmidt, 'A Methodology for Determining Third World Submarine Capabilities'.
[58] Personal interviews with submarine engineers and naval officers, in Europe and the United States, June-December 2013.
[59] Even short deployments may provide important information on submarine capability as the ability to exercise routine operation are indications of crew skill level. Schmidt, 'A Methodology for Determining Third World Submarine Capabilities', pp. 59-62.
[60] Schmidt, 'A Methodology for Determining Third World Submarine Capabilities', pp. 59-62.

Is there a submarine arms race in Asia?

There are a growing number of submarines in Asia and more will be added in the coming years. However, any talk of a submarine arms race may be focusing on the wrong question of numbers. Perhaps the more interesting question is what those numbers represent in the form of capability and how such capabilities may or may not contribute to crisis instability.

AIRCRAFT CARRIERS AND EXPEDITIONARY WARFARE SHIPS

COLLIN KOH SWEE LEAN

With the simmering maritime disputes in the East and South China Seas, much of the limelight has been on the spate of militarisation in Asia backstopped by the rise in military expenditures. Per the Stockholm International Peace Research Institute, military spending in Asia and the Oceania rose by 5.4–percent in 2015 and by 64–percent between 2006 and 2015.[61] The steady build-up of maritime forces — both navies and maritime law enforcement agencies — has especially captured much attention.

Often relegated to the periphery of this limelight, however, has been the less noticed expansion of expeditionary warfare capabilities of regional militaries. To be certain, such lumbering, mostly under-armed assets as expeditionary warfare ships — for this study referring to such large amphibious sealift vessels of landing ship, tank (LST) category and above — are considered less glamorous than their high-powered submarine, destroyer and frigate counterparts bristling with all the sophisticated firepower and sensor capabilities.

Bean-Counting Expeditionary Warfare Ships

Amphibious assault landing vessels — including expeditionary warfare ships and smaller landing craft — experience a downward slide in total regional numbers in Northeast Asia from 1147 in 1980–91 to 907 in the period of 2012–15. For the Oceania, numbers increased from 23 to 35 across the same periods. South Asia, fronted by India, experienced one of the fastest growth — 21 in 1980-91 to 67 in 2012–15 — and so does Southeast Asia: 373 to 461 across the same periods.[62]

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[61] Dr Sam Perlo-Freeman, Dr Aude Fleurant, Pieter D. Wezeman, and Siemon T. Wezeman, *SIPRI Fact Sheet: Trends in World Military Expenditure, 2015* (Stockholm International Peace Research Institute, April 2016), p. 3.

[62] For this study, Northeast Asia comprise China, Japan, the two Koreas and Taiwan. South Asia comprises Bangladesh, India and Pakistan. Southeast Asia comprises Brunei, Indonesia, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Vietnam. Finally, the Oceania comprises Australia and New Zealand. Data extracted and corroborated from various sources, including successive issues of the *Military Balance*, published by the International Institute of Strategic Studies (IISS) (Oxford, UK: Oxford University Press).

A closer look taking the period 2000 to 2015, however, reveals that expeditionary warfare ships have generally risen from 172 in 2000 to 197 in 2010, dipping later to 167 in 2015, whereas landing craft category for the region has steadily declined from 1310 in 2000 to 1178 in 2010, and then 1056 in 2015.[63] Overall, though, landing craft continues to constitute the bulk of amphibious sealift assets across Asia. This reflects the littoral geographical nature of Asia, where shallow, narrow and semi–enclosed waters make low–draft and physically small landing craft handy workhorses under most circumstances.

The decline in landing craft numbers has a lot to do with the retirement of many ageing vessels — mostly dating from the Cold War, and even of Second World War vintage — while there is no necessarily one-for-one replacement for them. South Asia continues to see greater emphasis on landing craft, though India leads in terms of acquiring expeditionary warfare ships. It is mainly in Northeast and Southeast Asia, and the Oceania, where this latter category has witnessed a boom.

Towards Larger, Better Expeditionary Warfare Ships

One may conclude that there is an increasing general preference shown across the various Asian sub–regions towards the bigger, more capable expeditionary warfare ships. The proliferation of expeditionary warfare ships is largely driven by the need for better HADR capabilities especially following the Indian Ocean earthquake and tsunami in December 2004. Indonesia was particularly affected by that episode; it found its amphibious sealift assets woefully inadequate — which thereafter motivated the enhancement of its expeditionary warfare ship programmes.[64]

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[63] Ibid.

[64] For example, Indonesia purchased more *Makassar*-class LPDs, of South Korean design, while also developing its own indigenous, *Teluk Bintuni*-class LSTs to recapitalize the ageing fleet of LSTs.

As the Asian navies retire their bulk of older LSTs, they also begin to induct new-built, vastly more superior replacements. These ships are more than the basic LSTs that have the capability to beach and disembark troops, vehicles and materiel. Increasingly, Asia has seen a proliferation of expeditionary warfare ships of landing platform, dock (LPD) category — often touting a bigger aviation capacity (either a longer aft helicopter deck or a through-deck configuration) with hangar facilities, and most notably an internal well-dock that can disembark small landing craft.

Some LPDs, like Singapore's *Endurance*-class, retain bow doors and landing ramps to allow direct disembarkation of troops and vehicles onto shore. But the more superior aviation and well-dock capacities give these assets the option of disembarking forces at standoff distance, minimising their exposure to enemy counter-landing direct fire. Better aviation capacity has become an especially prized quality; Singapore for instance mooted plans for what it dubbed Joint Multi-Mission Ship (JMMS).[65]

An Uneven Proliferation

Larger expeditionary warfare ships, such as LPDs, are more expensive for the enhanced qualities they embody, meaning that Asian navies could only acquire smaller numbers — certainly not one-for-one replacement of those less capable LSTs. Hence, some countries found their ambitions to acquire such vessels coming under fiscal challenge, especially when other maritime defence and security needs are prioritised. India, for example, built a successive series of new LSTs but following the acquisition of an ex-American LPD, named INS *Jalashwa*, progress for its LPD programme has been slow compared to other naval shipbuilding projects.

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[65] Not too coincidentally this plan came after Super Typhoon Haiyan that wracked the Philippines in November 2013. *Speech by Dr Ng Eng Hen, Minister for Defence, at Committee of Supply Debate 2014*, Ministry of Defence, Singapore, March 6, 2014. At: https://www.mindef.gov.sg/imindef/press_room/official_releases/sp/2014/06mar14_speech.html (accessed on October 10, 2016).

Malaysia is one such example; it has deferred its Multi-Role Support Ship programme numerous times due to budget constraints despite having lost an ex-American LPD, KD *Sri Inderpura*, to an onboard fire while its vintage LSTs are progressively retired — all without replacements yet in sight, an oddity for a country that would have depended on such vessels to transport forces to and from West and East Malaysia across the South China Sea.[66]

Asia's proliferation of expeditionary warfare ships is in part also enabled by the emergence of local shipbuilders capable of building such vessels for both domestic use and export. For example, South Korea sold LPDs to Indonesia, designated the *Makassar*-class, under a technology transfer scheme that in turn enabled the latter to sell a pair of Strategic Sealift Vessels (SSVs) to the Philippines. Singapore not only built four LPDs for itself, but also a modified variant that was exported to Thailand. These are not just simple landing craft that has long been produced by some Asian shipbuilders, for which they have already become technically competent.

