Anti-Access in Comparative Perspective:
Imperial Japan, the Soviet Union, and 21st-Century China

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Anti-access is having an outsized impact on strategic affairs in Asia and beyond. It is a catchall concept for campaigns and tactics designed to complicate or deny enemy military operations in the global commons.[2] While the term is a relatively new member of military lexicon, anti-access enjoys a long pedigree in military history. Understanding its role in the past may allow scholars and practitioners today to peer into the future.

Over the past decade, China's anti-access strategy has proved most worrisome to Beijing's neighbors and the United States. Called "counter intervention" in China's strategic community, it challenges long-held American and allied assumptions about unfettered use of bases, airspace, and open seas in the western Pacific. Countervailing responses by regional players, including Japan, increasingly involve measures that preclude China's access to its offshore periphery, turning the tables on Chinese forces. Anti-access seems to beget more anti-access. Outside of East Asia, Iran and Pakistan have adopted their own versions of anti-access to blunt the power projection capabilities of their main rivals

Ready availability of precision-strike weaponry has in large measure contributed to this spread of anti-access postures along the eastern and southern rimlands of Eurasia. In particular, the proliferation of missile technologies, guidance systems, and sensors has enabled second-rate military powers and even non-state actors to acquire the ability to strike accurately and lethally. The intensely technical character of anti-access has lent this military trend an aura of novelty. Yet, a look back at history shows that anti-access is not new. Indeed, many anti-access technologies in use today trace their origins to a century ago. Beyond the material realm, the rationales and organizing principles behind current anti-access strategies would have been instantly recognizable to defense planners of past belligerents.

This paper takes a retrospective look in order to gain greater analytical purchase on the concept. It specifically examines key features of anti-access in the Pacific War, the Cold War, and the current Sino-U.S. rivalry. These three case studies lend themselves particularly well to comparison. Geographically, Imperial Japan, the Soviet Union, and early twenty-first century China planned to employ their anti-access strategies in the western Pacific theater. They shared a common opponent, namely the United States, which posed similar daunting challenges to them. The same tactics and technologies, including torpedoes, airpower, and missiles, featured prominently across all three cases. From these comparisons, this paper will illustrate the enduring logic of anti-access, drawing larger lessons that can be applied to the

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2 For an excellent survey of the term anti-access, see Sam J. Tangredi, *Anti-Access Warfare: Countering A2/AD Strategies*, (Annapolis, MD: Naval Institute Press, 2013), pp. 32-74.

contemporary era.

Historical Analogies at Work

In recent years, senior policymakers and seasoned Asia watchers have harkened back to the Pacific War and the Cold War to illustrate China's anti-access challenge. As early as 2008, Thomas Ehrhard and Robert Work published a monograph that draws on the Imperial Japanese and Soviet experiences to describe the emergence of a Chinese "maritime reconnaissance-strike complex," involving an array of sensors and weaponry that can detect, track, target, and attack aircraft carriers cruising in the open ocean at very long ranges. As the authors warn, "For the first time since the late 1980s, and for only the second time since the end of World War II, U.S. carrier strike forces will soon face a major land-based threat that outranges them."[3] In reference to China's anti-access strategy, Michael McDevitt similarly notes, "This is the third time in the last 75 years that the United States has faced the problem of an Asian power attempting to keep US naval forces at bay."[4]

In response to a reporter's query concerning China's rapid military developments in 2011, the then Chief of Naval Operations Admiral Gary Roughead replied, "You can go back and look at specific campaigns in World War II. The Japanese were trying to deny us access into the Western Pacific. So warfare is about anti-access."[5] In his analysis of the controversy surrounding AirSea Battle, the Pentagon's operational concept designed to counter China's anti-access capabilities, James Holmes observes, "In some sense China and America are replaying the interwar years" when Japan and the United States developed war plans to fight each other.[6] In an effort to dispel public misconceptions of AirSea Battle and the anti-access threats it seeks to overcome, two Pentagon officials contend, "Such [anti-access] problems are not new. During World War II, for example, Imperial Japan possessed robust A2/AD capabilities in the form of air forces, surface fleets, submarine forces, naval minelayers and air defenses. All had to be overcome by U.S. and Allied air and naval forces to make effective power projection possible."[7]

Such historical analogies help to rise above the tendency to treat anti-access as either unique or unprecedented. Familiarity brings clarity. Assessing previous developments and uses of anti-access also identifies recurring patterns and discontinuities, both of which offer insights about the strengths, weaknesses, and effectiveness of Chinese anti-access. There is thus analytical merit to examining the Japanese, Soviet, and Chinese experiences. A comparative framework could in turn furnish a basis for evaluating China's current and future challenge to

3 Thomas Ehrhard and Robert O. Work, *Range, Persistence, Stealth, and Networking: The Case for a Carrier-Based Unmanned Combat Air System*, (Washington, D.C.: Center for Strategic and Budgetary Analysis, 2008), p. 195.

4 Michael McDevitt, "The Evolving Maritime Security Environment in East Asia: Implications for the U.S.-Japan Alliance," *PacNet*, No. 22, May 21, 2012, p. 2.

5 Admiral Gary Roughead, Chief of Naval Operations, Interview Transcript, Defense Writers Group, A Project for the Center for Media and Security, March 24, 2011.

6 James Holmes, "Preparing for War with China," *The National Interest*, August 16, 2012.

7 Captain Philip Dupree and Colonel Jordan Thomas, "Air-Sea Battle: Clearing the Fog," *Armed Forces Journal*, June 1, 2012.

Asian security.

Japanese Anti-Access

Interwar Japan faced the possibility of a naval war with the United States that, at least on paper, it seemed certain to lose. The consensus in Tokyo held that it would invariably fight from a position of weakness. To level the playing field, Japan relied on innovative doctrines, tactics, and technologies to give it a fighting chance. The Imperial Japanese Navy specialized in warfighting skills that furnished an outsized edge, converging on weapons that were lethal to highly-prized, capital-intensive American naval assets. This reflected the belief that landing devastating blows on battleships—the capital ships of the era—held the most promise for victory at sea. The goal was to impose disproportionate costs on the adversary.

