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MORE IS NOT ENOUGH: ARMS BUILDUPS, INNOVATION, AND STABILITY IN THE ASIA-PACIFIC

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The arms buildup across the Asia-Pacific is remarkable. Understandably, some fear that the accumulation of military hardware reflects possible arms races and that these arms races will increase the likelihood of political miscalculation and lead to armed conflict. But while all arms races include arms buildups, not all arms buildups are arms races. What is now occurring in the Asia-Pacific fails to meet the classic criteria for an arms race. It does not represent "a progressive, competitive peacetime increase in armaments between two states or coalition of states resulting from conflicting purposes or mutual fears."[1] It is not a case where states have become trapped in a competitive spiral of ever greater arms procurement.

Nonetheless, the region is rearming. That is because of changes in the geopolitical environment that have been brought on by China's rapid military modernization, its more assertive behavior, and the region's festering doubts about long-term American commitment. But rather than being a "competitive" increase in armaments, the arms buildup across the Asia-Pacific bears more resemblance to an arms catch-up, in which regional countries have come to realize that their military forces are inadequate to ensure their safety in the new environment. But since no one country or set of countries, at the moment, is attempting to match the pace of China's military modernization or cause China to fear for its safety, there has been no real competition.

Moreover, not all arms buildups are the same. Geography (or the lack thereof) can help differentiate. In some parts of the world where countries struggle over land, calculations of military power must take into account not only combat systems, but also the conditions under which they would operate—terrain, fortifications, and even operational concepts (like envelopment), none of which have a direct corollary in the air or at sea.[2] In today's Asia-Pacific, countries largely vie for control over maritime spaces. Since the specks of land that exist within these spaces have little intrinsic military value, they are strategically less important than the skies above and the seas around them. That means that, in the Asia-Pacific, combat systems are more likely to dominate military power

[1] Samuel P. Huntington, "Arms Races: Prerequisites and Results," *Public Policy* 8:1 (1958), pp. 41-42.
[2] Wayne P. Hughes, *Fleet Tactics and Coastal Combat*, 2nd ed. (Annapolis, MD: Naval Institute Press, 2000), pp. 172-173.

calculations. Since the effectiveness and survivability of such arms on the modern battlefield increasingly relies on a high level of technical sophistication, there is little doubt that technology will play an outsized role in determining the ultimate balance of power in the Asia-Pacific.

ARMS RACES AND INNOVATION

Even so, the study of arms races can inform how the Asia-Pacific's arms buildup could contribute to greater stability, rather than less of it, in the regional balance of power. That is because there are different kinds of arms races. One sort focuses on increasing the quantity of arms. In that case, a country would seek to increase the numerical strength of its existing combat systems to improve its military power. For instance, Japan could simply acquire more of its current-generation fighter aircraft. The other sort concentrates on increasing the quality of arms. In that case, a country would seek to replace its existing combat systems with more capable ones to improve its military power. Returning to Japan, one can see this in Tokyo's decision to replace its existing fleet of F-4 fighters with next-generation F-35 Joint Strike Fighters.

Of course, both quantitative and qualitative features are present in most arms buildups. But one is often still favored over the other. That can have meaningful consequences for the outcome of an arms race. In a quantitative race, the country that can develop a numerical superiority in its military forces is likely to maintain it in the long run, since its rival would have to redouble its efforts just to catch up. Indeed, the country that wins a quantitative race is frequently the one with greater determination and resources. Hence, it is believed that quantitative races naturally lead to an inequality in the balance of power. Given that, such an arms race is more likely to produce a situation in which the country holding a military advantage chooses to use it against its rival to achieve its goals.

On the other hand, a qualitative arms race tends toward equality in the balance of power. Rather than a single long race, it looks like a series of shorter ones. If a country that is at a numerical disadvantage in a particular combat system introduces a new and vastly more effective one, it could quickly neutralize the numerical advantage of its rival. Thus, each new and innovative combat system can narrow the military power gap between two rival countries. That was certainly a motivation behind America's ceaseless investment in technology for its military throughout the Cold War—so that it could confront the Soviet Union's numerically superior conventional forces on more equal terms. As the theory goes, the larger the innovative leap, the faster a lagging country can approach parity with its rival. Inasmuch as an inequality in the balance of power may increase the likelihood of aggression and conflict, a greater equality in that balance may well decrease their prospects.