Expeditionary Warfare Ships or Light Aircraft Carriers?

Necessary to highlight here is an observation that Northeast Asian countries have begun an interesting pattern that blurs the lines between large expeditionary warfare ships and aircraft carriers. For example, Japan moved from building simple LSTs to through-deck *Osumi*-class LPDs.[67] It also built the *Hyuga*-class and the even larger *Izumo*-class "helicopter destroyers" which feature no internal well-docks but a through-deck — making them resemble aircraft carriers. These interesting vessels in fact served as de facto expeditionary warfare ships during the recent disasters — *Osumi*-class LPD JS *Kunisaki* participated in humanitarian assistance and disaster relief (HADR) operations after the December 2004 Indian Ocean earthquake and tsunami. *Hyuga*-class ship JS *Ise* was deployed in the aftermath of Super Typhoon Haiyan in November 2013.

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[66] The January 2013 infiltration by Sulu militants in Lahad Datu, eastern Sabah would also have impressed upon the need for rapid deployment capabilities enabled by such assets as MRSS. But as of now, the priority continues to be on other naval and maritime law enforcement assets optimized for surveillance and patrol operations. And the navy's Second-Generation Patrol Vessel – Littoral Combat Ship (SGPV-LCS) programme devoured a lion's share of the budget.

[67] By the very nature of its through-deck and enhanced aviation capacity, the *Osumi*-class should have been categorized as a landing helicopter dock (LHD).

South Korea built the *Dokdo*-class landing helicopter dock (LHD) that also has a through–deck configuration and internal well–dock. So far, this ship has not seen HADR action, but in supporting amphibious assault training exercises. Further south in the Oceania, though not built locally but in Spain, Australia's *Canberra*-class LHDs also feature a through–deck configuration.

Singapore's JMMS has a potential of becoming a light aircraft carrier.[68] These Australian and Northeast Asian models can at least in theory turned into light aircraft carriers with suitable modifications, operating small numbers such fixed–wing planes as the vertical and/or short take-off and landing (V/STOL) F-35B Lightning II Joint Strike Fighter.

There is probably no requirement in the foreseeable future for these Asian navies to possess a supercarrier like the ones the US Navy musters; such light carriers, each embarking a modest complement of fixed- and rotary-wing assets, may still optimally fulfil whichever wartime missions as required. In Asia, currently only China and India are pursuing full–fledged aircraft carrier programmes, while Thailand remains the sole Southeast Asian operator of a light carrier bought in the 1990s, the HTMS *Chakri Naruebet*.[69]

Aircraft Carriers: A New Frontier of Naval Arms Race?

Before China commissioned the *Liaoning* in late 2012, India was the sole major Asian aircraft carrier operator following Australia's retirement of HMAS *Melbourne* in 1982.[70] The Indian Navy flew Sea Harrier "jump jets" from the recently-retired light carrier INS *Viraat* and with the induction of a larger, more capable aircraft carrier INS *Vikramaditya*, it progressed to a more powerful carrier-borne aviation based on Russian-built MiG-29K/KUB Fulcrum-D multi-role fighters.

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[68] The JMMS specifications have yet to be released by the Singapore defense and navy authorities, but local shipbuilder ST Marine has unveiled the *Endurance-160*, a through-deck LHD design which could be a possible candidate. If *Endurance-160* or a foreign design is chosen, it would bequeath Singapore with a latent light carrier potential.

[69] And it is a decaying one in fact; other than the carrier getting on age, its aviation complement has lost its fixed-winged aircraft – the Spanish Matador (modified AV-8 Harrier) jump jets – and is now purely a helicopter carrier. There are no forthcoming plans to restore a fixed-wing aviation capability for the HTMS *Chakri Naruebet*.

The Chinese, interestingly, made a leap right into full carrier capability with *Liaoning* which is analogous to INS *Vikramaditya*, boasting a growing organic complement of J-15 Flying Shark — a close Russian Su-33 lookalike – multi-role fighters. The *Liaoning* has so far been engaged in numerous sea trials, including flight training for J-15 aviators, whereas Beijing appears intent to establish a full carrier battle/strike group capability by building not just more J-15s but also the necessary surface escorts and afloat support.[71] The learning curve is steep for Beijing, whose experience with shipborne aviation (even helicopters embarked on its fleet of destroyers and frigates) is already not extensive to begin with, yet it is clearly determined to pursue this pathway at all costs. The aim is to possibly field at least two carrier groups in the foreseeable future.

China and India are at present pursuing better carrier capabilities. When seen from a broader perspective of their existing geopolitical rivalries — the unresolved land boundary dispute, and naval forays into each other's traditional maritime sphere of influence, namely the Indian Ocean and South China Sea – these developments could be interpreted as a form of "carrier race". Beijing is in the late stages of building its first indigenous carrier, dubbed Project-001A, whereas India's Indigenous Aircraft Carrier (IAC) has progressed with the launch of IAC-1 (INS *Vikrant*).

[70] Plans to acquire the Royal Navy light carrier HMS *Invincible* fell through when the Falklands War broke out, and subsequent plans to acquire HMS *Hermes* also came to nothing. The latter was eventually sold to India as INS *Viraat* in 1986.

[71] Besides the J-15, the Chinese are also building a new Z-18 shipborne helicopter for both anti-submarine and early warning roles, as well as a possible airborne early warning and control aircraft analogous to the US Navy's E-2D Hawkeye.

However, indigenous carrier development has not enjoyed rapid progress as these two Asian giants would have desired. Preliminary photographic evidence points to the possibility that Project-001A may not differ much from the *Liaoning*, since it still features a ski–jump — a sign that China has not yet secured a catapult-assisted take-off and arrested recovery (CATOBAR) capability. INS Vikrant also features a ski-jump, reflecting New Delhi's longstanding hurdle in the same respect. This possibly motivated India to cooperate with the US to develop aircraft carrier technology, in particular CATOBAR, including the much talked about prospect of Washington sharing the Electromagnetic Aircraft Launch System (EMALS). In any case, IAC-2 (INS *Vishal*) is tipped to feature CATOBAR.

A Naval Arms Control Challenge

Aircraft carriers, especially when seen in the context of geopolitical rivalries at sea in Asia, naturally become a subject of interest. Moreover, it is not just China and India and their indigenous carrier programmes, but also the need to consider the latent potential of some other Asian navies possessing something close to a carrier capability with their new expeditionary warfare ships. As such, it will be unwise to overlook the proliferation of expeditionary warfare capabilities. Non-monolithic Asia, comprising several sub-regions each with its own unique blend of diversities, is a fertile "playground" for the full utilisation of these assets across a full peace-war spectrum of operations.

Seen in the context of maritime disputes, the proliferation of expeditionary warfare ships can be especially unsettling, since they can be employed to undertake amphibious assault landing operations against terrestrial features in disputed waters. Yet the very same assets can also be deployed for HADR operations in response to natural calamities, as demonstrated in December 2004 and November 2013. In between these two extreme ends, for instance the Philippine Navy SSV BRP *Tarlac* debuted as a floating command post for Manila's recent campaign to eradicate the Abu Sayyaf militant group in the southern Philippines.

Even aircraft carriers have come to signify this dichotomy — a departure from the usual image of such vessels being employed for conventional warfighting missions.[72] For example, the Thai carrier HTMS *Chakri Naruebet*, despite having lost its fixed-wing aircraft, demonstrated its HADR utility during the southern Thailand floods in 2006. Certainly, due to their deep draft and lack of specialized amphibious sealift capabilities (such as an internal well-dock), using aircraft carriers for HADR roles can be limited. Nonetheless, whenever expedient, these assets can still be employed for such low-intensity, operations other than war (OOTW).