While the United States possessed a formidable naval force, it had to slog across the vast ocean to reach East Asian waters, imposing enormous logistical burdens on the U.S. fleet. The closer it neared enemy territory, the more difficult resupply and maintenance became as lines of communication stretched ever thinner. By contrast, Japan enjoyed the home-court advantage. As a resident power, Japanese planners possessed intimate knowledge of their own neighborhood. Japan's defending forces also benefited from their proximity to support infrastructure located just behind them. This geographic asymmetry is central to the development of Japanese strategy.

At the campaign level, Japan stuck to the idea that the best strategic defense is a good tactical and operational offense. As a centerpiece of its "progressive reduction strategy," the IJN planned to launch "interceptive operations" involving aggressive and repeated attacks against the enemy fleet.[8] Under this scheme—the basis of Japanese war planning until 1941—a gauntlet of Japanese submarines, aircraft, cruisers, and destroyers would stand in the way of the U.S. Pacific Fleet as it advanced westward toward Japan. The Japanese envisioned a succession of battles that would eat away as much as a third of the enemy fleet's fighting power. Once attrition had done its work, the IJN would unleash its fresh main striking force—deliberately kept out of harm's way until the opportune moment—to finish off the much weakened opponent in a decisive battle of annihilation.

Beneath the waves, the interwar Japanese navy planned to rely on long-range fleet submarines to interdict American naval forces. The attack boats would sortie to forward positions, forming picket lines across the path of the U.S. fleet. The submarines would ambush the approaching enemy battle line as it came within torpedo range. The subs would continue to intercept and track the fleet until it ran into Japan's main battle fleet awaiting the decisive engagement. For this purpose, the IJN built ocean-going submarines that boasted the range to reach the U.S. west coast and the endurance to operate there for weeks.

On the high seas, Japanese planners formed night combat squadrons composed of torpedo destroyers and cruisers that excelled in concealment and surprise. To outrange U.S. firepower, the IJN equipped the surface units with the Type-93 "long lance" torpedo that far outclassed

8 David C. Evans and Mark R. Peattie, *Kaigun: Strategy, Tactics, and Technology in the Imperial Japanese Navy 1887-1941*, (Annapolis, MD: Naval Institute Press, 1997), pp. 203-204.

its American equivalent in speed and range. Moreover, the oxygen-powered torpedo produced virtually no telltale trail in its wake, masking its approach toward enemy vessels.

Under the cloak of darkness, the IJN's nimble warships would let loose coordinated and concealed salvoes of torpedoes against unsuspecting U.S. battlewagons, sowing panic, confusion, and chaos among enemy forces. It was thought that this nocturnal warfighting skill would compensate for Japan's inability to contest American sea control in daylight hours. During the 1942-1943 Guadalcanal Campaign, Japanese night attacks savaged U.S. naval forces, validating a tactical innovation that gave the IJN a valuable, but short-lived, equalizer.[9]

The maturation of aviation technologies furnished Japan the means to influence events at sea directly from shore. The Mitsubishi G3M and G4M were some of the most advanced land-based maritime-strike bombers that extended the IJN's offensive punch by hundreds of miles over water. Few competitors in the world rivaled these attack aircraft in speed and range. Launched from forward airbases on Pacific islands under Japanese mandate—the Marianas, the Carolines, and the Marshalls—aviation units could conduct deep raids against the oncoming Pacific Fleet.

During the early months of the war, Japanese bombers dominated the skies, menacing enemy targets across large swathes of maritime Asia. Notably, they scored a major tactical victory when Indochina-based bombers sank the HMS *Prince of Wales* and the HMS *Repulse* in the heart of the South China Sea. The British naval disaster proved for the first time that land-based airpower alone could destroy capital ships while underway on the open sea.

The infamous kamikazes also demonstrated the potential effectiveness of shore-based airpower against naval forces. The kamikazes were the functional equivalent of piloted cruise missiles launched from airfields. Attesting to their lethality, the kamikazes inflicted frightening losses on the U.S. fleet in the naval battle for Okinawa, sinking or heavily damaging over 120 ships in two months. As the end neared, about 5,000 suicide planes were readied to repulse the anticipated American invasion of the Japanese home islands.[10] Had the United States attempted the forced landings on Japan's shores, hundreds upon hundreds of manned cruise missiles would surely have rained down upon exposed American amphibious forces.

Soviet Anti-Access

Soviet strategy at sea evolved over a period of decades in an intense competition with the United States. By the 1970s, the protection of ballistic-missile submarines (SSBNs) operating in or near home waters and homeland defense against seaborne assault emerged as priority missions. Beginning with the introduction of the R-29 submarine-launched ballistic missile (SLBM) with a range exceeding 9,000 kilometers, Soviet SSBNs could strike the United States without leaving waters closer to home, reducing their exposure to sub hunters in the open ocean. Soviet submarines thus began retreating from forward patrolling stations to safe

9 Thomas G. Mahnken, "Asymmetric Warfare at Sea: The Naval Battles off Gudalcanal, 1942-1943," *The Naval War College Review*, Vol. 64, No. 1 (Winter 2011), pp. 95-121.

10 Richard B. Frank, "Ending the Pacific War: 'No Alternative to Annihilation," in *The Pacific War Companion: From Pearl Harbor to Hiroshima*, Daniel Marston, ed. (Oxford, UK: Osprey Publishing, 2005), pp. 237.

havens, the so-called "bastions" in the Kara, Barents, Norwegian, and Greenland Seas in the west and the Seas of Japan and Okhotsk and areas near the Kamchatka Peninsula in the east.[11] From there, conventional forces ashore shielded Soviet SSBNs against American airborne and undersea anti-submarine units.