Of course, some may argue that the attainment of technological superiority could have the same effect as the achievement of numerical superiority. In that view, a country with a technological superiority might be tempted to use it before its rival can match its achievement. But that has rarely occurred. Certainly new combat systems developed during wartime have been immediately put to use. For example, during World War II Germany made its Me 262 jet fighter and *Vergeltungswaffen* (retribution weapons)—the V-1 buzz bomb and the V-2 ballistic missile—fully operational soon after they were developed.[3] The United States did the same for the atomic bomb. But in the years immediately after World War II, the United States held a clear qualitative superiority over the Soviet Union in atomic arms, but did not use them. In the decades that followed, the two countries sought qualitative superiority in many technologies, but again neither side employed them against the other. Rather, it was when a country possessed an unchallenged qualitative superiority relative to its rival did it resort to military force. The Soviet Union used it against Afghanistan (1979-1989) and the United States in several cases, from North Korea (1950-1953) to Iraq (1991 and 2003).

Thus, military innovation, at least, offers the possibility of a less destabilizing arms race than one purely based on numerical superiority. One could say the same of arms buildups. Countries that embark on arms buildups that focus on innovation may be able to reach military parity with their rivals faster and thus achieve greater equality in the balance of military power (and ultimately regional stability). Of course, using the current generation of military technology in innovative ways may also produce similar benefits. But to maximize those benefits, countries must eventually adopt new military technologies.

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[3] Germany's innovations marked attempts to escape the limitations of speed in the former case and air defense penetration and weather in the latter case. Williamson Murray and Allan R. Millet, *A War to Be Won: Fighting the Second World War* (Cambridge, MA: Harvard University Press, 2000), pp. 599-600.

LESSONS OF HISTORY

The classic example of qualitative arms races occurred in the competition for naval supremacy between the 1840s and 1910s. During that time a series of innovations occurred that revolutionized naval warfare. Among the most significant were: steam propulsion and screw propellers (replacing the sail); iron and steel-hulled ships (replacing wooden ones); and progressively more powerful breach-loading guns (replacing muzzle-loading cannons). While the British Royal Navy maintained its dominant position throughout this time, it did so in spite of serious challengers.

The first was the French Navy. In response to Anglo-French tensions over Spain and Syria, French Emperor Napoleon III sought a stronger navy and, specifically, one equipped with steam-powered warships. Steam offered naval commanders far better control over an engagement than wind ever could. When France launched the steam-powered *Napoléon* in 1850, it immediately outclassed every warship in the Royal Navy. But Britain quickly responded with its steam-powered Agamemnon-class ship of the line two years later. By 1858, France still lagged Britain in sail-powered ships of the line 10 to 35, but already reached parity in steam-powered ships of the line 29 to 29. A few years on, greater British determination and resources enabled the Royal Navy to regain its supremacy. But by then France introduced the ironclad. With cannons still dominating maritime arsenals, iron offered far better protection from cannon fire than timber. By the start of the American Civil War (and the famous *Monitor* vs. *Merrimack* engagement), the French Navy had 15 ironclads built or under construction. The Royal Navy had only seven. But after a crash shipbuilding program in the early 1860s, Britain restored the Royal Navy's preeminence.

Nevertheless, by the late 1880s, new countries with as much determination and resources as Britain had emerged, most notably Germany.[4] At the same time, powerful breach-loading guns firing high-velocity shells, which could penetrate iron and steel, had begun to replace muzzle-loading cannons and their traditional shot. Until then, British naval policy had been to never introduce any technology that would outdate its existing warships, but to undertake a rapid shipbuilding program if another country were to do so. But with Germany's fast rise, Britain decided to introduce the first "all big gun ship," the Dreadnought-class battleship, in 1906. However, doing so reduced the value of the Royal Navy's existing fleet and gave Germany a chance to catch up. Thus, two years later, despite the Royal Navy's great advantage over its German rival in pre-Dreadnought battleships, 63 to 26, its lead in Dreadnought battleships under construction was slim, only 12 to 9. Still, Britain's early start and continuous investment allowed it to build on its advantage through the start of World War I. At each turn, one can see how innovation helped a country with inferior military power quickly catch up to its rival. Only Britain's embrace of innovation allowed it to stay ahead.

More recently, a similar story has played out in the Pacific. After two U.S. aircraft carrier battlegroups were sent to challenge China's attempt to intimidate Taiwan with ballistic missile tests off its coast in 1995 and 1996, China has sought ways to even the balance of power between it and the United States. Before the end of the decade, it beefed up its anti-air campaign strategy to counter the threat from American aircraft carriers. But rather than reflexively build its own aircraft carriers, it sought to capitalize on a gap in American fleet defenses. While the U.S. Navy had focused on improving its defenses against sea-skimming cruise missiles since the 1970s, it had not fully developed its defenses against ballistic missiles from above. Fortunately for China, its ballistic missile program was one of its few weapons programs that escaped the turbulence of the Cultural Revolution.[5] By the early 2000s, China's ballistic missile technology had advanced to the point at which Chinese military leaders could seriously contemplate using ballistic missiles armed with maneuverable conventional warheads to hit (or at least damage) a large ship, like an aircraft carrier, at sea. In 2004 China's military revised its doctrine to include the possible use of anti-ship ballistic missile salvos against aircraft carriers off its coast. At the time, American observers dwelled on the "asymmetric" nature of the threat. But more fundamentally, it was a threat born from innovation. China began to deploy DF-21D anti-ship ballistic missiles sometime in 2012. Though China still lacks the oceanic surveillance system that it needs to properly detect, track, and target an aircraft carrier, the presence of such missiles has narrowed the gap in