All in all, expeditionary warfare ships and increasingly the case of aircraft carriers epitomise the longstanding challenge which plagued naval arms control specialists — they are essentially dual-functional, can be used for both offensive and defensive (and benign) missions. If one recalls the past difficulties in naval arms control, it becomes inevitable that any attempt to limit the growth of such assets is destined to navigate an arduous path, if not fail outright, since governments proclaim legitimate strategic and operational rationales behind their acquisitions. When nation-states define their security strategies beyond deterrence and warfighting to include OOTW to safeguard regional peace and stability, expeditionary warfare ships and aircraft carriers become even more relevant. More pertinent perhaps, is to make use of existing regional mechanisms that promote practical security cooperation, for example ASEAN Regional Forum or the ASEAN Defence Ministers Meeting Plus, as avenues for these capabilities to be put to benign use and thereby facilitating some degree of confidence-building.

[72] Of course, the US Navy has long used aircraft carriers for HADR, more as a floating aviation hub for helicopters. The USS *George Washington* for example was deployed to assist with Haiyan HADR in November 2013, trading its fixed-wing aircraft for space to support helicopters. London also sent the light carrier HMS *Illustrious* to join in the effort.

ADVANCED COMBAT AIRCRAFT AND UNMANNED AERIAL VEHICLES

PHIL FINNEGAN

Faced with growing threats, leading countries throughout the region are importing fifth generation fighters and launching new domestic programs for advanced combat aircraft. Asia-Pacific is emerging as the largest potential export market for advanced fighter aircraft outside of the United States and Europe. It is a leader in the import of fifth generation aircraft, which includes all aspect stealth, high performance airframe, advanced networking and avionics capabilities and sensor fusion. Japan, South Korea and Australia are all purchasing the F-35A, a fifth-generation fighter. Japan will be the first to receive the F-35A and will be the site of a F035 regional depot. Australia's planned purchase of 72 F-35As will make it the fourth largest international operator of F-35s. Dassault's Rafale, an advanced fourth generation aircraft, made its largest export sale ever in India, 36 aircraft with an option for an additional 12. India's discussions about the possible purchase of the F-16 or the JAS 39 Gripen line would represent one of the largest and potentially the largest transfer in history of a military aircraft production line depending on the final arrangements.

The flurry of activity in purchasing advanced fighters comes from a changing perception of threat from North Korea's nuclear and missile programs and Chinese assertions of its maritime claims. China has been developing advanced stealth fighters, the Chenghu J-20 and the AVIC J-31 and is importing 24 Russian Su35 fighters, and advanced fourth generation fighter. (Despite the technological steps forward, the Chinese fifth generation aircraft are believed to have weaknesses in their underpowered engines, their electronic systems such as AESA radars and networking.

As they cope with these changing threats, Western allies are being forced to grapple with the extent to which they are willing to pay the price for their industries' aeronautical capabilities at the cost of military capability. As their perception of the threat has grown, countries are increasingly focused on building greater links with the international defence industry and removing roadblocks to technology transfer and integration into the worldwide defence industry.

Japan faces one of the more complex balancing acts. It is grappling with the balance between domestic industry, a tight defence budget and a requirement for an advanced fighter that it cannot purchase off the shelf. Japan has contracted for 42 F-35s, the last 38 of which would be assembled and go through final check-out by Mitsubishi Heavy in Nagoya. The difficulty for Japan is that domestic industry would like a greater role that would built up its technological advantages. The F-35 is also not a good fit for Japan's needs. While stealthy, it does not provide the air combat capabilities of the F-22 fighter, which Japan earlier requested to purchase from the United States. As a result, Japan is considering what to do about its planned F-3 fighter programme which could give it those needed capabilities. One option would be to build an all indigenous fighter, a programme that would be led by Mitsubishi Heavy, which has already developed the X-2 fighter technology demonstrator. Developing such a fighter would be quite expensive with a price of $30 billion to $40 billion. Moreover, Japanese capabilities in areas such as stealth and advanced engines are not at the levels that would be needed for an effective next generation fighter.

A second option would be to bring in foreign technology and team with international firms, likely from the United States, with the intention of gaining needed technology and trying to compete in international markets. Lockheed Martin and Boeing Co have expressed interested in cooperating if only to strengthen their links in Japan. Unfortunately, the Japanese industry will find international markets challenging. Japanese programmes such as the F-2, an assembly programme for a larger version of the F-16, produced fighters at two to three times the world market price. This option is more likely than the indigenous development, but also faces serious obstacles in cost.

A third option would be to restart the F-22 line, which would be partially financed by Japan to allow an expansion of the US force and the acquisition of fighters by Japan. It would meet Japanese military requirements, but it would be quite costly. There is a continuing effort in the US Congress, particularly the House of Representatives, to encourage a restart of the line, but the US Air Force and Lockheed Martin are ambivalent because it could undermine the F-35 program.

South Korea faces a similar challenge as it seeks to balance the needs of industry and military capabilities. It is purchasing 40 F-35As and may expand that acquisition by an additional 20 aircraft. In addition, it has launched the $15 billion KF-X project to develop a “4.5 generation fighter.” Development is to be completed in 2026. Indonesia is planned to have a 20 stake in the programme. Essentially this would be an advanced non-stealth aircraft. There are several challenges that could ultimately undermine this project. First, the United States has refused to transfer key technologies to South Korea including active electronically scanned array (AESA) radar, infrared search and track (IRST), an electronic warfare system and an electro-optical targeting pod. Obviously, there are a number of high technologies hurdles to overcome. Still, there are sources in Europe and Israel that would be able to provide many of these technologies. Second, by going with two engines, the fighter will be at cost levels that will make it difficult to export. The single-engine F-16 was exported to 26 countries while the dual-engine F/A-18 was exported to seven countries.

Australia is opting for fighter imports to satisfy its defence needs. Its planned 72 F-35As will begin to enter operational service from 2020 to replace older F/A-18 fighters and there could be additional purchases. “Options to replace the Super Hornets (F/A-18 E/F) in the late 2020s will be considered in the early 2020s in light of developments in technology and the strategic environment and will be informed by our experience in operating the (F-35A) Joint Strike Fighters,” according to the Australian Defence White Paper issued in March.

India is plotting its own fighter acquisition course, working at times to marginalise its industry to allow the modernisation to forge ahead. After a deadlock over whether Dassault would guarantee Rafales built in India by Hindustan Aeronautics, India backed down from the requirement that Dassault build its Rafales in India. It cut the order from 126 to 36 aircraft with an option for an additional 12. At those levels having a line in India would make no sense. The Rafale order solved the problem of involving Hindustan Aeronautics, a public-sector firm that has serious performance issues. India has worked with Russia on the T-50 PAK FA, Sukhoi’s next–generation fighter. This programme originally began as a reaction to the

US F-22 program. As of early 2015, India contributed $295 million to the design. Yet the program has been plagued by disputes between Russia and India over technology, workshare and budgets and the status of Indian involvement is unclear. As modernisation continues, India will need to continue to grapple with the balance of domestic and international industry. Its interest in buying at least 200 and as many as 300 foreign single-engine fighter jets hinges on them being built in India. Lockheed Martin Corp. and Saab are both interested in moving their F-16 and Gripen lines to India as part of a deal. India's need for the fighters is increasingly pressing, its Soviet era aircraft are aging and it already has a fighter shortfall.