At the same time, American long-range strike from the sea posed a significant threat. The Soviets worried about U.S. carrier-based raids against Warsaw Pact territories along the Soviet seaboard. Equally troubling to Moscow was the fielding of the Tomahawk land-attack cruise missile that could be launched from U.S. surface combatants and submarines along the littorals and threaten targets deep inside the homeland.[12] The destruction of Western naval forces in the open ocean and in or near enclosed seas was thus a top priority in Soviet plans. Notably, anti-carrier warfare constituted a critical mission often only second in importance to the protection of Soviet SSBNs.[13]

To keep the U.S. fleet as far from the Soviet homeland as possible, the Russians formed concentric rings of defenses out to sea. The 1982 U.S. National Intelligence Estimate described this posture as "echeloned defense in-depth" involving an array of conventional forces, including surface, undersea, and air units.[14] Defenders in the inner ring would seek to assert sea control over the various bastions. Extending as far as 2,000 kilometers from shore, Soviet forces operating along the outer ring would conduct sea denial operations. Observed the 1984 U.S. maritime strategy, "The sea denial zones *engulf most of our forward deployed ground and air forces and several of our allies, extending far out into "blue water."* [15]

The first line of defense against U.S. carriers was the shore-based maritime-strike aircraft. The Tu-16 Badger and the Tu-22 Backfire bombers formed the backbone of Soviet anti-carrier operations. The supersonic Backfire was armed with the formidable Kh-22 antiship missile, boasting a speed of Mach 3 and a range of four hundred kilometers. Advanced variants of the Tu-22 could in theory carry three Kh-22 missiles over 2,500 nautical miles of open waters. By the 1980s, the Soviets planned to pit as many as one hundred Badger and Backfire bombers against each American carrier battle group. Groups of bombers were to approach the carrier task force from different vectors and varying altitudes and were timed to launch a massive salvo of missiles at the battle group simultaneously.[16]

In addition to the waves of bomber raids it planned to unleash, the Soviet Union deployed nuclear-powered guided-missile submarines (SSGNs) armed with anti-ship cruise missiles to threaten American carriers. In the 1980s, the Soviets began to put to sea the massive Oscar

11 While the Soviets never used the term "bastion" in their discourse, their deployment patterns conformed to this notion of a bulwark against attack. Vladimir Kuzin and Sergei Chernyavskii, "Russian Reactions to Reagan's 'Maritime Strategy,'" *The Journal of Strategic Studies*, Vol. 28, No. 2 (April 2005), p. 431.

12 Ibid., pp. 436-437.

13 See Robert W. Herrick, *Soviet Naval Doctrine and Policy 1956-1986*, Volumes 1-3, (New York: Edwin Mellen Press, 2003).

14 National Intelligence Estimate, *Soviet Naval Strategy and Programs through the 1990s*, NIE 11-15-82/D, October 19, 1982, p. 121.

15 John B. Hattendorf and Peter M. Swartz, eds. *U.S. Naval Strategy in the 1980s*, (Newport, RI: Naval War College Press, 2008), p. 61.

16 Maksim Y. Tokarev, "Kamikazes: The Soviet Legacy," *Naval War College Review*, Vol. 67, No. 1 (Winter 2014), p. 73-77.

II-class SSGNs carrying 24 SS-N-19 Shipwreck missiles. With a range of 500 kilometers, the ability to fly low at supersonic speeds, and a 750-kilogram conventional warhead, the Shipwreck was a fearsome weapon. As many as fifteen SSGNs would surge forward to attack U.S. carrier groups.

The Soviet navy relied on a variety of guided-missile surface combatants to deliver carrier-killing missiles. The Kirov-class nuclear-powered heavy cruiser was armed with 20 Shipwreck anti-ship cruise missiles while the Slava-class cruiser carried 16 SS-N-12 Sandbox missiles that could attack ships 500 kilometers away. The *Sovremenny*-class destroyer was equipped with 8 SS-N-22 Sunburn missiles. The supersonic, sea-skimming Sunburn missile can strike ships with a 300-kilogram conventional warhead as far as 120 kilometers distant and engage in evasive maneuvers as it neared the target. All other major ship types, including cruisers and destroyers assigned to anti-submarine warfare missions and even aircraft carriers, could perform anti-surface roles.[17]

By the late 1970s, the Soviets began to experiment with combined-arms battle, involving air, undersea, and surfaces forces.[18] Such a joint operation was designed to deliver a massive, concentrated salvo of missiles launched from multiple axes to overwhelm enemy fleet defenses. While such coordinated action was probably beyond the reach of the Soviets in practice, such massed missile attacks represented the gravest threat to U.S. carriers. But, even sequential attacks were viewed as problematic from the American perspective.

Writing in 1982, Admiral Stansfield Turner illustrated the dilemma that U.S. carrier battle groups confronted in an offensive operation against the Soviet Union. As Turner observed, "By the time the carriers were within 1,600 miles of Soviet air bases, they would be within range of over 90 percent of the U.S.S.R.'s land-based bombers. Yet, the Soviet bases would still be over 1,000 miles beyond the range of carrier aircraft." This meant that the carriers would still need two days steaming time to close the remaining distance before carrier-based aircraft came within range of Soviet targets ashore. In the meantime, the carriers would be exposed to bomber raids, submarine threats, and surface attacks along the way. "In short," Turner concluded, "we would be fighting the Soviets on their turf at times and places of their choosing, well before we could assume the offensive."[19]

Chinese Anti-Access

China's formidable military challenge to U.S. staying power in the western Pacific is now a fact of life. Over the past decade, China has built up an array of forces that threaten to complicate and even preclude American military operations across large swathes of maritime Asia. Known in Pentagon jargon as an "anti-access/area denial" strategy or what Chinese strategists call "counter intervention," Beijing seeks to keep the United States and its allies at bay in the event that China fights in a major regional conflict, such as a war over Taiwan.