[4] The other new major naval power was the United States, which also saw itself in an arms race against Germany by 1903. George W. Baer, *One Hundred Years of Sea Power: The U.S. Navy, 1890-1990* (Stanford: Stanford University Press, 1994), p. 37.
[5] John Wilson Lewis and Xue Litai, *China's Strategic Seapower: The Politics of Force Modernization in the Nuclear Age* (Stanford: Stanford University Press, 1994), pp. 129-205.

military power between China and the United States.[6]

However, the United States has not stood still. It also innovated. Advances in its ballistic missile defense program allowed the United States to set up a X-band radar in northern Japan in 2006 to track ballistic missile launches in the Pacific. A second is now under discussion for southern Japan. These radars could also support the targeting of SM-3 surface-to-air missile interceptors aboard U.S. warships at sea. And that is not the end. In 2014 the U.S. Navy will deploy its first-generation laser weapon system to counter small craft in the Persian Gulf. It is not hard to imagine that in the coming decades, higher-powered laser weapon systems could be used to deflect or defeat anti-ship cruise missiles or even ballistic missile warheads.[7]

That is not to say that all military innovations are revolutionary or even transformative. However, in conjunction with proper military organization and doctrinal employment, military innovations can help quickly correct inequalities in the balance of power without triggering a more destabilizing quantitative arms buildup.

THE ASIA-PACIFIC ARMS BUILDUP

Fortunately in the Asia-Pacific, technology is already a recognized necessity, given the region's geography. Hence, considerations regarding military innovation already take center stage in weapons procurement. They have contributed to the rapid adoption of air-independent propulsion in the region's most recently acquired diesel-electric submarines. Air-independent propulsion technology enables submarines to stay underwater for far longer than they do now, reducing the likelihood that they will be detected. Four of the six most advanced navies in the region, including those of China, Japan, South Korea, and Singapore, have all acquired air-independent propulsion submarines.[8]

Even so, many of the less advanced armed forces in the region have chosen to upgrade their armed forces to only the current generation of combat systems. A good example is Vietnam, which dramatically increased its military expenditures over the last half decade. It turned to its former Russian patrons to supply SA-20 air defense systems, Su-30MK2 fighters, and Kilo-class submarines—all of which many other countries, including China, already possess.[9] But Vietnam also reportedly ordered two batteries of P-800 missiles, part of the Russian K-300P Bastion-P coastal defense system.[10] Each road-mobile battery can rapidly deploy to a site and salvo its missiles against an adversary from an unexpected direction. Given that much of the maritime spaces that Vietnam disputes with China are within the range of these missiles, Vietnam has essentially taken advantage of a contemporary technology and employed them in an innovative way to create a potential local military superiority. Doing so reduces the military power gap between the two countries in those disputed spaces.

Of course, there are constraints on a qualitative arms buildup in the Asia-Pacific. First and foremost is money. Few can match the pace (or volume) of China's military spending on new technology.[11] More generally, modern air and naval armaments are simply expensive and getting more so.[12] Even unmanned aerial vehicles, once heralded as

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[6] Jonathan F. Solomon, "Maritime Deception and Concealment: Concepts for Defeating Wide-Area Oceanic Surveillance-Reconnaissance-Strike Networks," *Naval War College Review* 66:4 (Autumn 2013), pp. 87-116; Julian E. Barnes, Nathan Hodge, and Jeremy Page, "China Targets U.S. Might By Bulking Up Its Military," *Wall Street Journal*, Jan. 5, 2012; Duncan Lennox, "Analysis: China's ASBM project: keep calm and carry on," *Jane's Defence Weekly*, Feb. 16, 2011.

[7] Spencer Ackerman, "Watch the Navy's New Ship-Mounted Laser Cannon Kill a Drone," *Wired*, Apr. 8, 2013; Adam Entous and Julian E. Barnes, "U.S. Plans New Asia Missile Defenses," *Wall Street Journal*, Aug. 23, 2012, p. A1; Missile Defense Agency, *Ballistic Missile Defense Review Report* (Washington: U.S. Department of Defense, Feb. 2010).