Unmanned Aerial Vehicles (UAVs)

Unmanned Aerial Vehicles for strategic purposes promise to proliferate rapidly in coming years in the Asia-Pacific region. Changing US export policies combined with the perception of heightened threat are driving the influx of UAVs into the region. The Asia-Pacific region is already the largest market outside of the United States for UAS and will continue to grow. Teal Group forecasts show the market growing from $524 million in 2016 to $2.5 billion in 2025, nearly a five-fold increase. It will rank second only to the United States throughout the decade but will grow more quickly. Currently it is only slightly more than the European market, but by 2025 it will be more than twice as large as Europe.

Strategic UAVs include high-altitude, long-endurance (HALE) systems such as Global Hawk. The Global Hawk, or the naval version known as the Triton, flies at 65,000 feet for up to 36 hours, making it ideal for countries to do surveillance of large areas. Medium-altitude, long-endurance systems (MALE) include systems like the MQ-1/MQ-9 Predator or the Heron 1/ Heron TP. They are considerably less costly than the Global Hawk but can also be used to provide surveillance of large areas from 25,000 to 50,000 feet with an endurance of up to 36 hours. We are not considering mini, small or tactical or UAVs in this study. These systems, which require less technological sophistication, are frequently available from local manufacturers and are used more directly for support of troops engaged in combat.

Among the Western-aligned countries, none have HALE systems or armed MALE systems. Few countries have MALE systems. HALE and armed UAV systems will be imported soon and companies possessing MALE UAVs promises to increase. The groundwork is being laid for even more advanced programs to develop unmanned combat aerial vehicles.

Japan, South Korea, Australia and India are all planning major programs to import UAVs that will bring them these new capabilities. The advanced technology available primarily from US, Israeli and Chinese manufacturers means that there is less tension about the capabilities of domestic industry in the strategic classes of UAV. That will help fuel faster acquisition of systems than the disputes that arise over the role of domestic industry in any acquisition of combat aircraft. Attempts by domestic industry in India and South Korea to develop MALE UAVs appear uncertain. Hindustan Aeronautics, despite its poor performance, is developing the Rustom, potentially an armed UAV. Korean Air is developing a MALE system but has only recently received a contract for a less sophisticated tactical system.

The drive to deploy strategic systems stems directly from the changing threats in the region and the need for earlier warnings of actions by potential adversaries. North Korea's aggressive actions continue to create concerns in Japan and South Korea. Chinese maritime claims and actions to change the status quo are creating a greater desire to track actions in disputed areas for many countries. China is also engaged in its own aggressive drive to build up its UAV arsenals, developing multiple UAV systems, including armed MALE ones. These are being exported to customers in the Middle East, Africa and Central Asia.

Shifting US export policy is opening the door to purchases from new buyers, allowing the purchase of new classes of UAVs for the area, HALE systems and advanced MALE systems such as Predator B. South Korea sought to purchase RQ-4 Global Hawk, which is the most advanced non-classified US UAV, for a decade. The proliferation of UAV technology and desire to support the US industry finally led the US government to allow the export. Japan also is purchasing the three RQ-4 Block 30 Global Hawks. Australia

is planning the largest acquisition of any Asian–Pacific country, laying the groundwork to acquire up to seven high altitude MQ-4C Triton unmanned aircraft from the early 2020s. The MQ-4C Triton is the naval version of the Global Hawk that is being acquired by the US Navy for persistent maritime patrol. Other countries have been in discussions about the possible purchase of MALE systems. General Atomics has been targeting the Philippines, Japan, Indonesia, Singapore and Australia for the RQ-9 Predator and its navalised Guardian version, which is operated by the US Department of Homeland Security. Australia already began training crews on the Predator in February. Singapore already has Israeli Herons.

India, which already has the largest force of MALE UAVs in Asia outside of China, is showing willingness to shift its policies to facilitate the import of more advanced systems. India joined the Middle Technology Control Regime in June, paving the way for an acquisition of more capable strategic systems. The Missile Technology Control Regime restricts the proliferation of missiles, UAVs and related technologies for systems capable of carrying a 500kg (1,100lb) payload at least 162nm (300km). Signatories are careful about the provision of systems to countries which are not signatories. The United States, the world's largest manufacturer of UAVs, and Israel, the world's largest exporter of UAVs, adhere to the restrictions. Israel agreed to do so even though it is not a signatory.

India is moving quickly to take advantage of the opportunities offered to import more advanced UAVs. It has already agreed to buy 10 Heron TPs, Israel's most capable strategic system, to add to a force of more than 50 Heron I and Heron 2 UAVs, other less capable MALE systems. It is also interested in very advanced systems from the United States. It has made a formal request to buy 22 Guardians, the maritime version of the Predator B, that is operated by the Department of Homeland Security. The US government earlier cleared discussions with the Indian Navy on the Triton version of the Global Hawk. In September 2015, the Indian Air Force began exploring the possible acquisition of the Predator C, a more advanced jet-powered Predator that has never been exported outside of the United States. A US decision to allow the sale to India seems highly unlikely but the mere fact of the Indian Air Force's consideration of it shows the extent to which it is seeking the latest Western technology.

Western-oriented Asian–Pacific nations are also beginning to consider armed UAVs. Australia outlined plans for the introduction into its force in the early 2020s of an armed MALE UAV in its March 2016 Defence White Paper. Australian personnel are already training with US troops on how to operate the MQ-9 Reaper. The Japanese military is beginning to consider more advanced systems, such as unmanned combat aerial vehicles. The Japanese Ministry of Defence is developing plans for Combat Support Unmanned Aircraft that would operate with the F-3 as a forward sensor aircraft in 15-20 years. That would be followed by a weapon-firing version after 20 years. Propulsion and power studies are planned to begin in fiscal 2019.

Conclusions

The urgent pursuit of advanced new technology in combat aircraft and strategic UAVs is leading countries through the region to make fundamental changes to better integrate with the world defence industry and to agree to new structures such as the Missile Technology Control Regime that pave the way for greater technology transfer. At the same time, there is a growing interest in Western nations in making more technology available, whether to keep production lines open or to improve coordination as the perceived common threat grows.

THIRD OFFSET SYSTEMS

PETER DOMBROWSKI

Almost lost in the endless debates about whether and how the Obama administration endangered US national security are the concrete steps taken during the President's second term to solidify America's military advantages far into the future. Under the rubric of the Third Offset Strategy, the Department of Defence has sought to reinvigorate efforts to introduce cutting edge technologies into the future force. Moreover, it has sought to reform the defence acquisition system in ways great and small to allow for the more rapid and less costly integration of advanced warfighting capabilities into all three military services in the coming decades.

If successful, and there is little reason to believe it won't be if the incoming Trump administration continues the initiative, the Third Offset will help ensure that the United States maintains the technological superiority its armed forces have enjoyed for much of the post–World War II era. Regardless of what approach to national security the Trump administration choses to pursue, maintaining the qualitative edge for the US military will give his administration and those of his successors greater degrees of freedom in responding the long-term security challengers and short–term crises.