17 For an excellent source on Soviet naval weapons and sensors, see Norman Polmar, *The Naval Institute Guide to the Soviet Navy*, 5th edition (Annapolis, MD: Naval Institute Press, 1991).

18 Milan Vego, *Soviet Naval Tactics*, (Annapolis, MD: Naval Institute Press, 1992), p. 262-263.

19 Stansfield Turner, "Preparing for the Unexpected: The Need for a New Military Strategy," *Foreign Affairs*, Vol. 61, No. 1 (Fall 1982), p. 126.

Following years of virtually uninterrupted growth in defense spending, China already boasts the means to contest American and allied freedom of maneuver along the maritime and aerial approaches to the Chinese mainland. As China extends this contested zone ever deeper into the Pacific, the U.S. military's unimpeded use of Asia's commons will become a luxury of the past. The integrity of the American forward strategy upon which the region's stability and security rest is thus at risk.

Moreover, the geographic scope of this Chinese barrier extends to the seas, airspace, and extensive basing infrastructure along the Japanese archipelago. Indeed, Japanese territory, particularly the Southwestern Islands, is well within reach of China's anti-access weaponry. China's growing capacity to keep out foreign forces is as much a menace to Japan as it is a danger to the United States.

The anti-access challenge is particularly vexing at sea. At the operational level of war, the Chinese navy or the PLA Navy (PLAN) holds that the best strategic defense is a good tactical and operational offense. Termed "near-seas active defense" in Chinese military parlance, the idea is to use offensive means to grind down a powerful foe until the attacks opened the way for a knockout blow. In operational terms, the PLAN would "use all kinds of methods" to "unceasingly exhaust and annihilate the attacking enemy." It would employ "mobile combat capabilities to search and destroy the enemy, gradually shift the power balance, change the strategic situation, and thereby appropriately time the transition to the strategic counter offensive and attack."[20]

To implement this strategy of exhaustion, the PLAN has developed weapons and honed doctrines that would first cut the opponent down to size. The weapon of choice for this attritional contest is the anti-ship missile. Missiles are very inexpensive, especially when compared to the costs of their principal targets, the multibillion-dollar U.S. and allied warships. They are neither technologically novel nor difficult to manufacture. Most importantly, maritime-strike missiles are deadly and difficult to defeat. These favorable attributes explain the Chinese navy's substantial investment in an extended family of ship-killing missiles.

Over the past two decades, the PLAN has introduced large numbers of submarines, ships, and aircraft, arming them to the teeth with anti-ship cruise missiles (ASCMs). The influx of these missile-carrying platforms promises to make sea combat increasingly fatal for American and allied navies in Asia. Between 2000 and 2010, China's fleet of attack submarines, increased more than six-fold from 5 to 31 boats. This modern undersea force can fire ASCMs while submerged, posing a potent threat to surface forces.

Since the 1990s, the PLAN put to sea four *Sovremenny*-class guided-missile destroyers procured from Russia, along with at least ten new classes of indigenously built destroyers, frigates, corvettes, and fast attack craft. All of the warships can launch ASCMs with ranges exceeding 150 kilometers. The latter ship types—such as the Type 052D *Luyang*-III destroyer, the Type 054A *Jiangkai*-II frigate, the Type 056 *Jiangdao* corvette, and the Type 022 *Houbei*

[20] Editorial Board of the Chinese Navy Encyclopedia, *Encyclopedia of the Chinese Navy*, (Beijing: Haichao Publisher, 1999), p. 1154.

fast attack craft—have all entered serial production, adding mass to the missile-firing fleet.[21]

The PLAN's air arm, the world's largest, deploys a variety of shore-based fixed-wing aircraft armed with ASCMs. Notably, the Su-30MKK multirole fighter and the H-6 medium-range bomber can threaten surface ships cruising well east of the first island chain, which stretches from the Japanese islands through Taiwan to the Philippines.

The Second Artillery Corps—the PLAN's sister service that commands China's conventional and nuclear rocket forces—fields the anti-ship ballistic missile (ASBM). With a range reportedly exceeding 1,500 kilometers, the truck-mounted missile is armed with a maneuverable warhead capable of hitting moving targets at sea. Whether it will perform as advertised has been a subject of intense debate, but it is an unmistakable sign that the Chinese are seeking to hold at risk the enemy's surface fleet with as many maritime strike options as possible.[22]

To maximize its attritional strategy China would mount layered defenses, forming concentric rings of firepower extending deep into the western Pacific. In the initial phases of hostilities, the PLAN would conduct distant operations, intercepting U.S. forces as far from the mainland as possible. As the U.S. fleet nears the Chinese coast, it would run into fiercer attacks as more PLAN units and weaponry pile on, quickening the pace at which China eats away American expeditionary power.

Tactically, long-range aircraft and anti-ship ballistic missiles could deliver the first blows. ASBM raids and massed formations of maritime strike aircraft armed with long-range ASCMs could conceivably punch through the U.S. fleet's defenses. Such shore-based firepower allows China to deliver ordnance on an American carrier strike group directly from the mainland well before the striking power of U.S. carrier-based combat aircraft could get close enough to shore to retaliate in kind.

As the U.S. fleet approaches the Chinese seaboard, it would encounter lurking ASCM-armed submarines, stealthy fast-attack craft, and other shorter-range missile-armed units. Chinese submarines would transit to firing positions in advance and wait for the right time to spring an ambush on the adversary. Swarms of fast-attack craft would launch coordinated saturation missile volleys from China's offshore waters to overwhelm the enemy fleet. The United States would meet the stiffest and deadliest resistance in this inner ring of China's anti-access zone.