[8] These include China's Type 041 (Yuan-class), Japan's Sōryū-class, South Korea's KSS-2 class, and Singapore's Archer-class submarines. Since Australia ruled out nuclear propulsion for its next class of 12 submarines, they are likely to be equipped with air-independent propulsion technology. India is assessing whether it can install air-independent propulsion into its new Scorpene-class submarines, starting with the third boat of its six-boat building program. Department of Defence, *Defence White Paper 2013* (Canberra: Commonwealth of Australia, 2013), p. 82.

[9] Felix K. Chang, "A Salutation to Arms: Asia's Military Buildup, Its Reasons, and Its Implications," FPRI *E-Note*, Sep. 2013, p. 3.

[10] Jon Grevatt, "Vietnam negotiates for Russian coastal defence systems," *Jane's Defence Weekly*, Aug. 15, 2011.

[11] Felix K. Chang, p. 2.

[12] That can be quantified in American naval shipbuilding costs. Over the last thirty years, naval shipbuilding costs have risen about 1.4 percentage points above the normal rate of inflation. Congressional Budget Office, *An Analysis of the Navy's Fiscal Year 2013 Shipbuilding Plan* (Washington: Congressional Budget Office, Jul. 2012), p. 14.

cost-effective airborne platforms, has followed the capability and cost trajectories of their manned predecessors. Plus, since many Asia-Pacific countries rely on foreign defense companies for their armaments, any devaluation of their national currencies can make already-costly purchases even costlier. The same could be said about the impact of shortcomings in their arms procurement processes. A second constraint is access to military technology, due to either arms export restrictions or political circumstances. Countries typically impose restrictions on arms exports, because of their concern over technology proliferation, mistrust of those that seek the military hardware, or pursuit of policy goals that require such controls. In one recent case, the United States cited the potential for technology leaks as the reason it barred the export of F-22 fighters to Australia, Israel, and Japan.[13] In another case, political circumstances have played the central role. Taiwan has long sought to acquire advanced combat systems (like submarines) but has been unable to do so, because of sustained Chinese pressure on arms exporting countries to isolate it from international arms sales.

These constraints on a qualitative arms buildup in the Asia-Pacific give rise to two destabilizing concerns. Either the inequality in the balance of power grows so great that China believes that it is free to behave aggressively in disputes with its neighbors; or a country that is unable to qualitatively improve its military power relative to China might seek to expand its existing military forces and use them (in conjunction with whatever political levers it has) to try to compel China into a settlement before its transitory advantage is lost. Both scenarios would increase the potential for armed conflict in the region.

CONCLUSION

Today, perceptions in the Asia-Pacific about its geopolitical environment are changing. Countries that once viewed China as a benign power and enjoyed a free ride from America's military presence in the region, either directly or indirectly, are now rebuilding their military strength. Those countries with Cold War-era security arrangements with the United States have sought reassurances of American commitments to them. But however firm those commitments may be, it seems that they have become somewhat more dependent on the administration in Washington. Hence, many countries have come to believe that they must adequately rearm to provide an additional hedge against China's rise, should it turn out to be less benign than originally hoped. Together with China's rapid military modernization, the region-wide military buildup has raised fears that armed conflict has become more likely.

But in studying the nature of arms races, we can see that arms buildups need not end in conflict.[14] Rather if the countries of the Asia-Pacific focus on military innovation as the foundation for their arms buildups, they could improve their military power more quickly and in doing so create greater equality in the balance of power. That, in turn, would lower the probability of miscalculation and conflict. Indeed, the geography of the Asia-Pacific naturally leads countries to concentrate on technology in their arms procurement decisions. Regrettably, budgetary constraints, currency devaluations, and internal bureaucratic and political challenges have bedeviled many of these efforts. While acquiring more of the same sorts of military hardware that one's rival already has in abundance may imbue a country with slightly more confidence, it is unlikely to do much to close the gap in military power in the long run. There is no getting away from the need for military innovation.

[13] Jim Wolf, "Senate panel seeks end to F-22 export ban," Reuters, Sep. 10, 2009; Jason Miks, "F-22 Export Ban, Collective Security Test U.S.-Japan Defense Ties," *World Politics Review*, Jan. 30, 2009, http://www.worldpoliticsreview.com/articles/3227/f-22-export-ban-collective-security-test-u-s-japan-defense-ties; Sharon Weinberger, "F-22 Not For Sale, Says Export Chief," *Wired*, Apr. 30, 2007.

[14] The quality of information and control also plays a role in conflict avoidance. Strategic misrepresentation, imperfect intelligence, problems of interpretation, and problems in control can all lead to a lack of cooperation and possibly conflict, rather than better balance. George W. Downs, David M. Rocke, and Randolph M. Siverson, "Arms Races and Cooperation" in *Cooperation Under Anarchy*, ed. Kenneth A. Oye (Princeton: Princeton University Press, 1986), pp. 133-143.