This is especially true in the maritime domain where the United States Navy faces significance operational challenges for the first time since the collapse of the Soviet Union. The rapid rise of the PLA(N)—in terms of size, capabilities and declared ambitions-- combined China's increasing aggressiveness in the South China Sea and elsewhere, have led to concerns over the ability of the United States and its allies to defend the regional status quo in the Indo–Pacific.[73] In particular, military leaders, politicians, and analysts worry that in order to meet American security

[73] The literature is vast. See, in no particular order, for example, Toshi Yoshihara and James R. Holmes, *Red Star over the Pacific: China's Rise and the Challenge to US Maritime Strategy* (Annapolis: Naval Institute Press Reprint edition 2013) , Bernard D. Cole, The Great Wall at Sea, Second Edition: China's Navy in the Twenty-First (Annapolis: Institute Press; 2 edition 2010); and Phillip C Saunders, Christopher D. Yung, Michael Swaine, and Andrew en-Dzu Yang, eds, *The Chinese Navy: Expanding Capabilities, Evolving Roles* (Washington: National Defense University Press 2011)

commitments to allies and partners, the United States must be able to overcome China's so-called (and controversial) Anti-access/Area-Denial strategies and thwart its emerging ability to project power—missions that will require the United States Navy to develop and deploy technologically advanced weapons and supporting systems.

A Brief History of the Third Offsets Strategy

On November 15, 2014, then-Secretary of Defence Chuck Hagel announced a new plan to "sustain and advance America's military dominance for the 21st century" by having DoD "explore and develop new operational concepts, and new approaches to warfighting, war-gaming and professional military education."[74] Deputy Secretary of Defence Bob Work was asked to lead the effort, known colloquially at the Third Offset Strategy, a role he continued after Ashton Carter took over for Secretary Hagel in February 2015.[75] Carter and Work have concentrated on identifying military capabilities that will both keep the US ahead of competitors and, most important, help deter and, if necessary win future high-end wars. Moreover they have sought to institutionalise innovation, by repurposing or creating a series of new organisations ranging from the Strategic Capabilities Office (SCO, repurposed from earlier foci) to the Defence Innovation Unit Experimental (DUIx), a Defence Innovation Board,[76] and, perhaps even, a new innovation czar (a chief innovation officer).[77] The Secretary of Defence also expressed interest working with Congress on a broader, but related, set of defence reforms, including revisiting the Goldwater-Nichols Act and rethinking defence acquisition processes, a topic he had specialised in during earlier stints in the government.[78]

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[74] Cheryl Pellerin, 'Hagel Announces New Defense Innovation, Reform Efforts," *DoD News* (November 15, 2014). Available at http://www.defense.gov/News/Article/Article/603658.

[75] For more of the early history and ideas about the Third Offset Strategy see, Peter Dombrowski, "Cybered Conflict and the Third Offset Strategy: The Sino-American Rivalry and Peacetime Competition," *Georgetown Journal of International Affairs* (September 2015).

[76] Cheryl Pellerin, "Defense Innovation Board Makes Interim Recommendations," *DoD News* (Oct. 5, 2016). Available at http://www.defense.gov/News/Article/Article/965196/defense-innovation-board-makes-interim-recommendations.

[77] Mohana Ravindranath, "Pentagon Needs A Chief Innovation Officer, Say Eric Schmidt, Jeff Bezos, Neil deGrasse Tyson, and Friends," *DefenseOne* (November 2, 2016).

[78] "McCain, Thornberry preview FY-17 defense reform agenda," *InsideDefense.com SitRep* (Oct 21, 2015). Available at http://search.proquest.com/docview/1724205059/fulltext/56148F3BE54F4354PQ/32?accountid=322.

The bottom line of the Third Offset Strategy was to encourage greater technological innovation within the military, remove bureaucratic impediments to innovation, and harness the American private sector to gain long–term competitive advantage over strategic competitors like China. While the dollar figures devoted to the new organisations like SCO and DUIx are relatively small compared to major acquisition programmes, the point was to both stimulate change from the top-down and encourage innovation from the bottom-up.

The Next Administration

The Trump administration is highly likely to pursue at least some elements of the Third Offset Strategy initiatives begun under President Obama. Of course, new administration's being what they are, the name itself is likely to change and the details of which capabilities and technologies are preferred will likely be adjusted. But extensive efforts to maintain US technological superiority will continue, especially because US president-elect Trump has stated repeatedly that "[h]istory shows that when America is not prepared is when the danger is greatest. We want to deter, avoid and prevent conflict through our unquestioned military dominance."[79] The president-elect has also pledged to begin pursuing this vision quickly: "As soon as I take office I will ask Congress to fully eliminate the defence sequester [presumably referring to the 2011 Budget Control Act] and will submit a new budget to rebuild our military; it is so depleted,"[80]

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[79] Jeremy Diamond, "Trump Calls for Military Spending Increase," *CNN.com* (September 7, 2016). Available at http://www.cnn.com/2016/09/06/politics/donald-trump-defense-spending-sequester/index.html.

[80] Daniel Wasserbly, "US Presidential Election: Trump's Defence Plans Close to Republican Party's," *IHS Jane's Defence* Weekly (November 10, 2016).

Over the past nine months or so, the Pentagon has planned to ensure the future of the Third Offset Strategy initiatives across the presidential transition, regardless of who won the 2016 presidential election. In May, Deputy Secretary Work assured stakeholders, "I'm going to be central to the transition, so I'm going to be able to personally talk with the transition team and explain to them what we have pursued and why we pursued it and let them make their own decisions."[81]

One key question, of course, is whether the new administration will agree with and thus continue the specific initiatives pursued by its predecessor. Another key is whether Trump administration will concentrate on current operations and readiness, or whether it will balance near-term expenditures with focused investments that will not pay dividends for many years. As Robert Tomes has argued with regard to the so-called first offset strategy (including capabilities like the precision guided munitions and conceptual breakthroughs like the Airland Battle,) initiated by Defence Secretary Harold Brown during the Carter administration, defence transformation, serious change takes time;[82] S&T investments, R&D expenditures, and doctrinal innovations begun in the later 1970s only initiated a forty-year period of transformation that culminated not just in the Persian Gulf War and the Iraq War but, more generally, in the process of military transformation during the early 2000s. Even the greatest proponents of the Third Offset Strategy admit that the fruits of recent activity will not be harvested for several decades.

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[81] Scott Maucione, "DoD is setting up the Third Offset for the Next President," *Federal News Radio* (May 2, 2016). Available at http://federalnewsradio.com/defense/2016/05/dod-setting-third-offset-next-president/

[82] Robert R. Tomes, *US Defence Strategy from Vietnam to Operation Iraqi Freedom: Military Innovation and the New American War of War, 1973-2003* (London: Routledge 2007).

For the US Navy, the new administration may bring increased attention and resources. The Washington rumour mill suggests that former Representative Randy Forbes is the most likely candidate to be the new Secretary of the Navy; Forbes is/was one of the genuine experts on naval affairs in the legislative branch and an advocate for building a stronger more strategically focused Navy.[83] Trump and several of his surrogates have suggested that the overall defence budget may increase by as much as twenty percent and the headline goal for the size of the Fleet will increase to 350 ships.