The Logic of Anti-Access

These brief sketches of Japanese, Soviet, and Chinese capabilities and operational concepts illustrate the larger logic behind anti-access. All three powers extended layers of defenses from their homelands out to the open ocean. Indeed, each power drew lines at sea to delineate zones where its forces would defend against the incoming adversary. Whether such apparent

21 See Ronald O'Rourke, *Chinese Naval Modernization: Implications for U.S. Navy Capabilities*, (Washington, D.C.: Congressional Research Service, April 2014), pp. 22-28.

22 See Andrew Erickson, *Chinese Anti-Ship Ballistic Missile Development: Drivers, Trajectories and Strategic Implications*, (Washington, D.C.: Jamestown Foundation, 2013).

extensions of terrestrial defense bespeak a continental mentality unsuitable for developing a genuine blue-water navy remains a subject of debate.[23]

As the tide turned during the Pacific War, Japan established an "absolute defense perimeter," an arc that covered the Kuriles, the Bonin Islands, Iwo Jima, the Marianas, the Philippines, the Dutch East Indies, and Andaman-Nicobar Islands in the Bay of Bengal. Beginning in the late 1960s, Soviet sources referred to a "blue belt of defense" to describe the combination of maritime strike forces that would be employed to attack U.S. carriers and submarines.[24] The Chinese frequently invoke the "first island chain" as an important geographic marker that bounds China's inner maritime frontier. The outer ring, the "second island chain," roughly conforms to Imperial Japan's absolute defense perimeter in the western Pacific.

The concepts of interior and exterior lines—concepts derived from land warfare—illustrate the potential value of these maritime defensive perimeters. As Milan Vego explains:

> A force moves along interior lines when it runs between those of the enemy's lines of operations. Interior lines always originate from a central position. They are formed from a central position prolonged in one or more directions or they can also be understood as a series of central positions linked with one another. Interior lines in general allow concentration of one's forces against one part of the enemy force, while holding the other in check with a force distinctly inferior in strength.[25]

In theory, local defenders, such as Imperial Japan, the Soviet Union, and China today, benefit from operations along interior lines. They occupy central positions with all the advantages it entails, notably nearby bases and forces, agile movement in space, and short lines of communication. In China's case, modern infrastructure, including vastly improved national highways, railways, and port facilities, substantially adds to these advantages.

For an exterior power to overcome an interior power's ability to concentrate at any point along the defensive perimeter, it must coordinate superior numbers and resources and attack that perimeter on multiple fronts at the same time. In other words, the interior power concentrates in space while the exterior power concentrates in time. Concentration in time demands greater physical might, the ability to project that power into an adversary's backyard, and the ability to coordinate multiple actions across multiple points of contact—fixing and overwhelming resistance from an interior power exploiting its home-field advantage.

This is an exacting standard, yet one that an exterior power must meet to prevail in faraway theaters. Consider the U.S. forces' dual-pronged thrust across the Pacific Ocean during

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23 For a critique of this continental mindset, see Yoji Koda, "Commentary: Japanese Perspectives on China's Rise as a Naval Power," *Harvard Asia Quarterly*, December 24, 2010, p. 11 and Bernard Cole, "Drawing Lines at Sea," *Proceedings*, Vol. 137, No. 11 (November 2011), p. 51.

24 See Robert W. Herrick, "The USSR's 'Blue Belt of Defense' Concept: A Unified Military Plan for Defense Against Seaborne Nuclear Attack by Strike Carriers and Polaris/Poseidon SSBNs," Professional Paper No. 111, Center for Naval Analysis, May 1973.

25 Milan N. Vego, *Naval Strategy and Operations in Narrow Seas*, 2d ed., rev. (London: Frank Cass, 2003), pp. 85–86.

World War II. Concurrent Central and Southwest Pacific drives forced Tokyo to defend along two main fronts, preventing Japanese forces from concentrating in space. Yet this campaign plan proved highly resource-intensive and time-consuming, taxing even the industrial might of the United States. Looking ahead, the question is whether the United States will be able to concentrate in time against China's interior position as the PLA continues to grow in strength.

Notably, the concept of interior and exterior lines occupies an important place in China's military tradition. In the 1930s, Mao Zedong extolled the value of operations along interior lines for the weaker communist side. Today, PLA doctrinal writings continue to pay close attention to the interaction of forces operating along interior and exterior lines. For example, the 2001 edition of the *Science of Military Strategy* calls for "conducting counterattacks on exterior lines" in order to win local wars along China's maritime periphery.[26] The 2013 *Science of Military Strategy* states, "Once the [crisis or war] situation gets out of control, we must implement operations that uses the mainland and the near seas as strategic interior lines while deterring and controlling along the strategic exterior lines of the western Pacific and the northern Indian Ocean."[27]

Beyond exploiting their respective strategic geographies, the IJN, the Soviet navy, and the PLAN expected to achieve very similar tactical outcomes. The Japanese, the Russians, and the Chinese viewed saturation attacks with torpedoes and missiles as effective means for overwhelming enemy defenses. The speed and lethality of war at sea demanded such a rapid and all-out commitment to offensive action. As two analysts from the Beijing University of Aeronautics and Astronautics observe, "Modern naval warfare is a fast-tempo, high-intensity process. While missile attacks on both sides will probably only last about 10 minutes, they will also launch several hundred missiles [during that timeframe]."[28] Given the prospects of such a voluminous exchange of firepower, the side that acts first and decisively may hold the advantage.

For the Soviet navy and the PLAN, in particular, throwing in the first punch with a massive volley was the key to seizing the initiative in sea combat. Indeed, some Chinese analysts seemingly embrace the Soviet concept of the "battle for the first salvo." Two researchers at the Electronic Engineering College of the Naval University of Engineering argue that a first strike would mitigate the risks inherent to fighting at sea. They assert, "Sea combat is very short. The possibility of failure can occur in an instant. As such, preemptive strikes often possess decisive meaning. Defense cannot play a leading role in sea combat. Preemption and offensive operations must not be neglected."[29]

Japan, the Soviet Union, and China also invested in airpower and missiles to outrange the striking power of the adversary. Referring to the IJN's thinking behind its plans to outreach

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26 Peng Guangqian and Yao Youzhi, *The Science of Military Strategy*, (Beijing: Military Science Publishing House, 2005), pp. 459-461.

27 Shou Xiaosong, *The Science of Military Strategy*, (Beijing: Military Science Publishing House, 2013), p. 108.

28 Zhang Kun and Bi Xiaochun, "The Organization and Implementation of Antiship Missile Saturation Attacks," *Aerodynamic Missile*, No. 11 (2006), p. 17.

29 Li Jun, Li Minyong, and Liu Guolin, "Research on Maritime Swarming Warfare," *Journal of Dalian Naval Academy*, No. 1, (2010), p. 16.

the enemy, David Evans and Mark Peattie observe, "The Japanese wanted to strike the enemy at the outset of the decisive encounter at a distance from which he could not retaliate. The concept began with the possibilities of long-range naval gunfire, but eventually came to be applied to the use of torpedoes, submarines, and of course, naval aircraft."[30] Japanese Zero fighters on one-way missions and Soviet Backfire bombers well exceeded the combat radii of U.S. carrier-based aircraft.

Today, the United States and China are now locked in a "range war" over the distances that their missiles and aircraft can cover to reach their intended targets.[31] The PLA appears to be ahead in virtually every category, including ship-to-ship and air-to-ship missile engagements. For example, Chinese Flanker fighters armed with long-range anti-ship cruise missiles could threaten surface combatants nearly 2,000 kilometers from China's shores. By comparison, an American F-18 aircraft armed with air-to-air missiles has an effective combat range of 1,300 kilometers. Mass, speed, and range are thus key ingredients to the effectiveness of anti-access.

All three powers counted on attrition to raise the costs of an American military offensive across the Pacific. But an attritional approach imposed high losses on their own forces. While figures differ, the IJN lost more than 2,500 kamikaze pilots in the last ten months of fighting. Less than 20 percent of the aircraft got past the U.S. fleet's defensive screen to score a hit.[32] The Soviets for their part expected to suffer appalling losses in bomber raids against the incoming American carriers. They estimated that half of their bomber force would fall victim to carrier air defenses whether or not the attacks succeeded in hitting the target.[33] There is thus nothing elegant or clean about anti-access. While it is unclear how much the PLAN expects to lose in a fight against U.S. forces, Chinese analysts have conducted extensive operations research on the offense-defense balance in naval warfare.[34] They are clear-eyed about the potential losses against a powerful adversary at sea.

Anti-Access in Strategic Context

But not all anti-access strategies are created equal. Their potential utility depends in part on the unique circumstances, some fixed more than others, of the defenders. The different strategic conditions that the IJN, the Soviet navy, and the PLAN operated under imposed constraints and offered opportunities. Such differences provide a basis for comparing the advantages and disadvantages of the three anti-access powers and for assessing how Chinese anti-access measures up to Imperial Japan and the Soviet Union.

First, strategic geography again looms large. Japan was perhaps least encumbered by its position. Bodies of water buffered the island nation from its two giant land powers to the west. At the same time, Japan enjoyed direct access to the Pacific Ocean. Major Japanese naval

30 David Evans and Mark Peattie, *Kaigun*, p. 250.

31 Robert Haddick, "The Real U.S.-China War Asia Should Worry About," *National Interest*, July 25, 2014.

32 Nicolae Timenes, *Defense Against Kamikaze Attacks in WWII and Its Relevance to Anti-Ship Missile Defense*, (Alexandria, VA: Center for Naval Analysis, 1970), p. 83.

33 Tokarev, p. 78.

34 See Li Dengfeng and Xu Teng, *Naval Operational Research Analysis and Application*, (Beijing: National Defense Industry Press, 2007).

bases and ports faced east toward the Pacific, enjoying egress to the open oceans. Vessels and aircraft did not have to pass near territories administered by foreign powers to reach the high seas. Formosa provided an additional island base from which to sortie aircraft and warships. Moreover, Japanese-occupied mandated Pacific islands offered forward basing for land-based bombers and submarines.

On the other hand, Japan suffered from the lack of strategic depth. Once U.S. airpower and seapower came within striking distance of the home islands, Japanese population and industrial centers were exposed to attack and blockade. Whereas Japan could not fall back once the enemy breached its forward defense perimeter, both the Soviet Union and China could count on deep inland territories to trade space for time.

The Soviet Union was hemmed in behind island barriers. In the Far East, the Japanese home islands surrounded Vladivostok, the hub of Soviet naval power. Some of the major routes to the Pacific passed through chokepoints formed by hostile territories, including the Tsushima, Tsugaru, and Soya Straits. Indeed, throughout the Cold War, the U.S.-Japan alliance worked to bottle up Soviet naval forces in the Sea of Japan. Further north, the Kurile Islands enclosed the Sea of Okhotsk, forming another series of narrow seas through which Soviet forces had to transit. Although the naval base at Petropavlovsk is located on the east coast of the Kamchatka Peninsula, ice packs during the winter months made it an inhospitable environment.

Similarly, geography does not favor China. The first island chain lies just offshore of the mainland seaboard. Chinese mariners, both commercial and military, must pass through at least one chokepoint formed by the long archipelago to reach the high seas of the Pacific and the Indian Oceans. Equally disquieting to Chinese observers, the occupants of the entire island chain are either formal treaty allies or friends of the United States. PLA maritime-strike aircraft would likely have to fight through well-defended allied airspace before reaching the open waters. Chinese warships and submarines must hazard the narrow seas patrolled by enemy units in order to break out into the Pacific.