Third Offset Technologies and Military Capabilities

What technologies did the Obama administration believe would help maintain and extend America's technological edge? In the initial stages of the Third Offset Strategy, administration officials and defence commentators advanced a laundry list of possibilities (see Table 1), from systems that might be fielded in the medium-term like directed energy weapons to pie-in-sky weapons just this side of science fiction.[84] Such speculation reflected wider strategic debates about grand strategy, including how to respond to China's rise and provocations in places like the South China Sea as well as internal debates within the military services about Service and Joint concepts of operations. Simply put, to determine what capabilities and technologies would provide enduring advantages, it was first necessary to think through who might be fought, when, and how.

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[83] Sam LaGrone, "Randy Forbes is the Favorite for Trump's Secretary of the Navy," *USNI.org* (November 9, 2016). Available at https://news.usni.org/2016/11/09/randy-forbes-is-the-favorite-for-trumps-secretary-of-the-navy.

[84] Peter Dombrowski, "Can America Compete with China's Great Military Leap Forward? *War on the Rocks* (September 17, 2015). Available at http://warontherocks.com/2015/09/is-america-ready-for-chinas-great-military-leap-forward/.

Table 1:
Alternative Visions of the Third Offset Strategy

Hagel 2014[85]	Ochmaneck 2014[86]	Martinage[87]	Work 2014[88]
Robotics	Enhanced capabilities to thwart the enemy's attacking forces early in a conflict	Increase space resiliency, hedge against the loss of space-based enablers, and develop counter–space capabilities;	Learning machines
Autonomous systems	Resilient basing	Expand the geographic coverage of the undersea fleet and sensor networks;	Learning machines
Miniaturization	Rapid suppression/ destruction of enemy air defences	Develop and field modern ground-, air-, and sea-deployed naval mines and long-range antisubmarine warfare weapons	Assisted human operations
Big data	Degrading the enemy's situational awareness	Reverse the active defence versus missile attack cost exchange ratio	Human-machine combat teaming
Advanced manufacturing, including 3-D printing	Cyber defence and offense	Develop and field new counter-sensor weapons	Network–enabled autonomous weapons
		Accelerate fielding of aerial refuelling capabilities	
		Field a new long–range strike bomber	
		Field land-based, penetrating, high–altitude	

Over the last two years, it appears that Third Offset Strategy proponents within the government have increasingly focused on one important category, less a weapons system, than a general-purpose technology or technologies,[89] with wide applicability across the full range of weapons and support systems fielded by the US military and even the intelligence agencies: artificial intelligence and autonomous systems.

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[85] Cheryl Pellerin, "Hagel Announces New Defense Innovation, Reform Efforts," DOD News (Nov. 15, 2014). http://www.defense.gov/news/ newsarticle.aspx?id=123651.

[86] David Ochmanek, "The Role of Maritime and Air Power in DoD's Third Offset Strategy,"

[87] Robert Martinage, Statement before the House Armed Services Subcommittee on Seapower and Project forces on the Role of Maritime and Air Power in the DoD's Third Offset Strategy, December 2, 2014.

[88] "Deputy Secretary Discuses 3rd Offset, First Organizational Construct," *US Fed News Service* (September 22, 2016).

[89] Timothy F. Bresnahan and Manuel Trajtenberg, "General Purpose Technologies 'Engines of growth'? "*Journal of Econometrics vol.* 65, no. 1, (January 1995), pp. 83–108.

The five key technologies described by the Deputy Defence Secretary are as follows:

(1) Learning machines;

(2) Human-machine collaboration (advanced computers and visualisation to help people make faster, better and more relevant decisions);

(3) Assisted human operations (linking individuals into the battle network);

(4) Human–machine combat teaming (new ways for manned and unmanned platforms to operate); and

(5) Network–enabled autonomous weapons (a learning command, control, communications and intelligence, or C3I, network).[90]

Deputy Secretary Work explained his rationale: "We believe this vision is very well-matched for an evolving era of technological dynamism as well as warfare where challenges are multidomain and multifunctional and operations — especially cyber, electronic warfare and guided-munition salvos — move at high speeds."

[90] "Deputy Secretary Discuses 3rd Offset, First Organizational Construct," *US Fed News Service* (September 22, 2016).

Perhaps the most obvious area where artificial intelligence and autonomous systems more generally will potentially influence future naval operations is regarding unmanned surface vehicles (USVs) and unmanned underwater vehicles (UUVs). Proponents believe that virtually all aspects of high-end naval warfighting (not to mention maritime security operations and various contingency operations)

Table 2:
Missions of Unmanned Maritime Systems[91]*

Unmanned Surface Vehicles	Unmanned Underwater Vehicles
Antisubmarine warfare (ASW)	Intelligence, surveillance and reconnaissance (ISR)
Maritime security	Mine countermeasures
Surface warfare	Antisubmarine warfare
Special operations	Inspection/identification
Electronic warfare	Oceanography
Maritime interdiction operations	Communications/navigation network node
	Payload Delivery
	Information operations
	Time-critical strike

*For illustrative purposes, Table 2 excludes the variety and range of missions that could be performed by the unmanned aerial vehicles that are and will be fielded by the USN and USMC.

Impact on Allies and Partners

As I have argued elsewhere,[92] American efforts to once again widen its technological lead will affect not only its adversaries and potential adversaries (inducing classic action-reaction dynamics and asymmetric strategies), but also allies and potential coalition members. Research has demonstrated that recent RMAs have complicated interoperability between American forces and even treaty allies; in fact, interoperability problems only skim the surface of the technology gaps. Advanced operational

[91] Defense Science Board, *Task Force Report: The Role of Autonomy in DoD Systems* (Washington: Office of the Secretary of Defense for Acquisition, Technology and Logistics, July 2012).

[92] Peter Dombrowski, "America's Third Offset Strategy: New Military Technologies and Implications for the Asia-Pacific," *RSIS Policy Briefs* (March 2015), p. 9. Available at https://www.rsis.edu.sg/publications/rsis-publications/rsis-publications-policy-briefs/

concepts from the Airland Battle to the AirSea Battle are predicated on common doctrine, an enormous amount of training, and constant exercising. Building or buying advances systems is one thing; utilising them is another.

In the short term, at least, many Asian allies lack the resources to keep pace with the advanced weapons technologies that will emerge from the Third Offset Strategy. They are either cannot manufacture compatible systems or are unable to purchase advanced systems from the United States. After all, in both the first two offset strategies it was US policy to limit allied access to top–end systems. It was during the period of the so-called First Offset Strategy that the United States first implemented a serious policy of nuclear nonproliferation—Eisenhower's "Atoms for Peace" proposal that led, ultimately, to the Nonproliferation Treaty in 1968. If past is prologue, future American administrations will seek to limit access to advanced systems and thereby complicate future allied and coalition operations.

Three factors may mitigate this possibility, especially if the Trump administration's version of the Third Offset Strategy continues to focus on artificial intelligence and autonomous systems. First, by some accounts, artificial intelligence will allow greater integration of component systems of all types—in theory, open architectures will be the norm. Second, insofar autonomy and AI are incorporated into unmanned systems, Asian states will have the ability to build or acquire the baseline unmanned systems themselves (vice accompanying C2 and data fusion infrastructures). In general, at least at the lower ends of the capability spectrum, unmanned systems are less expensive than manned systems with similar capabilities. Further, there is an international market with multiple potential suppliers of unmanned systems. Finally, under President Obama's Department of Defence, civilian and military leaders have been self-conscious about the possibility that the Third Offset will further stress allies already facing budgetary and capability shortfalls. It is possible that President Trump's Department of Defence and its successors will recognise this as well.