Second, whether the anti-access power has to contend with more than one opponent or more than one front is a critical consideration. The fewer adversaries and threat vectors the defender faces, the more that it can concentrate and direct its anti-access forces at the most powerful enemy. Following the Pearl Harbor attack, Japan found itself fighting in two massive theaters of operations. It could not extricate itself from the grinding continental quagmire in China even as it had to wage a maritime war in the Pacific. The conflict in China, arguably the central front for Japan, soaked up huge amounts of manpower that might have otherwise been deployed against the United States. By war's end, 1.8 million Japanese troops, roughly 30 percent of the nation's land forces, were stationed in China and Manchuria. As Sally Paine concludes, "The United States could not have won the Pacific War at an acceptable cost without China tying down one-third of available Japanese forces."[35]

The Soviet Union was poised to fight a multi-front global war that could have featured extensive use of nuclear weapons. Its main theater of operations lay in Europe. It not only had

35 SCM Paine, *The Wars for Asia*, 1911-1949, p. 217.

to prepare for a titanic struggle for control of the European continent along the Central Front, but it also had to anticipate simultaneous naval assaults against the maritime extremities of the homeland. Furthermore, the Soviets contemplated opening new fronts along its entire Eurasian periphery, including the Middle East, the Sino-Soviet border, and the maritime perimeter in the Far East.[36] In the last decade of the Cold War, the United States explicitly exploited this geostrategic dilemma. For example, the U.S. Maritime Strategy of the 1980s threatened Soviet naval assets in the Pacific in order to draw Moscow's resources and attention away from the main front in Europe to a peripheral, secondary front.[37]

For the moment, China does not have to deal with grave threats to its security or survival on multiple fronts. Beijing has settled major land border disputes to the north, the direction from which the most dangerous, regime-toppling threats have emerged throughout its history. China enjoys cordial relations with Russia, ties that have strengthened further in recent years. While Sino-Indian ties remains troubled by the unresolved border dispute, they have been largely peaceful, if frosty. The relative calm on the continental front, an unprecedented phenomenon, has enabled Beijing to devote a larger proportion of its energies to maritime and aerospace power aimed in the oceanic direction. Yet, even on the Pacific front alone, China must still contend with the United States and a potentially powerful U.S.-led coalition that stretches from Japan down to Australia.

Third, economic health, the sinews of national power, dictates the strength and sustainability of anti-access. Japan's economic situation was quite precarious and threatened to deteriorate as the United States recovered from the Great Depression. On the eve of the Pacific War, the U.S. economy and industrial potential were twelve and ten times larger, respectively, than those of Japan. Wartime naval construction is telling. American shipyards produced more than five times as much warship tonnage as their Japanese counterparts from 1942 to 1945.

The Soviet Union's GDP growth rates began to falter in the 1970s just as its navy began to demonstrate the ability to surge forces worldwide. The economy slowed even more significantly in the 1980s when the collapse in oil prices wiped out the USSR's income from oil exports.[38] Even more telling, the USSR never kept up with the United States. Soviet per capita GDP as a percentage of U.S. per capita GDP peaked in 1960 at 35 percent, stayed at roughly the same level over the next two decades, and fell behind in the 1980s. By 1990, Soviet per capita GDP was only 11 percent of U.S. per capita GDP. As two Russian analysts concede retrospectively, "Our country was effectively drawn into an arms race in general, and a naval arms race in particular, that was beyond the strength of its economy."[39]

In 2013, the Chinese economy was slightly more than half the size of America's.[40]

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36 See U.S. Department of Defense, *Soviet Military Power: An Assessment of the Threat 1988*, (Washington, D.C.: Government Printing Office, 1988), pp. 69-74.

37 Norman Fiedman, *The U.S. Maritime Strategy*, (Annapolis, MD: Naval Institute Press, 1988), pp. 190-191.

38 See Yegor Gaider, "The Soviet Collapse: Grain and Oil," *On the Issues*, American Enterprise Institute, April 2007.

39 Vladimir Kuzin and Sergei Chernyavskii, p. 438.

40 International Monetary Fund, World Economic Outlook Database, April 2014 edition, http://www.imf.org/external/pubs/ft/weo/2014/01/weodata/index.aspx.

If current growth rates continue, the Sino-U.S. gap will shrink further. Indeed, Japan and the Soviet Union were destined to fall behind the United States while China will likely narrow America's material lead. The contrast with Imperial Japan is especially sharp. China boasts a much larger industrial and resource base than Japan did. Beijing is already one of the largest shipbuilding powers in the world while its naval yards are bolting together warships of every kind at breakneck speed. Owing to such sheer economic heft, China's anti-access and general-purpose forces will grow in size and improve in quality beyond the wildest dreams of Japanese planners. In a potential protracted war, China's enormous industrial capacity will also give the PLAN advantages of military mass and the ability to regenerate such mass that the IJN never enjoyed.

While there are clear signs that the days of double-digit growth are over for China, even a more modest pace would generate substantial national wealth to invest in defense. According to Bradford Lee, if China's economy manages to grow at 6 percent over the next twenty-five years while the United States grows at 3 percent during the same timeframe, then Chinese GDP measured in purchasing power parity terms would be 50 percent larger than that of the United States. By contrast, owing to the much smaller size of the Soviet economy compared to the United States, even if the Soviet Union had enjoyed the same growth differential over the United States from the 1950s to the 1970s, it still would not have been able to close the gap. As Lee concludes, "China presents a challenge to the United States that the Soviet Union was never capable of mounting." [41]

Fourth, the overall military capacity to control events at sea is essential to measuring the potential effectiveness of anti-access. In warfighting capability, the IJN was a fearsome threat to the U.S. Navy. Japan boasted a very well trained and balanced fleet that could command the Asian seas. Tactically, the Japanese navy's weapons were among the best in the world. On the eve of the Pearl Harbor attack, the IJN was superior to the US Navy on most measures of naval power. As Samuel Eliot Morison notes, "In contrast to the United States Pacific Fleet, the Japanese Combined Fleet was well balanced, thoroughly trained, and spoiling for a fight… The Japanese Navy was more powerful in combatant ships than the United States Navy in the Pacific; more powerful even if one added the British and Dutch warships in that ocean." [42] There was thus merit to the IJN's forecast that the struggle would culminate in a titanic battle between two battle fleets of comparable size and technological sophistication.

Following the Cuban Missile Crisis of 1962, which punctuated Moscow's maritime weakness in dramatic fashion, the Soviet Union commenced an impressive naval buildup that bore fruit within a decade. During the Okean '75 naval exercise, the navy surged units into oceans and seas spanning the globe, taking Western observers aback. In the Far East, the Soviet navy threatened to tip the naval balance. As Edward Marolda records, "By the mid-1980s, the Soviet Pacific Fleet operated 500 warships and submarines…One thousand six hundred Soviet aircraft and one-third of the USSR's intermediate-range ballistic missile force

41 Bradford A. Lee, "The Economic Context of Strategic Competition," in *Strategy in Asia*, Thomas Mahnken and Daniel Blumenthal, eds. (Stanford, CA: Stanford University Press, forthcoming December 2014).

42 Samuel Eliot Morison, *The Two-Ocean War*, (Boston: Little, Brown and Co., 1963), p. 39.

operated in the Far East."[43] According to Alexey Muraviev, "By the second half of the 1980s, the Soviet Navy in the Pacific had nearly achieved naval parity with the United States and its Pacific allies…In the Pacific, Soviet naval forces deployed in forward areas posed a serious threat to their primary opponents."[44] By the last years of the Cold War, the Soviet Union possessed "an oceanic navy with a sea-denial strategy of fighting to destroy or neutralize and enemy's striking forces."[45]

The PLAN is a navy in transition. It is still largely a sea-denial force, unable to project and sustain naval power—beyond the token forces it has deployed—over great distances. There is no doubt that the Chinese navy is closing the capability gap that separates it from the U.S. Navy. The proportion of modern equipment is growing rapidly, replacing obsolescent platforms that still constitute a drag on the service. A more balanced fleet is clearly in the making. Nevertheless, by Western standards, China still lags in standardization of equipment, seamanship, training, exercises, and doctrine. The PLAN is thus in no position to slug it out with the U.S. fleet on the open ocean. It will take many more years for China to build a genuine blue-water navy—if that is indeed the goal—to engage in a one-on-one struggle with American naval forces.

The four variables—geography, number of enemies, long-term economic performance, and naval power—by no means exhaust the range of internal and external inputs that could shape anti-access. For example, such considerations as bureaucratic politics, interservice rivalries, the strategies and capabilities of the adversary, the role of nuclear weapons in the case of the Soviets and the Chinese, and the nature of the conflict would all be highly relevant, even indispensable, to assessing anti-access. But, the four factors above illustrate how and why anti-access strategies could potentially vary in their effectiveness.

In the case of the IJN, the qualitative and quantitative superiority of its fighting power at the outset of the conflict could not compensate for the economic and military balance of power that was shifting inexorably in America's favor. Once the United States generated enough mass to conduct a dual-pronged campaign that concentrated in time across the central and southwestern Pacific areas, Japan's defense perimeter could not withstand the weight of American power. The Soviet Union, too, faltered under economic duress in peacetime conditions even as its navy was reaching parity in critical warfighting areas with the U.S. Navy. For China, the question is whether the more variable inputs, such as economic growth and naval power, can be sustained sufficiently and long enough to produce anti-access and general-purpose forces that overcome fixed geographical disadvantages. Deft Chinese diplomacy would also be essential to keeping its continental fronts quiet, although diversions of forces inland are probably inevitable.

The High Costs of Victory

That the United States prevailed in the Pacific War and the Cold War should give cold comfort

43 Edward Marolda, *Ready Seapower*, (Washington, DC: Department of the Navy, 2012), p. 89.
44 Alexey Muraviev, *The Russian Pacific Fleet*, (Canberra: Sea Power Center, 2007), p. 28.
45 Robert Herrick, p. 1380.

to those charged with defeating Chinese anti-access. American victory in the Pacific does not by itself condemn China's anti-access strategy to failure. After all, major battles that turned the tide of the Pacific War, including Midway and Guadalcanal, were all close-run things. Had chance favored Japan in any one of those encounters, the price of American victory might have soared. With all the advantages that the U.S. Navy enjoyed, it still took 30 months of arduous fighting to tear down Japan's anti-access wall. Even a deeply flawed strategy permitted Japan to inflict great harm on its way to defeat. As the adage goes, the journey is as important as the destination.

Ehrhard and Work, too, offer a sobering reminder that there was nothing fated about U.S. operational success in a possible war against the Soviets. Drawing explicitly from America's experience in the Pacific War, they note, "Actual combat between these two adversaries would likely have been extremely intense…If the Soviets were able to coordinate their attacks as planned, a carrier battle group would face a modern-day kamikaze raid consisting of up to 180 supersonic cruise missiles."[46] They conclude, "The fact remains that no one can really know which side would have come out on top in a shooting war."[47] Even if the United States ultimately triumphed, it would have almost certainly paid dearly for the victory.

If the Japanese and Soviet experiences are any guide, a Sino-American conflict would likely be a very bloody affair. While China and the United States may prefer, plan for, and even expect a quick, decisive victory, a long slugfest could well ensue should deterrence fail. As noted above, China's economic prowess will furnish it with the kind of staying power that Imperial Japan and the Soviet Union never had. Over the longer term, Chinese military power could approach that of Imperial Japan or the Soviet Union at their respective heights of warfighting capabilities. At that point, would the duration and the magnitude of effort required to overcome Chinese anti-access exceed the value that the United States attaches to its aims in Asia? That is the question that awaits Washington in the coming years.

46 Ehrhard and Robert Work, p. 87.

47 Ibid., p. 89.