Arms Racing in Asia

To briefly summarise the potential impact of the Third Offset Strategy on the possibility of arms racing in Asia:

- Even assuming the Trump administration adopts a variant of the Obama administration's Third Offset Strategy, the direct impact of the new systems deployed by the USN and other American forces will not be felt for many years.

- Regional adversaries including China are well-aware of the American objective of re-establishing technological superiority.

- As such, China will adjust its own investment programs and operational approaches to "offset-the-offset."

- It is unclear whether either the United States or China have the will or the wherewithal to sustain an expensive technological race in the long-term.

- Both sides have strengths and weaknesses in pursuing such competitive strategies. While China's economy continues to grow and its ability to sustain higher defence spending seems assured, its capacity to innovate, deploy and operate advanced systems remains an open question. For the US, the post-World War track record of sustained (and surged) military–technological innovation is extremely impressive, but there is some question as to whether domestic politics will support the necessary levels of expenditures, especially given the nation's global responsibilities.

- American allies and partners must also adjust to if they hope to contribute to regional deterrence and, in extremis, fight a coalition war against China or any other potential adversary.

- Efforts to match or mirror American Third Offset investments and initiatives will not only impact the regional security dynamic vis-a-vis China, but also other bilateral rivalries (i.e., India–Pakistan).

- The current Third Offset Strategy's focus on artificial intelligence and autonomous systems (as general purpose innovations) will have far reaching implications on all military capabilities but most especially, in the shorter-term and in the maritime context, on the full range of unmanned aerial, surface and underwater vehicles.

SECTION 3: EXPERT DISCUSSION

COLLIN KOH SWEE LEAN

The third session of the workshop featured expert assessments and discussion by a panel of experts: Geoffrey Till, Sam Bateman, Oded Gour–Lavie, and Richard A. Bitzinger.

Geoffrey Till started his presentation by first remarking that by "conventional wisdom", arms races are typically seen as wasteful and destabilising. He then moved on to outline seven deadly characteristics of the naval arms race.

First, naval arms races are internationally driven, seen in the light of *Aussenpolitik* (responding to what others are doing) or *Innenpolitik* — domestic factors such as incompetence, corruption, or various economic drivers. Second, naval arms races are typically bilateral in nature. Third, naval arms races are characterised by high levels of political tension between the parties involved, when one could see modern examples where lethal force could constitute a possible measure of such a characteristic; for example, the India-Pakistan border conflict and alleged North Korean sinking of the South Korean corvette *Cheonan* in 2010.

Fourth, Till pointed out, naval arms races are also characterised by abnormal intensity in style through the individual country's defence efforts, where defence planners tend to consider uncertainty in their contingency planning, yet oftentimes running the risks of under- or over-planning. In this respect, transformational military technology (quality) gives one party an asymmetric strategic advantage (for instance, the case of the HMS *Dreadnought*). He proffered a possible future scenario of the Third Offset Strategy, conceived of by the US Department of Defence, as a potential driver of future races. However, overall seen, defence technologies would remain quite balanced between offense and defence in the long term, Till argued. Nonetheless, qualitative factors aside, defence planners would also focus on quantity. The lack of transparency and ensuing uncertainties would remain as key drivers behind reciprocal defence buildups.

Fifth, naval arms races are specifically focused operationally. Till brought forth the case of the People's Liberation Army's First and Second Island Chains concept to build its naval forces as a possible countermeasure against perceived American attempts to contain China. Sixth, naval arms races involve high stakes, as observed in the case of the rivalry between Great Britain and Germany prior to the outbreak of the First World War. Yet in contemporary Asia–Pacific, policymakers are observed to have little acknowledgment of the existence of naval arms races, or even use such phenomena as justifications for their naval acquisitions. Finally, Till pointed out that naval arms races are characterised by the problem of perceptions and language. He argued that the spate of naval arms acquisitions observed to date in the Asia–Pacific have yet to amount to a "race", though he questioned whether engaging in one is necessarily a bad thing. In this respect, he wondered whether not engaging in a naval arms race could be destabilising instead, since not doing so would consequently provoke a sense of insecurity.

One participant commented that the *Dreadnought* battleship race prior to the outbreak of the First World War may not have any modern equivalent; perhaps the ongoing spate of submarine acquisitions could be one to ponder about. It was also pointed out that the cyberspace and unmanned military systems also constitute potential arenas for a new type of arms races in today's context. Moreover, the participant argued that after all, trust is about perception of others' behaviour. Unlike the context in the run-up to the First World War, the cultures of Asia–Pacific countries are different. Nonetheless, it was argued that regardless how the arms dynamic is being labelled, it is a fact that inadvertent and accidental wars, when seen in the context of interstate disputes and rivalries, remains a danger to consider. To that, another participant argued that there is indeed greater external imperative to play greater regional and even international security roles and shoulder more responsibilities to deal with external security issues. The Asia–Pacific, it was argued, is relatively stable yet it often receives extra-regional criticisms that smaller and weaker countries (e.g. those in Southeast Asia) are too weak to deal with their security problems, hence compelling those governments to purchase better military capabilities.

Sam Bateman expounded upon the issue of strategic distrust which is prevalent in the Asia-Pacific region. He argued that the lack of trust amongst regional countries has become the number one barrier against cooperation in promoting good order at sea. But he also felt that this issue constitutes a "chicken and egg" problem — between trust and cooperation, which one should come first? Seen in this light, the fundamental lack of strategic trust effectively precludes cooperation in the South China Sea. For example, Beijing undertook some steps to promote cooperation, taking for instance the ASEAN-PRC Maritime Cooperation Fund. But ASEAN countries do not appear to trust China enough to tap on Beijing's goodwill.

Seen in the context of prevailing lack of strategic trust in the Asia-Pacific that precludes effective interstate cooperation, naval arms acquisitions take on an interesting dimension. Overall, countries in the region experiencing strong economic growth also tend to muster high growth rates in defence expenditures. Amongst the various naval capabilities acquired, Bateman specially mentioned about submarines. It would be difficult to conceive of viable wartime roles for such small forces being acquired thus far in Southeast Asia for instance. As such, he envisaged that Southeast Asian navies acquired submarines for the primary peacetime missions of covert surveillance and intelligence gathering instead of sinking enemy ships. The spate of submarine acquisitions in the region could be said to be competitive and entails high risks of accidents or incidents (boats being detected in waters they are not supposed to be). This thus drives home the need for better water-space management, he argued. A submarine "no-go zone" like that in the Cold War could be a plausible initiative for the Asia-Pacific, such as in the SCS. But one participant pointed out that mutual trust amongst the concerned actors in the region to realise such forms of cooperation. It was pointed out by another participant that the apparent lack of accidents or incidents involving submarines could be an indicator that those boats mustered by Asia-Pacific navies do not sortie out to sea on missions very often. A major naval race involving submarines was however deemed quite unlikely.

Finally, Bateman remarked about the role played by the military industrial complex, highlighting the dearth of research in how and to what extent defence industries are driving arms acquisitions in the region. One participant argued that it may not be easy to distinguish reaction towards a change in strategic environment, not necessarily a specific threat, from the typical classical threat-based action-reaction dynamic. Moreover, it could be dangerous to overhype the role of the military industrial complex, the participant argued, since defence industries may not have as much say in what would be developed and built, contrary to what most may think.

Oded Gour-Lavie outlined ways to make sense of the ongoing arms acquisitions in the Asia-Pacific. The first is to examine the stability-versus-instability dichotomy. In this regard, he said, the Cold War was stable albeit fragile, comprising also an evident arms race dimension between the two opposing camps. In today's context, smaller countries bolster their military capabilities to enhance security in their immediate geographical areas. However, while such measures do enhance local stability (such as tackling low-intensity security challenges), this might potentially contribute to instability, especially when seen in the context of their interactions with extra-regional partners.

The next question to examine, Gour-Lavie suggested, is to ask whether the Asia-Pacific is undergoing any doctrinal shifts in the region's military modernisation efforts: what are threats and changing military requirements? Are some countries analysing threats and their military requirements wrongly? He argued that doctrinal changes serve as better indicator of arms races, since they are driven also by internal and external political pressures. He also pointed out that where it comes to a "race" in defence planning and arms acquisitions, there is no single finishing line; instead there are many lines created by different countries and designed for their peculiar national objectives. One participant also added by suggesting that it is important to also consider how political leaders view arms acquisitions since weapons become meaningless possessions if those concerned actors have no will or inclination to use them.

It is also important to consider the whole maritime arena in its entirety, not just naval arms racing. Besides navies, which the discussion about arms racing tends to revolve around, there is also a need to consider maritime law enforcement forces, since militaries constitute only a facet of national maritime strategies that include a whole range of non-military/ security aspects. Hence, countries may not necessarily engage in a military security-oriented type of race; it could well be a wider maritime race that needs proper exploration, Gour-Lavie argued. Finally, in relation to the first point about the stability-versus-instability dichotomy, one needs to consider the geographical context; is it local vs. local; or wider regional context of arms racing.

Another participant pondered about how much of such capabilities as amphibious forces and aircraft carriers are acquired based on threat perception. Moreover, it was argued that in today's context, an asymmetric arms dynamic constitutes an element that is difficult to overlook. For example, missiles are relatively cheap to manufacture and acquire, compared to such "big-ticket", costly platforms as aircraft carriers. This thus provides a possible avenue for weaker actors in arms dynamic to pursue means to counter those stronger adversaries. Seen in this respect, despite possessing obvious advantages in such high–end capabilities as aircraft carriers and unmanned military systems, the US continues to face missile proliferation as a key source of concern. This was echoed by another participant who highlighted evidences of such asymmetrical arms competition in the Asia-Pacific, for example China's development of a whole range of missiles, including anti-ship ballistic missiles, to counter US aircraft carriers. This is certainly different from the typical symmetric competition seen in the *Dreadnought* battleship race seen prior to the First World War.

Richard Bitzinger first raised the question about the quantitative and qualitative progression of weapons systems in the region; does such proliferation of new capabilities mean an arms race is going on? He argued that the label "arms race" is a misleading terminology; it is something self–defined and unconsciously means something inherently negative. But he felt that an arms race is not necessarily a bad thing.

In the first place, Bitzinger pointed out, there is no good definition that exists about the arms race. All available definitions used till this day pre–exist in the Cold War literature and there is a lack of a contemporary version to best describe the current phenomena observed. Moreover, there appears to be no accurate or commonly-accepted benchmark to what quantities of weapons acquired amount to being destabilising. He also pointed out that an arms race may not necessarily be bilateral only; it can be multilateral as well. Taking a modern regional example of the so-called Sino-US arms race, Bitzinger pointed out that Beijing does not necessarily believe that it is engaging in one, and may still proceed to accumulate advanced military capabilities even if the US is not in the picture. On the other hand, the US Department of Defence may simply just need a threat (in this case, China's military rise) to justify its colossal defence expenditures. In this respect, he felt that Washington is racing against some mythical benchmark, which is not necessarily bad, but can still be perceived as provocative by Beijing. One participant however argued to the contrary that Beijing did make it clearly known in public discourse that it views the US as a security challenge.

If one accepts premise of an action–reaction cycle that leads to strategic distrust and potentially destabilising, then one may need to accept the pessimistic outlook that the Asia-Pacific region remains stuck in the perpetual cycle of action-reaction in arms acquisitions, whether defined as an arms race or otherwise — akin to being the "hamster in the wheel". Unfortunately, using this analogy, Bitzinger argued that not every country is the smart hamster that gets off the wheel. He used the Cold War example of Graduated Reciprocation in Tension Reduction (GRIT); then Soviet leader Mikhail Gorbachev implemented a series of obvious disarmament measures expecting the US to match but the latter just did not feel inclined to reciprocate, since there was a prevailing lack of strategic trust between the two opposing ideological camps. One participant pointed out that that there was no arms race observed in the pre-*Dreadnought* era, which seemed to mean that the danger lies more in creating the potentially dangerous situation, where every party involved in the dynamic finds its capabilities "reset to zero" and thereby denied of advantages, thus prompting them to try to leap ahead of others since they perceive that the danger lies in having second–rate militaries.

Bitzinger concluded the panel discussion with the observation that there is always something ominous about a “Dreadnought Moment”, which is unhelpful in building regional security. The arms racing problem is not merely a definitional one, however, since it does concern a pertinent life-and-death issue that is very central to the future of Asia-Pacific security, thus becoming an important policy problem that requires continued discussion.

WORKSHOP PROGRAMME

0900–0930hrs **Registration and Welcome Coffee**

0930–1130hrs ***Welcome Remarks***

Mr. Richard Bitzinger
Senior Fellow and Coordinator
Military Transformation Programme, RSIS

PANEL 1: IS THERE AN ARMS RACE IN ASIA?

Moderator
Mr. Collin Koh See Lean
Research Fellow,
Maritime Security Programme, RSIS

Who is Selling Arms to Asia

Professor Jonathan Caverley
Associate Professor
US Naval War College

The Security Dimensions of Regional Arms Acquisitions

Ms Sheryn Lee
Associate Lecturer
Macquarie University

The View from China

Dr Zhang Zhexin
Assistant Director,
Institute of Taiwan, Hong Kong
and Macao Studies
Shanghai Institute for International Studies

The View from Washington

Mr Dean Cheng
Senior Research Fellow
The Heritage Foundation

Discussion

1130–1300hrs **Lunch**

1300–1500hrs **Panel 2: CASE STUDIES IN REGIONAL ARMS PROLIFERATION**

Moderator
Mr. Richard Bitzinger
Senior Fellow and Coordinator
Military Transformation Programme, RSIS

Submarines

Dr Jan Joel Andersson
Senior Analyst
EU Institute for Security Studies

Aircraft Carriers and Expeditionary Warfare Ships

Mr Collin Koh Swee Lean
Research Fellow
Maritime Security Programme, RSIS

Advanced Combat Aircraft

Mr Phil Finnegan
Director, Corporate Analysis
Teal Group Corp, USA

Third Offset Systems

Mr Peter Dombrowski
US Naval War College

Discussion

1500–1530hrs **Coffee Break**

1530–1700hrs **Panel 3: EXPERT DISCUSSION**

Moderator
Mr. Richard Bitzinger
Senior Fellow and Coordinator
Military Transformation Programme, RSIS

Panellists
Professor Geoffrey Till
Visiting Senior Research Fellow,
Maritime Security Programme, RSIS

Dr Sam Bateman
Advisor,
Maritime Security Programme, RSIS

Rear Admiral Gourlavie Oded
University of Haifa Research Centre for
Maritime Strategy

Mr. Richard Bitzinger
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Military Transformation Programme, RSIS

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